DIKSHANT TODAY

JANUARY 2023

What's special

- Collegium system & related issues
- Personality Rights
- Need for an effective tourist police
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- China's moves in the Indian Ocean
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COLLEGIUM SYSTEM & RELATED ISSUES

A JURY OF JUDGES

WHAT IS THE COLLEGIUM SYSTEM?

- A forum which decides on **appointments, transfers (A/Ts)** of judges.
- Comprised of Chief Justice of India, 4 **Supreme Court Judges**
- President merely **approves** CJI's choice

- Born from 'Three Judges Cases' which gave **primacy to CJI's call** on A/Ts
- Judiciary gets greater say than **Executive on A/Ts**

CRITICISMS

- **Administrative burden** of checking professional background data
- **Closed-door affair, lacks transparency**
- **Exclusivity** sidelines talented junior judges, advocates

SOME OF THE CHANGES SOUGHT:
- CJI cannot make unilateral choice
- Consulted judges' views need to be in writing
- Non-compliance must make CJI choice non-binding
- Transfer of judges reviewable only in case of non-compliance

Context:

- Amid Union law minister's recent remarks on the Supreme Court Collegium, the central government has asked the Supreme Court to reconsider 19 out of the 21 names recommended for appointment as High Court judges.
- The Centre expressed "strong reservations" about these pending recommendations made by the apex court collegium and sent back the files.
- The Supreme Court said that the government cannot just hold back recommendations without notifying any concerns.

What is the collegium system?

- A Supreme Court Collegium is a five-member judges' body that is headed by the Chief Justice of India (CJI) and consists of four other senior most judges of the top court at the time.
- A High Court Collegium consists of a Chief Justice and two senior most judges of that court.
- An HC Collegium sends the recommendation to the collegium of the apex court on judicial appointments.
- The appointments made through the collegium system can be in the form of elevation of High Court judges to the top court, or direct appointments of senior lawyers as Supreme Court judges, as per Business Standard.
- The collegium system is not governed by any specific law enacted by the Parliament.

Constitutional provisions:

- Articles 124(2) and 217 of the Constitution are related to the appointment of judges in the Supreme Court and High Courts.
- According to Article 124(2), "Every Judge of the Supreme Court shall be appointed by the President by warrant under his hand and seal after consultation with such of the Judges of the Supreme Court and of the High Courts in the States as the President may deem necessary for the purpose and shall hold office until he attains the age of sixty-five years. Provided that in the case of appointment of a Judge other than the Chief Justice, the Chief Justice of India shall always be consulted."
- Article 217 states: "Every Judge of a High Court shall be appointed by the President by warrant under his hand and seal after consultation with the Chief Justice of India, the Governor of the State, and, in the case of appointment of a Judge other than the Chief Justice, the Chief Justice of the High Court."

Union government's role:

- Once cleared by the CJI and SC Collegium, the names of judges for the High Court's reach the central government. The Centre has a limited role in the appointment of judges to High Courts or the apex court.
- The government can get a probe conducted by the Intelligence Bureau (IB) on whether a particular lawyer should be elevated. It can also seek clarification or express objections, however, if the collegium reiterates those recommendations, they have to be accepted.
- The collegium system has been criticised by some over its lack of transparency.

What was NJAC Act and why was it repealed?

- In 2014, the central government brought the National Judicial Appointments Commission (NJAC) Bill. The Constitution (99th Amendment) Bill, 2014 and the NJAC Bill were cleared by both houses of the Parliament the same year. They came into effect on 13 April 2015.
- The NJAC Act sought to change the collegium system and extend the role of the executive in appointments to the higher judiciary.
- The commission was to comprise the Chief Justice of India (Chairperson, ex-officio), two other senior SC judges, Union minister of law and justice, ex-officio and two other eminent persons, to be appointed by

the CJI, Prime Minister, and Leader of Opposition in the Lok Sabha.

➲ However, some lawyer associations and groups filed petitions in the Supreme Court challenging the Act.

➲ In October 2015, a five-judge Constitution Bench of the Supreme Court struck down the NJAC Act 2014 as "unconstitutional and void". In a 4:1 majority verdict, the bench held the collegium system would make the appointments of judges, and the CJI would have "the last word".

➲ In December 2021 the law minister had claimed that there is growing support for the reintroduction of the NJAC Bill.

How do other democracies elect their judiciary?

USA:

➲ In the United States of America, Supreme Court justices, court of appeals judges, and district court judges are appointed by the President and confirmed by the Senate.

➲ The federal judiciary, the Judicial Conference of the United States, and the Administrative Office of the US Courts play no role in the nomination and confirmation process.

UK:

➲ In the United Kingdom, a selection commission is convened by the Lord Chancellor for the appointments to the judiciary. The Lord Chancellor heads the ministry of justice as the Secretary of State for Justice.

➲ If the Lord Chancellor is satisfied with the recommendation, then the name is forwarded to the Prime Minister who, in turn, sends it to the King who makes the formal appointment.

Canada:

➲ Canada's Supreme Court has nine judges, including the Chief Justice of Canada.

➲ Each judge is appointed by the Governor in Council and must have been "either a judge of a superior court or a member of at least ten years' standing of the bar of a province or territory".

France:

➲ In France's Court of Cassation, the highest court in its judicial system, the judges are selected by the President of the Republic on a recommendation of the Higher Council of the Judiciary.

Norway:

➲ In Norway, the King-in-council appoints the judges. An advisory appointment board suggests the government on the issue of the selection of judges. This appointment board examines the qualifications of applicants.

➲ The Chief Justice of the Supreme Court gives recommendations to the Minister of Justice, while the King-in-council takes the final decision.

TOWARDS A ROBUST TRIUMVIRATE

Context:

➲ A five-judge Constitution Bench of the Supreme Court is examining a bunch of petitions recommending reforms in the process of appointment of members of the Election Commission.

➲ It is hoped that the Bench will also examine electoral reforms suggested to governments by successive Election Commissions over the last two decades or so.

Background:

➲ A list of over 20 reform proposals was compiled in 2004. More proposals were added to the list over time and are pending with government.

➲ These range from strengthening the Commission's inherent structure to handling the misuse of muscle and money power during elections, which violate the Model Code of Conduct.

The matter of appointments:

➲ The first, under consideration, is whether Election Commissioners should be selected by the executive or by a collegium. The idea of a collegium is not new.

Dinesh Goswami Committee:

➲ The Dinesh Goswami Committee in 1990 suggested that the Chief Election Commissioner be appointed by the President (read: executive) in consultation with the Chief Justice of India and the Leader of the Opposition. It said this process should have statutory backing.

➲ Importantly, it applied the same criteria to the appointments of Election Commissioners, along with consultation with the Chief Election Commissioner.

National Commission to Review the Working of the Constitution:

➲ The National Commission to Review the Working of the Constitution, under Justice M.N. Venkatachaliah, said that the Chief Election Commissioner and other Election Commissioners should be appointed on the recommendation of a body comprising the Prime Minister, the Leaders of the Opposition in the Lok Sabha and the Rajya Sabha, the Speaker of the Lok Sabha and the Deputy Chairman of the Rajya Sabha.

255th Report of the Law Commission:

- The 255th Report of the Law Commission, chaired by Justice A.P. Shah, said the appointment of all the Election Commissioners should be made by the President in consultation with a three-member collegium consisting of the Prime Minister, the Leader of the Opposition of the Lok Sabha (or the leader of the largest opposition party in the Lok Sabha), and the Chief Justice of India.
- It also suggested measures to safeguard Election Commissioners from arbitrary removal, in a manner similar to what is accorded to the Chief Election Commissioner, who can only be removed by impeachment, which is by no means easy.
- None of these recommendations gained traction in the governments to whom they were submitted.

Security of Tenure:

- The second issue is to afford the same security from arbitrary removal to Election Commissioners that the Constitution affords to the Chief Election Commissioner.
- The Supreme Court lost an opportunity for reform in its judgment in the Seshan case.
- It conferred equal powers on the Election Commissioners as those enjoyed by the Chief Election Commissioner (referring to the Chief Election Commissioner as primus inter pares, or first among equals) and even offered majority power, whereby any two can overrule even the Chief Election Commissioner.
- Yet, it did not afford the Election Commissioners the same constitutional protection (of removal by impeachment) as is accorded to the Chief Election Commissioner. It is hoped that the present Bench will examine this.

Recommendations:

- In the absence of full constitutional security, an Election Commissioner could feel they must keep on the right side of the Chief Election Commissioner. They might also feel they should remain within the ambit favoured by the government.
- With such misgivings, an Election Commissioner can never be sure whether they will automatically be elevated to the top post because nowhere has elevation been statutorily decreed.
- While the Chief Election Commissioner should be appointed by a collegium, this must apply equally to the Election Commissioners. The collegium should be wide based.
- Strengthened now by a broad-based selection by the top constitutional luminaries of the country, the Election Commission must now equally be protected from arbitrary removal by a constitutional amendment that would ensure a removal process that currently applies only to the Chief Election Commissioner.

Without this, the Election Commission of India will not be a robust triumvirate.

PERSONALITY RIGHTS
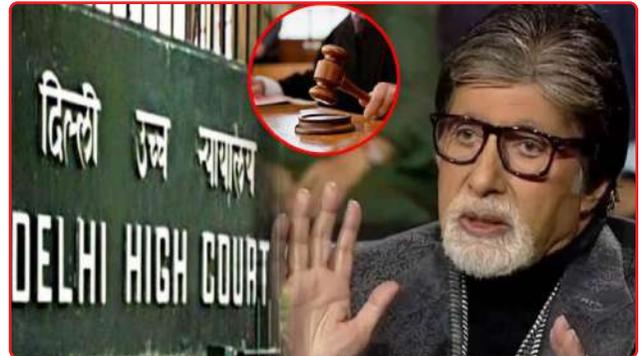
Why in news?

- The Delhi High Court recently passed an interim order to prevent the unlawful use of Bollywood star Amitabh Bachchan's name, image and voice.
- The court, through its order, restrained persons at large from infringing the personality rights of the actor.

What are personality rights?

- Personality rights refer to the right of a person to protect his/her personality under the right to privacy or property.
- These rights are important to celebrities as their names, photographs or even voices can easily be misused in various advertisements by different companies to boost their sales. Therefore, it is necessary for renowned personalities/celebrities to register their names to save their personality rights.
- A large list of unique personal attributes contribute to the making of a celebrity. All of these attributes need to be protected, such as name, nickname, stage name, picture, likeness, image and any identifiable personal property, such as a distinctive race car.

Are personality rights different from publicity rights?

- Personality rights are different from publicity rights.
- Personality rights consist of two types of rights:
  a) The right of publicity, or the right to keep one's image and likeness from being commercially exploited without permission or contractual compensation, which is similar (but not identical) to the use of a trademark; and
  b) The right to privacy or the right to not have one's personality represented publicly without permission. However, under common law jurisdictions, publicity rights fall into the realm of the 'tort of passing off'.
- Passing off takes place when someone intentionally or unintentionally passes off their goods or services as those belonging to another party. Often, this type of

misrepresentation damages the goodwill of a person or business, resulting in financial or reputational damage.

➲ Publicity rights are governed by statutes like the Trade marks Act 1999 and the Copyright Act 1957.

Does the use of a name on the internet affect personality rights?

➲ The Delhi High Court in 2011 made an observation in the case of Arun Jaitley vs Network Solutions Private Limited and Ors., in which Mr. Jaitley filed a suit seeking permanent injunction against the defendants from misuse and immediate transfer of the domain name www.arunjaitley.com.

➲ The Court stated that "the popularity or fame of individual will be no different on the internet than in reality."

➲ The Court decided in the favour of Mr. Arun Jaitley, stating that the "name also falls in the category wherein it besides being a personal name has attained distinctive indicia of its own.

➲ Therefore, the said name due its peculiar nature/distinctive character coupled with the gained popularity in several fields whether being in politics, or in advocacy, ...has become a well-known personal name/mark under the trade mark law which enures him the benefit to refrain others from using this name unjustifiably in addition to his personal right to sue them for the misuse of his name."

What about consumer rights?

➲ While celebrities are protected from commercial misuse of their name and personality, there have also been instances where the consumers are misled owing to false advertisements or endorsements by such personalities.

➲ Due to such cases, the Ministry of Consumer Affairs has made a notification in 2022 to keep a check on misleading adverts and endorsements of consumer products by imposing a penalty on the endorser.

CODE OF CRIMINAL PROCEDURE (GUJARAT AMENDMENT) BILL, 2021

Why in news?

➲ Recently, the Centre cleared a State legislation that empowers police officers to register cases without informing the local court in writing against persons who protest and agitate violating Section 144 of the Code of Criminal Procedure (CrPC).

➲ Section 144 empowers police and district magistrates to issue order in urgent cases of nuisance of apprehended danger.

Background:

➲ The Code of Criminal Procedure (Gujarat Amendment) Bill, 2021 was passed by the State Assembly in March 2021.

➲ It was sent to the Ministry of Home Affairs (MHA) to examine if it was repugnant with any central law or deviated from the Central government's policy.

➲ The clearance to the amendment comes at a time when the Ministry is actively working to overhaul the Indian Penal Code (IPC) and the CrPC to remove any colonial baggage from the codes.

➲ After holding inter-ministerial consultations, the MHA gave an opinion to process the bill, following which it was signed by the President, paving the way for it to become the law in Gujarat.

Key Highlights:

➲ The bill seeks to make any violation of prohibitory orders issued under Section 144 CrPC, a cognisable offence under Section 188 of the IPC (disobedience to order duly promulgated by public servant).

➲ It amends Section 195 of the CrPC, which states that no court shall take cognisance of any criminal conspiracy for contempt of lawful authority of public servants, except on the complaint in writing of the public servant concerned.

➲ The statement and objects of the bill said that the Government of Gujarat, Commissioners of Police and District Magistrates are empowered to issue prohibitory orders under Section 144 of the CrPC directing any person to abstain from certain act or to take certain order to prevent disturbance of public tranquility or a riot or an affray to maintain public order on various occasions.

➲ It said that police officers while deployed on such duties come across incidents of violation and need to take appropriate legal action against the violators under Section 188 of the IPC.

Section 188 of the IPC:

➲ Section 188 IPC was invoked liberally by police across the country on the directions of the MHA during the COVID-19 induced lockdown years of 2020 and 2021.

➲ In those two years, the number of cases registered under the said section stood at 6.12 lakh and 3.22 lakh respectively, a sharp jump from the 29,469 and 22,907 cases registered in 2019 and 2018 respectively.

➲ The maximum punishment under the Section is six months imprisonment.

NEED FOR AN EFFECTIVE TOURIST POLICE

Context:

➲ Crimes against tourists and other foreign nationals appear to be on the rise in India.

➲ In view of the forthcoming G20 Summit, the Delhi police is gearing up its tourist police wing, which was hitherto in a neglected state and so are other States which will see a huge influx of foreigners.

Few instances:

➲ A few days ago, a Kerala session court sentenced two men to life imprisonment for the rape and murder of a Latvian tourist in 2018.

- A 12-year-old Russian girl was raped in a hotel in Goa in April 2022. The rapist was an employee of the hotel in which the girl was staying with her mother.
- On September 2, a British woman lawyer lodged a complaint of sexual misconduct against a cab driver who was ferrying her from the airport to her hotel in South Delhi. The incident traumatised her to the extent that she left for the U.K. within two days of her arrival.
- These are just a few incidents of foreigners falling victim to crimes in India.

NCRB data:
- Women are more prone to sexual attacks by criminals on the prowl in tourist destinations.
- According to data of the National Crime Records Bureau (NCRB), Delhi recorded 27 cases of crime against foreigners last year, a drastic decline from 62 cases reported in 2020 and 123 in 2019.
- Rajasthan has shown a sharp reduction in registration of crimes from 16 in 2019 to just 4 in 2020 and two cases last year, which could be attributed to the sharp decline in tourist arrivals due to COVID-19.
- As many as 29 foreigners were murdered in the last three years. While 14 foreigners fell victim to rape last year, 16 were raped in 2020 and 12 in 2019.

Tourism industry:
- Crime against foreigners not only dents our image globally but could also adversely affect the inflow of foreign tourists, which is a vital source of income for India.
- While India's earnings through tourism was $30.06 billion in 2019, it declined to $6.958 billion in 2020 due to COVID-19 and the resultant restrictions in foreign tourists entering the country. A marginal increase of $8.797 billion was recorded last year.
- With optimistic predictions of about 13.34 million foreign tourists arriving by 2024, there is a pressing need to upgrade security systems specially to provide a flawless security blanket cover to foreign tourists. Safety assumes utmost importance to draw tourists in hordes.

Sensitization:
- In order to provide a safe environment for tourists, the Ministry of Tourism, in collaboration with the Bureau of Police Research and Development (BPRD), organised a conference in New Delhi on October 19, 2022.
- It was organised with a view to "sensitise the specific requirements of the tourists for effective implementation of Uniform Tourist Police Scheme at pan-India level".
- Though the concept of 'tourist police' has been in vogue for the past few years, it has not been given the kind of attention it deserves. The States that have tourist police are Uttar Pradesh, Madhya Pradesh, Delhi, Goa, Rajasthan and Kerala.

The tourist police scheme:
- The BPRD has brought out a booklet on the tourist police scheme detailing the mode of setting up of tourist police stations and control rooms, outposts, uniforms, recruitment, qualifications, training and logistics requirements for tourist police stations.
- As many as 25 popular tourist spots have been identified in the country where the tourist police necessarily need to be deployed to help foreigners.
- As an incentive, 30% deputation allowance has been recommended for the police personnel who joins the tourist police on deputation.

Fast track courts:
- While the setting up of tourist police stations is a commendable step to provide safety to foreigners, much needs to be done to instil a sense of security in them even before they leave their countries for India.
- With theft being the most common crime committed against foreigners, all criminals in and around tourist spots need to be identified and kept under constant surveillance.
- Since foreigners come for short durations, the cases cannot be allowed to linger on in courts for long. Fast track courts should be set up immediately to try cases of crime against foreigners and the culprits punished speedily.
- It may be recalled that a rape convict, Bitihotra Mohanty, was tried for raping a German national in Alwar (Rajasthan) on March 21, 2006 and he was sentenced to seven years imprisonment on April 12, that is, within 22 days.
- Such speedy disposal of cases of crime against foreigners can be replicated if we have the will.

WHY IS THERE FRICTION BETWEEN THE GOVERNMENT AND THE JUDICIARY?

Context:
- A major confrontation is on between the Union government and the Supreme Court over the former's resentment towards the Collegium system of appointments and its push to have a dominant say in judicial appointments and transfers.

Current issues:

➲ The government has also started airing its grievance against the invalidation of the National Judicial Appointments Commission (NJAC) by the court in 2015.

➲ The current round of conflict has two triggers. One is the government's repeated public criticism of the Collegium system on the ground that it is "opaque".

➲ The other concerns a battle between the Collegium and the government over the names being recommended and reiterated for appointment in constitutional courts.

How did the latest bout begin?

➲ In October, Law Minister shot a salvo at the Supreme Court Collegium, saying they were "preoccupied" with making judicial appointments when their primary job is delivering justice.

➲ This comments came at the fag end of the 49th Chief Justice of India N.V. Ramana's tenure, which saw the Collegium recommend 363 names for High Court judgeships and 11 names for the Supreme Court.

➲ On November 6, Law Minister complained again on the lack of accountability of the Collegium system and made references to the court striking down the NJAC law, which gave the government an equal say in appointments, in October 2015. His criticism coincided with Justice D.Y. Chandrachud taking over as top judge on November 9 for a two-year tenure.

➲ Meanwhile, Chief Justice Chandrachud agreed to list in due course a writ petition to reconsider the Collegium system. The SC also began its counter-offensive with the CJI advising that the Collegium and the government should work with a sense of "constitutional statesmanship" rather than find fault with each other.

➲ The parliamentary standing committee on Law and Personnel led by senior BJP leader Sushil Kumar Modi in its report said both the judiciary and the government need to do some "out-of-the-box" thinking to deal with the "perennial" judicial vacancies in High Courts. It said that both institutions were not adhering to the timeline given in the Second Judges case and the MoP.

What is the MoP and what is its current status?

➲ The procedure for appointment of judges to the Supreme Court and the High Courts, in accordance with the Collegium system, was laid down in the MoP prepared in 1998.

➲ It states that the initiation of a proposal for appointment of Supreme Court judges vested with the CJI and that of High Court judges with the Chief Justice of the High Courts concerned.

➲ The MoP required the Chief Justices of High Courts to initiate the proposals six months prior to vacancies. The Constitution (99th Amendment) Act was passed by Parliament to provide for a National Judicial Commission, which was duly formed by the NJAC Act.

➲ On October 12, 2015, the court struck down the NJAC Act and the Constitution Amendment which sought to give politicians and civil society a final say in the appointment of judges to the highest courts.

➲ However, the court said the 21-year-old Collegium system needed a re-look. The court directed the government to finalise a revised MoP in consultation with the CJI and the Collegium. A revised MoP was sent to the CJI by the government on March 22, 2016 for the response of the Collegium.

What are the government's grievances?

➲ The Centre argues that the Collegiums, both at the Supreme Court and High Court levels, are delaying judicial appointments. The NJAC was a good law thwarted by the court.

➲ It says that the High Courts are not making recommendations six months in advance of a vacancy. As on November 30, 2022, there are 332 judicial vacancies in the High Courts out of a total sanctioned strength of 1,108 judges.

➲ The High Courts have made 146 (44%) recommendations which are under consideration of the government and the Supreme Court. The High Courts are required to make recommendations for the remaining 186 vacancies (56%).

➲ Many High Courts have not made recommendations under the Bar and Service quotas for vacancies in the past one to five years. It said 43 High Court judges are scheduled to retire between December 1, 2022 and May 31, 2023, taking the vacancies up to 229. So far, no recommendations have been received.

Delay in appointment:

➲ The government has complained that the Supreme Court rejects 25% names recommended by the High Courts for judgeships.

➲ While making 165 appointments during 2022, 221 recommendations made by the High Courts were processed. The remaining 56 proposals were rejected by the Supreme Court Collegium. Sixty-six fresh proposals of names for judgeships are pending Intelligence Bureau inputs.

- The delay in the appointment process has affected the timely filling up of vacancies in the High Courts. The Supreme Court itself has six vacancies.

What is the SC's response?

- The court said the Collegium system, combined with the MoP, is the law as it exists now.
- The government has either kept Collegium recommendations pending for no apparent reason or it has repeatedly sent back names reiterated by the Collegium.
- The court accused the government of not appointing persons who are not "palatable" to it.

KERALA GOVERNMENT'S BILL TO REMOVE THE GOVERNOR AS CHANCELLOR OF STATE UNIVERSITIES

Why in news?

- Recently, the Kerala government has tabled University Laws (amendment) Bill in the State Assembly to amend laws relating to the governance of State universities and remove Governor Arif Mohammed Khan as the Chancellor of State universities.

Background:

- This rounds off several weeks of political confrontation between the state Government and the Raj Bhavan that began with the Supreme Court's invalidation of the Kerala Technological University (KTU) Vice-Chancellor's (VC) appointment on the grounds that it violated University Grants Commission (UGC) regulations.
- Following this, Mr. Khan had sought the resignations of 11 other VCs on the ground that the government had appointed them through the same process deemed unlawful by the apex court.

What is the University Laws (amendment) Bill?

- The proposed legislation will amend the statutes of 14 universities established by legislative Acts in Kerala and remove the Governor as the Chancellor of those universities.
- The Bill will supplant the Governor and give the government power to appoint eminent academicians as Chancellors of various universities, thus ending the Governor's watchdog role in university administration.

- The Bill also provides provision to limit the term of the appointed chancellor to five years. However, it also says that the serving chancellor can be reappointed for another term.

What are the State government and the ruling front's stand on amending University laws?

- Minister for Law, while tabling the bill, pointed out that the UGC guidelines, which earlier used to be considered mandatory for Central universities and "partially mandatory and partially directive" for State universities, had been made legally binding for all universities by way of recent rulings by the Supreme Court.
- "Worryingly, such precedence pointed towards a scenario in which the legislative powers of the Assembly on all subjects on the Concurrent List (of the Constitution) could be undermined through a subordinate legislation or an executive order issued by the Centre," he said.
- Moreover, the State government has claimed the recommendation of the Punchhi Commission on Centre-State Relations to refrain from "burdening the Governor with positions and powers which are not envisaged by the Constitution and which may lead the office to controversies or public criticism" as the rationale behind the Bill.

What are the arguments against the bill?

- The bill would give the State Government more leeway in appointing its own nominees as VCs of State Universities. This would mean a transfer of power over university administration from the Governor and the UGC to the State Government.
- While both the ruling front and the Opposition UDF seem united in stripping away the Governor's Chancellorship, the opposition fears that the State Government would try to turn State universities into its fiefdom.
- UDF leaders claim that as Chancellors would be appointed by the Government, they would be indebted to the ruling front, thus leading to the erosion of Universities' autonomy.

How can this issue be settled while maintaining the autonomy of State universities?

- A probable solution to the tug-of-war between the Governor and the State government regarding the governance of State universities was put forward by the M. Anandakrishnan Committee set up by the Kerala State Higher Education Council in 2009 to review the Acts of Universities of Kerala.
- The committee, led by renowned academician Prof. Anandakrishnan who was then chairman of IIT Kanpur, had recommended that universities should have complete autonomy in academic and administrative matters.

- The committee suggested creating statutory structures that would distance the Governor [as Chancellor] and Minister for Higher Education [as Pro-Chancellor] from the day-to-day administration of the universities.
- It also recommended immediate incorporation of UGC Regulations, 2010 in the university Acts/Statutes/Regulations.
- Moreover, the Supreme Court decision to invalidate KTU VCs appointment and the Kerala High Court's subsequent order to pull the plug on the appointment of the VC to the Kerala University of Fisheries and Ocean Studies suggest that Kerala needs to review the statutes governing individual universities in the State recognised under Section 12(B) of the UGC Act of 1956 and bring them in line with the UGC Regulations.

HOUSE COMMITTEE CALLS FOR MORE MEDICAL FACILITIES FOR TROOPS AT FORWARD LOCATIONS

Why in news?

- Recently, the Public Accounts Committee (PAC), submitted its 55th report on "Provisioning, procurement and issue of High Altitude Clothing, Equipment, Ration and Housing",
- It is based on the Comptroller and Auditor General's (CAG) findings in 2019.

Key Highlights:

- It said all efforts should be made to fully implement Phase III of the Central Inventory Control Group (CICG) for effective inventory management and procurement.
- The committee observed that a huge quantity of essential items under the Special Clothing and Mountaineering Equipment (SCME) Category-II were procured or held when they were not issued or required for long.
- Noting that CICG, an automated centralised database, had been created to mitigate such issues, it said all measures needed to be taken to fully implement Phase III of the project.

Recommendations:

- The PAC recommended an overhaul of the contracting process between the Defence Ministry and vendors

with built-in contractual responses and contractual liabilities on them; and an outcome-oriented monitoring of expenditure and revenue and capital procurement.

- It said the Ministry should collaborate with friendly countries with similar geographical conditions and learn from their experiences for technical specifications.
- Sufficient technical expertise is available in various Indian institutions which could be deployed for projects in harsh terrains. It should periodically get feedback from troops deployed in high altitude areas in terms of taste, quality and hygienic conditions of rations.
- It recommended more comprehensive medical facilities for troops at forward locations.

Way Forward:

- The "Ministry may fulfil assurance that there is no shortfall of High Altitude Clothing & Equipment in Indian Army and complete entitlement of soldiers is adequately met at all forward locations of their deployment".

PRADHAN MANTRI KAUSHAL KO KAAM KARYAKRAM (PMKKK) NOW NAMED AS PRADHAN MANTRI VIRASAT KA SAMVARDHAN (PM VIKAS) SCHEME

Why in news?

- Recently, the Union Minister of Minority Affairs, in a written reply to a question in the Lok Sabha informed that the Pradhan Mantri Kaushal Ko Kaam Karyakram (PMKKK) has now been named as Pradhan Mantri Virasat Ka Samvardhan (PM VIKAS) Scheme.
- The integrated scheme converges five erstwhile schemes of the Ministry viz.
  a) Seekho aur Kamao,
  b) USTTAD,
  c) Hamari Dharohar,
  d) Nai Roshni and
  e) Nai Manzil.

Key Highlights:

- The scheme has been approved by the Cabinet for the period of 15th Finance Commission.

- PM VIKAS aims to improve livelihoods of the minorities, particularly the artisan communities, using the components of skill development, education, women leadership & entrepreneurship.
- These components compliment each other in the ultimate objective of the scheme to increase the incomes of the beneficiaries and provide support by facilitating credit and market linkages.

Priority sectors:

- The priority sectors under PMJVK are education, health, skill development, women centric projects etc.
- In North Eastern Region (NER), the States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura are covered under PMJVK.

Implementation:

- The proposals under PMJVK are sent by the States/Union Territories (UTs) as per demand for infrastructure in the identified areas, which are considered and approved by the Empowered Committee (EC) of PMJVK, after due consultation with the concerned Central Ministries.
- Projects under PMJVK are implemented and managed by the concerned State/ UT Government.
- PMJVK is a demand driven scheme and State/ UT-wise allocation of funds is not made under the scheme.

COURT VACATIONS

Why in news?

- Recently, Chief Justice of India (CJI) D. Y. Chandrachud said that the Supreme Court will not have a vacation bench when it breaks next week for its annual winter vacation.
- The announcement came the day after Union Law Minister criticised the judiciary for taking long vacations even as pending cases rise to record levels every year.

What exactly did the Law Minister say?

- Responding to questions relating to pendency, he said the issue cannot be resolved until a "new system" on the appointment of judges is evolved.
- He also said that "there is a feeling among people of India that the long vacation which the courts obtain is not very convenient for justice-seekers", and that it is his "obligation and duty to convey the message or sense of this House to the judiciary".

What are court vacations?

- The Supreme Court has 193 working days a year for its judicial functioning, while the High Courts function for approximately 210 days, and trial courts for 245 days. High Courts have the power to structure their calendars according to the service rules.
- The Supreme Court breaks for its annual summer vacation which is typically for seven weeks, it starts at the end of May, and the court reopens in July. The court takes a week-long break each for Dussehra and Diwali, and two weeks at the end of December.
- While this judicial schedule has its origins in colonial practices, it has come under criticism for quite some time now.

What happens to important cases during court vacations?

- Generally, a few judges are available for hearing urgent cases even when the court is in recess. The combination of two or three judges, called "vacation benches", hear important cases that cannot wait. Cases such as bail, eviction, etc. often find precedence in listing before vacation benches.
- It is not uncommon for courts to hear important cases during vacation.
- For example, in 2015, a five-judge Bench of the Supreme Court heard the challenge to the constitutional amendment setting up the National Judicial Appointments Commission (NJAC) during the summer vacation.
- In 2017, a Constitution Bench led by then CJI J S Khehar held a six-day hearing in the case challenging the practice of triple talaq during summer vacation.

Why are court vacations criticised?

- The Law Minister's critique of court vacations is not new. For one, extended frequent vacations is not good optics, especially in the light of mounting pendency of cases and the snail's pace of judicial proceedings. For an ordinary litigant, the vacation means further unavoidable delays in listing cases.
- The colonial origins of the practice is not lost on the critics. The summer break perhaps began because European judges of the Federal Court of India found Indian summers too hot and took the winter break for Christmas.

Justice Malimath Committee:

- In 2000, the Justice Malimath Committee, set up to recommend reforms in the criminal justice system, suggested that the period of vacation should be reduced by 21 days, keeping in mind the long pendency of cases.
- It suggested that the Supreme Court work for 206 days, and High Courts for 231 days every year.

230th report of the Law Commission:

- In its 230th report, the Law Commission of India headed by Justice A R Lakshmanan in 2009 called for reform in this system.
- Considering the staggering arrears, vacations in the higher judiciary must be curtailed by at least 10 to 15 days and the court working hours should be extended by at least half an hour.

Supreme Court rules in 2014:

- In 2014, when the Supreme Court notified its new Rules, it said that the period of summer vacation shall not exceed seven weeks from the earlier 10-week period.

Recommendation by Justice Lodha:

- In the past, Chief Justices of India have tried to reform vacation cycles in view of the criticism.
- In 2014, when the pendency of cases hit the 2 crore mark, then CJI R M Lodha had suggested keeping the Supreme Court, High Courts, and trial courts open round the year.
- CJI Lodha suggested that schedules of individual judges should be sought at the beginning of the year, and the calendar should be planned accordingly. With Justice Lodha's tenure lasting just five months, that proposal did not see the light of the day.
- Former CJI T. S. Thakur also suggested holding court during vacations if parties and lawyers mutually agreed. That proposal too, did not take effect.

What are the arguments in favour of court vacations?

- Within the legal fraternity, the long breaks are strongly defended. Lawyers have often argued that in a profession that demands intellectual rigour and long working hours, vacations are much needed for rejuvenation.
- Judges typically work for over 10 hours on a daily basis. Apart from the day's work in court from 10.30 am to 4 pm, they also spend a few hours preparing for the next day. A frequently-made argument is that judges utilise the vacation to write judgments.
- Another argument is that judges do not take leave of absence like other working professionals when the court is in session.
- In 2015, even after the Supreme Court heard a midnight plea against the execution of Yakub Memon, Justices Dipak Misra and Prafulla Pant returned to work the next morning. Family tragedies, health are rare exceptions, but judges rarely take the day off for social engagements.
- Legal experts also point out that cutting down on court vacations will not see a dramatic decrease in pendency of cases, at least in the Supreme Court.
- Data show that the Supreme Court roughly disposes of the same number of cases as are instituted before it in a calendar year. The issue of pendency relates largely to legacy cases that need to be tackled systemically.
- The argument that cutting the vacation period would be a solution to pendency is not backed by data, and takes away from real issues that contribute to the pendency problem.

What is the practice in other countries?

- The Indian Supreme Court has the highest caseload among the apex courts around the world and also works the most. In terms of the number of judgments delivered too, with 34 judges, the Indian Supreme Court leads the way.
- In 2021, 29,739 cases were instituted before the Supreme Court, and 24,586 cases were disposed of by the court in the same year.
- In 2022, between January 1 and December 16, the Supreme Court has delivered 1,255 judgments. This is apart from the usual workload of daily orders and hearings in cases where judgments are yet to be delivered.
- By contrast, the US Supreme Court hears approximately 100-150 cases a year, and sits for oral arguments for five days a month. From October through December, arguments are heard during the first two weeks of each month and from January through April, arguments are heard in the last two weeks of each month.
- In the UK, High Courts and Courts of Appeals sit for 185-190 days in a year. The Supreme Court sits in four sessions throughout the year, spanning roughly 250 days.

WHAT IS CAUSING DELAYS AND CHAOS AT DELHI AIRPORT?

Why in news?

- Over the past few weeks, there have been delays and long queues at the Indira Gandhi International Airport in New Delhi, prompting Union Minister of Civil Aviation to step in to initiate corrective measures.
- A parliamentary panel summoned the CEO of Delhi International Airport Limited (DIAL), and the Airports Authority of India has issued a notice to examine whether it failed to meet "service quality requirements."

What are the reasons for over-crowding?

➲ Passengers have complained of long queues at entry gates, check-in counters as well as security lanes at the Indira Gandhi International Airport, with Terminal 3, built in 2010 to handle 3.4 crore passengers per annum, worst affected.

➲ So far December has witnessed a record number of air travellers since the COVID-19 outbreak with the highest number seen on December 11 when airlines carried 4.27 lakh domestic passengers.

➲ Delhi airport alone has seen 1,95,000 domestic and international passengers per day at all its three passenger terminal buildings.

➲ The number of flights and passengers at Delhi airport have grown exponentially, but its "infrastructure has frozen over time."

Recommendations:

➲ Equipment like X-ray machines and door frame metal detectors are bought by the airport out of its capital expenditure, while the CISF provides personnel and their cost is met through the aviation security fee component of airfare paid by passengers.

➲ A decision was taken to install seven more X-ray machines and take the number of total security lanes to 20 from the current 13, which were found to be adequate only for 15 flights, while the airport saw up to 21 flights during peak hours.

➲ A parliamentary panel also met DIAL officials, and the Airports Authority of India has also issued a notice to DIAL.

What are the service quality requirements?

➲ The DIAL is supposed to submit a quarterly report on the "service quality requirements" spelt out in Schedule 3 of the Operations Management Development Agreement of 2006 under which certain functions at Delhi airport were privatised and given to the DIAL.

➲ The agreement specifies 13 different categories of services and the minimum time within which they should be available.

Service parameters:

➲ After the furore on overcrowding at Delhi Airport, the Airports Authority of India sent a notice to DIAL to examine whether it was failing to conform to the requirements.

➲ These include service parameters such as maximum queuing time; within two years of the deal, the airport has to ensure that for check-in the maximum waiting time is five minutes for business class and 20 minutes for economy.

➲ Similarly, for security check as well as customs, immigration and quarantine, as many as 95% of passengers should be cleared within 10 minutes.

➲ As far as baggage delivery is concerned, the first bag should arrive on the conveyor belt within 10 minutes, and the last bag should arrive within 30 minutes after the aircraft lands. The airport should also ensure wheelchairs for 100% of passengers who need them within five minutes.

➲ There are other service parameters too, which include time taken to find parking space, maximum waiting time for taxis, and response to customer complaints on phone.

➲ If the airport operator fails to provide these standards, it is liable to pay 0.5% of the monthly revenue for every month that the standards are below the laid down requirements.

Why has infrastructure not kept pace with the growth in demand?

➲ COVID-19 turned the clock back as passenger traffic suddenly dropped to 56% to 6.3 crore in calendar year 2020. However, passenger numbers have been growing steadily since March 2022 after the fear of Omicron faded away.

➲ Moreover, with Diwali and Dussehra festivals in October, resurgence in demand was established. But expansion plans at various airports were put on the backburner due to the impact of COVID-19 on revenue as well as unavailability of manpower and material.

➲ Delhi airport embarked on an expansion plan that would take its passenger handling capacity from 6.9 crore now to 10 crore by mid-2023, but it is already a year behind schedule.

Way Forward:

➲ Though this capacity will be breached in a couple of years, the National Capital Region will get its second airport in Noida International Airport in Jewar by 2024. The development of airports such as Mumbai and Chennai is also behind the growth curve.

➲ Though the government has granted in-principle approval to 21 greenfield airport projects, construction has only begun in nine of them.

CITIZENSHIP PATH TO BE EASED FOR 6 MINORITY GROUPS FROM 3 NATIONS

Why in news?

➲ The Centre is all set to ease the citizenship process for minorities from Pakistan, Afghanistan and Bangladesh who entered India on valid documents, but whose passports and visas have since expired.

Details:

➲ The Ministry of Home Affairs (MHA) is expected to rejig the citizenship portal to accept expired passports and visas as supporting documents to process the citizenship application for members of six minority communities; Hindu, Sikh, Parsi, Christian, Buddhist and Jain from Pakistan, Afghanistan and Bangladesh.

➲ The citizenship portal run by the MHA currently accepts expired passports as supporting documents only for those Hindu and Sikh applicants from Pakistan and Afghanistan who entered India before December 31, 2009.

➲ In 2018, after reports of corruption emerged during manual screening, all citizenship processes were moved online.

Challenges:

➲ For a Pakistani Hindu who entered India in 2010, the online system does not accept the expired passport, leading to the application not being accepted.

➲ The person or family has to then rush to the Pakistani High Commission in Delhi who charge a hefty sum to renew the passports and sometimes reject it on flimsy grounds.

➲ Even though the person is eligible to get Indian citizenship under the 1955 Act, as he or she has spent around 12 years in India, they face hurdles.

Amendment:

➲ In 2015, MHA amended the Citizenship Rules and legalised the stay of foreign migrants belonging to these six communities who entered India on or before December 31, 2014 due to religious persecution, by exempting them from the provisions of the Passport Act and the Foreigners Act even as their passports expired.

➲ Though they were exempt from facing any criminal action for illegally staying in India, the online portal still does not accept the expired documents to process their citizenship applications.

➲ People seeking Indian citizenship either come on long term visas (LTV) or pilgrim visas. LTVs given for five years are considered a precursor to citizenship.

Citizenship Amendment Act (CAA), 2019:

➲ The Citizenship Amendment Act (CAA), 2019, that intends to grant citizenship to undocumented (or illegal) migrants from these six non-Muslim communities from the three neighbouring countries who entered India before December 31, 2014, is yet to come into force as the rules that govern the law are yet to be notified.

➲ The CAA could have helped the documented minority migrants in fast-tracking their applications as it reduces the mandatory requirement of 11 years aggregate stay in India to five years, to be eligible for citizenship. Many Pakistani Hindus who entered India legally and have spent more than 11 years in India also await citizenship.

What's next?

➲ There are 18,000 registered Pakistani Hindus who await citizenship.

➲ The MHA has also delegated powers to grant Indian citizenship by registration or naturalisation, in respect of the six minority communities who entered India on valid passports and visas, to district collectors of 31 districts and the Home Secretaries of nine States.

➲ As many as 2,439 LTVs were granted by the MHA for minority communities between March and December 2021. Of these, 2,193 were from Pakistan, 237 from Afghanistan, and nine from Bangladesh.

BILKIS BANO'S PLEA REJECTED BY SC: WHAT IS A REVIEW PETITION?

Why in news?

➲ Recently, the Supreme Court has dismissed a petition filed by 2002 Gujarat riots victim Bilkis Bano, seeking review of its May 2022 order which said the Gujarat government was the appropriate government to decide the prayer for remission by one of the 11 convicts handed life terms in her case, and let the state's 1992 remission policy apply in the matter.

Article 137:

➲ According to the Constitution, any ruling by the Supreme Court is in the normal course final and binding, and it becomes the law of the land. It is considered final because it provides certainty for deciding future cases.

➲ However, the Constitution also gives, under Article 137, the Supreme Court the power to review its judgments or orders. This provision forms the legal basis for the filing of a "review petition".

Procedure for review:

➲ A review petition must be filed within 30 days of pronouncement of the judgment. Except in cases of

death penalty, review petitions are heard through "circulation" by judges in their chambers. They are usually not heard in open court.

➲ Lawyers in review petitions usually make their case through written submissions, and not oral arguments. The same judges who passed the original verdict usually also hear the review petition.

➲ It is not necessary that only parties to a case can seek a review of the judgment on it. As per the Civil Procedure Code and the Supreme Court Rules, any person aggrieved by a ruling can seek a review. However, the court does not entertain every review petition filed.

➲ In Bilkis Bano's case, Bilkis, through her advocate Shobha Gupta, had herself sought the review.

Grounds for review:

➲ There are narrow, specific grounds on which a review petition can be entertained. Therefore, the court has the power to review its rulings to correct a "patent error" but not "minor mistakes of inconsequential import".

➲ In a 1975 ruling, Justice Krishna Iyer said a review can be accepted "only where a glaring omission or patent mistake or like grave error has crept in earlier by judicial fallibility".

➲ In a 2013 ruling, the Supreme Court laid down three grounds for seeking a review of a verdict it has delivered:
   a) the discovery of new and important matter or evidence which, after the exercise of due diligence, was not within the knowledge of the petitioner or could not be produced by him;
   b) a mistake or error apparent on the face of the record; or
   c) any other sufficient reason. In subsequent rulings, the court specified that "any sufficient reason" means a reason that is analogous to the other two grounds.

➲ In another 2013 ruling (Union of India v. Sandur Manganese & Iron Ores Ltd), the court laid down nine principles on when a review is maintainable. It added that the mere possibility of two views on the subject cannot be a ground for review.

Success of review pleas:

➲ It is rare for the Supreme Court to either admit reviews or to overturn an original decision in a review.

➲ It did agree to review its 2018 verdict in the Sabarimala case, but refused to review its ruling seeking a probe into the Rafale deal.

Curative petition:

➲ As the court of last resort, the Supreme Court's verdict cannot result in a miscarriage of justice. So, in Roopa Hurra v Ashok Hurra (2002), the court itself evolved the concept of a curative petition, which can be heard after a review is dismissed to prevent abuse of its process.

➲ A curative petition is also entertained on very narrow grounds like a review petition, and is generally not granted an oral hearing. It is yet to be seen if Bilkis Bano will take this route.

CENTRE TO SET UP APPELLATE PANELS TO REDRESS GRIEVANCES OF SOCIAL MEDIA USERS

Why in news?

➲ The Union government will set up appellate panels to redress the grievances the users may have against social media platforms like Twitter and Facebook on hosting contentious content following amendments to the new IT rules, the Delhi High Court was informed.

Details:

➲ The submission was made before Justice Yashwant Varma who was hearing a batch of petitions concerning the suspension and deletion of accounts of several social media users, including Twitter users.

➲ Additional Solicitor, representing the Centre, placed before the court a notification of October 28 in terms of which certain amended rules have come to be introduced in the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021.

Grievance Appellate Committee:

➲ As per the newly inserted rule, the Central government shall, by notification, establish one or more Grievance Appellate Committees within three months from the date of commencement of the IT Amendment Rules, 2022.

➲ Each Grievance Appellate Committee shall consist of a chairperson and two whole time members appointed by the Central Government, of which one shall be a member ex-officio and two shall be independent members.

➲ Any person aggrieved by a decision of the Grievance Officer may prefer an appeal to the Grievance Appellate Committee within a period of thirty days from the date of receipt of communication from the Grievance Officer.

➲ The Grievance Appellate Committee shall adopt an online dispute resolution mechanism wherein the

entire appeal process, from filing of appeal to the decision thereof, shall be conducted through digital mode.

➲ Every order passed by the Grievance Appellate Committee shall be complied with by the intermediary concerned and a report to that effect shall be uploaded on its website.

Background:

➲ The High Court had on August 17 granted time to the Centre to inform if it was drafting any regulations to govern the issue of de-platforming of users from social media.

INDIA'S SMART CITIES MISSION WINS THE PLATINUM ICON IN DIGITAL INDIA AWARDS 2022

Why in news?

➲ The Smart Cities Mission, Ministry of Housing & Urban Affairs won the Platinum Icon in the Digital India Awards 2022 for their initiative "DataSmart Cities: Empowering Cities through Data" under the 'Data Sharing and Use for Socio Economic Development' category.

➲ The DataSmart Cities Initiative is a key step in creating a robust data ecosystem that enables evidence-based decision-making in cities.

Details:

➲ The Digital India Awards (DIA) is a prestigious National competition that seeks to encourage and honour innovative digital solutions by government entities in realising the Digital India vision.

➲ The category 'Data Sharing and Use for Socio Economic 'Development' emphasizes on sharing of Government Data by Ministries/Departments/Organizations, States, Cities and ULBs to create a vibrant data ecosystem in the country for analysis, decision-making, innovation, services, economic development and public good.

Digital India Awards:

➲ The Awards instituted in 2009 are one of a kind in India for honouring the efforts of different Government entities in the digital realm.

➲ These are conducted by the National Informatics Centre (NIC) under the Ministry of Electronics & Information Technology (MeitY).

➲ The seventh edition of Digital India Awards (DIA) is being held in 2022.

➲ Digital India Awards (DIA) presents an opportunity to bring to the fore digital initiatives being adopted to transform India into a digitally empowered society & knowledge economy.

➲ These awards are instituted under the aegis of National Portal of India to encourage and honour innovative digital solutions by government entities at all levels. DIA 2022 aims to inspire and motivate not only government entities but also start-ups in fulfilling the Digital India vision.

DataSmart Cities Initiative – Smart Cities Mission

➲ To leverage and utilize valuable data being generated in cities via network of intelligent devices and systems, the Smart Cities Mission, MoHUA launched the DataSmart Cities (DSC) Initiative across 100 Smart Cities.

➲ The DSC uses a three-pronged approach – People, Process, Platforms – to imbibe a culture of data awareness and data usage in city functioning.

➲ Propagating the importance of data for accelerating the power of city's existing initiatives, various digital platforms such as Smart Cities Open Data Portal (SCODP), India Urban Observatory (IUO), India Urban Data Exchange (IUDX), Assessment & Monitoring Platform for Liveable, Inclusive & Future-ready urban India (AMPLIFI) and Geo-spatial Management Information System (GMIS) have been developed to enable cities better manage, share, and leverage available data.

➲ These platforms together host 55,000+ datasets and 1,400+ APIs engaging 15 Lakh+ users for evidence-based planning, cross-city assessments, multi-disciplinary research and improving socio-economic outcomes.

PARLIAMENT PASSES ANTI-PIRACY BILL TO ENSURE INDIA'S MARITIME SECURITY

Why in news?

➲ Recently, the Parliament passed a bill which provides for prevention of maritime piracy and stringent punishment to those convicted of such crimes.

➲ The Rajya Sabha passed the Maritime Anti-Piracy Bill 2022 by voice vote.

Standing Committee:

➲ The bill was initially introduced in the Lok Sabha on December 9, 2019 and referred to the Standing Committee on External Affairs for examination.

➲ Out of 18 recommendations of the Standing Committee, 14 have been incorporated suitably in the bill, he said, adding that three recommendations were only observations which too have been duly noted.

Why it matters?

➲ Before the passage of this bill, India did not have a domestic anti-piracy law on the books. The country used sections of the Indian Penal Code (IPC) to prosecute those accused of piracy.

➲ However, this came with jurisdictional problems as those codes only applied to India's territorial waters that extend only 12 nautical miles from India's coast.

➲ India also signed on to the UN Convention on the Laws of the Seas (UNCLOS) in 1995 which has some provisions for anti-piracy. An earlier effort to pass a domestic law to combat piracy during 2012 did not come to fruition.

Key Highlights:

➲ The bill defines piracy as "any illegal act of violence, detention, or destruction committed against a ship, aircraft, person or property, for private purposes, by the crew or passengers of a private ship or aircraft".

➲ The jurisdiction of the bill applies to the waters adjacent to or beyond India's Exclusive Economic Zone (EEZ), which stretches about 200 nautical miles from India's coast.

➲ The bill is notable for the heavy punishment it imposes for acts of piracy, which can range from life imprisonment to a mandatory death sentence, if the act is committed with an intention to cause death.

➲ This particular provision has attracted attention and some controversy as it is not apparent whether it is consistent with the Supreme Court's ruling that mandatory death sentences are unconstitutional.

➲ Piracy offences have also been made extraditable under the provisions of this bill. If India has an extradition treaty with countries, accused offenders can be transferred more easily.

➲ Currently, the bill is unclear on a matter of territorial jurisdiction. While domestic law applies to territorial waters and this new bill applies to waters beyond India's EEZ, it is unclear which provisions apply to the EEZ itself. The earlier Piracy Bill, introduced in 2012, had included the EEZ in its ambit.

Way Forward:

➲ The security of "our sea lanes of communication is critical" with more than 90 per cent of India's trade taking place by sea route and more than 80 per cent of its hydro-carbon requirements being sea-borne.

➲ India is also one of the largest providers of seafarers in the world.

WHAT DO THE J&K LAND GRANTS RULES, 2022 ENTAIL?

Why in news?

➲ The J&K Lieutenant Governor's administration, recently notified fresh land rules under J&K Land Grant Rules-2022 and replaced the J&K Land Grants Rules-1960, which dealt with the special rules to grant government land on lease in erstwhile State of J&K.

Background:

➲ Under the previous rules, prime locations such as Srinagar, Jammu, Gulmarg and Pahalgam were opened up for construction of hotels, commercial structures and residential buildings in the past.

➲ These land laws were considered as the backbone of J&K's upper middle class and allowed a new chain of hotels and commercial structures to come up in prime locations, including places like Pahalgam and Gulmarg over the years.

➲ J&K L-G, however, argued that amendments were needed because the previous land laws were "regressive". He also targeted the present land holders as one "who just paid ₹5 to enjoy profit from ₹100 crore property". However, local land holders see the move as one which has opened the gateway "to outsiders to buy prime properties in J&K".

What do new land laws entail?

➲ According to the new land laws, the leases of current land owners will not be extended in case of their lease expiry. It reads that all leases, except the subsisting or expired residential leases, expired or determined prior to the coming into force of these rules or issued under these rules shall not be renewed and shall stand determined.

➲ Unlike the previous up to 99 years of lease, the lease period has been reduced to 40 years. The government has asked the outgoing lease holders to evict properties or else face evictions under the new rules.

➲ However, the current land holders termed these rules "exclusive to J&K where the first right to lease-holders has not been granted and revised rates negotiated".

What is the L-G administration's plan for lease now?

⮊ An expert committee will enlist all properties where lease had ended. It will be e-auctioned afresh. The rules open bidding to "any person legally competent under Section 11 of the Indian Contract Act, 1872."

⮊ These rules deem a person or an entity in default of Government Revenue accrued to the government under J&K Land Grant Act, 1960 or Government convicted under Prevention of Money Laundering Act, 2002 shall not be eligible for participation in the auction.

⮊ According to now-repealed land laws, no such land shall be granted on lease to the person, who is not a permanent residence of the State; except where the Government, for the reasons to be recorded, relax this restriction in the interest of industrial or commercial development or in the favour of a registered charitable society.

Who all are eligible for lease rights in J&K after amendments?

⮊ The L-G administration has diversified the use of land on lease to education, healthcare, agriculture, tourism, skill development and development of traditional art, craft, culture and languages.

⮊ The land could be leased for hydro-electric projects, stadiums, playgrounds, gymnasiums or other recreational purposes.

⮊ It also included provisions for self-employment or for housing purposes of ex-servicemen, war widows and the families of martyrs, one who has sacrificed his life in the line of duty. In a first, the land could also be used for facilities of migrant workers, buildings and other construction workers.

AMENDMENTS TO THE CO-OPERATIVE SOCIETIES ACT

MULTI-STATE COOPERATIVE SOCIETIES (AMENDMENT) BILL, 2022

Why in news?

⮊ The Lok Sabha recently referred the Multi-State Co-operative Societies (Amendment) Bill 2022 to a joint committee of Parliament.

⮊ The Bill is aimed at overhauling the existing law, which was enacted 20 years ago.

What is a cooperative society, and who governs them presently?

⮊ Cooperatives are organisations formed at the grassroots level by people to harness the power of collective bargaining in the marketplace. This can mean different kinds of arrangements, such as using a common resource or sharing capital, to derive a common gain that would otherwise be difficult for an individual producer to get.

⮊ In agriculture, cooperative dairies, sugar mills, spinning mills etc. are formed with the pooled resources of farmers who wish to process their produce.

⮊ Amul from Gujarat is perhaps the best-known cooperative society in India, but the numbers show their prevalence: there are nearly 2 lakh cooperative dairy societies and 330 cooperative sugar mill operations across the country.

⮊ Cooperatives are a state subject under the Constitution, meaning they come under the state governments' jurisdiction, but there are many societies whose members and areas of operation are spread across more than one state.

MSCS Act 2002:

⮊ The existing law, the Multi-State Co-operative Societies Act (MSCS) of 2002 was enacted by the then Atal Bihari Vajpayee government for their management. Cooperatives of more than one state are registered under the MSCS Act.

⮊ Their board of directors has representation from all states they operate in. Administrative and financial control of these societies is with the central registrar, with the law making it clear that no state government official can wield any control over them.

Why amend the existing law?

⮊ Since 2002, many changes have taken place in the field of cooperatives. At that time, Cooperation was a department under the Ministry of Agriculture.

⮊ However, on July 6, 2021, the government carved out a separate Cooperation Ministry and Shah became the first Cooperation Minister of the country. Soon after taking charge of the Ministry, he announced the bringing in of a new National Cooperative Policy.

⮊ Part IXB was inserted in the Constitution, vide the Constitution (Ninety-seventh Amendment) Act, 2011. In view of insertion of the said Part, it has become imperative to amend the Act.

⮊ Further, developments over the years also necessitated required changes in the Act so as to strengthen the co-operative movement in the multi-State co-operative societies.

New rules for merger:

⮊ The Bill provides for the merger of "any co-operative society" into an existing multi-state co-operative society.

- Any co-operative society may, by a resolution passed by majority of not less than two-thirds of the members present and voting at a general meeting of such society, decide to merge into an existing multi-State co-operative society.
- At present, only multi-state cooperative societies can amalgamate themselves and form a new multi-state co-operative society.

Co-operative Election Authority:

- The Bill seeks to establish a "Co-operative Election Authority", with a view to bring "electoral reforms" in the co-operative sector.
- As per the proposed amendment, the authority shall consist of a Chairperson, a Vice-Chairperson and members not exceeding three to be appointed by the Centre.

Who can be appointed the chairperson of the authority?

- As per the proposed amendments, a person shall not be qualified for appointment as Chairperson of the Authority unless he has held the post of Additional Secretary to the Government of India or equivalent rank; Vice-Chairperson of the Authority unless he held the post of Joint Secretary to the Government of India or equivalent rank; and Member unless he fulfils such qualification and experience as may be prescribed.
- The Chairperson, Vice-Chairperson or Member of the Authority will hold office for three years or until they attain the age of 65 years, whichever is earlier, and they shall be eligible for re-appointment, according to the proposed Section 45(4).

What was the Constitution (Ninety Seventh Amendment) Act, 2011?

- Through the 97th constitutional amendment, Part IXB (The Co-Operative Societies) was inserted into the Constitution. The right to form cooperative societies was included as Right to Freedom under article 19 (1), Part-3 of the Constitution.
- In addition to this, Article 43-B (Promotion of Cooperation societies) was also inserted as one of the Directive Principles of State Policy under Part 4 of the Constitution of India.

Ombudsman to have powers like Civil Court

- The government has proposed to insert a new Chapter IXA relating to "redressal of complaints".
- Under this new chapter, the government has proposed to appoint one or more "Co-operative Ombudsman" with a territorial jurisdiction for inquiring into the complaints made by the members. For this, a new section 85 will be added to the law.

Fund for the revival of sick co-operative societies

- The Bill also seeks to insert a new section 63A in the principal Act, relating to "establishment of the Co-operative Rehabilitation, Reconstruction and Development Fund" for revival of "sick multi-State co-operative societies".
- It also proposes to insert a new section 70A relating to "concurrent audit" for multi-state co-operative societies having an annual turnover or deposit of more than the amount as determined by the Central Government.

Cooperative Information Officer

- The Centre has also proposed to make provisions for "appointment of a Co-operative Information Officer" to provide information relating to affairs and management of the multi-state co-operative society to the members of such society.

Way Forward:

- The Bill was introduced on December 7, when Opposition members argued that it seeks to "take away" state governments' rights, and demanded that it be sent to the standing committee.

INTERNATIONAL RELATION

INDIA KICKSTARTS G20 PRESIDENCY FROM HORNBILL FESTIVAL IN NAGALAND

Why in news?

- Coinciding with India's assumption of the G20 presidency, the Hornbill festival became the first venue for the launch of India's G20 presidency.
- Vice President of India inaugurated the festival, which is also the 60th statehood day of Nagaland.

Details:

- India assumed G20 presidency for a year from December 1, 2022, till November 30, 2023.
- The ten-day-long Hornbill Festival kicked off with cultural exhibitions, music, and more from December 1 at the Naga Heritage Village in Kisama, Nagaland.
- Organised by the State Tourism and Art and Culture Departments, the festival is named after the Indian hornbill, which is often mentioned in the folklore of most of Nagaland's tribes and is commonly sighted in the state forests.

G20 Summit:

- India will host the G-20 leaders' summit in New Delhi on September 9 and 10 in 2023 under its Presidency.

➲ The meetings will take place in less explored parts of the country at very exotic locations of India.

➲ Prime Minister's vision is to connect all districts and blocks with G-20 so that the message will reach to masses through Jan Bhagidari initiatives.

➲ "Jan Bhagidari" refers to the participation of people in governance at the local level.

About G20:

➲ The Group of 20 is a premier forum comprising world's advanced and developing economies, as well as the European Union, which meets every year to discuss global issues.

➲ The G20 was formed in 1999 in the backdrop of the financial crisis of the late 1990s that hit East Asia and Southeast Asia in particular.

➲ Together, the G20 countries include 60 % of the world's population, 80 % of global GDP, and 75 % of global trade.

Members:

➲ Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States and the EU.

➲ Spain is invited as a permanent guest.

INDIA ASSUMES PRESIDENCY OF UN SECURITY COUNCIL FOR MONTH OF DECEMBER

Why in news?

➲ Recently, India assumed the rotating Presidency of the 15-nation UN Security Council for the month of December, during which it will host signature events on countering terrorism and reformed multilateralism.

➲ India's first woman Permanent Representative to the UN Ambassador Ruchira Kamboj will sit in the President's seat at the horse-shoe table.

Key Highlights:

➲ India assumes the monthly rotating Presidency of the Security Council from December 1, the second time after August 2021 that India will preside over the Council during its two-year tenure as elected UNSC member.

➲ India's 2021-2022 term on the Council ends December 31.

➲ Countering terrorism and reformed multilateralism will be among the key priorities for India during its UNSC presidency that will culminate in the completion of its two-year tenure as non-permanent member of the 15-nation powerful body.

About UN Security Council:

➲ The UN Security Council has 15 members: the five permanent members and ten non-permanent members elected for two-year terms.

➲ The five permanent members are the United States, the Russian Federation, France, China and the United Kingdom.

➲ India, for the eighth time, has entered the UNSC as a non-permanent member last year (2021) and will stay on the council for two years i.e 2021-22.

➲ Each year, the General Assembly elects five non-permanent members (out of ten in total) for a two-year term. The ten non-permanent seats are distributed on a regional basis.

➲ The council's presidency is a capacity that rotates every month among its 15 members.

CHINA'S MOVES IN THE INDIAN OCEAN

Why in news?

➲ Recently, China convened the first "China-Indian Ocean Region Forum" in the southwestern Chinese city of Kunming.

➲ The meet organised by the China International Development Cooperation Agency (CIDCA) is the latest Chinese initiative focusing on the Indian Ocean Region (IOR), underlining China's growing strategic interests in a region where its economic footprint has been deepening.

What is the China Indian Ocean Region forum about?

➲ The first high-level official development cooperation forum jointly held by China and countries in the Indian Ocean Region" and "over 100 participants, including senior officials from 19 countries bordering the Indian Ocean" attended.

➲ The forum issued a "Joint Press Statement" that noted China "proposed to establish a marine disaster prevention and mitigation cooperation mechanism between China and countries in the Indian Ocean region" and "all parties agreed" to "strengthen policy coordination, deepen development cooperation, increase resilience to shocks and disasters, and enhance relevant countries' capacity to obtain economic benefits through use of marine resources such as fisheries, renewable energy, tourism, and shipping in a sustainable way."

Which countries have backed the forum?

➲ The organisers have said the forum was attended by "high-level representatives" and "senior officials" from 19 countries: Indonesia, Pakistan, Myanmar, Sri Lanka, Bangladesh, Maldives, Nepal, Afghanistan, Iran, Oman, South Africa, Kenya, Mozambique, Tanzania, Seychelles, Madagascar, Mauritius, Djibouti, and Australia.

➲ But at least two of those countries, Australia and Maldives, subsequently released statements rebutting the claim, emphasising that they did not participate officially.

Where does India stand?

➲ CIDCA, said India as "a major country in the Indian Ocean region, was invited to this forum" and added that China "looks forward to meeting India at the next forum". That prospect appears unlikely.

➲ India has viewed China's recent moves in the region warily, including the recent visit of a Chinese military tracking vessel, the Yuan Wang 5, to Sri Lanka.

➲ Moreover, India sees the Indian Ocean Rim Association (IORA) as an already established platform for the region, which has 23 members, including Australia and Maldives with 10 dialogue partners which include China, Japan, Russia, the U.K. and the U.S.

What are China's plans for the IOR?

➲ The forum has underlined China's stepped-up interest in the IOR, where it is already a major trading partner for most countries and where lie sea routes vital to China's economic interests.

➲ The stepped-up regional diplomacy comes while China is establishing a more frequent military presence in the waters of the IOR.

➲ China's first ever overseas military facility was set up in Djibouti near the Horn of Africa. Chinese military ships, tracking vessels, and submarines have been visiting ports in the region with greater frequency.

➲ Chinese military planners have previously said the PLA Navy, which earlier in 2022 launched its third aircraft carrier, has a long-term plan to deploy six aircraft carriers to secure China's maritime interests, and that two of them will be based in the Indian Ocean Region.

PROTEST-HIT IRAN ABOLISHES 'MORALITY POLICE'

Why in news?

➲ Iran has scrapped its 'morality police' after more than two months of protests triggered by the arrest of Mahsa Amini for allegedly violating the country's strict female dress code.

➲ Women-led protests, labelled "riots" by the authorities, have swept Iran since the 22-year-old Iranian of Kurdish origin died on September 16, three days after her arrest by the morality police in Tehran.

Morality police:

➲ The morality police known formally as the Gasht-e Ershad or "Guidance Patrol" were established under hardline President Mahmoud Ahmadinejad, to spread the culture of modesty and hijab, the mandatory female head covering.

➲ The units began patrols in 2006.

➲ Both men and women officials are part of the morality police.

The contested hijab:

➲ Iran has a long history of policing the hijab. During the reign of Reza Shah Pahlavi in 1936, the hijab was actually banned in an effort to "modernise" the country. The police would then remove the hijab from the heads of women seen wearing it in public.

➲ This situation was turned on its head after the Revolution, when conservative forces aligned with Ayatollah Ruhollah Khomeini deposed Mohammed Reza Pahlavi, son of Reza Shah, and proclaimed the Islamic Republic.

➲ While wearing the hijab was made mandatory, a force was constituted to enforce the rules on morality and the public appearance of women only in the 1990s, after the war broke out with Saddam Hussein's Iraq, and the regime felt the need to centralise its power and underline an Iranian national identity.

Morality functions:

➲ Not only the enforcement of hijab, but the implementation of other rules on public appearance and conduct, according to the Iranian authorities' interpretation of the Sharia, are also the responsibility of the police.

In 2010, for instance, Iran's Ministry of Culture and Islamic Guidance issued a template for suitable haircuts for men in order to halt Western influence on culture, and the morality police were tasked with enforcement at salons.

INDIA'S CENTRAL ASIA OUTREACH

Why in news?

➲ Recently, the National Security Advisor (NSA) Ajit Doval hosted a meeting of his counterparts from five Central Asian countries; Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, and Turkmenistan in New Delhi.

➲ All countries except Turkmenistan sent their NSAs; it was represented by its ambassador in New Delhi.

Background:

➲ The meeting, which took place in the backdrop of the Russia-Ukraine conflict and the security situation in Afghanistan under the Taliban, flowed from the first India-Central Asia virtual summit of January 27, 2022.

➲ The leaders of the Central Asian countries had been invited for the Republic Day celebrations, but their in-person participation was scuttled by the Omicron-led Covid surge in India.

Engagement with Central Asia

➲ The Silk Route connected India with Central Asia from the 3rd century BC to the 15th century AD. From the export of Buddhism to the lasting influence of Bollywood, India has shared old and deep cultural ties with the region.

➲ In 1955, during a 16-day visit to the erstwhile Soviet Union, Prime Minister Jawaharlal Nehru travelled to Almaty, Tashkent, and Ashgabat, all of which became capitals of newly-independent countries after the 1991 collapse of the USSR.

➲ Prime Minister P V Narasimha Rao visited Kazakhstan and Uzbekistan in 1992, and Turkmenistan and Kyrgyzstan in 1995. In 2003, Atal Bihari Vajpayee became the first Prime Minister to visit Tajikistan; he had travelled to Kazakhstan in the previous year. Manmohan Singh visited Uzbekistan in 2006, and the Kazakh capital Astana in 2011.

➲ Despite India's focus on its other relationships — the US (nuclear deal), China (2003 border pact), and Pakistan (in the aftermath of the 2008 Mumbai terror attacks — diplomatic parts continued to move on Central Asia. India also attended Shanghai Cooperation Organisation summits, which were attended by the Central Asian countries, and put in its request for membership.

➲ Focussed engagement began with the "Connect Central Asia policy" in 2012, which received a fillip with Prime Minister Narendra Modi's visit to all five Central Asian countries in July 2015 — the first by an Indian Prime Minister.

Battle for strategic space

➲ Central Asia has always been seen as Russia's backyard, some 20-30% of the population is of Russian origin, and Russian is spoken widely.

➲ Central Asia is extremely rich in mineral and natural resources. Kazakhstan has one of the biggest reserves of uranium, besides stores of coal, lead, zinc, gold, and iron ore.

➲ The Kyryz Republic is rich in gold and hydro-power, and Turkmenistan has one of the world's largest reserves of natural gas. Tajikistan has huge hydro-power potential and Uzbekistan has gold, uranium, and natural gas.

➲ China's President Xi Jinping chose to visit four Central Asian countries on his first overseas trip in September 2022 after two years of Covid-related disruption, underlines the strategic importance of this region.

For India, engagement with the Central Asian countries is important because of a range of reasons—

a) security cooperation after the Taliban takeover in Afghanistan;

b) to counter China's influence in the region;

c) plans for connectivity with Europe including the International North South Transport Corridor (INSTC);

d) to meet its energy needs (Turkmenistan is part of the proposed TAPI gas pipeline); and

e) for reasons of old cultural links and trade potential.

India's engagement

➲ The recent engagement began with the India-Central Asia foreign ministers' meeting on December 19, 2021. That meeting was held against the backdrop of the fall of Kabul in mid-August 2021, and a little more than a month after the NSAs of Central Asian countries, along with the NSAs of Russia and Iran, attended the Afghanistan-focussed Regional Security Dialogue in New Delhi.

➲ Turkmenistan, Uzbekistan and Tajikistan share borders with Afghanistan.

➲ This was followed by Prime Minister Narendra Modi's January 27, 2022 virtual summit with the leaders of

the Central Asian countries, in which he called for an integrated approach to regional cooperation and flagged Afghanistan as a common concern.

India and the five Central Asian leaders decided, among other things,

a) to hold a leaders' summit every two years;
b) regular meetings among their foreign and trade ministers;
c) a joint working group on Afghanistan;
d) joint counter-terrorism exercises between India and interested Central Asian countries; and
e) a group to operationalise the use of Chabahar port by all five countries.

Highlights of recent meeting:

➲ China, which has a direct border with the region, has a bilateral trade of $50 billion with Central Asia, and has made major investments in these countries with its Belt and Road Initiative. India's trade with the region is a paltry $2 billion.

➲ The lack of overland transport access is a major challenge to India's Central Asia plans. India wants to integrate the INSTC with Chabahar port in Iran to access the resource-rich region. The NSAs, who generally focus on security issues, discussed these connectivity corridors in recent meeting.

➲ From the security perspective, the NSAs discussed the challenges of extremism, terrorism, and radicalisation in the region.

➲ Central Asia is seen as the northern boundary of the Islamic world, and with the Taliban's return in Afghanistan, the threat of radicalism and possible regrouping of the Islamic State poses a serious security challenge for the countries in the region.

Way Forward:

➲ India does not want the post-Soviet space to be captured by the Chinese, and the NSAs engagement is a key mechanism in Delhi's toolkit.

➲ In June 2002, Vajpayee had said in Almaty that the new "Silk Route Initiative" of India's foreign policy seeks to build a new Silk Road of Friendship and Cooperation between India and Central Asia. Twenty years later, India remains on the road, and on the job.

INDIA-CHINA CLASH IN TAWANG

Why in news?

➲ Tensions are running high between India and China once again after the recent clashes between the troops of both armies at the Line of Actual Control (LAC) in Yangtse area of Tawang sector in Arunachal Pradesh.

Details:

➲ Defence Minister clarified the situation in Parliament saying that the "Peoples Liberation Army (PLA) troops carried out an incursion across the LAC in Yangtse area of Tawang sector in Arunachal Pradesh on 9 December, and attempted to unilaterally change the status quo.

➲ This turned into a hand-to-hand clash as the Indian troops retaliated to thwart the Chinese aggression, while there were injuries on both sides, there are no fatalities on the Indian side.

➲ Following the clash, the local commander of the Indian Army held a flag meeting with his Chinese counterpart on 11 December, where China was asked to maintain peace.

➲ This was the most recent clash that the Indian troops have had with the Chinese — the previous one was in eastern Ladakh's Galwan in 2020 when India lost 20 of its troops.

Why China repeatedly targets Yangtse?

➲ The border is fuzzy, with both sides claiming territory that is in the other's control.

➲ India claims some 45,000 square kilometres of territory in Aksai Chin in the western sector of the border, which China occupied in the 1962 war, while China claims an area of around 90,000 square kilometres, roughly coinciding with the state of Arunachal Pradesh, in the eastern sector.

➲ China refers to Arunachal Pradesh as Southern Tibet. Interestingly, during the 1962 war, China had taken control over vast swathes of this territory but then pulled back.

➲ In Arunachal Pradesh, Yangtse is one of the 25 contested areas along the 3,488-km Line of Actual Control. Tawang is situated 448 km north-west of Itanagar and is roughly 16 km away south of the LAC with China.

Importance of Tawang:

➲ Tawang is strategically and culturally significant to China.

➲ Tawang houses the Tawang monastery, which is the second largest Tibetan Buddhist monastery in the world only after the Potala Palace.

➲ Moreover, Tawang monastery is where the present Dalai Lama stayed for weeks after escaping China in 1959. Hence, from China's perspective it becomes an important site in the history of Tibetan resistance to Chinese rule. If Tibet was to rise up against China, Tawang would, as a report in The Diplomat stated, emerge as an important centre of resistance.

Strategic importance:

➲ Besides the cultural aspect, Tawang also holds tactical importance for China. The town provides a strategic entry into India's northeastern region.

➲ To the north of Tawang lies the important Bum La Pass, which is a border pass between India's Tawang district and Chinese-occupied Tibet Autonomous Region (TAR). Incidentally, it was this pass that the Chinese troops used to invade India in 1962.

➲ China has always claimed Arunachal Pradesh as its own and there's a strategy there too. If India wished to attack China, Arunachal would be the closest location for India to deploy its missiles.

➲ Additionally, Arunachal is the best location for India to deploy a multi-layered air defence system for possible attacks from China.

➲ An increased presence of China in Arunachal would help Beijing exert is influence in the area as well as negate India's presence. Experts believe that the latest skirmish was Beijing's attempt at pushing the Indian defences and try and gain as many heights.

➲ Also in Yangtse lies the crucial 17,000-feet high peak. This peak, in the firm control of India currently, provides a commandeering view on both sides of the border.

When Tawang saw clashes in the past?

➲ The clash on 9 December in Tawang isn't the first instance of Indian and Chinese troops clashing. Tawang was the site for several bloody encounters during the 1962 war between India and China.

➲ In 1999, the Yangtse area once again saw action during the Kargil War when the PLA took up positions and stayed there for 40 days. They later withdrew from the positions.

➲ Later in June 2016, it was reported that around 250 PLA soldiers had intruded into the area but there were no reports of clashes at the time.

➲ There was another report of an intrusion in September 2021 of around 200 PLA personnel at Yangtse, east of Bum La in the Tawang sector. However, an alert and vigilant India side caught the intruders and detained them for some time.

CHINA BUILDS ROPEWAY, ROADS NEAR TRI-JUNCTION

Why in news?

➲ China has set up a ropeway near the Torsa Nala on its side of the India-Bhutan-China tri-junction, and is strengthening roads and other infrastructure along the entire eastern sector.

Yangtse area:

➲ In the Yangtse area of Tawang sector, which saw a scuffle recently, China had stepped up patrols some years ago to assert its claims in the area.

➲ The Chinese usually patrol two to three times a year, before and after winter and there are four major ingress points in the Yangtse area which the PLA uses to enter the region.

➲ Yangtse is located 30-35 km northeast of Tawang and is at an altitude of around 17,000 feet.

Construction near Torsa Nala:

➲ The People's Liberation Army (PLA) has installed a ropeway close to the Torsa Nala on their side near the confluence point, and some new anchor points of the ropeway have been recently observed.

➲ There is also lot of activity near the Torsa Nala near Doklam, a location that saw a 73-day standoff between Indian and Chinese forces a few years ago.

Line of Actual Control (LAC):

➲ The Line of Actual Control (LAC) is divided into the western (Ladakh), middle (Himachal Pradesh and Uttarakhand), and eastern (Arunachal Pradesh and Sikkim) sectors.

➲ India has also been significantly upgrading its infrastructure along the LAC in the last few years, with further ramping-up post the 2020 standoff in Galwan in eastern Ladakh.

➲ In 2021, China and Bhutan reached an agreement on a 3-step roadmap to resolve their boundary issues, including the Doklam area, after 24 rounds of negotiations that began in 1984.

Recent conflict:

➲ The Army's statement giving details of the scuffle between Indian and Chinese troops on December 9 noted that, in certain areas along the LAC in the Tawang sector, there are areas of differing perception, where both sides patrol the area upto their claim lines. This has been the trend since 2006.

➲ India and China have mutually agreed disputed areas and areas of differing perception along the 3,488 km-long LAC.

➲ For instance in eastern Ladakh, there are two mutually agreed disputed areas, Trig Heights and Demchok, while there are 10 areas of differing perception. Similarly, Yangtse is one of the eight major friction points in the eastern sector.

INDIA LAUNCHES 'GROUP OF FRIENDS' FOR CRIME AGAINST PEACEKEEPERS

Why in news?

➲ Recently, India has launched a 'Group of Friends' to promote accountability for crimes against peacekeepers during India's current presidency of the UN Security Council.

➲ India will soon have a database that will record all crimes against the Blue Helmets.

Co-chairs:

➲ India, Bangladesh, Egypt, France, Morocco, and Nepal are co-chairs of the 'Group of Friends to Promote Accountability for Crimes Against Peacekeepers'.

Resolution 2589:

➲ The 'Group of Friends' represents the "political will" of member states, particularly of the troop and police contributing countries, to champion the implementation of the provisions of UN Security Council resolution 2589, which was adopted in August 2021 under India's Presidency of the Council.

➲ Resolution 2589 had called upon member states, hosting or having hosted United Nations peacekeeping operations, to take all appropriate measures to bring to justice perpetrators of the killing of, and all acts of violence against United Nations personnel, including, but not limited to, their detention and abduction.

➲ The resolution had also called on member states to take all necessary measures to investigate such acts and arrest and prosecute perpetrators of such acts in line with their national law, consistent with applicable international obligations, including under international humanitarian law.

➲ The UNSC resolution was co-sponsored by more than 80 member states and unanimously adopted by the Council.

Accountability:

➲ It will seek to promote accountability in practical terms both within and outside the UNSC.

➲ Technology can be a force multiplier in achieving these goals. Comprehensive databases and analytical tools for recording and assessing crimes against peacekeepers will be key to addressing impunity.

Crime against peacekeepers:

➲ In the last three years alone, 68 peacekeepers belonging to 20 countries have lost lives for the cause of peace.

➲ India, among the largest troop-contributing countries to UN peacekeeping, has lost 177 of its peacekeepers in the line of duty, the largest by far from any troop-contributing country.

About Group of Friends:

➲ The Group of Friends will seek to facilitate the promotion of accountability for all acts of violence against United Nations peacekeepers; seek facilitation of capacity building and technical assistance to the host state authorities.

➲ It will actively engage and share information with the Secretary-General and assist the member states hosting or have hosted peacekeeping operations, in
   a) bringing to justice the perpetrators of such acts;
   b) serve as an informal platform at the United Nations to exchange information, share best practices and mobilise resources directed at facilitating accountability for crimes committed against peacekeepers; and
   c) monitor progress on bringing accountability for crimes against peacekeepers.

➲ The Group of Friends will convene two meetings of its members per year, organise and host one event per year involving Permanent Missions and other stakeholders, designed to inform and galvanise support for promoting accountability for crimes against peacekeepers; and organize and hold other meetings, briefings, and events as needed, based on the annual work plan and developments relevant to safety and security of peacekeepers.

➲ The Group will convene and be moderated by representatives of the Permanent Missions of Bangladesh, Egypt, France India, Morocco, and Nepal as co-chairs and include all interested Member States and United Nations partners.

INDIA, CHINA, RUSSIA ABSTAIN ON UNSC RESOLUTION ON MYANMAR

Why in news?

➲ Recently, India, China and Russia abstained in the United Nations Security Council on a draft resolution that demanded an immediate end to violence in Myanmar and urged the military junta to release political prisoners, including State Counsellor Aung San Suu Kyi.

First SC resolution adopted on Myanmar in 74 years:

➲ The 15-nation Security Council, under India's Presidency, adopted the resolution after 12 members voted in favour, none against and India, China and Russia abstained.

➲ This is the first Security Council resolution adopted on Myanmar in 74 years.

- The only other UNSC resolution on Myanmar was in 1948 after the country formerly known as Burma got independence from Britain when the Council recommended to the General Assembly "that the Union of Burma" be admitted to membership in the United Nations.

India's stand:

- India shares a nearly 1,700 kilometres-long border with Myanmar and has historical and cultural links with its people.
- India believes that the complex situation in Myanmar calls for an approach of "quiet and patient diplomacy".
- It said any other course will not help in resolving the long-standing issues which have prevented enduring peace, stability, progress and democratic governance.
- However, India strongly calls upon all parties for an immediate cessation of hostilities, abandon their extreme positions and immediately initiate an inclusive political dialogue for the restoration of democracy. Political leaders should be released and allowed to resume political activities.
- India underlined that the UN system should assist the parties in dialogue so that the state of emergency comes to an end and Myanmar returns to the democratic path.

Key Highlights of the resolution:

- The resolution reaffirmed its support for the people of Myanmar and its strong commitment to the sovereignty, political independence, territorial integrity and unity of the country.
- It demanded an immediate end to all forms of violence throughout the country and urged restraint and de-escalation of tensions.
- The resolution also urged the Myanmar military to immediately release all arbitrarily detained prisoners, including President Win Myint and Suu Kyi.
- It reiterated its call to uphold democratic institutions and processes and to pursue constructive dialogue and reconciliation in accordance with the will and interests of the people of Myanmar and urged all parties to respect human rights, fundamental freedoms and rule of law.
- The resolution acknowledged ASEAN's central role in helping to find a peaceful solution to the crisis in Myanmar in the interests of the people of Myanmar and encouraged the international community to support the ASEAN-led mechanism and process in this regard, including ASEAN's efforts in the implementation of the Five Point Consensus.

Situation in Myanmar:

- Since the junta "violently seized power" in February 2021, they have conducted a brutal campaign against the people of Myanmar – burning villages, running indiscriminate airstrikes, torture and mass killings.
- Human Rights Watch said the "landmark resolution" reflects the Myanmar junta's "growing isolation"

generated by security force abuses amounting to crimes against humanity and war crimes.

SIGNIFICANT DECLINE IN THE MATERNAL MORTALITY RATIO (MMR)

Why in news?

- In a new milestone, there has been significant Decline in the Maternal Mortality Ratio from 130 in 2014-16 to 97 per lakh live births in 2018-20.

Details:

- As per the Special Bulletin on MMR released by the Registrar General of India (RGI), the Maternal Mortality Ratio (MMR) of India has improved further by a spectacular 6 points and now stands at 97/ lakh live births.
- The Maternal Mortality Ratio (MMR) is defined as the number of maternal deaths during a given time period per 100,000 live births.

National Health Policy (NHP) target:

- As per the statistics derived from Sample Registration System (SRS), the country has witnessed a progressive reduction in MMR from 130 in 2014-2016, 122 in 2015-17, 113 in 2016-18, 103 in 2017-19 and to 97 in 2018-20 as depicted below:

What is the collegium system?

- Upon achieving this, India has accomplished the National Health Policy (NHP) target for MMR of less than 100/lakh live births and is on the right track to achieve the SDG target of MMR less than 70/ lakh live births by 2030.
- The outstanding progress made in terms of the number of states which have achieved Sustainable Development Goal (SDG) target, the number has now risen from six to eight leading with Kerala (19), followed by Maharashtra (33), then Telangana (43) and Andhra Pradesh (45), subsequently Tamil Nadu (54), Jharkhand (56), Gujarat (57) and lastly Karnataka (69).

Government interventions:

- Since 2014, under the National Health Mission (NHM), India has made a concerted effort to provide accessible quality maternal and newborn health services and minimize preventable maternal deaths.

- The National Health Mission has made significant investments to ensure provision of healthcare services, particularly for effective implementation of the maternal health programs to accomplish the specified MMR targets.
- Government schemes such as "Janani Shishu Suraksha Karyakram" and "Janani Suraksha Yojana" have been modified and upgraded to more assured and respectful service delivery initiatives like Surakshit Matritva Aashwasan' (SUMAN).
- Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) is particularly lauded for its focus on identifying high-risk pregnancies and facilitating their appropriate management. This had a significant impact on mitigating preventable mortality.
- LaQshya and Midwifery initiatives concentrate on promoting quality care in a respectful and dignified manner ensuring choice of birthing to all pregnant women.

Way Forward:
- India's outstanding efforts in successfully lowering the MMR ratio provides an optimistic outlook on attaining SDG target of MMR less than 70 much before the stipulated time of 2030 and becoming known as a nation that provides respectful maternal care.

INDIA TO RECEIVE OVER RECORD $100 BN IN REMITTANCES IN 2022: WORLD BANK

World's Top Remittance Receivers
Estimate of money sent to low- and middle-income countries in 2022
■ Money received from abroad, calculated in USD

Source: World Bank, KNOMAD   Bloomberg
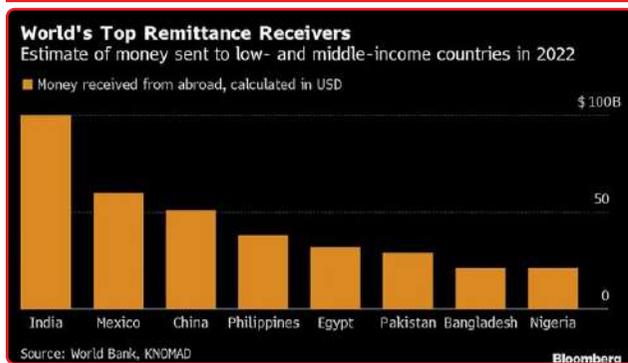
Why in news?
- In its latest 'Migration and Development Brief', World Bank said remittance flows to India will rise 12 per cent, putting its inflows ahead of China, Mexico and the Philippines.
- In 2022, for the first time a single country, India, is on track to receive more than USD 100 billion in yearly remittances.

Key Highlights:
- The remittances to South Asia grew an estimated 3.5 per cent to USD 163 billion in 2022. However, there is a large disparity across countries, from India's projected 12 per cent gain to Nepal's 4 per cent increase, to an aggregate decline of 10 per cent for the region's remaining countries.

- Remittances to India were enhanced by wage hikes and a strong labour market in the United States and other Organisation for Economic Co-operation and Development (OECD) countries.
- In the Gulf Cooperation Council destination countries, governments ensured low inflation through direct support measures that protected migrants' ability to remit. Sending USD 200 to the region cost 4.1 per cent on average in the second quarter of 2022, down from 4.3 per cent a year ago.

LMICs:
- Remittances to low- and middle-income countries (LMICs) withstood global headwinds in 2022, growing an estimated 5 per cent to USD 626 billion. This is sharply lower than the 10.2 per cent increase in 2021.
- Remittances are a vital source of household income for LMICs. They alleviate poverty, improve nutritional outcomes, and are associated with increased birth weight and higher school enrollment rates for children in disadvantaged households.
- According to World Bank, studies show that remittances help recipient households to build resilience, for example through financing better housing and to cope with the losses in the aftermath of disasters.

Factors shaping remittance flow:
- Remittance flows to developing regions were shaped by several factors in 2022. A reopening of host economies as the COVID-19 pandemic receded supported migrants' employment and their ability to continue helping their families back home.
- The World Bank brief said rising prices on the other hand, adversely affected migrants' real incomes. Also influencing the value of remittances is the appreciation of the ruble, which translated into higher value, in U.S. dollar terms, of outward remittances from Russia to Central Asia.

Impact of climate change:
- In a special feature on climate-driven migration, it notes that rising pressures from climate change will both drive increases in migration within countries and impair livelihoods. The poorest are likely to be most affected as they often lack the resources necessary to adapt or move.
- Studies show that migration can play a role in coping with climate impacts, for example, by providing an escape from disasters and also through remittances and other forms of support to affected households.
- The changes in the international legal norms and institutional frameworks for migration may be required to cope with the challenge of climate-related migration, particularly in the context of cross-border mobility, as is the case for small island nations.

IFFCO RANKED NUMBER 1 AMONG TOP 300 COOPERATIVES GLOBALLY

Why in news?

⮞ The Indian Farmers Fertiliser Cooperative Limited (IFFCO) has been ranked number 1 among the top 300 cooperatives in the world.

⮞ The ranking relates the turnover of the enterprise to the wealth of the country according to the 2022 edition of the 11th Annual World Cooperative Monitor (WCM) report published by the International Cooperative Alliance (ICA).

Another achievement:

⮞ IFFCO has also secured 1st Position among the top ten cooperatives of the world in the agriculture sector.

⮞ The International Cooperative Alliance (ICA) and the European Research Institute on Cooperative and Social Enterprises (Euricse) launched the 2022 edition of the World Cooperative Monitor during an international webinar.

IFFCO:

⮞ It is one of India's biggest cooperative societies which is wholly owned by Indian Cooperatives.

⮞ Founded in 1967 with just 57 cooperatives, today IFFCO has about 36,000 member cooperatives.

⮞ Among its notable achievements, IFFCO has developed the world's first nano fertiliser with an aim to reduce the use of chemical fertiliser and enhance crop productivity, a giant step towards sustainable farming, besides increasing farmers' income

⮞ 11th Annual World Cooperative Monitor (WCM) report:

⮞ In the Top 300 ranking based on the ratio of turnover over the Gross Domestic Product (GDP) per capita as they did last year, two Indian producer cooperatives reached the first and second positions: The Indian Farmers Fertiliser Cooperative (IFFCO) and Gujarat Cooperative Milk Marketing Federation Limited. In third place is the French Groupe Credit Agricole.

⮞ Notably, most of the top 300 enterprises are from the most industrialized countries such as the US (71 enterprises), France (42 enterprises), Germany (31 enterprises), and Japan (22 enterprises).

About WCM:

⮞ The World Cooperative Monitor is a project designed to collect robust economic, organizational, and social data about cooperatives worldwide.

⮞ It is published each year to report on key economic and employment data of the Top 300 cooperatives.

⮞ This latest edition will mark the report's move into its second decade of reporting on economic and social impact and presents a deeper dive into digitalization and cooperative identity.

WHY HAS THE RESERVE BANK OF INDIA INTRODUCED AN E-RUPEE?

Why in news?

⮞ The Reserve Bank of India recently launched the digital rupee on a pilot basis.

⮞ The digital currency will be offered by a select group of public and private banks in a few major cities initially, which can be used for both person-to-person and person-to-merchant transactions.

What is the digital rupee?

⮞ The digital rupee, or the e-rupee, is a central bank digital currency issued by the RBI.

⮞ The digital rupee is recognised as legal tender by the RBI, and thus has to be accepted by everyone in the country as a medium of exchange.

⮞ It is, however, different from deposits that you hold in a bank. Unlike deposits which are paid interest, the digital rupees in your wallet are not paid any interest by the central bank. Deposits held in banks can be converted into digital rupees and vice-versa.

Is there a need for the digital rupee?

⮞ The RBI believes that the digital rupee will make the rupee more attractive as a currency to users when compared to cryptocurrencies.

⮞ Cryptocurrencies have been viewed by many investors as alternatives to fiat currencies which progressively lose value over time due to debasement by central banks. Since such a trend could threaten their sovereignty, central banks have been trying to come up with their own digital currencies.

⮞ The RBI also believes that the digital rupee will be easier and more economical to produce when

compared to physical cash notes. More importantly, transactions carried out using digital rupees, in contrast to physical transactions, are more easily traceable by authorities.

What are the risks?

➲ The introduction of central bank digital currencies internationally has worried many who believe that it could disrupt the banking system.

➲ When interest rates offered by banks are low, people may be more prone to converting their bank deposits into digital currencies since they would not lose out much in the way of interest income by making the shift. Such an event could cause the cash holdings of banks to drop and hinder banks' capacity to create loans.

➲ The ability of banks to create loans is influenced by the amount of cash they hold in their vaults. This is because the cash position of a bank determines its ability to expand its loan book while keeping the risk of a bank run under control.

➲ The digital rupee could also play a crucial role in India's transition towards a cashless society. A rise in the use of the digital rupee could eventually free banks from having to maintain sufficient cash deposits before they expand their loan books.

➲ This could happen if digital rupee deposits turn out to be considered equivalent to other forms of virtual money such as deposits created initially as loans by banks. In such case, banks will be freed from the risk of bank runs which have traditionally served as a check on the unrestrained expansion of loan books.

What do the critics say?

➲ Critics point to the power that digital currencies give central banks to supervise economic activity, and believe that this could act as a deterrent to economic growth if legitimate economic activities are deemed illegal by governments.

➲ The future of central bank digital currencies as an alternative to private cryptocurrencies may also be overblown.

➲ Private cryptocurrencies have found demand among certain investors not simply because they are digital. Rather, they are thought to be better stores of value, exhibiting more stable purchasing power than fiat currencies.

INDIA-UK FREE TRADE AGREEMENT (FTA) IS LIKELY TO BE CLOSED BY MARCH 2023

Why in news?

➲ The ongoing negotiations for the proposed free trade agreement between India and the UK is likely to be concluded by March 2023.

Background:

➲ India-UK FTA negotiations began formally in January 2022.

➲ India and Britain launched negotiations for the free-trade agreement (FTA) in January with an aim to conclude talks by Diwali (October 24), but the deadline was missed due to political developments in the UK.

➲ There are 26 chapters in the agreement, which include goods, services, investments and intellectual property rights.

Political causes of delay:

➲ The Diwali deadline for an FTA was set by PM Boris Johnson. He had been plagued with political scandals had his term cut short and was followed by Liz Truss after she won a Conservative Party leadership contest that enabled her to fill the prime ministerial role.

➲ Truss had defeated Rishi Sunak, Chancellor in PM Johnson's cabinet. PM Truss herself resigned on October 20, having lasted barely 44 days in office.

➲ Rishi Sunak subsequently became prime minister on October 25 as his bid for Conservative Party leadership went uncontested.

What's at stake?

➲ The UK is keen to gain India market access for transport equipment, electrical equipment, medical devices, chemicals, motor vehicles and parts, wines, Scotch, and spirits, some fruits and vegetables which could impact local industry players and/or boost the manufacturing ecosystem.

➲ On its part, India wants to increase exports of textiles, food and beverages, pharmaceuticals, tobacco, leather and footwear, and agricultural items like rice to the UK. Digital services and ICT sectors will also benefit and drive the expansion of bilateral trade under the FTA.

Recognition of academic qualifications:

➲ Mutual recognition of academic qualifications and duration of study in recognized and approved higher educational institutions in both countries will ease movement of professionals across the two markets.

➲ For example, Indian senior secondary school and pre-university certificates will be recognized for entry into the UK's higher educational institutions. However, the MoU on education does not cover professional degrees, such as engineering and medicine.

MoU on maritime education:

➩ The MoU in maritime education will ensure mutual recognition of certificates of "maritime education and training, competency and endorsements of seafarers issued by each side".

➩ India is among the top suppliers of seafarers in the world, and this India-UK MoU opens job prospects in the British shipping sector.

Recruitment for British healthcare sector:

➩ Recruitment of Indian nursing and allied health professionals for the UK healthcare sector will benefit from the Framework Agreement on Healthcare Workforce.

Bilateral trade:

➩ The bilateral trade between the two countries increased to $17.5 billion in 2021-22 compared to $13.2 billion in 2020-21. India's exports stood at $10.5 billion in 2021-22, while imports were $7 billion.

Way Forward:

➩ While India seeks a March 2023 conclusion to the deal, discussions on sticky issues in the next round of talks will determine whether this is possible.

WORLD BANK RAISES INDIA'S GROWTH PROJECTION TO 6.9%

GROWTH FORECASTS FOR INDIA
FY23 FY24 (%, y-o-y)
*Calendar years 2022 and 2023
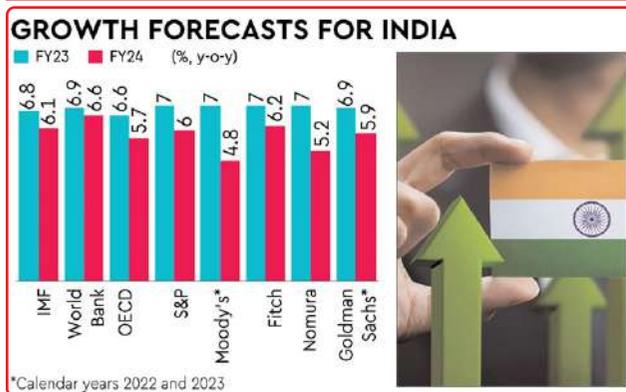
Why in news?

➩ Recently, the World Bank released its latest India Development Report titled 'Navigating the Storm'.

Details:

➩ It lifted its growth forecast for India's economy in 2022 to 6.9%, after having downgraded it to 6.5% in October.

➩ It revised the GDP forecast considering the strong upturn in the July-to-September quarter of 2022-23, when it grew 6.3% despite inflationary pressures and tighter financing conditions, "driven by strong private consumption and investment".

➩ The government's focus on bolstering capital expenditure also supported domestic demand in the first half of 2022-23. High frequency indicators indicate continued robust growth of domestic demand at the start of Q3 (October to December quarter).

Key Highlights:

➩ The Bank expects the Indian economy to grow at a slightly slower 6.6% in 2023-24 as a challenging external environment and faltering global growth will affect its economic outlook through different channels.

➩ The report said that while a one percentage point decline in growth in the United States is associated with a 0.4 percentage point decline in India's growth, the effect is around 1.5 times larger for other emerging economies, and the result is similar for growth spillovers from the EU and China.

Trade deficit:

➩ Strong revenue growth would largely offset India's higher subsidy bill and lower fuel taxes, but these measures have slowed the pace of fiscal consolidation.

➩ The confluence of multiple challenges on the external front poses a challenge to India's growth trajectory, but balanced policymaking, which factors in these trade-offs, will help India navigate global headwinds.

➩ A widening goods trade deficit, driven by rising imports and softening exports, has expanded India's current account deficit to 2.8% of GDP in Q2 this year from 1.5% in the first quarter. India scores better than only the Philippines and Thailand on this metric of macroeconomic stability.

India's forex reserves:

➩ Despite an over 10% dip in India's forex reserves in 2022, they are still over $500 billion and provide adequate buffer against global spillovers" with an import cover of at least eight months.

➩ Since the taper tantrum in 2013, India's forex reserves have almost doubled and provide better coverage of external debt than other emerging market economies.

Challenges:

➩ The report, cautions about trade-offs between trying to limit the adverse impact of global spillovers on growth and the available policy space.

➩ Like its COVID-19 response, the Indian government's response to the external shock combined demand-side and supply-side policies, with both fiscal and monetary policy levers deployed.

➩ While there are still some challenges in the financial sector, the adoption of several regulatory and policy measures including introduction of a new Insolvency and Bankruptcy Code and creation of the new National Reconstruction Company Limited facilitated an improvement in financial sector metrics over the past five years.

FTA WITH AUSTRALIA TO CREATE LEVEL-PLAYING FIELD FOR HOME TEXTILE EXPORTERS

Why in news?

➩ India's free trade agreement (FTA) signed with Australia, which comes into effect from December 29,

2022 will be beneficial for Indian garment and home textile exporters, according to India Ratings and Research (Ind-Ra).

➲ Even as there is a slowdown in demand for Indian garments in the US and Europe, free trade agreement (FTA) with Australia is likely to provide a level-playing field for home textile exporters in 2022-23.

How it will be helpful for India?

➲ Australia's zero import duty access to India, which was earlier 5 per cent, will provide a level-playing field with exports from China, Vietnam and Bangladesh.

➲ Given that China accounts for almost 60 per cent of textile imports into Australia with India at 5-6 per cent, Ind-Ra expects the volume of exports to gradually increase in 2023 and thereafter may increase further based on producer capacities.

➲ A long-term shift for meaningful volume increases, which encourages incremental capital expenditure, would necessitate improving the cost competitiveness and availability of a pool of skilled labour, it added.

➲ The availability of domestic sources of cotton and long-term visibility of demand could encourage domestic entities to diversify exports and manage demand cyclicality better.

Future potential:

➲ Given the slowdown being experienced by the US and Europe, this could provide partial relief along with other FTAs likely to be signed with UAE, UK, Canada and Israel.

➲ These markets have an aggregate textile import of USD 60 billion and even an incremental gain of 5 per cent for India would be a 50 per cent gain on the existing exports of USD 6 billion. The total textile export from India to the world aggregated USD 43 billion in FY22.

➲ India exports a significant proportion of its low value-added products 25-30 per cent in FY22 such as yarn and fabrics to China, Bangladesh and Vietnam which use them to value add and export to countries such as Australia and other potential FTA partners.

➲ Ind-Ra expects the removal of these tariff barriers through FTAs to increase the incentive to create value addition within the country and increase the

proportion of such products in the overall export basket. This will aid the process of diversification and limit the inherent cyclicality associated with the industry.

Way Forward:

➲ China, Vietnam and Bangladesh continue to hold major market shares in the import basket of Australia and a meaningful shift in volumes would necessitate looking at addressing tax anomalies, shortage of skilled labour and increasing the focus on sustainable practices including the use of green energy.

➲ As wage costs in China continue to rise, India would stand to benefit, although, our costs are still higher in relation to Vietnam, Bangladesh and Pakistan.

5TH EDITION OF YOUTH CO:LAB FOR YOUNG ENTREPRENEURS

Why in news?

➲ Recently, the 5th edition of Youth Co:Lab, Asia Pacific's largest youth innovation movement was jointly launched by Atal Innovation Mission (AIM), NITI Aayog and UNDP India.

Youth Co:Lab

➲ Youth Co:Lab is an initiative launched in 2019 by UNDP India in partnership with Atal Innovation Mission, NITI Aayog.

➲ It aims to establish a common agenda for Asia-Pacific countries to invest in and empower youth to accelerate implementation of the Sustainable Development Goals (SDGs) through leadership, social innovation, and entrepreneurship.

Significance:

➲ Atal Innovation Mission, along with UNDP India are driving this movement through the fifth edition of Youth Co:Lab India and have been supporting young social entrepreneurs who can be a powerful force in leading social change and furthering the implementation of SDGs target actions.

➲ The Youth Co:Lab initiative, till date, has been implemented in 28 countries and territories, reaching over 200,000 participants, benefitting more than 11,000 young social entrepreneurs and supporting over 1,240 social enterprises.

Focus thematic areas:

➲ Through Youth Co: Lab, 30 early-stage start-ups would be supported by the springboard programme, and the best would be provided a seed grant for scaling up their start-up. The 5 focus thematic areas for Youth Colab 2022-23 are:

a) Digital and Financial Literacy for Youth

b) Gender Equality and Women Economic Empowerment

c) Developing FinTech Solutions focused on Biodiversity Conservation

d) Promoting Biodiversity-friendly Lifestyles through Technological Solutions in Finance

e) Accelerating Circular Economy through Upcycling Innovations

f) Behavioural Nudges for LiFE (Lifestyle For Environment)

About Atal Innovation Mission (AIM):

➲ AIM is the Government of India's endeavor to promote a culture of innovation and entrepreneurship.

➲ Its objective is to serve as a platform for the promotion of world-class innovation hubs, grand challenges, start-up businesses, and other self-employment activities, particularly in technology-driven areas.

KERALA'S FIVE AGRICULTURAL PRODUCTS GET GI TAG

GI Tags of Kerala

Why in news?

➲ Recently, the five agricultural products of Kerala have been granted Geographical Indication (GI) status.

➲ The unique features of the products, imparted by the agro-climatic conditions of the geographical area of their production, are the basis for getting geographical indication tag.

The latest Geographical Indications that have been registered are

a) Attappady Attukombu Avara (beans)

b) Attappady Thuvara (red gram)

c) Onattukara Ellu (sesame)

d) Kanthalloor-Vattavada Veluthulli (garlic)

e) Kodungalloor Pottuvellari (snap melon).

Attappady Attukombu Avara:

➲ Attappady Attukombu Avara, cultivated in the Attappady region of Palakkad, is curved like a goat's horn as its name indicates.

➲ Its higher anthocyanin content compared to other dolichos beans imparts violet colour in the stem and fruits.

➲ Anthocyanin is helpful against cardiovascular diseases along with its antidiabetic properties. Other than this, calcium, protein, and fibre content are also high.

➲ The higher phenolic content of Attappady Attukombu Avara imparts resistance against pest and diseases, making the crop suitable for organic cultivation.

Attappady Thuvara:

➲ Attappady Thuvara is having seeds with white coat. Compared to other red grams, Attappady Thuvara seeds are bigger and have higher seed weight.

➲ This delicious red gram, which is used as vegetable and dal, is rich in protein, carbohydrate, fibre, calcium and magnesium.

Kanthalloor-Vattavada Veluthulli:

➲ Compared to the garlic produced in other areas, the garlic from the Kanthalloor-Vattavada area of Devikulam block panchayat in Idukki contains higher amount of sulphides, flavonoids, and proteins.

➲ It is rich in allicin, which is effective against microbial infections, blood sugar, cancer, cholesterol, heart diseases, and damages to blood vessels.

➲ The garlic cultivated in this area is also rich in essential oil.

Onattukara Ellu:

➲ Onattukara Ellu and its oil are famous for its unique health benefits. Relatively higher antioxidant content in Onattukara Ellu helps in fighting the free radicals, which destroy the body cells.

➲ Also, the high content of unsaturated fat makes it beneficial for heart patients.

Kodungalloor Pottuvellari:

➲ Kodungalloor Pottuvellari cultivated in Kodungalloor and parts of Ernakulam is consumed as juice and in other forms. This snap melon, which is harvested in summer, is an excellent for quenching thirst.

➲ It contains high amount of Vitamin C.

➲ Compared to other cucurbits, nutrients such as calcium, magnesium, fibre and fat content are also high in Kodungalloor Pottuvellari.

GI products of Kerala:

➲ With the latest five GIs, 17 agricultural products of Kerala facilitated by the Kerala Agricultural University have received the GI status.

About GI Tag:

➲ A geographical indication (GI) is a sign used on products that have a specific geographical origin and ensures good qualities or a reputation in the region.

➲ GI is a name or symbol used to check the duplicity of the products related to agriculture, machinery, and sweets etc.

- GI tags are issued as per the Geographical Indications of Goods (Registration and Protection) Act, 1999.

THE MINIMUM TAX ON BIG BUSINESSES

Why in news?

- Recently, the members of the European Union last week agreed in principle to implement a minimum tax of 15% on big businesses.
- In 2021, 136 countries had agreed on a plan to redistribute tax rights across jurisdictions and enforce a minimum tax rate of 15% on large multinational corporations. It is estimated that the minimum tax rate would boost global tax revenues by $150 billion annually.

What is minimum tax rate?

- EU members have agreed to implement a minimum tax rate of 15% on big businesses in accordance with Pillar 2 of the global tax agreement framed by the Organisation for Economic Cooperation and Development (OECD) last year.
- Under the OECD's plan, governments will be equipped to impose additional taxes in case companies are found to be paying taxes that are considered too low. This is to ensure that big businesses with global operations do not benefit by domiciling themselves in tax havens in order to save on taxes.
- Pillar 1 of the OECD's tax plan, on the other hand, tries to address the question of taxing rights. Large multinational companies have traditionally paid taxes in their home countries even though they did most of their business in foreign countries.
- The OECD plan tries to give more taxing rights to the governments of countries where large businesses conduct a substantial amount of their business. As a result, large U.S. tech companies may have to pay more taxes to governments of developing countries.

What is the need for a global minimum tax?

- Corporate tax rates across the world have been dropping over the last few decades as a result of competition between governments to spur economic growth through greater private investments.
- Global corporate tax rates have fallen from over 40% in the 1980s to under 25% in 2020, due to global tax

competition that was kick-started by former U.S. President Ronald Reagan and former British Prime Minister Margaret Thatcher in the 1980s.

- The OECD's tax plan tries to put an end to this "race to the bottom" which has made it harder for governments to shore up the revenues required to fund their rising spending budgets.
- The minimum tax proposal is particularly relevant at a time when the fiscal state of governments across the world has deteriorated as seen in the worsening of public debt metrics.

What lies ahead?

- Some governments, particularly those of traditional tax havens, are likely to disagree and stall the implementation of the OECD's tax plan. High tax jurisdictions like the EU are more likely to fully adopt the minimum tax plan as it saves them from having to compete against low tax jurisdictions.
- Low tax jurisdictions, on the other hand, are likely to resist the OECD's plan unless they are compensated sufficiently in other ways. Even within the EU, countries such as Poland have already tried to stall the adoption of the global minimum tax proposal citing various non-economic reasons.
- Since the OECD's plan essentially tries to form a global tax cartel, it will always face the risk of losing out to low-tax jurisdictions outside the cartel and cheating by members within the cartel.

What good will the OECD's tax plan do to the global economy?

- Supporters of the OECD's tax plan believe that it will end the global "race to the bottom" and help governments collect the revenues required for social spending.
- Many believe that the plan will also help counter rising global inequality by making it tougher for large businesses to pay low taxes by availing the services of tax havens.
- Critics of the OECD's proposal, however, see the global minimum tax as a threat. They argue that without tax competition between governments, the world would be taxed a lot more than it is today, thus adversely affecting global economic growth.

SOCIAL PROGRESS INDEX (SPI) FOR STATES AND DISTRICTS RECEIVED BY EAC-PM

Why in news?

- Recently, the Social Progress Index (SPI) for States and Districts made by the Institute for Competitiveness and Social Progress Imperative was submitted to Economic Advisory Council- Prime Minister and released.

What is Social Progress Index (SPI)?

- SPI is a comprehensive tool that can serve as a holistic measure of a country's social progress at the national and sub-national levels.

UTs EMERGE AS TOP PERFORMERS

Rank	State/ UTs	Score
1	Puducherry	65.99
2	Lakshadweep	65.89
3	Goa	65.53
4	Sikkim	65.1
5	Mizoram	64.19
6	Tamil Nadu	63.33
7	Himachal Pradesh	63.28
8	Chandigarh	62.37
9	Kerala	62.05
10	Jammu & Kashmir	60.76

Source: Social Progress Index

- The index assesses states and districts based on 12 components across three critical dimensions of social progress: Basic Human Needs, Foundations of Wellbeing, and Opportunity.
- The index uses an extensive framework comprising 89 indicators at the state level and 49 at the district level.

Three critical dimensions:

a) Basic Human Needs assess the performance of states and districts in terms of Nutrition and Basic Medical Care, Water and Sanitation, Personal Safety and Shelter.

b) Foundations of Wellbeing evaluates the progress made by the country across the components of Access to Basic Knowledge, Access to Information and Communication, Health and Wellness, and Environmental Quality.

c) Opportunity focuses on Personal Rights, Personal Freedom and Choice, Inclusiveness, and Access to Advanced Education.

Based on the SPI scores, states and districts have been ranked under six tiers of social progress. The tiers are

1. Tier 1: Very High Social Progress;
2. Tier 2: High Social Progress;
3. Tier 3: Upper Middle Social Progress;
4. Tier 4: Lower Middle Social Progress;
5. Tier 5: Low Social Progress; and
6. Tier 6: Very Low Social Progress.

Key Findings:

- Puducherry has the highest SPI score of 65.99 in the country, attributable to its remarkable performance across components like Personal Freedom and Choice, Shelter, and Water and Sanitation.
- Lakshadweep and Goa closely follow it with scores of 65.89 and 65.53, respectively. Jharkhand and Bihar scored the lowest, 43.95 and 44.47, respectively.

Basic Human Needs:

- For the dimension of Basic Human Needs, Goa, Puducherry, Lakshadweep, and Chandigarh are the top four states with the best performance in Water

and Sanitation and Shelter as compared to the other states and union territories.

- In addition, Goa has the highest component score for Water and Sanitation, followed by Kerala, scoring the highest across the Nutrition and Basic Medical Care component.
- For Shelter and Personal Safety, Chandigarh and Nagaland have emerged as the front-runners, respectively.

Foundations of Wellbeing:

- Mizoram, Himachal Pradesh, Ladakh, and Goa have emerged as the best-performing states for the Foundations of Wellbeing.
- Within the dimension for the Access to Basic Knowledge component, Punjab has the highest component score of 62.92, while Delhi has topped the list for Access to Information and Communication with a score of 71.30. For Health and Wellness, Rajasthan has the highest component score of 73.74.
- For Environmental Quality, the top three states belong to the northeast region, namely, Mizoram, Nagaland, and Meghalaya.

Opportunity dimension:

- Tamil Nadu has achieved the highest component score of 72.00 for the Opportunity dimension.
- Within this dimension, Andaman and Nicobar Islands have the highest component score for Personal Rights, while Sikkim has topped the list for Inclusiveness.
- It is commendable to witness Puducherry attaining the highest scores across two components in this dimension, i.e., Personal Freedom and Choice and Access to Advanced Education.

Way Forward:

- The report is based extensively on objective data and is primarily a normative/prescriptive exercise.
- It presents a cross-section of data across states and districts and the focus is on looking at various tiers of development by grouping the states rather than the individual rankings of the selected states and districts

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SEBI IS PHASING OUT THE STOCK EXCHANGE ROUTE AND HOW IT IMPACTS SHAREHOLDERS

Why in news?

- The Securities and Exchange Board of India (SEBI) has decided to phase out the buyback of shares of listed companies through the exchange route.
- The regulator favours the repurchase of shares by companies from shareholders on a proportionate basis through the tender offer because that is considered more equitable, transparent, and fair.

What is the stock exchange route?

- Under the stock exchange route, a company can buy back shares only on the stock exchanges having nationwide trading terminals.

Sebi's new rules: Key takeaways

- **Open market option will be closed for buyback offers from April 2025**
- **Upward revision of buyback price allowed until one working day prior to the record date**
- **Sebi to amend rules to permit stock exchanges to introduce investor risk reduction access platform**

ET Markets

⊃ The buyback of shares is made only through the order-matching mechanism. In this method, the promoters, or persons in control of a company are not allowed to participate.

⊃ Paytm, which witnessed a 76 per cent crash in share prices after its IPO last year, recently decided to opt for the open market route through the stock exchanges method for share buyback, which is to be completed within a maximum period of 6 months.

⊃ While TCS, which came out with share buybacks recently, used the tender route, Infosys opted for the stock exchange method for its recent buyback.

Why is SEBI against the exchange route?

⊃ As per the recommendations of the Keki Mistry-headed committee, set up by SEBI to review the buyback regulations, under the stock exchange route, there is a possibility of one shareholder's entire trade getting matched with the purchase order placed by the company, thus depriving other shareholders of availing the benefit of buyback.

⊃ This runs contrary to the principle of equitable treatment, which forms the basis of all corporate actions.

When will the exchange route be phased out?

⊃ As recommended by the Keki Mistry committee, SEBI will phase out buyback through the stock exchange route with effect from April 1, 2025.

⊃ Many experts termed SEBI's decision to phase out stock buyback through the exchange route as positive as it will give all the shareholders an opportunity to participate.

⊃ The aim of this move is to make the buyback process more robust, efficient, transparent and shareholder-friendly.

What is buyback via tender offer?

⊃ A tender offer means an offer by a company to buy back its own shares or other specified securities through a letter of offer from the holders of the shares or other specified securities of the company.

⊃ The buyback is done on a proportionate basis as per the buyback ratio, and the additional shares tendered over and above the prescribed buyback ratio get accepted if there are any unaccepted shares. It is a fixed-price buyback offer.

What are the changes made in the tender system?

⊃ SEBI has reduced the timeline for completion of the buyback through a tender offer by 18 days, by removing the requirement of filing a draft letter of offer with it.

⊃ It also permitted an upward revision of the buyback price until one working day prior to the record date.

What is share buyback?

⊃ When a listed company buys its own shares from the existing shareholders, it is known as a share buyback, which is also called share repurchase.

⊃ The process reduces the number of outstanding shares in the open market over a period which can lead to better valuation and earnings per share (EPS).

⊃ Currently, a company can buy back its shares from shareholders on a proportionate basis through a tender offer, or from the open market via a book-building process, or from the odd-lot holders.

⊃ The maximum limit of any buyback is 25 per cent or less of the aggregate of paid-up capital and free reserves of a company.

How will shareholders be benefitted?

⊃ The entire process of buyback via stock markets may or may not have benefitted smaller investors as they may not have known when the buyback was taking place.

⊃ With the tender offer process being the only process going forward, all shareholders would now be provided with an opportunity to participate in the buyback. Especially as tender offers also require a reservation for small shareholders.

PANEL FORMED FOR MEASURES TO PROMOTE EXPORT OF TELECOM EQUIPMENT

Why in news?

⊃ An expert committee has been constituted by the Department of Telecommunications (DoT) to recommend measures to promote the export of domestically-manufactured equipment.

Background:

⊃ The department of telecommunications issued an amendment in Telecom Licenses on March 3, 2021,

wherein, all licensees have been directed to connect only trusted products in their telecom networks with effect from June 6, 2021.

➲ A portal has been launched which facilitates evaluation of telecommunication equipment as trusted products and intimation of the same to licensees.

PLI Scheme:

➲ The domestic telecom manufacturing industry is being incentivised via schemes like production-linked incentive (PLI) and Public Procurement Preference (PPP-MII).

➲ PLI scheme aims to incentivise manufacturing of telecom and networking products within the country whereas PPP-MII Policy provides preference to domestic manufacturers in public procurement.

HS Codes:

➲ The government has taken steps for streamlining and categorising the HS Codes so as to avoid mislabelling of imported items.

➲ HS code is a common standard worldwide for classifying traded goods, which is used by 98 per cent of import and export trades worldwide in assessing duties.

SOCIAL ISSUE

GHAR-GO HOME AND RE-UNITE PORTAL

Why in news?

➲ The National Commission for Protection of Child Rights (NCPCR), has developed and launched a portal namely GHAR - GO Home and Re-Unite (Portal for Restoration and Repatriation of Child).

➲ The GHAR portal has been developed to digitally monitor and track the restoration and repatriation of children according to the protocol.

Salient features of the portal:

➲ Digital tracking and monitoring of children who are in the Juvenile Justice system and have to be repatriated to another Country/State/District.

➲ Digital transfer of cases of children to the concerned Juvenile Justice Board/Child Welfare Committee of the State. It will help in speedy repatriation of children.

➲ Where there is a requirement of a translator/interpreter/expert, request will be made to the concerned State Government.

➲ Child Welfare Committees and District Child Protection Officers can ensure proper restoration and rehabilitation of children by digitally monitoring the progress of the case of the child.

➲ A checklist format will be provided in the forms so that the children who are being hard to repatriate or children who are not getting their entitled compensation or other monetary benefits can be identified.

➲ List of Government implemented schemes will be provided, so that at the time of restoration the Child Welfare Committees can link the child with the schemes to strengthen the family and ensure that child remains with his/her family.

JJ Act, 2015:

➲ The Ministry of Women and Child Development is administering the Juvenile Justice (Care and Protection of Children) Act, 2015 (JJ Act, 2015) (as amended in 2021) and Rules thereunder, for ensuring safety, security, dignity and well-being of children.

➲ The Act provides for protection of children in need of care and protection and those in conflict with law by catering to their basic needs through care, protection, development, treatment and social re-integration.

Key provisions:

➲ Under the JJ Act, 2015 (Sections 27-30), the Child Welfare Committees have been empowered to take decisions with regard to the children in need of care and protection for the best interest of the children. They are also mandated to monitor the functioning of the Child Care Institutions (CCIs).

➲ Similarly, under section 106 of JJ Act, 2015, every State Government has to constitute a District Child Protection Unit (DCPU) for every district to take up matters relating to children to ensure the implementation of JJ Act, 2015 and rules thereunder.

➲ To ensure effective coordination in the Child Safety, Protection and Development; District Magistrates have been made the head of DCPUs.

➲ DMs have been empowered to review the functioning of DCPUs and CWCs at regular intervals to ensure prompt decisions as per provisions of JJ Act and Rules are taken by these bodies, keeping in mind best interests of Children.

SECURITY

NEW INDIAN NAVY CREST UNVEILED

Why in news?

➲ Recently, the President of India has approved introduction of a new design for the President's Standard and Colour and Indian Navy Crest for the

Indian Navy, which were unveiled at Visakhapatnam on Navy Day on 04 Dec 2022.

Background:

➲ The erstwhile design of the President's Standard and Colour for the Indian Navy was instituted on 06 Sep 2017.

➲ The design comprised one each horizontal and vertical red bands intersecting at the centre and the National Emblem inserted at their intersection.

➲ The National Flag was at the upper left canton adjacent to the staff and a Golden Elephant was at the lower right canton on the fly side. This design was inspired from the erstwhile Naval Ensign.

New design of the President's Standard and Colour:

➲ The Indian Navy adopted a new Naval Ensign on 02 Sep 2022, and the new design of the President's Standard and President's Colour awarded to the Indian Navy incorporates this change.

➲ The new design of the President's Standard and Colour comprises three main constituents:

a) The National Flag in the upper left canton adjacent to the staff,

b) The State Emblem underscribed with 'Satyamev Jayate' in Golden Colour on the upper right canton on the fly side, and

c) A Navy Blue - Gold Octagon below the Golden State Emblem.

➲ The Octagon has twin golden octagonal borders, encompassing the golden National Emblem (Lion Capital of Ashoka – underscribed with 'Satyamev Jayate' in blue Devnagri script) resting atop an anchor; and superimposed on a shield.

➲ Below the shield, within the octagon, in a golden bordered ribbon, on a Navy Blue background, is inscribed the motto of the Indian Navy 'Sam No Varunah' in golden Devnagri script.

➲ The Golden State Emblem signifies 'Power, Courage, Confidence and Pride' whilst the Navy Blue – Golden Octagon shape draws inspiration from Shivaji Maharaj Rajmudra or the Seal of Chhatrapati Shivaji Maharaj, and represents the eight directions (four cardinal and four inter cardinal), symbolising the Indian Navy's maritime outreach.

➲ The new design of President's Standard and Colour highlights India's glorious maritime heritage and also symbolises a powerful, courageous, confident and proud Indian Navy.

Indian Navy Crest:

➲ The Indian Navy Crest has been amended to replace the foul anchor with a Clear Anchor. The clear anchor depicts steadfastness of the Indian Navy to deter any challenge in maritime domain, and represents clarity in vision, mission and aspirations of its sailors.

➲ The Clear Anchor also depicts Indian Navy's commitment towards securing the Coast and Maritime Interest of India. The change would imply removal of the symbolic nautical rope in the Crest Designs.

➲ The Modified Indian Navy Crest has been introduced with effect from 04 Dec 22 on the occasion of the Navy Day 2022.

➲ The New Naval Crest has a traditional naval clear anchor below the Ashoka Lion Head with **'शं नो वरुणाः'** inscribed below it, which is an invocation from the Vedas meaning 'May the Ocean God be Auspicious unto us'.

➲ The phrase was adopted as the motto of the Indian Navy on the suggestion of Chakravarti Rajagopalachari, the first Indian Governor General of Independent India.

President's Standard and President's Colour:

➲ The President's Standard and President's Colour are awarded to static and mobile formations of the Indian Navy respectively, to acknowledge their distinguished and meritorious service to the Nation.

➲ The Indian Navy was the first among the three Services to be awarded the President's Colour on 27 May 1951 by the then President Dr. Rajendra Prasad. In the Indian Navy, the President's Colour has been awarded to the Western, Southern, and Eastern Naval Commands, both Western and Eastern Fleets, the Submarine Arm, the Naval Air Arm, INS Shivaji, INS Valsura and the Indian Naval Academy.

➲ The 22nd Missile Vessel Squadron was the first Naval Combatant Squadron to be honoured with the President's Standard.

JAPAN, BRITAIN, ITALY TO DEVELOP NEXT-GENERATION FIGHTER JET

Why in news?

➲ Japan, Britain and Italy will jointly develop a next-generation fighter jet in a project that holds scope for future cooperation with allies including the United States.

➲ The joint project is called the Global Combat Air Programme.

Details:

➲ The new jet, to be ready by 2035, is expected to merge the nations' current research into cutting-edge air

combat technology, from stealth capacity to high-tech sensors.

⮑ The "ambitious endeavour" would "accelerate our advanced military capability and technological advantage" at a time when "threats and aggression are increasing" worldwide.

Britain:

⮑ Britain had already been working with Italy on a future fighter jet project called Tempest, launched to great fanfare in 2018.

⮑ The objective was to develop by 2035 a twin-engined stealth aircraft that could be operated manned or unmanned, could not be detected by radar, and would boast features such as laser-directed weapons and a virtual cockpit.

Japan:

⮑ Japan's prior project to build a next-generation fighter plane, named F-X, was reportedly expected to cost more than five trillion yen (around $40 billion).

⮑ But the war in Ukraine, repeated missile launches from North Korea and growing pressure from China have helped build support for a bigger budget.

⮑ The companies Mitsubishi Heavy Industries, BAE Systems and Leonardo would oversee the new project, which is Tokyo's second joint development after its SM-3 missile made with U.S.

Way Forward:

⮑ The Global Combat Air Programme is the latest high-profile example of allied countries collaborating on an ad-hoc basis to develop defence equipment.

PRIVATE INDUSTRIES INCLUDING STARTUPS ELIGIBLE TO APPLY FOR MISSION DEFSPACE

Why in news?

⮑ Private industries including start-ups, individual innovators and Micro, Small and Medium Enterprises (MSMEs) are eligible to apply for Mission DefSpace.

Mission DefSpace:

⮑ Prime Minister launched Mission DefSpace in October to boost India's space-related defence preparedness.

⮑ It was launched with 75 defence space challenges relevant to the end users.

⮑ These challenges have been categorised into existing DDP initiatives of iDEX, Make-I and Make-2.

Challenges:

⮑ The challenges, which have been classified into five buckets namely, launch system, satellite system, communication and payload system, ground system and software system, provide a holistic 360 degree overview of space.

What's next?

⮑ During the Parliament session, Minister of State for Defence, said that initiatives that prioritise the procurement of capital items from domestic sources under the Defence Acquisition Procedure (DAP)-2020 will be taken up in 2023.

These include

⮑ simplifying the Make Procedure,

⮑ launching innovations for Defence Excellence (iDEX) scheme involving start-ups and Micro, Small, and Medium Enterprises (MSMEs),

⮑ launching an indigenisation portal called SRIJAN to facilitate indigenisation by Indian industries, establishing two Defence Industrial Corridors, one each in Uttar Pradesh and Tamil Nadu,

⮑ making reforms in offset policy with thrust on attracting investment and

⮑ transfer of technology for defence manufacturing by assigning higher multipliers, among others.

THE INS MORMUGAO AND ITS CAPABILITIES

Why in news?

⮑ In a boost to the country's maritime capabilities, INS Mormugao has officially joined the Indian Navy's fleet.

- The warship 'Yard 12705', named after the Goan port city of Mormugao, is the second of the four Visakhapatnam-class destroyers being built under the Indian Navy Project 15B, or P15B.
- The destroyer has multi-dimensional combat capabilities which include surface-to-surface missiles, surface-to-air missiles and modern surveillance radar.

What is Project 15B?

- Project 15 was launched in the 1990s to add guided missile destroyers to the inventory of the Indian Navy. The project was named 'Delhi class'.
- It was followed by Project 15A or Kolkata class which primarily focused on advanced technology and equipment in surface ships.
- Project 15B or the Visakhapatnam class is a follow-on class of weapon-intensive Project 15A destroyers. The project was launched in January 2011 to incorporate advanced design concepts such as state-of-the-art weapons and sensors, advanced stealth features and a high degree of automation for "improved survivability, sea keeping, stealth and manoeuvrability".
- The lead ship of Project 15B, INS Visakhapatnam, was the first of the class to be commissioned. Besides INS Mormugao, the other two destroyers are expected to be commissioned between 2023 and 2025.

What are the capabilities of INS Mormugao?

Propulsion system:

- Regarded as "one of the most potent warships to have been constructed in the country", the destroyer is 163 metres long, 17 metres wide and displaces 7,400 tonnes when fully loaded. The ship is propelled by four gas turbines in a combined gas and gas (COGAG) configuration.
- The propulsion system allows the ship to achieve a speed of more than 30 knots (50km/h) and a maximum range of 4,000 nautical miles. It can accommodate a crew of about 300 personnel.

Warfare capabilities:

- INS Mormugao's firepower comprises BrahMos surface-to-surface missiles (SSM), Barak-8 surface-to-air (SAM) missiles for a long range of shore and sea-based targets and a 76mm super rapid gun mount.
- The ship is armed with RBU-6000 anti-submarine rocket launchers and 533mm torpedo launchers. It is also equipped to carry and operate multi-role helicopters. Its enhanced stealth features ensure a reduced Radar Cross Section or radar signature.

Control Systems:

- It is automated with sophisticated digital networks such as the Gigabyte Ethernet-based Ship Data Network (GESDN), the Combat Management System (CMS), Automatic Power Management System (APMS), Integrated Platform Management System (IPMS) and Ship Data Network (SDN).

- While the CMS performs threat evaluation and resource allocation based on the tactical picture compiled and ammunition available onboard, APMS controls power management.
- IPMS is used to control and monitor machinery and auxiliaries and the SDN is the 'information highway for data' from sensors and weapons.
- The ship has multiple fire zones, battle damage control systems, distributional power systems to enhance survivability in emergencies and a total atmospheric control system to protect the crew against nuclear, biological and chemical threats.

Indigenous:

- Built with over 75% indigenous content, the commissioning of INS Mormugao is a shot in the arm for India's self-reliance efforts and crucial for the 15-year Indian Naval Indigenisation Plan (INIP) 2015-2030 implemented in 2014 for indigenous development of its resources, equipment and to make the nation self-reliant in defence technology.

What is the strategic importance?

- While India's interests are closely tied to the Indian Ocean, China has been rapidly expanding its naval footprint in the region.
- Amid growing Chinese strategic interests, India renewed its focus on bolstering its maritime capabilities in the region to counter the threat.
- Economic, political and trade relations between countries are constantly evolving. The COVID-19 pandemic, the situation in the Middle East, Afghanistan and now Ukraine. It directly or indirectly impacts every country in one way or another.
- In this era of globalisation, almost all nations are dependent on each other in the field of trade. Hence, rule-based freedom of navigation, security of sea lanes etc. have become more important than ever for stability and economic progress of the world.
- The addition of a technologically advanced stealth warship to the naval inventory provides a strategic advantage to India and adds to the combat capabilities of the armed forces. Besides surface operations, guided missile destroyers are capable of engaging in anti-aircraft and anti-submarine warfare.

INDIA, JAPAN TO CONDUCT 1ST BILATERAL AIR COMBAT EXERCISE NEXT MONTH TO ENHANCE MUTUAL SKILLS

Why in news?

- In a key move, India and Japan will carry out their maiden bilateral air combat exercise early 2023 seeking to increase the interoperability between the two countries amid tensions with China.

Details:

- The exercise will be carried out from 16 January to 26 January at the Hyakuri Air Base and its surrounding

airspace in Omitama, and the Iruma Air Base in Sayama.

➲ The aim of the combat exercise with Japan Air Self Defense Force (JASDF) was to strengthen defence cooperation between the forces, enhance tactical skills and promote mutual understanding.

India & Japan Exercises:

➲ India and Japan do conduct both Army and Navy level exercises.

➲ In February 2022, both armies came together for "EX DHARMA GUARDIAN-2022" in Belagavi, Karnataka, where they trained in house-interventions drills, raid on terrorist hideouts in semi-urban terrain, combat first aid, unarmed combat and close-quarter combat firing.

➲ The bilateral Army exercise was started in 2018 while the Indian Navy has been conducting the Japan India Maritime Exercise (JIMEX), every year since 2012.

➲ The primary focus of the naval exercise has been on anti-submarine warfare and Air Defence tactics.

Japan's new defence policy:

➲ Japan, which has largely remained pacifist since World War II, is now increasingly focusing on defence preparedness.

➲ Earlier, Japan unveiled its USD 320 billion security strategy which includes drastically expanding its defence capabilities and developing new "counter strike" capabilities.

➲ The surprising five-year plan will make Japan the world's third-biggest military spender after the United States and China, based on current budgets.

INDIA'S NE STRATEGIC RAIL LINK TO LAC WITH CHINA GATHERS PACE, PLANS TO CONNECT 8 CAPITALS TOO

Why in news?

➲ India has completed the final location survey of three strategic railway lines in the Northeast that aims to help the military push its men and equipment faster into the border areas, especially in Arunachal Pradesh, along China.

➲ These strategic railway lines, which will be completed over the next one decade, will add to the extensive network of highways that are already being built.
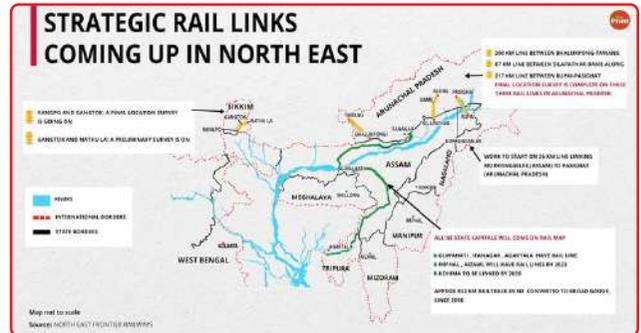
Strategic railway lines:

➲ The plan, first mooted by the Army in 2010-11 also aims to put many key border areas including that in Arunachal Pradesh, Manipur and Sikkim on the broad gauge rail map.

➲ However, the key lines for which work was sped up are a 200 km broad gauge line between Bhalukpong to Tawang (Arunachal Pradesh), 87 km line between Silapathar (Assam) to Along via Bame (Arunachal Pradesh) and 217 km line between Rupai (Assam) to Pasighat (Arunachal Pradesh) which also has an advanced landing ground of the Indian Air Force.

➲ All the three proposed railway lines are categorised as "strategic", which means that the cost will be borne by both the railways and defence ministries.

How it is important for the Army?

➲ The projects got a push because of the ongoing stand-off with China along the Line of Actual Control (LAC). The Army was pushing for the strategic lines because it would help in the movement of soldiers and equipment.

➲ The Bhalukpong-Tawang line is one of the most important projects which will cater to the military's wide needs in an area which has seen tensions rise with China.

➲ The proposed line will see multiple tunnels and will be built at locations over 10,000 ft.

➲ Both the highways projects and the strategic railway lines were mooted by the Army as part of its internal study on defence preparedness.

More railways lines being planned:

➲ While the three strategic rail link projects where the final location survey is completed are all in Arunachal Pradesh, the NFR will also start work on another strategic rail line – 26 km long broad gauge track connecting Murkongselek, a village in Dhemaji, north Assam to Pasighat in Arunachal Pradesh.

➲ Though Assam and Arunachal Pradesh are presently connected by rail line, the Murkongselek-Pasighat line is strategic as it will facilitate movement of defence forces further inside Arunachal Pradesh.

➲ Besides, the NFR is also undertaking a feasibility study to see if a broad gauge line to connect Kokrajhar in Assam to Gelephu in Bhutan.

- Gelephu is on the Assam-Bhutan border and the proposal to provide rail connectivity between Assam and Bhutan has been on the pipeline for a while now.
- The Indian Railways is also moving ahead with its plan to bring Sikkim on the rail map.

Connecting all 8 Northeast capitals with rail line:

- It's not just the strategic rail links, as the railway ministry is also working to ensure that the capitals of all the 8 Northeast states are connected with a broad gauge line.
- While Guwahati (Assam), Itanagar (Arunachal Pradesh) and Agartala (Tripura) already are on the rail map, Kohima (Nagaland) will have a broad gauge line by 2026. Work is already at an advanced stage to connect Imphal (Manipur) and Aizawl (Mizoram) rail line. Both the lines will be ready by 2023.
- Though Meghalaya is connected to the rail network, the NFR has not been able to make progress to connect its capital Shillong with a rail line because of protests by Khasi groups demanding Inner Line Permit in the state.

GEOGRAPHY & ENVIRONMENT

PROTECT GLACIAL-PERIOD COASTAL RED SAND DUNES OF VIZAG

Why in news?

- The Geologists say that coastal red sand dunes of Vizag has much significance geologically, archaeologically and anthropologically and it needs to be protected for further study and evaluation.

Erra Matti Dibbalu:

- The coastal red sand dunes of Visakhapatnam are popularly known as 'Erra Matti Dibbalu'.
- The site is located along the coast and is about 20 km north-east of Visakhapatnam city and about 4 km south-west of Bheemunipatnam.
- This site was declared as a geo-heritage site by the Geological Survey of India (GSI) in 2014 and the Andhra Pradesh government has listed it under the category of 'protected sites' in 2016.

Why it matters?

- Primarily this site needs to be protected to study the impact of climate change, as Erra Matti Dibbalu have seen both the glacial and the warm periods.
- The site is about 18,500 to 20,000 years old and it can be related to the last glacial period.
- It is a lively scientific evolution site, which depicts the real-time effects of climate change.
- About 18,500 years ago, the sea (Bay of Bengal) was at least 5 km behind from the present coastline. Since then it has been undergoing continuous active changes till about 3,000 years ago and still the changes are on.
- Such sand deposits are rare and have been reported only from three places in the tropical regions in south Asia such as Teri Sands in Tamil Nadu, Erra Matti Dibbalu in Visakhapatnam and one more site in Sri Lanka. They do not occur in equatorial regions or temperate regions due to many scientific reasons.

Geochemically unaltered:

- The top light-yellow sand unit, which is estimated to have been deposited around 3,000 years ago, could not attain the red colouration as the sediments were geochemically unaltered. These sediments are unfossiliferous and deposited over the khondalite basement.
- The dunes consist of light yellow sand dunes at the top followed by a brick red sand unit, a reddish brown concretion bearing sand unit with yellow sand at the bottom.
- The earlier studies indicate that the bottom-most yellow sand unit is fluvial while the other overlying three units are aeolian in origin.

Archaeological significance:

- The site also has archaeological significance, as studies of artefacts indicate an Upper Palaeolithic horizon and on cross dating assigned to Late Pleistocene epoch, which is 20,000 BC.
- Scientists from the university say that the site was home to the pre-historic man as the excavations at several places in the region revealed stone implements of three distinctive periods and also the pottery of the Neolithic man.

Way Forward:

- Keeping all these in mind, it is the responsibility of the State government to see that the site is protected at all costs from all vagaries.

NEW PAMBAN BRIDGE

Why in news?

- Recently, the Ministry of Railways informed that around 84 per cent of work has been completed on India's first vertical lift railway sea bridge, the new Pamban Bridge.
- The 2.07 km long Pamban rail sea bridge in Tamil Nadu will connect the holy Rameswaram on Pamban island to mainland India.

It is also expected to be a boon for pilgrims travelling to Rameswaram and Dhanuskhodi as well as enhance tourism.

What is a vertical lift bridge?

- Vertical lift bridges use a system of counterweights and cables to move an interior lift span section that remains horizontal as it is raised up and down like an elevator, allowing river traffic to pass beneath the structure.
- US' Hawthorne Bridge, Ryde Bridge in Australia and France's Pont Jacques Chaban-Delmas are some examples of vertical lift bridges.

Features of the new Pamban Bridge:

- Built at the cost of around Rs 540 crore, the new Pamban Bridge will facilitate the movement of ships across the railway bridge.
- The new link will replace the iconic Pamban bridge which was India's first-ever sea bridge opened in 1914.
- The old bridge that connects Tamil Nadu with the Pamban or Rameswaram Island, is one of the longest sea bridges in the country.
- The 6,700-foot structure was built by the British to strengthen trade relations with Sri Lanka.

Old Vs. New:

- The new bridge, which is 12.5 metres above ocean level, will be 3 metres higher than the old one and will have 100 spans across the sea.
- The 6,776 feet long bridge will allow two ships to cross it simultaneously.
- The 72-metre-long vertical lift span can be elevated to enable the movement of ships or steamers.
- The old bridge used Scherzer rolling lift technology that is manually operated and opens horizontally to let the ships pass through.
- The navigational span can be lifted up to a height of 17 metre using an electro-mechanical system, unlike manual operations in the old one.
- This system will be joined with the train control systems to provide "seamless system connectivity".
- While the old bridge is a non-electrified track, the new one will be an electrified railway track.

Way Forward:

- It will solve the problem with the old bridge in which there is a speed restriction of 15 kmph, which is nearly 100 years old and has a lot of corrosion. The new bridge will have a speed limit of 65 kmph.
- The double track in the new bridge's substructure can accommodate "future doubling" and the superstructure will be provided for a single line.

CHEETAHS AND TIGERS IN INDIA

Context:

- The year 2022 marked the arrival of Namibian cheetahs to India, the first intercontinental transfer of wild cats into the country since independence.
- Eight cheetahs were flown into the Kuno National Park (KNP), Madhya Pradesh, from Namibia on September 17 as part of an ambitious project to eintroduce the big cat into the country.
- In February, the government went public with a plan to import a cohort of animals that could live in India, setting up a task force to implement the programme.

Has the transfer been successful?

- The cheetahs were flown into India following several weeks of medical supervision in Namibia.
- They will be released into the wild gradually so that they have enough time to adapt to Indian conditions, are at reduced risk of contracting and spreading infection and have honed the skills to hunt Indian prey.
- The eight cheetahs were housed in six 'bomas' (enclosures) and initially provided with buffalo meat. So far, three of the animals have been released into a larger enclosure outside of the 'bomas' after two of them successfully killed chital for prey in November.
- The third animal, Oban, was also released mid-November and all the animals are expected to be moved inside larger enclosures in weeks.
- The cheetahs are radio-collared and their movements will be tracked. Each animal has a dedicated tracking team.

Why is it necessary to have cheetahs outside of Africa?

- Cheetahs were once widespread in India as well as in many parts of the world until they were hunted to extinction. Only around 8,000 of them survived, and overwhelmingly in Namibia and South Africa.

- A different species, called the Asiatic cheetah, once abundant in India, is found in Iran. As part of improving their odds of long-term survival, young animals are being reared as part of conservation efforts in Namibia and then sent to different parts of the world, including India.
- While it is still early days for the cheetah, experts have raised concerns that the KNP has limited space for the cheetah to co-exist with other predators such as tigers and lions, for which the KNP was originally prepared.

What is the tiger population in India?

- Every four years, India carries out a census of the tiger population across India. The latest estimate put the tiger population at 2,967.
- Tigers were reportedly increasing at a rate of about 6% per annum and the area that they occupied was roughly stable, at about 89,000 square km since 2014.
- In 2006, India had 1,411 tigers. This rose to 1,706 in 2010 and 2,226 in 2014 on the back of improved conservation measures and new estimation methods.

How did the numbers increase?

- The consistent implementation of Project Tiger since 1973, whereby dedicated tiger reserves were established in India, as well as anti-poaching measures have played a significant role in tiger conservation.
- India has 53 tiger reserves with the latest being added early in 2022. However, rising tiger numbers have meant that nearly half the tigers are now outside designated protected zones that lead to increasing instances of human-animal conflict.

LIFE OF PLASTIC: URUGUAY MEET CONCLUDES

Why in news?

- Recently, the first session of the Intergovernmental Negotiating Committee (INC-1), tasked with developing an international legally binding instrument to end plastic pollution, concluded in Uruguay's Punta Del Este.
- It implicitly endorsed the Centre for Science and Environment (CSE)'s position that plastic pollution is rooted in the material's lifecycle.

- The INC-1 was convened and managed by the United Nations Environment Programme.

Details:

- The UN Secretariat's document titled 'Summary of plastic pollution science' noted that plastic pollution was an offshoot of the linear take-make-dispose economy.
- It said the current trends needed to be replaced by a circular economy which forms the basis of the solutions to the plastic pollution problem facing the world.

The document proposed four strategic goals that can guide the transition to a circular economy:

a) Reduce the size of the problem by eliminating and substituting problematic and unnecessary plastic items, including hazardous additives.

b) Ensure that plastic products are designed to be circular — reusable as a first priority, and recyclable or compostable after multiple uses at the end of their useful life.

c) Close the loop of plastics in the economy by ensuring that plastic products are reused, recycled, or composted.

d) Manage plastics that cannot be reused or recycled (including existing pollution) in an environmentally responsible manner.

First session of the INC-1:

- The first session of the INC-1 came nine months after representatives from 175 countries endorsed a landmark resolution on plastic pollution at the United Nations Environment Assembly (UNEA).
- The UNEA resolution 5/14 calls for the international legally binding instrument to promote a comprehensive lifecycle approach to chemicals and waste through sustainable production and consumption of plastics by adopting sound product design, and environment-friendly waste management.
- It identified and recognised the growing concern stemming from the links between plastic, human health, and environmental health.

Burden of plastic waste:

- Global plastic production totalled 460 million tonnes (Mt) in 2019, double of 234 Mt in 2000, according to the Organisation for Economic Co-operation and Development.
- Plastic waste more than doubled during the same period to 353 Mt from 156 Mt. In 2000 alone, 22 Mt of plastic material leaked into the environment. By 2019, 109 Mt had accumulated in rivers and 30 Mt in oceans.

CLIMATE TALKS AS SHORTCHANGING INTERNATIONAL LAW

Context:

- Fraud in public law is the deliberate attempt to avoid provisions of the statute. In the climate negotiations

for instance, areas of interest to developing countries are not covered or sparsely covered, while other areas are over-regulated.

➲ Equitable sustainable development is not even discussed. At COP27, the policy debate was no longer legitimised by science. There seems to be a concerted effort to fraudulently change the basic structure of the Climate Treaty.

Three problems with the current negotiating process:

➲ First, citizens in developed countries are not even aware that two-thirds of their national emissions of carbon dioxide come from their diet, transport, and residential and commercial sectors, which together constitute the major share of their GDP; the consumption sectors are not independent silos but reflect their urban lifestyles.

➲ Second, the process ignores that global well-being will also follow urbanisation of the developing country's population, requiring fossil fuels for infrastructure and energy to achieve comparable levels.

➲ Third, the need for vast quantities of cement and steel in developing countries for infrastructure is not being considered.

What it translates for developing countries?

➲ As late urbanisers, developing countries account for more than half the annual emissions and most emissions growth. They cannot affordably access many of the new technologies to decarbonise quickly.

➲ The result is a shrinking of their policy space and human rights, endangering efforts to achieve comparable levels of well-being with those who developed earlier without any constraints.

➲ Such discussions are not taking place in the climate negotiations because of the way the agenda is set.

Differentiated common responsibility:

➲ The objective of the Climate Treaty is to avoid a concentration of cumulative emissions of carbon dioxide, prevent dangerous anthropogenic interference with the climate system and enable sustainable economic development. The Paris Agreement (2015) agreed to a 1.5°C global temperature goal.

➲ The Intergovernmental Panel on Climate Change (IPCC) in 2018 recommended that net emissions needed to zero out around 2050. In Glasgow, in 2021, negotiators zeroed in on coal to reduce future emissions.

➲ This initiative was not based on science and it ignored the key finding of the IPCC on the centrality of the carbon budget, i.e., cumulative emissions associated with a specific amount of global warming that scientifically links the temperature goal to national action.

➲ Carbon budgets are robust as they can be estimated accurately from climate models. And, they are the most useful for policy as they couple the climate to the economy consistent with the science of both.

➲ The IPCC, in 2018, estimated the budget for a 50% chance of avoiding more than 1.5°C of warming to be 2,890 billion tonnes of carbon dioxide (now, it is less than 400bn tonnes), raising the question on how late developers will attain comparable levels of well being.

Climate justice:

➲ Climate injustice flows from the negotiations and not from the text of the Climate Treaty:

➲ First, the process adopted the structure of international law in a manner that rejected historical responsibility for a continuing problem, and steadily shifted the burden to China and India.

➲ Second, the agenda was set around globalised material flows described as global warming (the symptom), and not wasteful use of energy.

➲ Third, public finance is used as a means to secure a political objective, and not to solve the problem itself. The $100 billion promised at Paris along with pre-2020 commitments constituting the incentive for developing countries to agree to a global temperature goal has not materialised. And, new funding for 'Loss and Damage' will be from a "mosaic of solutions", constituting a breach of trust.

➲ Fourth, the longer term trend has been ignored. With one-sixth of the global population, the developed country share in 2035 will still be 30%. Asia's emissions with half the world's population will rise to 40% remaining within its carbon budget. Pressures to further reduce emissions displace their human rights.

Conclusion:

➲ India's thrust on LiFE (or "Lifestyle for Environment"), with the individual shifting from wasteful consumption of natural resources goes back to the original science.

➲ Consumption-based framing challenges the 'universalism' that has dominated the negotiations and its common path of reductions based on single models.

- The carbon budget formalises a 'diversity' of solutions. For example, in developed countries, exchanging overconsumption of red meat for poultry can meet half the global emissions reduction required by the end of the century.
- A just transition for developing countries is about keeping within their carbon budget. And not de-carbonisation of arbitrarily selected sectors.

BLACK SOIL IN RED: CLIMATE CHANGE THREATENS WORLD'S FOOD BASKET

Why in news?
- On the occasion of World Soil Day (December 5), the Food and Agriculture Organization (FAO) released a report on Global status of black soils.
- Black soils, which feed the global population, are under threat, with most losing at least half of their soil organic carbon (SOC) stocks.

Black soils:
- These soils are characterised by a thick, dark-coloured soil horizon rich in organic matter. Most of the black soils suffered from moderate to severe erosion processes, as well as nutrient imbalances, acidification and biodiversity loss, the report said.
- Black soils are extremely fertile and can produce high agricultural yields thanks to their elevated moisture storage capacity.
- They constitutes 5.6 per cent of global soils and contain 8.2 per cent of the world's SOC stocks: Approximately 56 billion tonnes of carbon.

Significance for climate change mitigation and adaptation:
- This signifies their importance for climate change mitigation and adaptation. The ability of the soils to remove carbon from the atmosphere and lock it up in soil organic matter (called carbon sequestration) has been proposed as an important solution to mitigate human-induced climate change.
- However, black soils are quickly losing their SOC stocks. They have lost 20 to 50 per cent of their original SOC stock, with the carbon being released into the atmosphere mostly as carbon dioxide, exacerbating global warming.

Potential
- Black soils have the potential to provide 10 per cent of the total SOC sequestration globally if they receive proper attention. Europe and Eurasia have the highest potential at over 65 per cent and Latin America and the Caribbean at around 10 per cent.
- Black soils were home to 2.86 per cent of the global population and had 17.36 per cent of cropland, 8.05 per cent of global SOC stock and 30.06 per cent SOC stock of global cropland.
- However, despite representing a small portion of the world's soils, black soils were key for food security and the global economy.
- Globally in 2010, 66 per cent of sunflower seeds, 51 per cent of small millet, 42 per cent of sugar beet, 30 per cent of wheat and 26 per cent of potatoes were harvested from black soils.
- The distribution of black soil areas used as croplands varied in each region. Europe and Eurasia accounted for 70 per cent of the soil in the total cropland, while North America, Latin America and the Caribbean and Asia had 10 per cent each.

Way Forward:
- The inherent fertility of the soils make them the food basket for many countries and are considered essential to the global food supply.
- Preserving natural vegetation on black soils such as grasslands, forests and wetlands and adopting sustainable soil management approaches on cropped black soils are the two main goals highlighted by the report.

THREE HIMALAYAN MEDICINAL PLANTS ENTER IUCN RED LIST

Why in news?
- Recently, three medicinal plant species found in the Himalayas have made it to IUCN Red List of Threatened Species following a recent assessment.
- Meizotropis pellita has been assessed as 'critically endangered', Fritilloria cirrhosa as 'vulnerable', and Dactylorhiza hatagirea as 'endangered'.

Meizotropis pellita:
- Meizotropis pellita, commonly known as Patwa, is a perennial shrub with restricted distribution that is endemic to Uttarakhand.

➲ The species is listed as 'critically endangered' based on its limited area of occupancy (less than 10 sq. km).

➲ The species is threatened by deforestation, habitat fragmentation and forest fires.

➲ The essential oil extracted from the leaves of the species possesses strong antioxidants and can be a promising natural substitute for synthetic antioxidants in pharmaceutical industries.

Fritillaria cirrhosa:

➲ Fritillaria cirrhosa (Himalayan fritillary) is a perennial bulbous herb.

➲ It is reasonable to conclude a decline of at least 30% of its population over the assessment period (22 to 26 years).

➲ Considering the rate of decline, long generation length, poor germination potential, high trade value, extensive harvesting pressure and illegal trade, the species is listed as 'vulnerable'.

➲ In China, the species is used for the treatment of bronchial disorders and pneumonia. The plant is also a strong cough suppressant and source of expectorant drugs in traditional Chinese medicine.

Dactylorhiza hatagirea:

➲ The third listed species, Dactylorhiza hatagirea (Salampanja), is threatened by habitat loss, livestock grazing, deforestation, and climate change.

➲ It is extensively used in Ayurveda, Siddha, Unani and other alternative systems of medicine to cure dysentery, gastritis, chronic fever, cough and stomach aches.

➲ It is a perennial tuberous species endemic to the Hindu Kush and Himalayan ranges of Afghanistan, Bhutan, China, India, Nepal, and Pakistan.

Background:

➲ Earlier, six species with medicinal values, including Himalayan Trillium govanianum (Himalayan Trillium) and Trillium tschonoskii (Keun-yeon-yeong-cho), have been marked as 'endangered' .

➲ The Himalayas are a rich repository of medicinal plants and studies carried out in 1998 had pointed out that the number of such species in the region stands at 1,748.

Way Forward:

➲ The Himalayan region is a biodiversity hotspot but there is lack of data on many species here. The assessment of these plants will set conservation priorities and help protect the species.

INDIA TO ALMOST DOUBLE ITS RENEWABLE POWER CAPACITY IN NEXT 5 YEARS: IEA REPORT

Why in news?

➲ Renewable energy will comprise 90 per cent of global electricity capacity expansion in the next five years and much of it will be in India, according to a new study by International Energy Agency (IEA).

➲ China, the European Union and the United States will be three other geographies contributing majorly to this upward trend besides India. This is primarily owing to the favourable policies and market reforms in all four.

Details:

➲ Renewable energy's installed power capacity addition will grow to 2,400 gigawatts (GW) between 2022 and 2027. This expansion was 85 per cent faster than the previous five years and will be equal to the entire installed power capacity of China today.

➲ With the addition of 145 gigawatt (GW), India is forecast to almost double its renewable power capacity over 2022-2027. Solar photovoltaic (PV) accounts for three-quarters of this growth, followed by onshore wind with 15 per cent and hydropower providing almost all the rest.

Policy framework:

➲ The consistent policy support from the Indian government may enable this transition, particularly by promoting local manufacturing of solar modules. This is because there are bottlenecks in the supply chain from China.

➲ Two such policies came to effect in 2022:

   a) The duty on imports was increased to 40 per cent for PV modules from 15 per cent and to 25 per cent for solar cells in April 2022. This was done to reduce dependence on China and increase domestic manufacturing. This is expected to add 16 GW of PV capacity, 60 per cent higher than last year.

   b) The Production Linked Incentive (PLI) scheme sanctioned 9 GW of PV manufacturing capacity to provide an ecosystem of local manufacturing. This programme aims to expand India's solar PV cell and module manufacturing capacity to over 70 GW in this decade, including 29 GW of manufacturing capacity fully integrated across the whole supply chain, the report said.

Hybrid projects in India:

➲ Almost a quarter of the capacity awarded since 2021 has been contracted through hybrid auctions. These

auctions are thus expected to be an increasingly important growth driver as the penetration of wind and PV technologies in India's power system grows and grid integration challenges emerge.

- Hybrid projects refers to innovative combinations of solar and wind power at a site. It can include solar, wind, and battery or pumped hydro storage. Bundling coal with renewables is also another option.
- The storage will play a key role in the hybrid project, particularly to overcome the intermittency of RE and enhance grid balancing.

Wind energy in India:
- Policy changes in the wind energy sector were also made to accelerate the transition to renewables. In July 2022, the Indian government suspended reverse bidding in wind auctions.
- Currently, the government is considering closed-envelope submissions. The IEA report said this could raise tariffs for wind energy and make it a more competitive market.

Challenges:
- Wind energy is a different ball game compared to solar because the good sites are only located in coastal states. Even within a coastal state, there are tier 1, tier 2, and tier 3 sites depending on the wind intensity.
- Another aspect not working under the reverse bidding mechanism was the differences in costs. For instance, land procurement was expensive in Tamil Nadu as the land is mostly privately held. Whereas in Gujarat, the land was provided by the government and the cost was cheaper.
- Closed envelop bidding may lack transparency and may not be the only way ahead. One has to look at different mechanisms in combination such as accelerated depreciation, generation-based incentives, or feed-in tariffs.

DISCOMs:
- On the demand side, higher renewable purchase obligations, which were announced in July 2022 and specify targets for wind, hydro, and other renewable energy sources (solar, bioenergy), should further encourage power utilities (DISCOM) to procure renewable energy.
- Raising the capability of DISCOMs to procure more renewable energy will be crucial to achieving faster growth.
- To this end, improving the financial performance of DISCOMs and increasing penalties for non-compliance with renewable purchase obligations should limit delays in signing PPAs with auction winners, making developers and investors more willing to undertake new utility-scale projects.
- In addition, offering DISCOMs financial and regulatory incentives to increase rooftop PV deployment in

their grids should encourage them to attract tens of millions of potential prosumers by facilitating investment, thereby tripling main-case distributed PV deployment for 2022-2027.

UP TO DEVELOP ONE WETLAND IN EVERY DISTRICT TO PROMOTE ECO-TOURISM

Why in news?
- The Uttar Pradesh forest department has decided to develop one wetland in every district as an ecotourism site under the 'One District One Wetland' (ODOW) initiative, which is similar to One District One Product (ODOP) scheme of the state government.
- Wetlands should be developed to promote ecotourism in every district.

Details:
- While there are a lot of wetlands and Important Bird Areas (IBAs) in the state, those which lie outside protected areas will be conserved under the ODOW initiative.
- As per a conservative estimate, there are around 1. 2 lakh wetlands that lie outside the forest and around 500 inside it.
- According to satellite data from 2020, of 1.2 lakh wetlands, at least 23,800 are in more than 2.2-hectare area, and need conservation.
- Revenue records, however, peg the number of such wetlands around 26,000 in the state.

Notified wetlands:
- The state government in 2019 had notified the UP Wetlands Authority to prepare wetland atlas for the state, including the ones lying outside forest.
- Ramgarh Taal of Gorakhpur, which lies outside forest, was the first wetland on the lines of ODOP which was notified in 2020.
- The wetlands that are notified will be protected under the Wildlife Protection Act.

Ramsar Sites:
- A Ramsar site is a wetland designated to be of international importance under the Ramsar Convention signed in Iran in 1971.
- UP has at least ten wetlands which are Ramsar sites. Bakhira sanctuary was declared the tenth Ramsar site from the state in February this year.

◔ Nawabganj in Unnao, Parvati Aranga in Gonda, Saman in Mainpuri, Samaspur in Rae Bareli, Sandi in Hardoi, Sarsai Nawar in Etawah, Keetham lake in Sur Sarovar sanctuary in Agra and Upper Ganga River, the stretch from Brigghat to Narora, which was the state's first Ramsar site declared in 2005, are the others.

RESEARCHERS SUGGEST HOW ANIMAL HERBIVORES HINDER NITROGEN FIXATION IN TROPICAL FORESTS
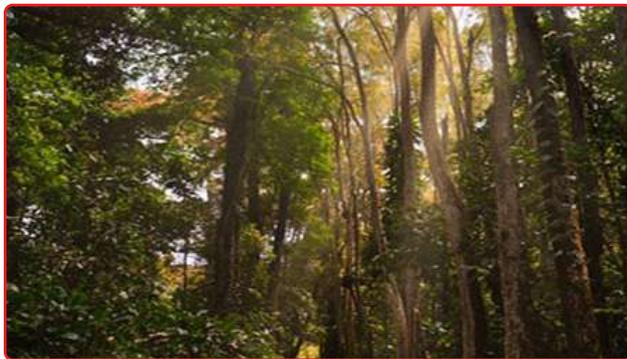
Why in news?

◔ Recently, an international team of scientists, found that trees with the ability to fix nitrogen attracted insects and other animals that would eat their leaves, a process known as herbivory.

Nitrogen fixation:

◔ Some trees, like those in the Fabaceae family of legumes, have a symbiotic connection with bacteria that enables them to absorb nitrogen from the atmosphere.

◔ Nitrogen is a nutrient that most plants obtain from the soil, but some soils–especially those in newly replanted or disturbed tropical forests can be deficient in nitrogen, which inhibits tree growth.

◔ Nitrogen is a key nutrient needed for photosynthesis.

◔ Using a process known as nitrogen fixation, some plants have adapted to take-up nitrogen from the air using the services of friendly bacteria.

◔ Higher levels of nitrogen can result in higher levels of photosynthesis and removal of carbon dioxide, a potent greenhouse gas, from the atmosphere, helping to offset some of the carbon emissions from human activity.

◔ Nitrogen fixation also raises the nitrogen levels in the soil, encouraging non-fixing species to survive.

Findings on Herbivory:

◔ In a tropical forest in Panama, the nitrogen-fixing trees experienced 26 per cent more herbivory than non-fixing trees.

◔ They found that by being consumed, the nitrogen-fixing trees experienced lower growth and lower rates of survival when compared to non-fixing trees.

◔ This would have an impact on the amount of new nitrogen getting into the forest soils and would constrain the role that trees were able to play in taking carbon dioxide out of the environment.

Way Forward:

◔ The results of recent research into the restrictions on nitrogen fixation among plants may help reforestation initiatives to be more successful.

◔ These findings give new insights into the function of different types of trees in tropical forests and could help inform efforts to reforest tropical regions that have been degraded for logging and agriculture.

HIMALAYAN FRITILLARY AMONG 29 NEW THREATENED SPECIES IN INDIA: IUCN

Why in news?

◔ Recently, the IUCN Red List unveiled a critical indicator of the health of the state of the world's biodiversity.

◔ It provides information about the global extinction risk status of species and is a key tool to help define and inform conservation targets.

Details:

◔ Over 15,000 scientists and experts from around the world are part of the IUCN Commission.

◔ They found 1,355 of over 9,472 species of plants, animals, and fungi across India's land, freshwater, and seas assessed for the Red List are considered to be under threat, classed as critically endangered, endangered, or vulnerable to extinction.

◔ According to the data shared by IUCN, 239 new species analysed in India have entered the list. Of these, 29 are threatened.

The 15th Conference of Parties to the Convention of Biological Diversity (CBD COP15):

◔ Delegates from 196 countries, including India, have gathered in Montreal, Canada for a two-week conference from December 7-19, to adopt the post-2020 Global Biodiversity Framework, a landmark agreement to halt and reverse nature loss by 2030.

Dancing Frog:

◔ According to IUCN, the white-cheeked Dancing Frog (Micrixalus candidus), which has entered the Red

List as endangered, is only known from a small range with an extent of occurrence of 167 square kilometers (km2) in the Western Ghats of Karnataka, a biodiversity hotspot.

- It is considered to be uncommon. Its habitat is threatened by the conversion of forest to areca nut and coffee plantations, it said.
- 30 per cent of dancing frogs are found to live in the regions that are not protected by the government.
- They are endangered with extinction due to loss of their habitat, pollution, changes in temperature, diseases, pests, invasive species among others.

Andaman Smoothhound:

- The Andaman Smoothhound (Mustelus andamanensis) has been included in the Red List as Vulnerable. This recently described shark is found in the Andaman Sea in the Eastern Indian Ocean off the coast of Myanmar, Thailand, and the Andaman and Nicobar Islands.
- It is subject to fishing pressure across its spatial and depth range. It is taken as a bycatch in industrial and artisanal fisheries with multiple fishing gears including trawl, longline, and gillnet.
- A small fish, discovered in April 2021 as new to science Andaman Smoothhound is facing the risk of extinction due to overfishing.
- Growing demand for fish and fish meat is a major reason. This new species is currently only known from the Andaman Sea and endemic to India.

Yellow Himalayan Fritillary plant:

- The Yellow Himalayan Fritillary plant (Fritillaria cirrhosa), which has been included in the Red List as Vulnerable, is mostly found in the Himalayas.
- It occurs in Bhutan, China, India, Myanmar, Nepal and Pakistan.
- In the Indian Himalayas, the species is threatened due to unorganised harvest, over-extraction, unsustainable and premature harvesting of bulbs, coupled with illegal hidden markets.
- A rapid decline has been reported and raised high conservation concerns on the rapid population decline of Fritillaria cirrhosa in the Western Himalayas.
- Harvested and traded with a new trade name i.e., Jangli lehsun' probably to disguise common Allium species, the species is facing tremendous decline in wild populations due to its illegal harvesting and trade in Himachal Pradesh.

Lack of Policy:

- As of now, the government does not have any policy to conserve these species.
- The recent IUCN's assessment will alarm the bells and hopefully, attention of global and national policymakers will be attracted to formulate the conservation plans, he added.

Threatened with extinction:

- The IUCN Red List now includes 150,388 species, of which 42,108 are threatened with extinction. Over 1,550 of the 17,903 marine animals and plants assessed are at risk of extinction, with climate change impacting at least 41 per cent of threatened marine species.
- For instance, globally, populations of dugongs large herbivorous marine mammals and 44 per cent of all abalone shellfish species have entered the IUCN Red List as threatened with extinction.

UN RECOGNISES 'NAMAMI GANGE' PROJECT AS ONE OF 10 'GROUND-BREAKING' GLOBAL ECOSYSTEM RESTORATION INITIATIVES

Why in news?

- Namami Gange project that aims to improve the health of the Ganges, is among 10 "ground-breaking" efforts recognised from around the globe by the United Nations for their role in restoring the natural world.

Details:

- According to a report unveiled during the UN Biodiversity Conference (COP15), climate change, population growth, industrialisation and irrigation have degraded the Ganges along its arcing 2,525-kilometre course from the Himalayas to the Bay of Bengal.
- Restoring the health of the Ganges is the focus of a major push to cut pollution, rebuild forest cover and bring a wide range of benefits to the 520 million people living around its vast basin.

World Restoration Flagships

- The initiatives were declared World Restoration Flagships and are eligible to receive UN-backed promotion, advice or funding.
- They were selected under the banner of the United Nations Decade on Ecosystem Restoration, a global movement coordinated by the UN Environment Programme (UNEP) and the UN Food and Agriculture Organisation (FAO).
- Together, the 10 flagships aim to restore more than 68 million hectares an area bigger than Myanmar, France or Somalia and create nearly 15 million jobs.

- These 10 inaugural World Restoration Flagships show that with political will, science and collaboration across borders, we can achieve the goals of the UN Decade of Ecosystem Restoration and forge a more sustainable future not only for the planet but also for those of us who call it home.

Namami Gange:

- It was launched in 2014.
- The government-led Namami Gange initiative is rejuvenating, protecting and conserving the Ganges and its tributaries, reforesting parts of the Ganges basin and promoting sustainable farming.
- The project also aims to revive key wildlife species, including river dolphins, softshell turtles, otters, and the hilsa shad fish.
- The initiative, with an investment of up to USD 4.25 billion so far, has the involvement of 230 organisations, with 1,500 km of river restored to date.
- Additionally, there have been 30,000 hectares of afforestation so far, with a 2030 goal of 134,000 hectares.

Other World Restoration Flagships:

- The other inaugural World Restoration Flagships include
  a) The Trinational Atlantic Forest Pact, which aims to protect and restore the forest in Brazil, Paraguay and Argentina
  b) The Abu Dhabi Marine Restoration project which is safeguarding the world's second-largest dugong population in Abu Dhabi.
  c) The Great Green Wall for Restoration and Peace initiative to restore savannas, grasslands and farmlands across Africa,
  d) The Multi-Country Mountain Initiative based in Serbia, Kyrgyzstan, Uganda and Rwanda,
  e) The Small Island Developing States Restoration Drive focused on three small island developing states Vanuatu, St Lucia and Comoros.
  f) The Altyn Dala Conservation Initiative in Kazakhstan to restore the steppe, semi-desert and desert ecosystems,
  g) The Central American Dry Corridor, and
  h) Shan-Shui Initiative in China were the other projects on the list.

UN Decade on Ecosystem Restoration:

- In revealing the World Restoration Flagships, the UN Decade seeks to honour the best examples of large-scale and long-term ecosystem restoration, embodying the 10 Restoration Principles of the UN Decade on Ecosystem Restoration.
- The UN Decade acknowledges the time needed for restoration efforts to deliver results.
- Until 2030, regular calls for World Restoration Flagships will be launched.
- In expectation of increased funding to the UN Decade's Multi-Partner Trust Fund (MPTF), additional submissions are being considered, including restoration drives from Pakistan, Peru, and an initiative focusing on Somalia and other drought-affected countries.

RAJASTHAN SANCTUARY GETS PROTECTION AGAINST ESZ SHRINKING

Why in news?

- The famous Tal Chhapar blackbuck sanctuary in Rajasthan's Churu district has received a protective cover against a proposed move of the State government to reduce the size of its eco-sensitive zone.
- The World Wildlife Fund for Nature (WWF) has also taken up a major project for the conservation of raptors in the sanctuary, spread in an area measuring 7.19 sq. km.

Background:

- The Rajasthan High Court has intervened through a suo motu public interest litigation to protect the sanctuary, taking cognisance of reports that its area was going to be reduced to three sq. km. under pressure from mine owners and stone crusher operators.
- The court recently ordered a "complete prohibition" on any action to reduce the wildlife sanctuary's area.

Fauna:

- The sanctuary is host to about 4,000 blackbucks and other wild animals, over 40 species of raptors and more than 300 species of resident and migratory birds.
- The raptors, which include predators and scavengers, are on top of the food chain and control the populations of small mammals, birds and reptiles as well as insects.

Threats:

- Some exotic species of animals seemed to have been destroyed or relocated to other areas suitable for their survival, following an increase in human population around the sanctuary, and unplanned and rampant construction activities.
- The sanctuary earlier had a large population of desert foxes and similar burrowing animals, while the large colonies of the only herbivorous lizard, the spiny-tailed lizard, exist as the prey base for raptors.

○ The issues confronting the sanctuary include hyper-aridity, grazing pressure, the invasive weed Prosopis juliflora, and salt mines in the vicinity. The sanctuary's area is insufficient for its large blackbuck population.

Initiatives taken:

○ The court struck down an order of September 30 renotifying a 2.7-km-long road, forming part of the Nokha-Sikar highway, passing through the sanctuary, and ordered its denotification keeping in view the presence of an alternative road existing adjacent to the protected forest area.

○ The grassland for blackbucks was being continuously developed in the sanctuary and attempts were being made for the expansion of a prey base for the raptors.

○ The forest authorities are also examining a proposal to develop the Jaswantgarh forest block in Nagaur district, situated at a short distance from Tal Chhapar, for the shifting of the excess population of blackbucks facing shortage of territory and grazing resources.

○ The High Court has suggested the creation of a corridor for free movement of animals through an underpass across the railway line passing between the two areas.

INDIA NEEDS TO CHANGE COURSE TO CURB AIR POLLUTION: WORLD BANK STUDY

Why in news?

○ Recently, the World Health Organization's (WHO) released a study titled, "Striving for Clean Air: Air Pollution and Public Health in South Asia".

○ Terming air pollution as a public health crisis for South Asia, the report highlights that this crisis not only imposes high economic costs but also cause nearly 2 million premature deaths each year.

PM2.5:

○ Making a case for revisiting the current approach in combating air pollution in South Africa, the report states that the World Health Organization's (WHO) Air Quality Guideline recommends that concentrations of PM2.5 should not exceed an annual average of 5 micrograms per cubic meter (μg/m3).

○ According to the report, in South Asia, nearly 60 per cent of the population lives in areas where concentrations of PM2.5 exceed an annual mean of 35 μg/m3.

○ In the densely populated Indo-Gangetic Plain, it is over 20 times the level that the WHO considers healthy (100 μg/m3 in several locations.

Causes of Air pollution in India:

○ For India, the report points that the main causes of air pollution are unique to the largest country in South Asia.

○ Solid fuel combustion in the residential sector for cooking and heating; small industries, including brick kilns; burning high-emission solid fuels; the current management practices of municipal waste in the region, including burning plastics; the inefficient application of mineral fertilizer; fireworks; and human cremation, are among the causes of Air pollution that are unique to India.

○ Agriculture remains a significant contributor to polluting air by generating secondary particulate matter in the form of ammonia (NH3) emissions from imbalanced fertilizer use and livestock manure that reacts with nitrogen oxides (NOx) and sulfur dioxide (SO2) gases from energy, industry, and transportation sources.

The six major airsheds identified by the report in South Asia where spatial interdependence in air quality is high are:

a) West/Central Indo-Gangetic Plain- Punjab (Pakistan), Punjab (India), Haryana, part of Rajasthan, Chandigarh, Delhi, Uttar Pradesh

b) Central/Eastern Indo-Gangetic Plain- Bihar, West Bengal, Jharkhand, Bangladesh

c) Middle India- Odisha/Chhattisgarh

d) Middle India- Eastern Gujarat/Western Maharashtra

e) Northern/Central Indus River Plain- Pakistan, part of Afghanistan; and

f) Southern Indus- Plain and further west: South Pakistan, Western Afghanistan extending into Eastern Iran.

Challenges:

○ The air quality policy measures currently in place as of 2018 can have a significant impact on the trajectory of air pollution in South Asia, if fully implemented and effectively enforced.

○ For example, primary fine particulate matter (such as soot and mineral dust) would decline by 4 per cent rather than grow by 12 per cent between 2018 and 2030, region wide.

○ However, the report explains that even if all technically feasible measures were fully implemented, parts of South Asia would still not be able to meet the WHO Interim Target on their own by 2030 because of the spatial interdependence of air quality.

Roadmap:

○ The report acknowledged that progress has been made in legislation and planning for AQM, but

states that South Asia is not on track to reach even the modest WHO Interim Target. The report calls for action and gives a three phased approach to achieve targets.

- In first phase, it recommends steps for more and better monitoring and improved institutions.
- For this it recommends widespread installation of sensors and the data sharing; Creation of credible scientific institutes that analyze airsheds; decentralised scientific capacity and a strong role of ministries of the environment that is complemented with a whole-of-government approach.
- In the second phase, the report states that once the focus broadens beyond cities, other emissions, which are important especially in South Asia, can be reduced.
- These include emissions from solid fuel use in households, from brick kilns and ovens in other small industries, from agriculture, and from open burning of solid municipal waste.
- The reports calls for mainstreaming air quality in the economy in the third phase. In this phase, the study makes a case for taxation of activities that release pollutants to make cleaner technologies more competitive. Along with this it calls for creating markets for emission-permit trading.

COP15 SUMMIT ADOPTS HISTORIC BIODIVERSITY DEAL

Why in news?

- Nearly 200 nations of the world recently agreed on a historic package of measures deemed critical to addressing the dangerous loss of biodiversity and restoring natural ecosystems.
- Convened under UN auspices, chaired by China, and hosted by Canada, the 15th Conference of Parties to the UN Convention on Biological Diversity adopted the "Kunming-Montreal Global Biodiversity Framework" (GBF), including four goals and 23 targets for achievement by 2030.

Global targets:

- Among the global targets for 2030 are: Effective conservation and management of at least 30 per cent of the world's lands, inland waters, coastal areas and oceans, with emphasis on areas of particular importance for biodiversity and ecosystem functioning and services.
- The GBF prioritizes ecologically-representative, well-connected and equitably-governed systems of protected areas and other effective area-based conservation, recognizing indigenous and traditional territories and practices.
- Currently 17 per cent and 10 per cent of the world's terrestrial and marine areas respectively are under protection.

The framework's four overarching global goals:

Goal A:

- The integrity, connectivity and resilience of all ecosystems are maintained, enhanced, or restored, substantially increasing the area of natural ecosystems by 2050;
- Human induced extinction of known threatened species is halted, and, by 2050, extinction rate and risk of all species are reduced tenfold, and the abundance of native wild species is increased to healthy and resilient levels;
- The genetic diversity within populations of wild and domesticated species, is maintained, safeguarding their adaptive potential.

Goal B:

- Biodiversity is sustainably used and managed and nature's contributions to people, including ecosystem functions and services, are valued, maintained and enhanced, with those currently in decline being restored, supporting the achievement of sustainable development, for the benefit of present and future generations by 2050

Goal C:

- The monetary and non-monetary benefits from the utilization of genetic resources, and digital sequence information on genetic resources, and of traditional knowledge associated with genetic resources, as applicable, are shared fairly and equitably, including, as appropriate with indigenous peoples and local communities, and substantially increased by 2050, while ensuring traditional knowledge associated with genetic resources is appropriately protected, thereby contributing to the conservation and sustainable use of biodiversity, in accordance with internationally agreed access and benefit-sharing instruments.

Goal D:

- Adequate means of implementation, including financial resources, capacity-building, technical and scientific cooperation, and access to and transfer of technology to fully implement the Kunmin-Montreal global biodiversity framework are secured and equitably accessible to all Parties, especially developing countries, in particular the least developed

countries and small island developing States, as well as countries with economies in transition, progressively closing the biodiversity finance gap of $700 billion per year, and aligning financial flows with the Kunming-Montreal Global Biodiversity Framework and the 2050 Vision for Biodiversity.

15th Conference of Parties to the UN CBD:

- Held at Montreal's Palais des Congres from December 7-19, representatives of 188 governments on site (95 per cent of all 196 Parties to the UN CBD, as well as two non-Parties; the US and The Vatican), finalised and approved measures to arrest the ongoing loss of terrestrial and marine biodiversity and set humanity in the direction of a sustainable relationship with nature, with clear indicators to measure progress.

- In addition to the GBF, the meeting approved a series of related agreements on its implementation, including planning, monitoring, reporting and review; resource mobilization; helping nations to build their capacity to meet the obligations; and digital sequence information on genetic resources.

Way Forward:

- COP15 delegates agreed to establish within the GBF a multilateral fund for the equitable sharing of benefits between providers and users of DSI, to be finalized at COP16 in Turkey in 2024.

DSI ADOPTION AT COP15 CAN FINANCIALLY HELP PROTECT BIODIVERSITY IN INDIA

Why in news?

- Digital Sequence Information (DSI) which was adopted as part of the historic deal to protect biodiversity at the COP15 conference will ensure the flow of funds to countries like India for the conservation of nature.

Details:

- Through the Nagoya Protocol, the UN Convention on Biological Diversity aims to distribute benefits arising from genetic resources between users who are corporate entities and providers who are indigenous communities and farmers conserving these resources in developing countries.

- But now, with DSI technology, companies can use nucleotide sequences of genetic resources using genetic engineering, without needing to physically access resources from their country of origin.

- At COP15, developing countries have maintained that benefits resulting from DSI should also be shared equitably.

ABS Mechanism:

- DSI is now a part of the Post 2020 Global Biodiversity Framework (GBF) under Target 13 and Goal C and could benefit developing countries from funds accruing from the products manufactured using DSI Technology.

- The parties had agreed upon a consensus to bring DSI into the access and benefit sharing (ABS) mechanism.

- DSI will ensure that products manufactured using DSI Technology would be covered under the benefit-sharing mechanism. This will help to finance biodiversity conservation in developing countries including India.

- Benefit-sharing should be ensured by mechanisms that do not limit access to DSI. This is a fundamental shift away from traditional control-oriented ABS to a new idea of open access (OA) and benefit-sharing (BS).

Current deliberations:

- The deliberations are currently focused on bringing DSI into the Nagoya Protocol for access and benefit sharing (ABS) for commercial utilisation.

- The deliberations are also focused on how developed countries can assist developing countries through funds mobilised from DSI.

- While developed countries from Europe have been arguing to set up a multilateral funding mechanism which can be used to park funds accruing from DSI, developing countries have been requesting for the establishment of both a multilateral and a bilateral mechanism, whenever the source of the biological resource is known.

- Similarly, many developed countries have opined that tracking of DSI is not practical which is not agreeable to countries like India, South Africa, and Latin American Countries, he said.

Way Forward:

- Adoption of DSI would go a long way to meet the financial requirement for biodiversity conservation in developing countries in the coming years. The biodiversity funding gap is estimated to stand at around USD 700 billion every year.

- India's Biological Diversity Act, of 2002 already regulates information associated with biological resources under the benefit-sharing mechanism and the Post-2020 GBF would go a long way towards making it more explicit by bringing DSI under the ABS mechanism.

JAISALMER VILLAGERS MARCH 225 KILOMETRES TO GET SACRED GROVES LISTED AS 'ORAN LAND'

Why in news?

- Residents from around 40 villages of Jaisalmer, Rajasthan have walked 225 kilometres to protect community-conserved sacred spaces known as 'orans'. Currently, the biodiversity hotspots are classified as wastelands.

Details:

- The villagers walked to the district headquarters of Jaisalmer to submit a letter to the collector. They asked them to recategorise the area as 'oran land'.

- The current categorisation is causing a loss of biodiversity and is affecting the livelihood of the locals in the area, as huge chunks of land are being allotted for setting up solar plants.

What are orans?

- The orans are among the last natural habitats of the great Indian bustard.
- These orans are hotspots of biodiversity with trees and flowers like rohida, bordi, kumbhat, and desi babool in large numbers.
- There are different varieties of grasses like sevan and murath as well, making these grasslands home to more than 250 species of birds and animals, including the great Indian bustard, McQueen bustard, chinkara, Indian desert cat, desert fox, etc.

What is the issue?

- The open stretch of land, which receives long hours of sunlight and brisk winds, has become a hub of green energy with windmills and solar photovoltaic dotting it.
- The orans are listed as 'wastelands' in the revenue records. The Degrai Oran is around 10,000 hectares (60,000 bighas), but only 4,000 hectares are recognised as oran, which are listed as common land. The rest is categorised as wasteland.
- The government is allotting these lands for solar projects to make them 'useful'. There are other orans like Mokla, Salkha, Kemde, which also spread across several hectares but are listed as wastelands.
- Rajasthan-based non-profit Ecology, Rural Development & Sustainability (ERDS) Foundation documented 100 orans and identified 30 more with the help from the Jaisalmer Chapter of the Indian National Trust for Art and Cultural Heritage (INTACH).

Demand of villagers:

- The Supreme Court in 2018 had ordered the orans be recorded as 'deemed forests' in the revenue records in the TN Godavarman vs. Union of India case, but not even one oran has been recorded as a deemed forest so far.
- Most people in the Jaisalmer district are indirectly dependent on animal husbandry for employment. Almost all the ancient orans of the district are located in the middle of livestock-dominated villages, where

agriculture is prohibited due to ancient social and religious beliefs.

- The government has allotted vast chunks of lands under the orans to energy companies and it is creating pressure on the remaining grazing lands. Many types of grass have started disappearing and the area's natural biodiversity is being affected.
- The villagers have raised this issue of conservation and correcting the land records to accommodate the orans. If corrected, local people can take their cattle to graze and depend on them for livelihood, but so far, no action has been taken.

JAPAN REVERTS TO MAX NUCLEAR POWER TO TACKLE ENERGY, CLIMATE

Why in news?

- Japan has adopted a new policy promoting greater use of nuclear energy to ensure a stable power supply amid global fuel shortages and to reduce carbon emissions, a major reversal of its phase-out plan since the Fukushima crisis.

Background:

- Anti-nuclear sentiment and safety concerns rose sharply in Japan after the 2011 Fukushima disaster, and restart approvals have since come slowly under stricter safety standards.
- Utility companies have applied for restarts at 27 reactors in the past decade. Seventeen have passed safety checks and only 10 have resumed operations. That was in line with Japan's earlier plan to phase out nuclear energy by 2030.

Key Highlights:

- The new policy says nuclear power provides stable output and serves "an important role as a carbon-free baseload energy source in achieving supply stability and carbon neutrality" and pledges to "sustain use of nuclear power into the future."
- It has drafted a plan to allow extensions every 10 years for reactors after 30 years of operation, while also permitting utilities to subtract offline periods in calculating reactors' operational life beyond the current 60-year limit.
- Japan will also push for the development and construction of "next-generation innovative reactors"

with safer features to replace about 20 reactors now set for decommissioning.

Focus on renewable energy:

- The adoption of the new policy comes less than four months after Prime Minister launched the "GX (Green Transformation) Implementation Council" of outside experts and ministers to "consider all options" to compile a new policy that addresses global fuel shortages amid Russia's war on Ukraine and seeks to achieve carbon neutrality by 2050.
- The council also adopted plans to make renewables Japan's main energy source and further promote hydrogen and ammonia as well as off-shore wind power and other forms of energy to promote decarbonization, supply resilience and economic security.

Way Forward:

- Nuclear energy accounts for less than 7% of Japan's energy supply, and achieving the government's goal of raising its share to 20-22% by fiscal 2030.
- New safety inspection rules still need to be compiled into law and approved by Parliament.

ANTARCTICA'S EMPEROR PENGUINS COULD BE EXTINCT BY 2100

Why in news?

- Greater conservation efforts are needed to protect Antarctic ecosystems, and the populations of up to 97 per cent of land-based Antarctic species could decline by 2100 if we don't change tack, a new research has found.
- They identified climate change as the biggest threat to Antarctica's unique plant and animal species. Limiting global warming is the most effective way to secure their future.

Threats to Antarctic biodiversity:

- The continent's plants and animals face numerous threats, chief among them is climate change.
- As global warming worsens, Antarctica's ice-free areas are predicted to expand, rapidly changing the habitat available for wildlife. And as extreme weather events such as heatwaves become more frequent, Antarctica's plants and animals are expected to suffer.

- The scientists and tourists visiting the continent each year can harm the environment through, for example, pollution and disturbing the ground or plants.
- And the combination of more human visitors and milder temperatures in Antarctica also creates the conditions for invasive species to thrive.

Observations made:

- Under a worst-case scenario, the populations of 97% of Antarctic terrestrial species and breeding seabirds could decline between now and 2100, if current conservation efforts stay on the same trajectory.
- At best, the populations of 37% of species would decline. The most likely scenario is a decline in 65% of the continent's plants and wildlife by the year 2100.
- The emperor penguin relies on ice for breeding, and is the most vulnerable of Antarctica's species. In the worst-case scenario, the emperor penguin is at risk of extinction by 2100.
- Climate change will also likely wreak havoc on other Antarctic specialists, such as the nematode worm Scottnema lindsayae. The species lives in extremely dry soils, and is at risk as warming and ice-melt increases soil moisture.
- Climate change won't lead to a decline in all Antarctic species – in fact, some may benefit initially. These include the two Antarctic plants, some mosses and the gentoo penguin.
- These species may increase their populations and become more widely distributed in the event of more liquid water (as opposed to ice), more ice-free land and warmer temperatures.

Recommendations:

- Clearly, current conservation efforts are insufficient to conserve Antarctic species in a changing world.
- Reducing climate change to no more than 2 degrees Celsius of warming would benefit up to 68% of terrestrial species and breeding seabirds.
- The next two most beneficial strategies were "managing non-native species and disease" and "managing and protecting species".
- These strategies include measures such as granting special protections to species, and increasing biosecurity to prevent introductions of non-native species.

Funding:

- The study also found just USD 23 million per year would be enough to implement ten key strategies to reduce threats to Antarctica's biodiversity.
- This relatively small sum would benefit up to 84% of terrestrial bird, mammal, and plant groups.

Way Forward:

- As Antarctica faces increasing pressure from climate change and human activities, a combination of regional and global conservation efforts is needed. Spending just USD 23 million a year to preserve

Antarctica's biodiversity and ecosystems is an absolute bargain.

SCIENCE & TECH

INCREASING THE SHELF LIFE OF STORED BLOOD

Why in news?

➲ Recently, the Institute for Stem Cell Science and Regenerative Medicine (DBT-inStem) has developed a novel blood bag technology to enhance the quality and shelf life of stored blood.

Why it matters?

➲ Despite inadequate blood donation, millions of blood units are discarded due to decline in quality during storage. Stored blood has a finite shelf life.

➲ Typically, stored cells produce various extracellular components known as damage-associated molecular patterns (DAMPs), which damage the blood cells during storage.

Previous attempts:

➲ Although multiple attempts have been made to increase the quality of stored blood, they have limited success. Thus far, studies have focused on improving storage conditions through additives, rejuvenation solutions, and cryopreservation protocols.

➲ However, none of those approaches addressed the cause of the problem, the presence of damage causing extracellular components in the blood.

New approach:

➲ To tackle this issue, contrary to the conventional approaches, they have developed a novel approach to scavenge/capture and remove the damage-causing extracellular components during blood storage.

➲ This prevented the damage of stored blood cells, and enhanced their quality, and increased the shelf life of stored blood by about 25%.

➲ Typical extracellular components being generated are free-iron and free-hemoglobin, bioactive lipids such as poly unsaturated fatty acids, extracellular DNA, nucleosomes, and proteins. During the storage, these components interact and damage red blood cells (RBCs).

➲ Capturing these DAMPs components without causing damage to the stored blood cells is highly challenging. Therefore, they have custom-designed nanofibrous sheets that can capture such damage-causing components and protect RBCs.

Nanofibrous sheets:

➲ Critical damage-causing agents are charged molecules. they hypothesised and demonstrated that charged nanofibrous sheets made with cationic and anionic polymers will help scavenge damage-causing agents through ionic interactions. These nanofibrous sheets can be made into blood bags.

➲ DAMPs are produced when cells get destroyed and the DAMP components, in turn, damage the membrane of RBCs and reduce the membrane integrity, which makes the RBCs fragile. Upon transfusion, the fragile RBCs break down, leading to poor blood transfusion outcomes.

Outcome:

➲ Intermittent capturing of DAMPs on day 21 or 28 after collection using the novel blood bags helped protect RBCs from losing their membrane integrity, and enhanced the transfusion efficiency. Scavenging of DAMPs can be completed in 15 minutes.

➲ Typically, blood can be stored for 42 days before transfusion. Compared to fresh blood, blood loses its quality upon storage, and overall blood transfusion efficiency reduces.

➲ 42 days of stored old blood has the least transfusion efficiency than either fresh blood or 21 days of stored blood.

Way Forward:

➲ With new technology, the quality of 42 days of stored old blood is as good as freshly collected blood. Additionally, the maximum shelf life of stored blood has increased by 25%.

➲ Besides increasing the shelf life of stored blood, it may be a boon for preserving rare blood groups.

ISRO INKS MOU WITH SOCIAL ALPHA TO ESTABLISH SPACETECH INNOVATION NETWORK

Why in news?

➲ Recently, the Indian Space Research Organisation (ISRO) has signed an MoU with Social Alpha, to launch SpaceTech Innovation Network (SpIN).

Details:

➲ SpIN is India's first dedicated platform for innovation, curation, and venture development for the burgeoning space entrepreneurial ecosystem.

➲ Social Alpha is a multistage innovation curation and venture development platform for science and technology start-ups.

➲ The tie-up is a one-of-a-kind public-private collaboration for start-ups and SMEs in the space industry.

Focus:

➲ SpIN will primarily focus on facilitating space tech entrepreneurs in three distinct innovation categories:
a) Geospatial Technologies and Downstream Applications;
b) Enabling Technologies for Space & Mobility; and
c) Aerospace Materials, Sensors, and Avionics.

Innovation Challenge:

➲ In line with the partnership announcement, SpIN has launched its first innovation challenge.

➲ Early-stage start-ups for developing solutions in areas of maritime and land transportation, urbanisation, mapping, and surveying, disaster management, food security, sustainable agriculture, environmental monitoring, and natural resources management, among others are encouraged to apply.

➲ The selected start-ups and innovators will be able to access both Social Alpha's and ISRO's infrastructure and resources as per the prevailing guidelines.

➲ They will be provided active hand-holding in critical areas, including access to product design, testing and validation infrastructure, intellectual property management, go-to-market strategy, and access to long-term patient capital, among other technical and business inputs.

Way Forward:

➲ SPIN platform would create a level playing field for various stakeholders to collaborate and contribute to the space ecosystem in India.

SCIENTISTS DISCOVER TECHNOLOGY TO ABSORB ELECTROMAGNETIC WAVES IN 6G BAND
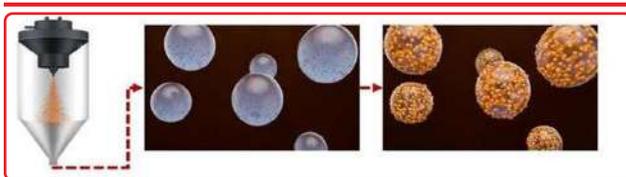
Why in news?

➲ The world's first method to repeatedly produce epsilon iron oxide, which can absorb millimetre waves with a powerful coercive force comparable to that of neodymium (Nd) magnets, was created by a research team at the Korea Institute of Materials Science (KIMS).

Previous technologies:

➲ Most magnetic materials that absorb ultra-high frequencies, a potential 6G frequency range, have high coercive epsilon crystal phases, such as iron oxide. It has only ever been generated in nanoparticles that are 50 nanometers or smaller up until this point.

➲ Japan succeeded to produce pure epsilon iron oxide through a batch-type wet process, but it involves a time-consuming multi-stage process, resulting in a low yield.

New research:

➲ The research team adopted the aerosol process to solve the low-yield problem and succeeded in producing a composite powder in which epsilon iron oxide nanoparticles are embedded in silica particles by spray-drying precursor solutions in a hot chamber.

➲ When the precursor material solution is continuously injected and the droplets are instantly dried, the iron precursor is trapped in the silica xerogel particles and limited to growth during heat treatment.

➲ Epsilon iron oxide nanoparticles could be continuously produced through a micrometre-sized powder manufacturing process, which is significant as it showed the possibility of commercialization of millimetre wave-absorbing materials.

➲ While conventional metals that absorb electromagnetic waves have reduced absorption capacity in high-frequency bands or have limitations in controlling frequency bands, epsilon iron oxide has high potential as a material for future communication parts due to its absorption capacity in the ultra-high frequency (30-200GHz) band.

Outcome:

➲ Continuous manufacturing technology of epsilon iron oxide with millimetre wave absorption capability can be used for mm-wave 5G/6G wireless communication, radar sensors for driverless cars, and stealth and low-orbit satellite communication components.

➲ In addition, as it is a high-coercivity magnetic material, it can be used for electric motor parts for future mobility.

Way Forward:

➲ Currently, no companies commercially produce products with applied magnetic materials capable of absorbing mm waves. Only two or three companies in the US, Japan, and Germany produce 5G band absorbing and shielding materials.

➲ The technology developed by researchers at KIMS is

expected to be localized and exported to the global market in the future.

WHAT IS END-TO-END ENCRYPTION AND WHY ARE TECH COMPANIES FOCUSING ON IT?

Why in news?

- Recently, Apple announced it will be increasing the number of data points protected by end-to-end encryption on iCloud from 14 to 23 categories. The company claimed that with end-to-end encryption, user data will be protected even in case data is breached in the cloud.
- Similarly, Elon Musk, in November, said that he wanted Twitter DMs to be encrypted.

Concerns:

- However, government agencies are not happy with the development. The FBI said that while it remains a strong advocate of encryption, it is deeply concerned with the threat that end-to-end encryption and user-only access pose.
- The agency insisted they hinder its ability to protect Americans from cyber-attacks, violence against children, and terrorism.

What is end-to-end encryption?

- End-to-end encryption is a communication process that encrypts data being shared between two devices. It prevents third parties like cloud service providers, internet service providers (ISPs) and cybercriminals from accessing data while it is being transferred.
- The process of end-to-end encryption uses an algorithm that transforms standard text into an unreadable format. This format can only be unscrambled and read by those with the decryption keys, which are only stored on endpoints and not with any third parties including companies providing the service.
- End-to-end encryption has long been used when transferring business documents, financial details, legal proceedings, and personal conversations.
- It can also be used to control users' authorisation when accessing stored data, which seems to be what Apple intends to do.

Where is it used?

- End-to-end encryption is used to secure communications. Some of the popular instant-messaging apps that use it are Signal, WhatsApp, iMessage, and Google messages.
- However, instant messaging is not the only place where user data is protected using end-to-end encryption. It is also used to secure passwords, protect stored data and safeguard data on cloud storage.

Why are tech companies using it?

- Apple stated that the total number of data breaches more than tripled between 2013 and 2021.
- The focus on end-to-end encryption seems to stem from the company's desire to position itself as a provider of secure data storage and transfer services.
- End-to-end encryption is also seen as a technology that secures users' data from snooping by government agencies, making it a sought-after feature by activists, journalists, and political opponents.

What does it mean for users?

- End-to-end encryption ensures that user data is protected from unwarranted parties including service providers, cloud storage providers, and companies that handle encrypted data.
- Apple on its support page shared that end-to-end encrypted data can only be decrypted by trusted devices where users are signed with their Apple ID. No one else can access this data and it remains secure even in the case of a data breach in the cloud storage.
- The data can only be accessed with access to the device passcode, password, recovery contact, or recovery key. The technology also makes it harder for service providers to share user information from their services with authorities.
- However, end-to-end encryption does not protect metadata, which includes information like when a file was created, the date when a message is sent and the endpoints between which data was shared

Why are government agencies unhappy with it?

- The FBI in a statement expressed displeasure at the idea of increasing use of end-to-end encryption by technology companies.
- It said that while it remains a strong advocate of encryption schemes that give "lawful access by design", that would enable tech companies "served with a legal order" to decrypt data, it "continues to be deeply concerned with the threat end-to-end and user-only-access encryption pose".
- Attempts by government agencies across the globe, in the past, to access encrypted data hosted and stored by tech companies have met with strong resistance.
- In 2019, the U. S., the U. K., and Australia planned to pressure Facebook to create a backdoor into its encrypted messaging apps.

➲ Australia, in 2018, passed laws that would force tech companies and service providers to build capabilities allowing law enforcement secret access to messages on platforms like WhatsApp and Facebook.

➲ The legislation was necessary to prevent "terrorists" and other serious criminals from hiding from the law.

NASA'S ORION CAPSULE SPLASHES DOWN IN PACIFIC AFTER JOURNEY TO THE MOON

Why in news?

➲ Recently, NASA's Orion capsule splashed down in the Pacific ocean on after making an uncrewed voyage around the moon, winding up the inaugural mission of the U.S. agency's new Artemis lunar program 50 years to the day after Apollo's final moon landing.

Details:

➲ The gumdrop-shaped Orion capsule, carrying a simulated crew of three mannequins wired with sensors, plunked down in the ocean off Mexico's Baja California peninsula, demonstrating a high-stakes homecoming before NASA flies its first crew of Artemis astronauts around the moon in the next few years.

➲ The splashdown capped a 25-day mission less than a week after passing about 79 miles (127 km) above the moon in a lunar fly-by, and came about two weeks after reaching its farthest point in space, nearly 270,000 miles (434,500 km) from Earth.

Orion voyage:

➲ The capsule blasted off on Nov. 16 from the Kennedy Space Center at Cape Canaveral, Florida, atop Nasa's towering next-generation Space Launch System (SLS), now the world's most powerful rocket and the biggest NASA has built since the Saturn V of the Apollo era.

➲ The debut SLS-Orion voyage kicked off Apollo's successor program, Artemis, aimed at returning astronauts to the lunar surface this decade and establishing a sustainable base there as a stepping stone to future human exploration of Mars.

Why is re-entry critical?

➲ A top objective is to test the durability of Orion's heat shield as it re-enters Earth's atmosphere at 24,500

miles (39,400 km) per hour, comparatively faster than re-entries from the space station.

➲ The re-entry will test whether the heat shield can withstand atmospheric friction expected to raise temperatures outside the capsule to nearly 5,000 degrees Fahrenheit (2,760 degrees Celsius).

➲ The re-entry will also test the advanced guidance and thruster systems used to steer the capsule from the moon to its proper re-entry point and through descent, maintaining the spacecraft at just the right angle to avoid burning up.

Artemis I:

➲ By coincidence, the return to Earth of Artemis I unfolded on the 50th anniversary of the Apollo 17 moon landing of Gene Cernan and Harrison Schmitt on Dec. 11, 1972.

➲ They were the last of 12 NASA astronauts to walk on the moon during a total of six Apollo missions starting in 1969.

What next after Artmeis-1?

➲ If the Artemis-1 mission succeeds, a crewed Artemis II flight around the moon and back could come as early as 2024, followed within a few years by the program's first lunar landing of astronauts, one of them a woman, with Artemis III.

➲ Sending astronauts to Mars is expected to take at least another decade and a half to achieve.

FOCUS ON COMMERCIAL USE OF NAVIC, ISRO'S FUTURE SATELLITES TO GET ADDITIONAL FREQUENCY

Why in news?

➲ With an aim to promote the civilian use of NAVigation with the Indian Constellation (NavIC), Indian Space Research Organisation (ISRO), is introducing the L1 frequency in all its future satellites.

➲ The next satellites, starting from NVS-01 onwards, will have an L1 band for civilian navigational use.

L1 frequency:

➲ The L1 frequency, one of the most commonly used frequencies in the Global Positioning System (GPS), will increase the use of the regional navigation system in wearable devices and personal trackers

that use low-power, single-frequency chips.

➲ At present, the satellites operate on two frequencies — L5 and S bands.

➲ The NVS-01 satellite is set to replace one of ISRO's seven navigational satellites currently in space. Two of these satellites; IRNSS-1B and IRNSS-1C will complete their 10-year mission life in 2024.

Background:

➲ The NavIC-enabled chipsets first made their way to cell phones in 2019 even though the first three satellites of the constellation were launched in 2013 and 2014.

➲ In fact, a 2018 report by the Comptroller and Auditor General notes that even though ISRO received a go ahead for Rs 200 crore funding from the Cabinet to develop the user receivers in 2006, work on it only started in March 2017, by when all three atomic clocks aboard the first satellite — IRNSS-1A (Indian Regional Navigation Satellite System) — had failed and two other satellites had lost two to three years of their mission life.

Usage of NavIC:

➲ The usage of NavIC system has increased in India. NavIC finds utilisation in national projects like public vehicle safety, power grid synchronisation, real-time train information system and fishermen safety.

➲ Other upcoming initiatives (such as) common alert protocol-based emergency warning, time dissemination, geodetic network and unmanned aerial vehicles are in the process of adopting NavIC system.

➲ Other than that, many mobile phones available in the country already use chipsets capable of receiving NavIC signals.

Way Forward:

➲ With a fully operational constellation and ground stations outside of India, ISRO plans to set up ground stations in Japan and France to better triangulate the entire area under NavIC coverage, the system is likely to become more accurate than GPS.

➲ The satellites placed directly over India also ensure better availability of signals in varied geographical regions compared to GPS, which India receives at an angle making it difficult to access in dense forests or valleys.

U.S. SCIENTISTS ANNOUNCE BREAKTHROUGH IN FUSION ENERGY THAT POWERS THE SUN AND STARS

Why in news?

➲ Researchers at the Lawrence Livermore National Laboratory in California for the first time produced more energy in a fusion reaction than was used to ignite it, something called net energy gain.

➲ The achievement will pave the way for advancements in national defense and the future of clean power.

What is nuclear fusion?

➲ The reaction happens when two light nuclei merge to form a single heavier nucleus.

➲ Because the total mass of that single nucleus is less than the mass of the two original nuclei, the leftover mass is energy that is released in the process.

➲ In the case of the sun, its intense heat and the pressure exerted by its gravity allow atoms that would otherwise repel each other to fuse.

➲ Scientists have long understood how nuclear fusion has worked and have been trying to duplicate the process on Earth as far back as the 1930s.

➲ Current efforts focus on fusing a pair of hydrogen isotopes; deuterium and tritium, which says that particular combination releases "much more energy than most fusion reactions" and requires less heat to do so.

How are scientists trying to do this?

➲ One way scientists have tried to recreate nuclear fusion involves what's called a tokamak; a doughnut-shaped vacuum chamber that uses powerful magnets to turn fuel into a superheated plasma (between 150 million and 300 million degrees Celsius) where fusion may occur.

➲ The Livermore lab uses a different technique, with researchers firing a 192-beam laser at a small capsule filled with deuterium-tritium fuel.

➲ The lab reported that an August 2021 test produced 1.35 megajoules of fusion energy — about 70% of the energy fired at the target.

➲ The lab said several subsequent experiments showed declining results, but researchers believed they had identified ways to improve the quality of the fuel capsule and the lasers' symmetry.

How valuable would this be?

➲ Proponents of fusion hope that it could one day produce nearly limitless, carbon-free energy, displacing fossil fuels and other traditional energy sources.

➲ Producing energy that powers homes and businesses from fusion is still decades away. But researchers said it was a significant step nonetheless.

➲ It's also a process that doesn't produce the radioactive waste of nuclear fission.

HOW GENE THERAPY COULD CURE CANCER
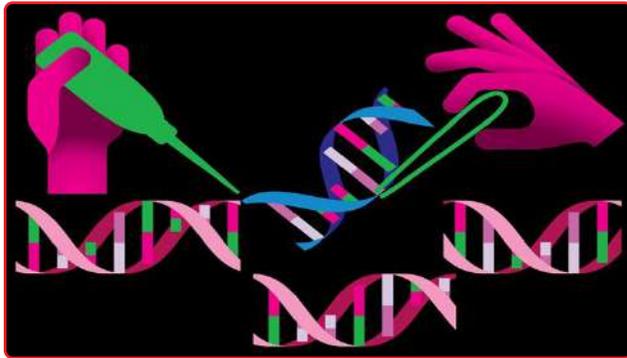
Why in news?

➲ Recently, scientists in the United Kingdom testing a new form of cancer therapy, reported success in a teenaged girl, Alyssia, with a form of cancer called T-cell acute lymphoblastic leukaemia.

What happens in this form of cancer?

➲ In this form of blood cancer, the T-cells, which are a class of white blood cells, equipped to hunt and neutralise threats to the body, turn against the body and end up destroying healthy cells that normally help with immunity.

➲ The disease is rapid and progressive and is usually treated by chemotherapy and radiation therapy.

➲ Alyssia, 13, tried several of the standard treatments including chemotherapy and radiation but with limited success.

➲ She was the first to receive experimental gene therapy that relied on a new technique called 'base editing.'

What is 'base editing?'

➲ A person's genetic code is several permutations of four bases: Adenine (A), Guanin (G), cytosine (C) and thymine (T). Sequences of these bases, akin to letters in the alphabet, spell out genes that are instructions to produce the wide array of proteins necessary for the body's functions.

➲ In Alyssia's case, her T-cells, perhaps because of a mis-arrangement in the sequence of bases had become cancerous. A way to correct this mis-arrangement could mean a healthier immune system.

➲ In the last two decades, the world of biomedical engineering has been enthused by a technique that allow genes to be altered and errors 'fixed.' The most popular among these approaches has been the CRISPR-cas9 system.

CRISPR-cas9 system:

➲ Inspired by how certain bacteria defend themselves against viruses, by snipping out and storing pieces of their genes, the CRISPR-cas 9 system, consists of an enzyme that acts like molecular scissors.

➲ It can be made to cut a piece of DNA at a precise location and a guide RNA can be used to insert a changed genetic code at the sites of incision.

➲ While there are a few ways to effect such changes, the CRISPR-cas9 system is believed to be the fast, most versatile system to effect such gene editing.

➲ While still a nascent technology, base editing is reportedly more effective at treating blood disorders which are caused by so-called single point mutations, or when a change in a single base pair can cause terminal disease.

How did base-editing work for Alyssia's therapy?

➲ The objective of the gene therapy in the case of T-cell leukamia was to fix her immune system in a way that it stops making cancerous T-cells.

➲ First, healthy T-cells were extracted from a donor and put through a series of edits.

➲ The first base edit blocked the T-cells targeting mechanism so it would cease attacking Alyssa's body, the second removed a chemical marking, called CD7, which is on all T-cells and the third prevented the cells being killed by a chemotherapy drug.

➲ Finally, the T-cells were programmed to destroy all cells with CD7 marked on it. After spending a month in remission, she was given a second donor transplant to regrow her immune system that would contain healthy T-cells.

How effective was the treatment?

➲ Three months after the treatment, her cancer seemed to resurface but the most recent investigations suggest no signs of it.

➲ Alyssia was one of 10 people enrolled in the trial to receive the treatment.

➲ It has been 1.5 years since she was first diagnosed with the disease and whether the treatment has reliably and entirely fixed her immune system, remains to be established.

PLASTIC RAIN

Why in news?

➲ Recently, a new study has found that around 74 metric tons of microplastics fell from the sky in New Zealand's Auckland city in 2020.

➲ The study says this amount of microplastic is equivalent to 3 million plastic bottles.

➲ Researchers believe the prevalence of plastic rain is undercounted globally.

What is plastic rain?

➲ Microplastics, very tiny pieces of plastic waste, less than 5 millimetres long, are raining from the sky.

➲ This microplastic emanates from packaging, clothing, vehicles, paint, worn car tyres and other sources.

➲ These small plastic particles are "flowing into the oceans via wastewater and tainting deep-sea ecosystems, and they're even ejecting out of the water and blowing onto land in sea breezes".

New study:

➲ The study conducted by the University of Auckland in New Zealand suggests that an average of around 5,000 pieces of microplastic fall on every square metre of Auckland's urban rooftops any given day.

➲ During the experiment, the researchers caught the residue of eight types of airborne plastics from both sites.

➲ In Auckland, polyethylene, often used in packaging materials was the most-detected substance, followed by polycarbonate, a type of plastic typically used in electrical and electronic applications.

➲ On the days when strong winds from the coast gushed through the city, there was a rise in microplastics collected using a funnel and jar contraption.

➲ The production of airborne microplastics from breaking waves could be a key part of the global transport of microplastics.

Previous studies:

➲ In 2020, researchers found that 1,000 metric tons of microplastic particles enter 11 protected areas in the western United States every year – an equivalent of 120 million plastic water bottles.

➲ Another study, conducted in 2019 by scientists at Kings College London, said that an estimated average of 771 microplastic particles was found in central London.

➲ The rate of deposition of microplastic in London was much higher in London than in China's Dongguan, China, Paris in France and Germany's Hamburg.

➲ The study also highlighted sources of microplastic in the Mediterranean Sea and the Atlantic Ocean.

Health effects:

➲ Earlier, a study revealed that people inhale up to 7,000 airborne microplastic particles every day.

➲ This was "100 times higher than expected" and can pose a "potential health threat that could rank alongside asbestos or tobacco".

➲ In March 2022, scientists announced microplastics were detected flowing through human veins.

➲ The microplastic can potentially cause "inflammation and stress to cells".

HOW CAN MRNA VACCINES HELP FIGHT CANCER?

Why in news?

➲ The results of a trial of an experimental cancer vaccine built on the mRNA (messenger ribonucleic acid) platform, made by Moderna and MSD (Merck&Co.), have shown promising results.

➲ Patients taking an immunotherapy drug Keytruda for advanced melanoma (a kind of skin cancer) were less likely to die or have the cancer recur, if they took the vaccine (mRNA-4157/V940) also.

What did the trial involve?

➲ It was a small study, involving 157 patients. The vaccine showed a 44% reduction in the risk of dying of cancer or having the cancer progress.

➲ As a personalised cancer vaccine, it is tailor-made for every patient. As a consequence, it is expected to be very expensive to make.

➲ The results too will have to be independently scrutinised by experts. But oncologists across the world have welcomed this as an exciting new opportunity in cancer care.

How does the vaccine work?

➲ The personalised cancer vaccine uses the same messenger-RNA technology that was used to produce the COVID vaccine. It allows the body's immune system to seek and destroy cancerous cells, in this case melanoma, but with the hope that it could lead to new ways to fight other types of cancers too.

➲ RNA as a therapeutic was first promoted in 1989 after the development of a broadly applicable in vitro transfection technique. A couple of years later, mRNA was advocated as a vaccine platform.

Role of SARS-CoV-2 Vaccine:

➲ The refinement of the mRNA platform owes everything to COVID. The researchers have learned how to engineer stable forms of mRNA and deliver these molecules to the body through vaccines.

➲ The mRNA-based cancer treatment vaccines have reportedly been tested in small trials for nearly a decade, with some promising early results.

➲ As far as the SARS-CoV-2 vaccine was concerned, the mRNA included in the Pfizer-BioNTech and the

Moderna vaccines instructs cells to produce a version of the "spike" protein that studs the surface of SARS-CoV-2. The immune system sees this spike protein as foreign and mobilises immune cells to produce antibodies to fight off the infection.

Personalised cancer vaccine:

⮡ The personalised cancer vaccine works in concert with Merck's Keytruda, to disable a protein called programmed death 1, or PD-1, that helps tumours to evade the immune system.

⮡ To build the vaccine, researchers took samples of patients' tumours and healthy tissue. After analysing the samples to decode their genetic sequence and isolate mutant proteins associated only with the cancer, that information was used to design a tailor-made cancer vaccine.

⮡ When injected into a patient, the patient's cells act as a manufacturing plant, producing perfect copies of the mutations for the immune system to recognise and destroy. Having been exposed to the mutations without the virus, the body learns to fight off the infection.

What does it mean for the future?

⮡ Both approaches CAR-T cells and bi specific antibodies among newer cancer therapies, have already produced spectacular results in many cancers.

⮡ While in CAR-T treatment, scientists take the immune systems cells out, engineer them to target a specific cancer and then put them back in the body to kill cancer cells, bispecific antibodies attach to immune system cells with one arm and cancer cells with the other, thereby bringing powerful immune system killer cells right next to the cancer cells. A few bispecific antibodies have been FDA-approved already.

⮡ The possibility of using mRNA vaccine technology to fight cancer just got a boost. The idea of cancer vaccines has been around for a long time. But mRNA vaccine technology and personalisation of the vaccine that it allows provides a lot of optimism.

DEEPFAKE TECHNOLOGY: HOW AND WHY CHINA IS PLANNING TO REGULATE IT

Why in news?

⮡ The Cyberspace Administration of China is rolling out new regulations, to be effective from January 10, to restrict the use of deep synthesis technology and curb disinformation.

⮡ Deep synthesis is defined as the use of technologies, including deep learning and augmented reality, to generate text, images, audio and video to create virtual scenes.

⮡ Under the guidelines of China's new rules, companies and platforms using the technology must first receive consent from individuals before they edit their voice or image.

What is a deepfake?

⮡ Deepfakes are a compilation of artificial images and audio put together with machine-learning algorithms to spread misinformation and replace a real person's appearance, voice, or both with similar artificial likenesses or voices.

⮡ It can create people who do not exist and it can fake real people saying and doing things they did not say or do.

⮡ The term deepfake originated in 2017, when an anonymous Reddit user called himself "Deepfakes." This user manipulated Google's open-source, deep-learning technology to create and post pornographic videos. The videos were doctored with a technique known as face-swapping. The user "Deepfakes" replaced real faces with celebrity faces.

⮡ Deepfake technology is now being used for nefarious purposes like scams and hoaxes, celebrity pornography, election manipulation, social engineering, automated disinformation attacks, identity theft and financial fraud.

What is China's new policy to curb deepfakes?

⮡ The policy requires deep synthesis service providers and users to ensure that any doctored content using the technology is explicitly labelled and can be traced back to its source, the South China Morning Post reported.

⮡ The regulation also mandates people using the technology to edit someone's image or voice, to notify and take the consent of the person in question. When reposting news made by the technology, the source can only be from the government-approved list of news outlets.

⮡ Deep synthesis service providers must also abide by local laws, respect ethics, and maintain the "correct political direction and correct public opinion orientation.

Why has such a policy been implemented?

⮡ China was concerned that unchecked development and use of deep synthesis could lead to its use in criminal activities like online scams or defamation.

- The country's recent move aims to curb risks that might arise from activities provided by platforms which use deep learning or virtual reality to alter any online content.
- If successful, China's new policies could set an example and lay down a policy framework that other nations can follow.

What are other countries doing to combat deepfakes?

- The European Union has an updated Code of Practice to stop the spread of disinformation through deepfakes. The revised Code requires tech companies including Google, Meta, and Twitter to take measures in countering deepfakes and fake accounts on their platforms.
- They have six months to implement their measures once they have signed up to the Code. If found non-compliant, these companies can face fines as much as 6% of their annual global turnover, according to the updated Code.
- Introduced in 2018, the Code of Practice on Disinformation brought together for the first time worldwide industry players to commit to counter disinformation.
- The Code of Practice was signed in October 2018 by online platforms Facebook, Google, Twitter and Mozilla, as well as by advertisers and other players in the advertising industry. Microsoft joined in May 2019, while TikTok signed the Code in June 2020.
- However, the assessment of the Code revealed important gaps and hence the Commission has issued a Guidance on updating and strengthening the Code in order to bridge the gaps. The Code's revision process was completed in June 2022.

U.S.

- In July 2021, the U.S. introduced the bipartisan Deepfake Task Force Act to assist the Department of Homeland Security (DHS) to counter deepfake technology.
- The measure directs the DHS to conduct an annual study of deepfakes — assess the technology used, track its uses by foreign and domestic entities, and come up with available countermeasures to tackle the same.

Does this technology disrupt the right to privacy?

- While Canada does not have any regulations to tackle deepfakes, it is in a unique position to lead the initiative to counter deepfakes.
- Within Canada, some of the most cutting-edge AI research is being conducted by the government with a number of domestic and foreign actors.
- Furthermore, Canada is a member and leader in many related multilateral initiatives like the Paris Call for Trust and Security in Cyberspace, NATO Cooperative Cyber Defence Centre of Excellence and the Global Partnership on Artificial Intelligence.

- It can use these forums to coordinate with global and domestic actors to create deepfake policy in different areas.

INDIAN SCIENTISTS FABRICATE RARE EARTH-FREE MAGNET THAT COULD REDUCE EV COSTS

Why in news?

- Rare-Earth elements are a constant in the automotive sector that are used to make permanent magnets that produce stronger magnetic fields.
- Indian scientists have now fabricated an improved low-cost heavy rare earth-free magnet that could boost Electric Vehicle (EV) production in the country in near future.

Neodymium Iron Boron (Nd-Fe-B) magnet:

- Scientists from the Centre for Automotive Energy Materials at the International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI) have designed improved rare earth Neodymium Iron Boron (Nd-Fe-B) magnet, which is in high demand for Electric Vehicles and can make them more affordable.
- The Nd-Fe-B magnets used in EVs operate at high temperatures of 150 − 200 degrees Celsius and need to exhibit high resistance to demagnetization, a capability that pure Nd-Fe-B magnets do not have.
- Since its discovery in 1984, the Nd-Fe-B magnets have been one of the most sought-after permanent magnetic materials for many technological applications.
- It is to be noted that over 90 per cent of EVs use brushless DC (BLDC) motors made up of this rare earth magnet.
- Globally, researchers are trying to enhance the coercivity (resistance to demagnetisation) of Nd-Fe-B magnets.

Outcome:

- Indian scientists have now managed to enhance the coercivity of Niobium (Nb)-containing Nd-Fe-B melt-spun ribbon by using a low melting point alloy, which acts as the source for the non-magnetic element.
- The coercivity value of 1 T at 1500 C critical for automotive applications achieved in this research could be a useful strategy to develop magnets without Dysprosium metal or EV applications.

➲ The research center has now ventured into setting up of pilot plant for the manufacturing of near-net-shaped Nd-Fe-B magnets and hopes that the strategy will be explored for the magnets manufactured in the pilot plant.

Way Forward:

➲ The new strategy could also be used for commercial production of Nd-Fe-B magnets in India, reducing imports that meet the major requirements of the automotive sector.

WHAT IS THE THREAT FROM GLOBAL COVID-19 RISE?

Why in news?

➲ The Union Ministry of Health has issued a communique to States to resume genome sequencing of new cases of COVID-19, in view of the sudden spurt of cases in some parts of the world.

➲ The sequencing of positive case samples will allow the Indian SARS-CoV-2 Genomics Consortium network to track the variants, enabling timely detection of newer variants, in order to undertake requisite public health measures in time.

➲ States were asked to daily send samples of all positive cases to INSACOG labs.

What was the situation in India in 2022?

➲ After ravaging the world for nearly two years, COVID-19 gave India a respite from the mid first quarter of 2022.

➲ While a total of 4.47 crore cases of COVID-19 were detected cumulatively in India, and the number of deaths stood at 5.31 lakh, the number of cases began going down from March 2022, with only 201 new cases reported on December 23.

➲ Consequently, restrictions that were imposed on public movement in the country were eased out.

➲ With the Indian government removing the Air Suvidha notification for international travel, end November, the last vestige of the pandemic protocol, was shed.

What is the global situation?

➲ In the U.S., a trifecta of viruses; Respiratory Syncytial Virus, Influenza and COVID-19, led to a rising number of respiratory infection cases since September, accelerating post November.

➲ In China, the number of cases began to soar as it dropped its zero-COVID policy and lifted all restrictions, in response to unprecedented protests. Because of the sheer size of the population and the fact that the nation had not been exposed properly to the natural march of the virus, there has been a massive surge end of the year.

➲ It has reached a stage where the doubling time was just a few hours.

➲ Simultaneously in Brazil, Korea and Japan, rising numbers have been a source of concern.

What happened in China?

➲ With its polar approaches, China made mistakes in handling the epidemic.

➲ Every pandemic will 'equilibrate', and over a period of time, level out infection levels across the world. It is not possible for some areas in the world to have a large number of cases, and others stop with low numbers.

➲ China also has low hybrid immunity, which is immunity granted by the twin factors of natural infection and vaccination, since it artificially suppressed the waves of COVID-19 with harsh restrictions.

➲ China will have about 80 crore infections in a matter of three months, i.e. 60% of its population will be impacted.

What are the future implications for India?

➲ The situation in India is under control, but vigil is necessary. The bulk of the adult population has been vaccinated with effective vaccines. About 70% of the country has been fully vaccinated, though booster vaccination is flagging.

➲ Almost all the sub-variants of Omicron found across the world were circulating in India as well, and no alarming situation has emerged so far.

➲ The government has just sanctioned the use of nasal vaccine for the 18-plus group as a booster. In a scenario where the number of tests has dropped (the total number of daily tests in India is at 1,15,734, against high prevalence States conducting a lakh or more tests daily during the peaks), he recommends conducting waste water surveillance for monitoring community infections.

DIABETES REMISSION THROUGH INTERMITTENT CALORIE-RESTRICTED DIET

Context:

➲ While many studies have validated the effectiveness and benefits of intermittent fasting in people with type-2 diabetes, no clinical trials have so far investigated the effectiveness of intermittent fasting in achieving remission.

Type-2 diabetes remission is achievable

A small randomised, control trial with intermittent calorie-restricted diet has found long-lasting diabetes remission

- Nearly 50% of the participants in the intervention group achieved remission at three months of follow-up
- At 12 months of follow-up, remission was seen in 44% of the participants
- All participants who achieved remission had completely stopped taking any drug to control blood sugar
- Remission was defined as stable HbA1c levels less than 6.5% after discontinuing anti-diabetic medications for at least three months
- Participants who were prescribed fewer anti-diabetics drugs were more likely to achieve diabetes remission

Tailored: Anti-diabetic medication dosage was adjusted during the trial depending on blood glucose levels

- Participants underwent six cycles of intermittent fasting for five days, followed by 10 days of ad libitum eating of everyday food items during the trial
- Participants in the intervention group received diet containing daily foods such as wheat, barley, rice, rye, and oat during the days of intermittent fasting

⮊ A small randomised, control trial with intermittent calorie-restricted diet carried out in people with type-2 diabetes was able to achieve remission in nearly 50% of the participants in the intervention group at the end of three months of follow-up after the trial.

Details:

⮊ The trial lasted for three months. Even at 12 months of follow-up, remission was seen in 44% of the participants. All participants who achieved remission had completely stopped taking any drug to control blood sugar, and the remission lasted at least one year.

⮊ Even with the more stringent criteria for complete remission, which describes a return to normal measures of glucose metabolism (HbA1c in the normal range, and fasting blood glucose of 100 mg/dL) of at least one year duration in the absence of any anti-diabetic drugs, 33.3% (12/36) of participants in the intervention group achieved complete remission.

⮊ For the trial, remission was defined as stable HbA1c levels less than 6.5% (48 mmol/mol) after discontinuing anti-diabetic medications for at least three months. During the trial, dosage of anti-diabetic medications was adjusted depending on blood glucose levels.

Yardsticks in the trail:

⮊ Participants in the intervention arm received the Chinese Medical Nutrition Therapy (CMNT) diet and underwent intermittent fasting for five days, followed by 10 days of ad libitum eating of everyday food items.

⮊ The participants went through six cycles of intermittent fasting, followed by ad libitum eating during the three months of trial. The CMNT diet contains daily foods such as wheat, barley, rice, rye, and oat, and features low glycaemic loads, calories, and carbohydrates.

⮊ The authors found that participants who were prescribed fewer anti-diabetics drugs were more likely to achieve diabetes remission than those taking more drugs to control blood sugar. However, duration of type-2 diabetes did not influence diabetes remission in participants.

⮊ The potential mechanism of the CMNT in achieving remission is by improving islet cell function, intestinal flora and liver glucose metabolism show. This allows the participants to revert to normal diet after three-month trial period

Way Forward:

⮊ All participants have been followed up for two years by now, and a follow-up of five years or more is ongoing to explore the stability of the CMNT diet and its impact on complications.

⮊ The scientists are planning further research and trial involving more participants living in a larger geographical area and a CMNT digital medical product for diabetes that combines biotechnology with information technology is under way.

THE EMERGING OMICRON SUBLINEAGES ACROSS THE WORLD
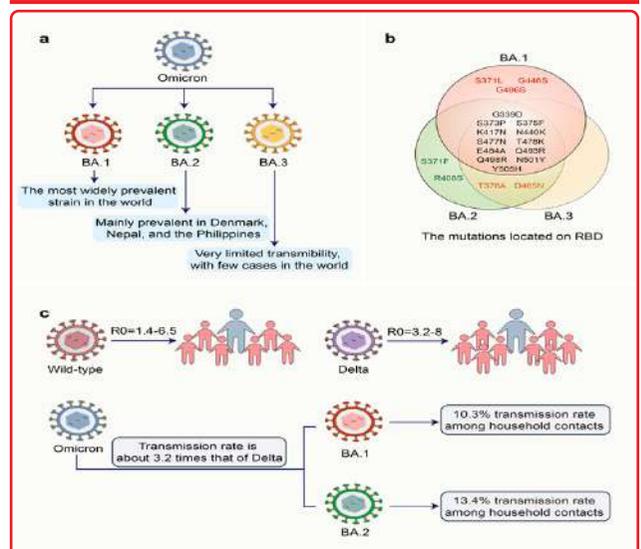
Context:

⮊ Since the initial outbreak in 2019 in Wuhan, China, the world has seen multiple repeated waves of COVID-19 infections over the past few years, largely driven by the emerging variants of concern (VOCs) of the causative virus, SARS-CoV-2.

⮊ However, until recently, China remained successful in containing the spread of the disease owing to its zealous "zero-COVID" policy, which included mass quarantines, lockdowns, and early vaccination programmes.

⮊ As a result of the abrupt lifting of the policy, the country is now facing a surge of COVID-19 cases.

What are the SARS-CoV-2 lineages circulating in China?

⮊ Over the course of the pandemic, genome sequencing of the virus and rapid sharing of data has been key to tracking the evolution of SARS-CoV-2 and early identification of emerging variants.

⮞ SARS-CoV-2 sequencing data previously submitted from China to GISAID, a globally accessible repository of SARS-CoV-2 genome sequences, shows that over the months, the country has seen isolated cases linked to multiple variants of the virus seen previously.

⮞ These include Delta and its sublineages in 2021, and Omicron and its sublineages in 2022. Only 30 sequences of SARS-CoV-2 collected between October-December 2022 are available on GISAID from China.

⮞ These belong to 14 different lineages of SARS-CoV-2, all of which are Omicron sublineages, including BA.5.2, BQ.1.1, BF.7, BF.5, BA.2.75 and the recombinant lineage XBB.

⮞ Of the 14 genomes from China available on GISAID for the month of December, two genomes each belong to the Omicron sublineages BF.7, BF.5 and BA.2.75, while one genome belongs to the recombinant lineage XBB.

⮞ Lineages BF5 and BF.7 of SARS-CoV-2, while first detected in January 2022 in France, have also been previously detected in India in May and July 2022, respectively, while lineage BA.2.75 was first detected in India as early as December 2021.

⮞ The recombinant lineage XBB has also been previously detected in early 2021 in multiple countries in Asia, including India and Singapore. With the limited number of genomes available corresponding to the ongoing outbreak, we are still in the dark about the variants driving the wave in China.

Which Omicron sublineages are under monitoring?

⮞ Owing to the large-scale spread of Omicron and its sublineages across the world, the World Health Organisation (WHO) has added another category of variants referred to as 'Omicron subvariants under monitoring'.

⮞ Currently, the Omicron subvariants being monitored under this category include BA.2.75, BA.4.6, XBB, BA.2.3.20 and sublineages of BA.5 including BF.7 and BQ.1.

⮞ While the first sample belonging to lineage BA.4.6 dates back to December 2021, lineage BA.2.3.20 was detected in multiple countries recently in August 2022.

What is the XBB lineage?

⮞ The SARS-CoV-2 virus has the potential to evolve by exchanging large fragments of the genome, called recombination. First detected in January 2022, the XBB lineage of SARS-CoV-2 resulted from recombinant between Omicron sublineages BA.2.10.1 and BA.2.75.

⮞ The lineage was largely detected in genomes from Singapore and India, with the largest number of genomes on GISAID belonging to the U.S. and India.

⮞ Although detected in over 30 countries, there has been no observed association of the lineage with a sustained increase in new cases in India but has become now the dominant variant in many countries seeing an uptick in infections. Monitoring the prevalence of XBB and its sublineages will therefore be essential in the days to come.

⮞ Although BA.5 was first detected in November 2021, certain BA.5 sublineages having mutations at key antigenic sites in the virus have emerged over the months, including BF.7, BF.14 and BQ.1. Lineage BQ.1 is a BA.5 sublineage having the mutations K444T and N460K in the spike protein of the virus.

⮞ Accounting for over 5% of global cases, the variant has been seen to have a growth advantage over other lineages in highly vaccinated regions including Europe and the U.S., thus making it important to monitor the spread and evolution of this sublineage.

Way Forward:

⮞ Being immune-naive to Omicron, an overwhelming surge of cases in a populous country such as China will not only cause massive loss to life but will also allow the virus to mutate with the potential to create new variants.

⮞ Wide-ranging efforts are thus urgently required to monitor the COVID-19 situation in China and other countries, including genomic surveillance and the use of time-tested methods with significant scientific evidence.
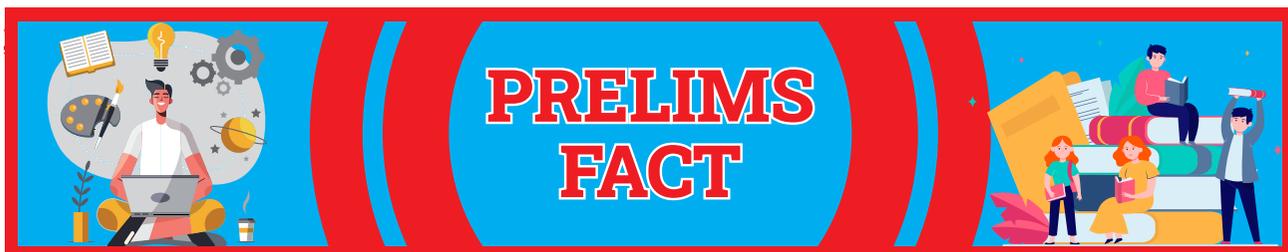
POLITY & GOVERNANCE

PARLIAMENTARY PANEL SUGGESTS CHANGES TO COMPETITION (AMENDMENT) BILL

Why in news?
- Recently, the Parliamentary Standing Committee on Finance recommended various changes to a bill to amend the competition law, including bringing cartels under the scope of settlements as a 'pragmatic recourse'.
- It also said the current prima-facie opinion timeline and that of passing the order for approval of combinations, should remain unchanged.

Reducing Timeline:
- Under the Competition (Amendment) Bill, 2022 that was introduced in the Parliament on August 5, the Corporate Affairs Ministry has proposed reducing the timeline for CCI to form a prima-facie opinion on a case to 20 days from 30 days.
- It has proposed cutting down the timeline for approval of combinations to 150 days from 210 days.
- In this regard, the committee said that apprehensions were raised by the Competition Commission of India (CCI) and stakeholders that it will put the authority in a difficult and onerous position.
- The committee is of the opinion that reducing the timeline can be burdensome for an already understaffed commission.

Cartel investigation:
- Among other recommendations, the panel said CCI should consider expanding the scope of settlements to include cartels also as a 'pragmatic recourse to the whole process'.
- The argument against including cartels is that they, by their very nature are anti-competitive. A settlement provision for cartels on a case-by-case basis may be for the courts to decide. It does not require emphasis that any matter, cartels or otherwise, that reaches the settlement stage, would have an anti-competitive one.
- In the bill, the Ministry has proposed the introduction of a 'Settlement and Commitment framework to reduce litigations' and incentivise parties in an ongoing cartel investigation in terms of lesser penalty to disclose information regarding other cartels.
- An application for settlement can be filed only after receipt of the investigation report and before passing the final order by CCI as may be specified by the regulations.

Background:
- After the introduction, the bill was referred to the committee, which is chaired by BJP member Jayant Sinha.
- It will be the first time since the enforcement of the Competition Act in 2009 that amendments will be made to the Act.
- The Act was brought in 2002 and subsequently, it underwent amendments in 2007 and 2009.
- In May 2009, the antitrust provisions of the law came into force and two years later in May 2011, CCI started screening mergers and acquisitions.

MEETING OF SPECIAL COMMITTEE FOR INTERLINKING OF RIVERS

Why in news?
- Recently, the 36th Annual General Meeting of National Water Development Agency (NWDA) Society and 20th Meeting of Special Committee for Interlinking of Rivers (SCILR) were held under the chairmanship of Union Minister for Jal Shakti.

Key Highlights:
- Special Committee for Interlinking of Rivers (SCILR) approved the proposal of considering the modified Parbati-Kalisindh-Chambal (PKC) link project duly integrated with Eastern Rajasthan Canal Project (ERCP) as a part of National Perspective Plan of ILR and declare the Phase-I of the Project as a Priority interlinking project.
- SCILR was also apprised of status of Cabinet Note for constitution of National Interlinking of Rivers Authority (NIRA) recently submitted to Union Cabinet for approval.

Way Forward:
- The Interlinking of Rivers (ILR) Programme is very important for enhancing water and food security of the country and would be helpful in providing water to drought prone and rainfed farming areas.

ALL-WOMEN BENCH TO HEAR MATTERS IN SUPREME COURT

Why in news?
- Recently, the Chief Justice of India has constituted an all-women bench comprising Justices Hima Kohli and Bela M. Trivedi to hear transfer petitions involving matrimonial disputes and bail matters.

Details:
- The two-judge bench is currently sitting in Court number 11 of the top court.
- The bench has 32 matters listed before it, starting with 10 transfer petitions involving matrimonial disputes and followed by 10 bail matters.
- This is the third occasion in the history of the apex court that an all-women bench has been constituted.

Background:
- The first all-women bench was set up in 2013 when a bench of Justices Gyan Sudha Misra and Ranjana Prakash Desai was constituted followed by a bench of Justices R. Banumathi and Indira Banerjee in 2018.

Current women judges in SC:
- There are three women judges in the top court at present including Justice Kohli, B.V. Nagarathna, and Justice Trivedi.
- Justice Nagarathna is also set to become first woman Chief Justice in 2027.

- The apex court currently has a strength of 27 judges including the CJI, against a sanctioned strength of 34.

PARLIAMENTARY PANEL REPORT RECOMMENDS 6-YEAR TERM FOR RBI GOVERNOR

Why in news?
- Recently, the Parliamentary Standing Committee on Finance headed by BJP MP Jayant Sinha has prepared a comprehensive report on the Reserve Bank of India (RBI), suggesting sweeping reforms in it.
- The Committee have suggested a six-year term for the central bank governor and increasing the number of deputy governors from four to eight.

Key recommendations:
- The report is said to have recommended moving state-owned banks under RBI's purview.
- Public sector banks are currently governed through the department of financial services.
- It have suggested a six-year term for the RBI Governor from the existing three years.
- Also, once the Governor's tenure comes to an end, he or she won't be appointed to any other constitutional post after that.
- It have suggested increasing the number of deputy governors from existing four to eight. Positions below that of a deputy governor can be filled through lateral entry.
- It have suggested creation of an independent debt management authority in line with international practices.

What's next?
- The report is likely to be presented during the forthcoming Winter session of Parliament

COMMON SERVICE CENTRE TO OPEN 500 THEATRES IN RURAL AREAS BY MAR 2023

Why in news?
- Recently, the Common Service Centre (CSC), a special purpose vehicle under the Electronics and IT Ministry, announced that it would open 500 cinema halls in rural areas by March 2023.

Collaboration:

➲ CSC e-Governance Services India Limited has partnered with October Cinemas to take the entertainment through CSC rural cinema to rural areas.

➲ The partnership is aimed at opening nearly one lakh small movie theatres in rural areas.

Key Highlights:

➲ By the end of 2023, around 1,500 cinema halls will be operational across India.

➲ These cinema halls with a seating capacity of nearly 100-200 people will also act as a hub of various CSC activities in rural areas.

➲ CSC cinema halls will open new avenues for VLEs (Village level Entrepreneur).

➲ Entertainment sector is booming in India and VLEs will help in the growth of the sector in rural and semi-urban areas.

➲ The venture will have features to control piracy of films.

Way Forward:

➲ It will help improve issues of mobility in villages. Mobility creates opportunities for development and growth, generating jobs and facilitating trade.

➲ It also enhances rural India's competitiveness by improving connectivity across local and national areas.

ONE DISTRICT ONE PRODUCT (ODOP) INITIATIVE OPERATIONALLY MERGED WITH 'DISTRICTS AS EXPORT HUB (DEH)' INITIATIVE

Why in news?

➲ ODOP initiative is operationally merged with 'Districts as Export Hub (DEH)' initiative of the DGFT, Department of Commerce, with the Department for Promotion of Industry and Internal Trade (DPIIT) as a major stakeholder.

ODOP Initiative:

➲ Central Government has initiated One District One Product (ODOP) in all States/UTs of the country, as a transformational step towards realizing the true potential of a district, fueling economic growth, generating employment and rural entrepreneurship, taking us to the goal of Aatmanirbhar Bharat.

➲ The ODOP Initiative is aimed at fostering balanced regional development across all districts of the country, enabling holistic socio-economic growth across all regions.

➲ The objective is to focus on District of the country as unit for converting into a manufacturing and export hub by identifying products with export potential in the District.

➲ The Department is engaging with State and Central Government agencies to promote the initiative of ODOP, which is an on-going process.

Districts Export Action Plans:

➲ In this context, Districts Export Action Plans include specific actions required to support local exporters / manufacturers in producing / manufacturing identified products in adequate quantity and with the requisite quality, for reaching potential buyers outside India, thereby creating economic value.

➲ These plans also include identifying and addressing challenges for exports of such identified products/ services, improving supply chains, market accessibility and handholding for increasing exports, paving way for employment generation.

The following are some of the achievements of ODOP:-

➲ The ODOP GeM Bazaar was launched on the Government e-Marketplace (GeM) on 29th August 2022 with over 200 product categories created on the platform to promote sales and procurement of ODOP products across the country.

➲ The ODOP initiative has been identified for the prestigious Prime Minister's Award for Excellence in Public Administration in Holistic Development through One District One Product (ODOP) category in April, 2022.

CENTRE INTRODUCES BILLS TO MODIFY ST LIST IN FOUR STATES

Why in news?

➲ Recently, the government introduced four Bills that seek to modify the Scheduled Tribes (ST) list in the four States of Tamil Nadu, Karnataka, Himachal Pradesh and Chhattisgarh in Lok Sabha, via amendments

proposed in the Constitution (Scheduled Tribes) Order, 1950.

- Union Minister of Tribal Affairs introduced these Bills in the Lok Sabha.

Key Highlights:

- The Bill seeks to add the Narikoravan and Kuruvikkaran hill tribes to the ST list of Tamil Nadu.
- The demand for their inclusion dates to before 1965 and even the Lokur Committee had in its report of that year recommended its inclusion.
- The government also moved a bill to introduce Betta-Kuruba as a synonym for the already categorised Kadu kuruba in the ST list of Karnataka.
- It also moved a bill to add a number of synonyms in Devanagri script for the already categorised Bhariya Bhumia tribe in the ST list of Chhattisgarh.
- They are all part of the same tribe but had been kept out of the list just because they pronounced and spelt their names differently.
- The Hattee community of Trans-Giri region in Sirmaur district was added to the ST list of Himachal Pradesh—a demand pending for almost five decades.

Way Forward:

- From time to time, the government brings such bills to give effect to modifications proposed by various states in relation to the ST list.

19 STATE LEGISLATURES HAVE LESS THAN 10% WOMEN MEMBERS: CENTRE

Why in news?

- Women representation in Parliament and most State Legislatures across the country is below 15% with

19 of State Assemblies having less than 10% women lawmakers, according to a government data.

Representation of women:

- The State Legislatures which have more than 10% women lawmakers are Bihar (10.70%), Chhattisgarh (14.44%), Haryana (10%), Jharkhand (12.35%), Punjab (11.11%), Rajasthan (12%), Uttarakhand (11.43%), Uttar Pradesh (11.66%), West Bengal (13.70%) and Delhi (11.43%).
- Andhra Pradesh, Assam, Goa, Gujarat, Himachal Pradesh, Kerala, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Odisha, Sikkim, Tamil Nadu and Telangana have less than 10% women legislators.
- In the recently held Gujarat Assembly elections, 8.2% of the elected representatives are women, whereas, in Himachal Pradesh, only one woman has been elected this time.
- The share of women MPs in Lok Sabha and Rajya Sabha stands at 14.94% and 14.05%, respectively.
- At the same time, the average number of women MLAs in Assemblies across the nation accounts for only 8%

Women's Reservation Bill:

- Recently, political parties such as the Biju Janata Dal (BJD), the Shiromani Akali Dal (SAD), the Janata Dal United JD(U) and the Trinamool have asked the government to introduce and pass the Women's Reservation Bill afresh in Parliament.
- Gender justice is an important commitment of the government. All political parties need to carefully discuss this issue on the basis of consensus before bringing the Constitution Amendment Bill before Parliament.
- The bill, which seeks to reserve one-third of seats in Lok Sabha and State Assemblies for women, was first introduced in Parliament in 1996.
- It was passed in the Rajya Sabha in 2010, but lapsed with the dissolution of the 15th Lok Sabha.

PRADHAN MANTRI ADI ADARSH GRAM YOJNA

Why in news?

- The Ministry of Tribal Affairs has revamped the existing Scheme of 'Special Central Assistance to Tribal Sub-Scheme (SCA to TSS) with nomenclature

'Pradhan Mantri Adi Adarsh Gram Yojna (PMAAGY)', for implementation during 2021-22 to 2025-26.

- It aims at transforming villages with significant tribal population into model village (Adarsh Gram) covering about population of 4.22 crore (About 40% of the total Tribal Population).
- It is envisaged to cover 36,428 villages having at least 50% tribal population and 500 STs across States / UTs with notified STs.

Objective:
- The main objective of this scheme is to achieve integrated socio-economic development of selected villages through convergence approach.

Salient Features:
- It includes preparing Village Development Plan based on the needs, potential, and aspirations.
- It also includes maximizing the coverage of individual / family benefit schemes of the Central / State Governments and improving the infrastructure in vital sectors like health, education, connectivity and livelihood.
- The scheme envisions to mitigate gaps prominently in 8 sectors of development viz. Road connectivity (Internal and Intervillage /block), Telecom connectivity (Mobile /internet), School, Anganwadi Centres, Health Sub-Centre, Drinking water facility, Drainage and solid waste management.

'Gap-filling':
- A sum of ₹20.38 lakh per village as 'Gap-filling' has been provisioned for approved activities including administrative expenses under PMAAGY.
- Besides States / UTs are encouraged for convergence of resources as Central / State Scheduled Tribe Component (STC) funds and other financial resources available with them for saturation of gaps in the villages identified under PMAAGY.

RAJYA SABHA PASSES ENERGY CONSERVATION (AMENDMENT) BILL

Why in news?
- Recently, the Rajya Sabha passed the Energy Conservation (Amendment) Bill December 12, 2022, to mandate non-fossil sources of energy and establish a domestic carbon market in India.

- This comes after the Lok Sabha passed the amended bill in August 2022. The bill was also amended in 2010.

NDCs:
- India is relentlessly marching towards its target of reducing India's carbon intensity by 45 per cent by 2030. This goal is a part of India's updated Nationally Determined Contributions (NDC).
- There are two constituents of non-fossil sources: one is renewable energy (solar, wind, hydropower and biomass), and the other is nuclear energy.
- Non-fossil sources, including green hydrogen, green ammonia, biomass and ethanol are for energy and feedstock.

Carbon credits:
- The government will issue carbon credits to businesses or other institutions interested in the scheme. It added that industries could sell and buy credits to meet their carbon budget.
- Carbon credits will not be sold to other countries. However, there is a provision to sell them to other countries when there is a surplus or a need to finance some cutting-edge technology.

Energy Conservation Building Code:
- The amended bill aims to bring large residential buildings under the Energy Conservation regime, enhance the scope of the Energy Conservation Building Code, and amend penalty provisions.
- It also applies to commercial buildings with a connected load of 100 Kilowatt or contracts demand of 120 Kilo-volt Ampere and above.
- The "energy conservation building codes" means the norms and standards of energy consumption expressed per square metre of the area where energy is used. It also includes the location of the building.

RAJYA SABHA CLEARS BILL TO MOVE GOND COMMUNITY TO ST LIST IN FOUR UTTAR PRADESH DISTRICTS

Why in news?
- Recently, the Rajya Sabha passed the Constitution (Scheduled Castes and Scheduled Tribes) Order (Second Amendment) Bill.

Mandate:
- It aims to move the Gond community from the Scheduled Castes list to Scheduled Tribes list in four districts of Uttar Pradesh.
- The four districts are Chandauli, Kushinagar, Sant Kabir Nagar, and Sant Ravidas Nagar.

Background:
- The issue pertaining to the inclusion of the Gond community in U.P. had been pending with successive Congress-led governments from 1981 and even after 1993, when the Office of the Registrar General of India had also recognised this demand and supported it.

Existing criteria for defining tribes:

➲ The importance of continuing with the existing criteria for defining tribes has been set out by the Lokur Committee in the 1960s.

➲ The five criteria as set out by the Lokur Committee include: indications of primitive traits, distinctive culture, geographical isolation, shyness of contact with the community at large, and backwardness.

Task Force under Hrusikesh Panda:

➲ The Union government was until recently considering a proposal to revise this criteria based on the report of a Task Force formed under the leadership of then Tribal Affairs Secretary, Hrusikesh Panda in February 2014.

➲ The Task Force had called the criteria "obsolete" and said that they were ending up standing in the way of several communities that deserve ST status but are not being considered.

➲ But the government has now put the proposal on hold.

PARLIAMENT PASSES BILL TO RENAME NEW DELHI INTERNATIONAL ARBITRATION CENTRE

Why in news?

➲ Recently, the Parliament passed a bill to rename the New Delhi International Arbitration Centre as the India International Arbitration Centre.

Details:

➲ The Rajya Sabha passed the New Delhi International Arbitration Centre (Amendment) Bill, 2022, which was piloted by Union Law Minister Kiren Rijiju.

➲ The Lok Sabha has already passed the bill on August 2022, which expands this to include the conduct of other forms of alternative dispute resolution besides arbitration.

Why the change has been made?

➲ The important cities in India such as Mumbai and Kolkata have their own arbitration centres. Even in Delhi, another body Delhi Arbitration Centre (DAC) is functioning.

➲ It will not be good to have two arbitration centres having the same name of Delhi.

PUBLIC SERVANTS CAN BE FOUND GUILTY OF GRAFT ON CIRCUMSTANTIAL PROOF: SC

Why in news?

➲ Recently, a Constitution Bench of the Supreme Court held that the demand and acceptance of bribe or illegal gratification by a public servant can be inferred by a court on circumstantial proof in the absence of direct evidence.

What was the issue before the SC?

➲ The Bench was answering a reference on the question whether public servants could be convicted for corruption under Section 7 (public servant taking gratification other than legal remuneration in respect of an official act) and 13 (1)(d)(i) and (ii) (criminal misconduct by a public servant) in the absence of direct oral or documentary evidence due to unavailability of the complainant owing to his death or for any other reasons.

➲ The prosecution can prove its case of corruption with the help of any other witness, oral or documentary evidence or circumstantial evidence in cases in which the complainants have turned hostile. The trial would not abate or result in an acquittal.

Key Highlights:

➲ It said if a bribe-giver offers to pay illegal gratification without there being any demand from the public servant and the latter simply accepts the offer and receives the payment, it would be a case of "acceptance" under Section 7 of the PC Act.

➲ On the other hand, if the accused public servant makes a demand for a bribe and accepts the payment, it would be a case of "obtainment" and an offence under 13 (1)(d)(i) and (ii) of the PC Act.

➲ But both the offer by the bribe-giver and the demand and acceptance of the illegal gratification have to be effectively proved by the prosecution as a fact.

➲ The SC Bench interpreted that a court of law could use its discretion to make a "presumption of fact" of the offer made and bribe demanded or accepted by an accused official based on the material on record.

Valid Concerns:

➲ The Bench, said the "stink of corruption" has a "pervasive impact" on the efficient administration

and governance of the country.

⮑ Corrupt officials have a demoralising effect on honest public servants. Corruption by public servants has become a "gigantic problem".

⮑ Large-scale corruption retards nation-building activities and everyone has to suffer on that count.

'SAMARTHYA' SUB-SCHEME OF 'MISSION SHAKTI"

Why in news?

⮑ Recently, Union Minister for Women & Child Development, Smriti Zubin Irani in a written reply in the Rajya Sabha gave detail of HEW under 'Samarthya' sub-scheme of 'Mission Shakti and Gender Resource Centers (GRC).

Samarthya Scheme:

⮑ The Government has initiated a number of schematic and legislative interventions over the past few years for educational, social, economic and political empowerment of women. These have resulted in improving the status of women on many counts.

⮑ Recognising the need for a single window system for inter- sectoral convergence of schemes and programs meant for women, the Government is setting up Hub for Empowerment of Women (HEW) at National, State and District levels under 'Samarthya' sub-scheme of 'Mission Shakti, an Umbrella Scheme for safety, security and empowerment of women.

⮑ The Hubs aim to facilitate women's access to various institutional and schematic set ups for information dissemination and availing services pertaining to healthcare, quality education, career and vocational counseling/ training, financial inclusion, entrepreneurship, backward and forward linkages, health and safety for workers, social security and digital literacy etc.

Gender Resource Centers (GRC):

⮑ Under Deen Dayal Antyodaya Yojana- National Rural Livelihoods Mission (DAY-NRLM), a total 1411 Gender Resource Centers (GRC) have been formed in 13 States of the country till date.

⮑ The GRCs are called by different names in many States such as 'Lok Adhikar Kendra in Madhya Pradesh', 'Sangini Kendra in Chhattisgarh' and 'Pragya Kendra in Odisha'. Based on the level of preparation and their respective gender operational strategies, different States have different plans and models of GRCs.

Mandate of GRCs:

⮑ GRCs are run and managed by Cluster Level Federations (CLFs) or by Block Level Federations (BLFs), as per the local context. GRC is the apex institutional structure in the institutional mechanism to address gender issues under DAY-NRLM.

⮑ The cases related to rights and entitlements and gender-based violence of Self Help Group (SHG) members are escalated to GRC by Self Help Groups (SHGs), Village Organizations (VOs) or Cluster Level Federation (CLF) based on the merit of cases.

⮑ GRC refers the cases, if need be, to different public service points such as One Stop Centers, Police, District Legal Service Authorities etc.

RS NOMINATES 10 MEMBERS TO PANEL ON MULTI-STATE COOPERATIVE SOCIETIES BILL

Why in news?

⮑ Recently, Rajya Sabha nominated 10 members to the joint committee of Parliament to examine the Multi-State Cooperative Societies (Amendment) Bill, 2022.

Details:

⮑ The Lok Sabha referred the Bill to the committee. 21 members of the joint panel will be from the Lok Sabha and 10 from the Rajya Sabha.

⮑ These members are Ghanshyam Tiwari, Surendra Singh Nagar, Dhananjay Bhimrao Mahadik and Ram Chander Jangra of the BJP, Rajani Ashokrao Patil of the Congress, Sukhendu Sekhar Ray of the Trinamool Congress, N R Elango of the DMK, Vikramjit Singh Sahney of the AAP, Sujeet Kumar of the BJD and S Niranjan Reddy of the YSRCP.

⮑ The Upper House adopted a motion for nomination to the joint committee of Parliament on this Bill through a voice vote.

About Multi-State Co-operative Societies (Amendment) Bill, 2022:

- The Multi-State Co-operative Societies (Amendment) Bill, 2022, which seeks to bring transparency and accountability in the sector, was introduced in Lok Sabha on December 7 and opposition members had demanded that it be referred to a standing committee for review.
- The bill also seeks to strengthen governance, reform the electoral process, improve the monitoring mechanism, and ensure ease of doing business in multi-state co-operative societies.

Way Forward:

- The panel will submit its report to the Lok Sabha in the first week of the second part of the Budget session (which usually begins in March).

PMO NOW HAS 7 IFS OFFICERS

Why in news?

- Following a series of appointments, the Prime Minister's Office (PMO) now includes a total of seven IFS officers, compared to the usual three or four.
- This comes at a time when Prime Minister's thrust on foreign policy has made the role of diplomats crucial in the system.

Details:

- Recently, the PMO inducted three new IFS officers and extended the tenure of another currently serving in the rank of joint secretary.
- However, the number of IFS officers in the PMO may come down to five as two of the officers, who are on deputation, may go back to the Ministry of External Affairs.

PM's focus on foreign policy:

- PM's address at the UNGA and his speech at Madison Square Garden in New York in September 2014 were an indication of his thrust on foreign policy.
- Continuing with this focus, he inducted former foreign secretary S. Jaishankar, who retired from the service in 2018, into his Cabinet as the minister of external affairs in 2019.
- In the past eight years, India has hosted then US president Donald Trump and Chinese President Xi Jinping. The country hosted the BRICS summit in 2021, and has now assumed the G20 presidency this year.
- India holds the presidency of the G20 from 1 December this year to 30 November, 2023. Forty-three heads of delegations, the largest-ever in the G20, will be participating in the New Delhi summit in September next year.
- India will also be hosting the Shanghai Cooperation Organisation (SCO) summit in 2023.

INTERNATIONAL RELATION

EXTREME HEAT WAVES MAY BREAK HUMAN SURVIVABILITY LIMIT IN INDIA: WORLD BANK

Why in news?

- Recently, the World Bank releases a report titled "Climate Investment Opportunities in India's Cooling Sector".
- As per this report, extreme heat waves are increasing with alarming frequency across India in the past few decades and soon the country may become one of the first places in the world to experience heat waves that break the human survivability limit.

Extreme temperature:

- The severe heat waves are responsible for thousands of deaths across the country, where higher temperatures are arriving early and staying for far longer periods.
- In April 2022, India was plunged into the grip of a punishing early spring heat wave that brought the country to a standstill, with temperatures in the capital, New Delhi, topping 46 degrees Celsius. The month of March, which witnessed extraordinary spikes in temperatures, was the hottest ever recorded.

Economic impact:

- The rising heat across India can hit economic productivity, observing that 75 per cent of India's workforce or 380 million people depend on heat-exposed labour, at times working in potentially life-threatening temperatures.
- By 2030, India may account for 34 million of the projected 80 million global job losses from heat stress associated productivity decline.

- The lost labour from rising heat and humidity could put up to 4.5 per cent of India's GDP at risk by the end of this decade.

ILO DECLARATION URGES COUNTRIES TO ENSURE LABOUR PROTECTION

Why in news?

- Recently, the17th Asia and the Pacific Regional Meeting (APRM) of the International Labour Organization (ILO) concluded with governments, workers' and employers' organizations agreeing to bolster efforts to achieve social justice and decent work for all.
- It set ten-point priorities of national action for the member countries to deal with the issue of dwindling wages of workers, inflation and unemployment.

Key Highlights of Singapore Declaration:

- The "Singapore Declaration", agreed that social dialogue was essential to address labour market challenges and finding solutions in crisis situations.
- It urged the governments to ensure labour protection for all through the promotion of freedom of association and the effective recognition of the right to collective bargaining throughout the regions, including for workers in vulnerable situations and workers in the informal economy, as enabling rights for decent work.
- It called for closing gender gaps in the world of work through measures that increase women's labour force participation, promote equal pay for work of equal value, balance work and responsibilities, and promoting women's leadership.
- The declaration also urged the governments to strengthen governance frameworks and respect for freedom of association to protect the rights of migrant workers.

About ILO:

- It is the only tripartite U.N. agency, since 1919. It brings together governments, employers and workers of 187 member States.
- Established as an agency for the League of Nations following World War I by the Treaty of Versailles in 1919.
- It became the first specialised agency of the United Nations (UN) in the year 1946.

- It got the Nobel Peace Prize in 1969.
- Headquarters: Geneva, Switzerland.

UNITED NATIONS EXTENDS CONGO PEACEKEEPING FORCE WITH AN EYE TO ITS EXIT

Why in news?

- The Security Council has voted unanimously to extend the UN peacekeeping mission in Congo with an eye to its eventual exit.
- The separate resolutions were approved amid worsening security in Congo's mineral-rich east, a region rife with rebel groups and an upsurge in violence and civilian killings that has uprooted tens of thousands of its inhabitants.

Highlights of the resolution:

- The resolution extending the U.N. peacekeeping force known as MONUSCO until Dec. 20, 2023, strongly condemns all domestic and foreign armed groups operating in the country and demands they immediately cease all violence and destabilizing actions and the illegal exploitation and trafficking of natural resources.
- It also demands the immediate withdrawal of M23 rebels, who have been fighting a coalition of armed civilian protection militias in the east for more than a year, as agreed at a mini-summit in the Angolan capital Luanda in late November and endorsed by the African Union.
- It also expresses concern about reported links between Uganda-based Allied Democratic Forces rebels and terrorist networks in eastern Congo.

MONUSCO mission:

- Congo continues to suffer from recurring and evolving cycles of conflict and persistent violence by foreign and domestic armed groups, which exacerbate a deeply concerning security, human rights and humanitarian crisis, as well as inter-communal and militia violence in areas of the country.
- MONUSCO's mission is primarily to protect civilians threatened by violence, secondly to disarm, demobilize and reintegrate combatants, and thirdly to provide strategic and technical advice on reforming Congo's security sector.

ECONOMY

HARYANA GOVT APPROVES NEW 'AATMANIRBHAR TEXTILE POLICY'

Why in news?

➲ Recently, the Haryana Cabinet approved a new 'AatmaNirbhar Textile Policy 2022-25', which aims to attract investment worth Rs 4,000 crore and generate 20,0000 new jobs in the state.

Details:

➲ The new textile policy will supersede the previous 'Haryana Textile Policy 2019' and it aims to promote value-added textile activities with suitable policy interventions to harness the potential of the entire textile value chain in the state.

➲ The estimated budget for the policy is Rs 1,500 crore with capping for capital incentive cases.

Aim:

➲ The 'Haryana AatmaNirbhar Textile Policy 2022-25' aims at fostering an ecosystem of self-reliance and innovation by offering a robust incentive framework for backward integration, enhanced production of man-made fibres, promoting circular economy, attracting investments in weaving, knitting, processing, ready-made garments, apparel making, technical textiles, integrated units, textile parks, textile clusters, etc.

Key Highlights:

➲ The policy aims to attract investment in the textile sector to the tune of Rs 4,000 crore, generate 20,000 new jobs in the textile sector across the value chain, achieve higher and sustainable growth in the entire textile value chain with emphasis on innovation, backward integration and adoption of clean and green technologies, it said.

➲ It also targets to support the industry, adopt world-class state-of-the-art technology in conformity with the environment and social standards, encourage the industry to innovate, develop new designs, diversify and enhance value addition and facilitate and promote sunrise sectors like technical textiles in the critical areas such as defence, automobiles, construction, etc.

➲ The policy further aims to support the industry with a skilled workforce and create additional employment opportunities and promote the export of all types of textiles with a special thrust on products such as garments, made-ups, technical textiles etc.

Way Forward:

➲ It will have a special emphasis on value addition, employment generation and productivity enhancement.

FORMER MINISTER AND ECONOMIST Y.K. ALAGH PASSES AWAY AT 83
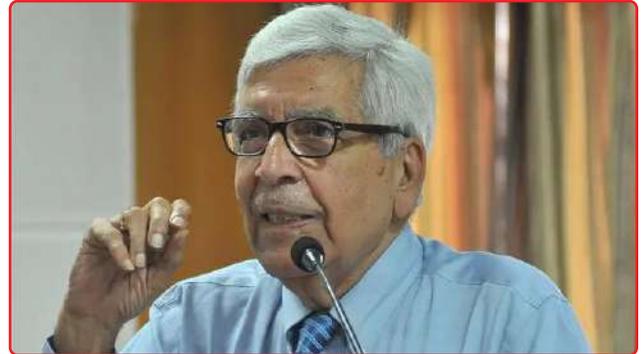
Why in news?

➲ Former Union Minister and agricultural economist Yoginder K. Alagh, passed away recently.

➲ He is remembered for being a "democrat" and for his "inclusive approach to development".

Facts about Y.K. Alagh:

➲ He had been the Chairperson of the Institute of Rural Management Anand from 2006 to 2012, succeeding Verghese Kurien.

➲ He was the Chancellor of the Central University of Gujarat, Gandhinagar, and Vice-Chairman, Sardar Patel Institute of Economic and Social Research, Ahmedabad.

➲ He was appointed a Union Minister based on his lifetime achievements in academia and public policy and headed the Ministries of Power, Science and Technology and Planning and Programme Implementation.

➲ Alagh headed a task force in 1979 which devised the first ever poverty estimates based on calorie requirements.

➲ Between 1992 and 1996, he served as the Vice-Chancellor of Jawaharlal Nehru University (JNU) where he raised non-government funding from zero to 25%, recruited 23 scholars from the finest universities around the world and as a member of the International Rectors' Group sponsored by New York University, pushed the university towards globalisation.

➲ As the Chairman of the Agricultural Prices Commission during 1982-83, he reorganised Indian

planning on an agro-climactic basis. From 1980 to 1982, he was the Executive Vice-Chairman of the Narmada Planning Group.

➲ He also chaired the Expert Group on the Cauvery dispute.

ASSAM'S GAMOSA, TELANGANA'S TANDUR REDGRAM, LADAKH'S APRICOT GET GI TAG

Why in news?

➲ Recently, the government has granted Geographical Indications (GI) tag to various products, including Gamosa of Assam, Tandur Redgram of Telangana, and an apricot variety of Ladakh.

➲ The total number of GI has reached to 432.

➲ Famous Gamosa of Assam, Tandur Redgram of Telangana, RaktseyKarpo Apricot of Ladakh, Alibag White Onion of Maharashtra have got their GI tags.

Why GI?

➲ The top five states holding maximum number of GIs are Karnataka, Tamil Nadu, Uttar Pradesh, Karnataka and Kerala.

➲ Recently, the government has supported the promotion of GIs by approving an expenditure of Rs 75 crore for three years for promotion at awareness programmes.

Geographical Indications (GI):

➲ A GI is primarily an agricultural, natural or a manufactured product (handicraft and industrial goods) originating from a definite geographical territory.

➲ Typically, such a name conveys an assurance of quality and distinctiveness, which is essentially attributable to the place of its origin.

➲ There is a proper process of registration of GI products, which includes filing of application, preliminary scrutiny and examination, show cause notice, publication in the geographical indications journal, opposition to registration, and registration.

➲ Any association of persons, producers, organisation or authority established by or under the law can apply. The applicant must represent the interest of the producers.

Other goods carrying GI tags:

➲ The famous goods which carry GI tag include Basmati rice, Darjeeling Tea, Chanderi Fabric, Mysore Silk, Kullu Shawl, Kangra Tea, Thanjavur Paintings, Allahabad Surkha, Farrukhabad Prints, Lucknow Zardozi and Kashmir Walnut Wood Carving.

FIRST-EVER 'SURETY BOND INSURANCE' FOR INFRASTRUCTURE PROJECTS LAUNCHED

Why in news?

➲ Recently, the Union Minister for Road Transport and Highways launched one of India's first-ever Surety Bond Insurance product from Bajaj Allianz.

Surety Bond Insurance:

➲ Surety Bond Insurance will act as a security arrangement for infrastructure projects and will insulate the contractor as well as the principal.

➲ The product will cater to the requirements of a diversified group of contractors, many of whom are operating in today's increasingly volatile environment.

Contract of guarantee:

➲ The Surety Bond Insurance is a risk transfer tool for the Principal and shields the Principal from the losses that may arise in case the contractor fails to perform their contractual obligation.

➲ The product gives the principal a contract of guarantee that contractual terms and other business deals will be concluded in accordance with the mutually agreed terms.

➲ In case the contractor doesn't fulfil the contractual terms, the Principal can raise a claim on the surety bond and recover the losses they have incurred.

Zero Collateral:

➲ Unlike a bank guarantee, the Surety Bond Insurance does not require large collateral from the contractor thus freeing up significant funds for the contractor, which they can utilize for the growth of the business.

➲ The product will also help in reducing the contractors' debts to a large extent thus addressing their financial worries. The product will facilitate the growth of upcoming infrastructure projects in the country.

Way Forward:

➲ With this new instrument of Surety Bonds, the availability of both liquidity and capacity will definitely be boosted; such products stand to strengthen the sector.

RAILWAY TO MODERNISE 1,000 SMALL STATIONS UNDER AMRIT BHARAT STATION SCHEME

Why in news?

➲ The railways is planning to modernise 1,000 small yet important stations under the new 'Amrit Bharat Station Scheme'.

➲ This is apart from the ambitious plan to revamp 200 big stations under a separate redevelopment programme.

➲ The small stations would be identified not just for their footfalls but also based on the cities they cater to.

➲ The divisional railway managers (DRMs) will take a call on modernisation works in a phased manner. A special fund will also be earmarked with the DRMs for this purpose.

Khurda model of redevelopment:

➲ The scheme's target is the introduction of new amenities as well as to upgrade and replace existing facilities.

➲ These stations will be redeveloped under what is being internally called the "Khurda model of redevelopment".

➲ Khurda station in Odisha was modernised for Rs 4 crore with all contemporary amenities for passengers. The main structure was renovated, the facade was redone and the number of railway tracks was also increased.

How the scheme will be implemented?

➲ The new scheme envisages cost-efficient improvement to facades and makes provisions for wide, well-lit and aesthetically pleasing entrance porches.

➲ The DRMs have been instructed to review existing buildings in the station premises and release space for passengers near the entrances and enable relocation of rail offices to other places.

➲ Creation of new buildings should generally be avoided other than those required for relocation of old structures or relocation of structures to improve circulation or provision of structures to improve the size of waiting halls. Decision on this shall be taken by the DRM.

➲ Modernisation of these stations would include improved station approaches to ensure smooth access by widening roads, removal of unwanted structures, properly designed signages, dedicated pedestrian pathways, well-planned parking areas, and improved lighting among others.

➲ The station should also have a second entry station building and high-level platforms with a length of 600m.

Way Forward:

➲ It aims at preparing master plans of railway stations and implementing those in phases to enhance facilities including and beyond the minimum essential amenities and aim for the creation of roof plazas and city centres at stations.

DIGI YATRA FOR THREE AIRPORTS LAUNCHED

Why in news?

➲ Recently, the Union Minister for Civil Aviation launched Digi Yatra from the Indira Gandhi International Airport, New Delhi for three airports in the country, namely New Delhi, Varanasi and Bengaluru.

➲ Digi Yatra is conceived to achieve contactless, seamless processing of passengers at airports based on Facial Recognition Technology (FRT).

What is the DigiYatra scheme?

➲ DigiYatra is a biometric-based digital processing of passengers at airports.

➲ Passengers will be automatically processed based on a facial recognition system at checkpoints, including entry point check, security check, aircraft boarding.

➲ It also facilitates self-bag drop and check-in using facial recognition to identify passengers and data recall.

➲ DigiYatra facilitate paperless travel and avoids identity check at multiple points.

⮡ DigiYatra has a centralised registration system for passengers.

Key Highlights:

⮡ To use this facility, one-time registration on Digi Yatra app is required using Aadhar based validation and a self-image capture. The project has tremendous advantages of improving passenger convenience and ease of travel.

⮡ Keeping in mind the privacy, there is no central storage of Personally Identifiable Information (PII).

⮡ Passenger's ID and travel credentials are stored in a secure wallet in the passenger's smartphone itself. The uploaded data will utilise blockchain technology and all the data will be purged from the servers within 24 hours of use.

Phase I:

⮡ Digi Yatra in the first phase, will be launched at 7 airports.

⮡ However, it has been initially launched at 3 airports i.e., Delhi, Bengaluru and Varanasi, to be followed by 4 airports namely Hyderabad, Kolkata, Pune, and Vijayawada by March 2023. Later it would be implemented across various airports in the country.

⮡ The service is presently being launched for domestic flights passengers only. Digi Yatra App is available on both IoS and android. It is voluntary is nature.

About DigiYatra:

⮡ Digi Yatra Foundation, a not-for-profit company, is the nodal body for DigiYatra.

⮡ The foundation's shareholders are Airport Authority of India (AAI), Cochin International Airport Ltd (CIAL), Bangalore International Airport Ltd (BIAL), Delhi International Airport Ltd (DIAL), Hyderabad International Airport Ltd (HIAL) and Mumbai International Airport Ltd (MIAL).

Way Forward:

⮡ With Digi Yatra, India is setting a new global benchmark for a seamless, hassle free and health risk free process at airports.

DEFENCE & SECURITY

DRDO HANDS OVER AHSP OF AKASH WEAPON SYSTEM TO MISSILE SYSTEMS QUALITY ASSURANCE AGENCY

Why in news?

⮡ Recently, the Defence Research and Development Organisation (DRDO) handed over Authority Holding Sealed Particulars (AHSP) of Akash Weapon System (Indian Army Version) to Missile Systems Quality Assurance Agency (MSQAA) in Hyderabad.

⮡ The handing over was held at Defence Research and Development Laboratory (DRDL) which, as a nodal agency, has designed and developed the Akash weapon system.

Akash:

⮡ Akash is the first state-of-the-art indigenous surface-to-air missile system which has been with Armed Forces for nearly a decade defending the Indian skies and providing national security.

⮡ It is inducted by Indian Army and Indian Air Force with order value worth Rs 30,000 crore, which is one of the largest single system orders for indigenous missile system.

Way Forward:

⮡ The transfer process will enable the roadmap for future missile systems, which are under production.

INDIA-CENTRAL ASIA MEET OF NSAS CALLS FOR ACTION TO DEAL WITH TERRORISM

Why in news?

⮡ Recently, the first India-Central Asia meeting of the National Security Advisers was held in New Delhi.

⮡ The NSAs of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan attended the conclave while Turkmenistan is being represented by its ambassador to India.

Key Highlights:

⮡ They called for collective action to combat challenges like terror financing, radicalisation and use of terrorist proxies for cross-border terrorism, while asserting that Afghanistan must not become a safe haven for terrorist activities.

⮡ The meeting emphasised the need for respecting Afghanistan's sovereignty, unity and territorial integrity and urged non-interference in its internal affairs.

- A joint communique agreed that the expansion of terrorist propaganda, recruitment and fund-raising efforts have serious security implications for the region, and therefore, a collective and coordinated response is essential.
- The mentioning of cross-border terrorism is seen as a reference to Pakistan's support to various terror groups which have been targeting India.
- The meeting also strongly called for an early adoption of the UN Comprehensive Convention on International Terrorism to effectively deal with the menace.
- It also reiterated that greater connectivity could be a force multiplier for enhancing trade and commerce as well as for ensuring closer interactions between India and Central Asian countries.

Background:

- The conclave with a focus on evolving a common framework to deal with challenges of terrorism in the region including Afghanistan and ways to bolster overall security cooperation in sync with a decision taken at the first India-Central Asia summit in January.

39TH EDITION OF INDIA-INDONESIA COORDINATED PATROL

Why in news?

- The 39th edition of India-Indonesia Coordinated Patrol (IND-INDO CORPAT) between the Indian Navy and the Indonesian Navy is being conducted from 08 – 19 December 2022.
- The CORPAT will be executed along the International Maritime Boundary Line (IMBL) from 15 to 16 December 2022 and will conclude with a debrief at Port Blair.

Key Highlights:

- Indian Naval Ship (INS) Karmuk, an indigenously built Missile Corvette participated in the pre-deployment briefing at Belawan, Indonesia.
- Along with INS Karmuk, L-58 (indigenously built Landing Craft Utility vessel) and Dornier Maritime Patrol Aircraft will be participating in the CORPAT.
- KRI Cut Nyak Dien, a Kapitan Pattimura Class Corvette, would represent the Indonesian side.

About CORPAT:

- India and Indonesia have been carrying out CORPATs twice a year since 2002, with an aim of keeping this vital part of the IOR safe and secure for commercial shipping, international trade and conduct of legitimate maritime activities.
- CORPATs help build understanding and interoperability between navies, and facilitate institution of measures to prevent and suppress Illegal Unreported Unregulated (IUU) fishing, drug trafficking, maritime terrorism, armed robbery and piracy.
- It further helps enhance the operational synergy by exchange of information for prevention of smuggling, illegal immigration and for conduct of Search and Rescue (SAR) operations at sea.

Way Forward:

- The 39th edition of IND-INDO CORPAT seeks to bolster the maritime cooperation between the two navies and forge strong bonds of friendship between India and Indonesia.

SURYA KIRAN-XVI

Why in news?

- The 16th Edition of Indo-Nepal joint training Exercise "SURYA KIRAN-XVI" between India and Nepal will be conducted at Nepal Army Battle School, Saljhandi (Nepal), from 16 - 29 December 2022.

About Surya Kiran-XVI:

- Exercise "SURYA KIRAN" is conducted annually between India and Nepal with the aim to enhance interoperability in jungle warfare & counter terrorism operations in mountainous terrain and HADR under UN mandate.
- The 15th edition of Indo-Nepal joint military training exercise Surya Kiran was held in September 2021, at Pithoragarh in Uttarakhand.

Key Highlights:

- The two armies, through these contingents, shall be sharing the experiences gained during the conduct of various counter-insurgency operations over the years in their respective countries.

➲ The joint exercise would focus on evolution of combined drills for planning and conduct of tactical operations at unit level in counter terrorism operations and disaster response mechanism in general and role of armed forces in management of disaster.

➲ During the exercise, participants will be training together to develop inter-operability and share their experience including Counter Insurgency and Counter Terrorist operations and also on Humanitarian Relief operations.

Way Forward:

➲ The joint military exercise will enhance the level of defence cooperation which will further foster the bilateral relations between the two nations.

IAF HOLDS EXERCISE IN NORTH EAST AMID LAC TENSION WITH CHINA

Why in news?

➲ Days after the clash between the Indian Army and the People's Liberation Army (PLA) of China at the Line of Actual Control (LAC) at Tawang in Arunachal Pradesh, the Indian Air Force (IAF) started a two-day exercise over the eastern sector.

Details:

➲ The exercises, for which India had earlier announced a NOTAM (no-fly zone) over the North East for December 15-16, are being held from Indian Air Force (IAF) bases Tezpur, Chhabua, Jorhat in Assam and Hashimara in West Bengal.

➲ The exercise involves all IAF combat aircraft close to the front line and other resources deployed in the region.

Key Highlights:

➲ Frontline aircraft including Sukhoi-30MKI and Rafale jets of the Indian Air Force (IAF) are taking part in the exercise.

➲ All forward air bases and some Advance Landing Grounds (ALGs) of the IAF in the North Eastern Region are also included in the exercise.

➲ The IAF's Sukhoi fighter jets are stationed at Tezpur airbase, while a squadron of Rafale fighter jets is stationed at Hasimara.

➲ Apart from this, Apache helicopters and transport aircraft are stationed in Jorhat. Helicopters and military transport aircraft are also participating in this two-day exercise.

Background:

➲ Before the recent clash between India and China in the Yangtse area near Tawang, Chinese drones had moved very aggressively towards the Indian positions on the Line of Actual Control (LAC) in Arunachal Pradesh forcing the Indian Air Force (IAF) to scramble its fighter aircraft deployed in the region.

➲ The Chinese military has been behaving aggressively over issues in the Yangtse in the vicinity of the Holydip and Parikrama area on the LAC where the Chinese side has been opposing Indian positions.

Way Forward:

➲ The Indian Air Force will conduct this exercise for the purpose of testing military preparedness.

➲ The purpose of the exercise is also to test the combat capability of the Indian Air Force (IAF).

INDIGENOUS STEALTH GUIDED-MISSILE DESTROYER INS MORMUGAO COMMISSIONED

Why in news?

➲ Recently, Indian Naval Ship (INS) Mormugao (D67), second warship of the P15B class of stealth guided-missile destroyers, was commissioned in the presence of Raksha Mantri at Naval Dockyard, Mumbai.

➲ The event marked the formal induction of the second of the four 'Visakhapatnam' class destroyers, indigenously designed by the Indian Navy's in-house organisation Warship Design Bureau and constructed by Mazagon Dock Shipbuilders Limited (MDL), Mumbai.

About INS Mormugao:

➲ Named after the historic port city of Goa on the west coast, the ship is equipped to fight under Nuclear, Biological and Chemical warfare conditions. It is propelled by four powerful Gas Turbines, in a Combined Gas and Gas configuration, capable of achieving speeds in excess of 30 knots.

➲ The ship has enhanced stealth features resulting in a reduced Radar Cross Section. INS Mormugao has a complement of about 300 personnel.

⊃ With over 75% indigenous content, all her major weapons and sensors have been developed and manufactured in India either directly through design and development by Indian Original Equipment Manufacturers (OEMs) or through strategic tie-ups and Transfer of Technology with reputed foreign OEMs.

Salient Features:

⊃ Measuring 163m in length and 17m in breadth with a displacement of 7,400 tonnes, INS Mormugao is packed with sophisticated state-of-the-art weapons and sensors such as Surface-to-Surface Missile and Surface-to-Air Missiles.

⊃ The ship is fitted with a modern Surveillance Radar which provides target data to the gunnery weapon systems.

⊃ Its Anti-Submarine Warfare capabilities are provided by the indigenously-developed Rocket Launchers, Torpedo Launchers and the ASW helicopters.

P15B destroyers:

⊃ P15B destroyers incorporate new design concepts for improved survivability, seakeeping and manoeuvrability.

⊃ Enhanced stealth has also been achieved, making the ships difficult to detect.

⊃ With a significantly increased indigenous content, P15B destroyers are a hallmark of self-reliance in warship design and building and a shining example of 'Aatmanirbhar Bharat'.

Vision & aim:

⊃ With power dynamics in the Indian Ocean Region constantly changing, the ship's all-domain capability will augment the Indian Navy's mobility, reach and flexibility to accomplish any mission or task.

⊃ Induction of the ship into the Navy also reflects India's growing ability to remain First Responder and Preferred Security Partner in the region.

History:

⊃ The ship was launched on September 17, 2016 and commenced sea trials on December 19, 2021, coinciding with 60 years of Goa Liberation.

⊃ The commissioning on 18 December is significant as it was the same date in 1961 when Operation Vijay was launched to liberate Goa from Portuguese rule.

GOVT GIVES NOD TO PROCURE PRALAY BALLISTIC MISSILES FOR ARMED FORCES

Why in news?

⊃ The Defence Ministry has given the nod to procure 120 Pralay ballistic missiles for the armed forces that are likely to be deployed along India's border areas along Pakistan and China.

⊃ The Defence Research and Development Organisation (DRDO) had in December 2021 successfully conducted

the maiden flight test of the indigenously developed surface-to-surface Pralay missile.

About Pralay Missile:

⊃ Pralay is capable of striking and destroying targets in the range of 150-500 km, and can also be used in the night to attack enemy's targets.

⊃ The missile has a speed of around 2,000 km per hour, and is equipped with an infrared or thermal scanner.

⊃ The missile would be provided to the Air Force and the Navy.

⊃ In the missiles of similar category, while China has Dongfeng-12 missiles, Pakistan possesses Ghaznavi, M-11 and Shaheen missiles.

Target:

⊃ The Pralay missile has an accuracy of 10 metres which means it is capable of hitting within 10 metres of the target and causing damages.

⊃ As Pralay has a short range, if launched from the country's eastern, western or northern frontiers, it would hit only the targeted areas.

⊃ The Pralay has been developed with a capacity to tackle the interceptor missiles as well.

⊃ After travelling a certain distance in the air, it is also capable of changing its route, which gives the missile the capability of completely destroying the enemy targets.

Rocket Force:

⊃ The project will give a fillip to the key plan of creating a 'rocket force' for the armed forces.

⊃ Late former Chief of Defence Staff, Gen Bipin Rawat was also a major proponent of creating such a rocket force.

SOCIAL ISSUE

MAHARASHTRA FIRST STATE WITH DIVYANG DEPARTMENT

Why in news?

⊃ Recently, the Maharashtra Chief Minister has announced the setting up of a separate Divyang department for the welfare of differently-abled people with a fund allocation of Rs 1,143 crore.

Key Highlights:

- The government has created 2,063 posts for the new department which will formulate policies for the welfare of the disabled by taking into consideration views of the stakeholders.
- The sections looking into issues of Divyang (differently-abled) people under the Social Justice and Special Assistance department will be clubbed to form the new Divyang Welfare Department,.
- Welfare activities of Divyang people like education, training, and rehabilitation were so far taken care of by the state social justice department.

Way Forward:

- Maharashtra is the first State in the country to have a separate Ministry for the disabled that aims to ensure the welfare of the disabled and effective implementation of various government schemes for them.

INDONESIA APPROVES BAN ON SEX OUTSIDE MARRIAGE

Why in news?

- Recently, the Indonesia's parliament approved a law that would outlaw sex outside marriage in a move critics said was a huge setback to rights in the world's most populous Muslim country.

Key Highlights:

- Some of the most controversial articles criminalise extra-marital sex, as well as the cohabitation of unmarried couples.
- The sex outside marriage will be punished with one year in prison while unmarried people living together could face six months in jail.
- The new rules could also be used to criminalise the LGBTQ community in Indonesia, as the country does not acknowledge same-sex marriage.

Criticism:

- Rights groups protested against the amendments, denouncing them as a crackdown on civil liberties and political freedoms as well as a shift towards fundamentalism in Muslim-majority Indonesia.
- The article criminalising sex outside marriage has been criticised by Indonesian business organisations as detrimental to tourism, though authorities insist foreigners travelling to Bali would not be affected.

What's next?

- The new code, which still needs to be approved by President Joko Widodo, will come into force after three years.

CULTURE

MEETEI ON THE MASTHEAD AS BENGALI SCRIPT BOWS OUT OF MANIPURI TITLES
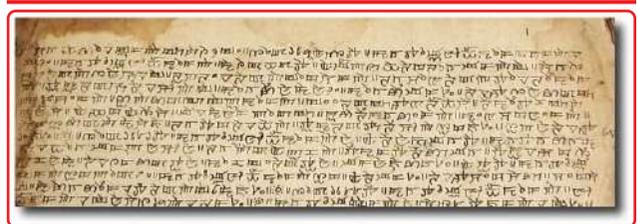
Why in news?

- From January 15, 2023, all seven vernacular morning newspapers, nine evening papers and four periodicals in Manipur State will have to use only the Meetei Mayek or Manipuri script, replacing the Bengali script in use since the early 18th century.

Background:

- The All-Manipur Working Journalists Union and the Editors Guild, Manipur came to an understanding with the script activists of the Meetei Erol Eyek Loinasilol Apunba Lup (MEELAL) a year ago, agreeing to replace the Bengali script in their newspapers from January 15, 2023.
- The previous deadline was February 2022.

Meetei Mayek script:

- The history of the Meetei Mayek script dates back to at least the sixth century, and it had been in use till the 18th century.
- In 1709, a Hindu missionary named Shantidas Gosai came to Kangleipak, the ancient name for the independent kingdom of Manipur, to spread Vaishnavism.
- He mesmerised the kings and the high officials of the palace, and on royal orders, all religious and other

precious books in Meitei Mayek were incinerated, and new ones written in the Bengali script.

➲ The Manipuri language was included in the Eighth Schedule of the Constitution in 1992, but in Bengali script.

Towards phase-out:

➲ However, Meetei Mayek has seen a revival in the 21st century, with an initial shift to the Manipuri script in educational institutions and an amendment to the Manipur Official Language Act last year to mandate the phasing out of Bengali script in over the 10 years.

➲ However, the stumbling block to a complete switch-over has been the vernacular newspapers.

ENVIRONMENT

160-200 MN INDIANS COULD BE EXPOSED TO LETHAL HEAT WAVES ANNUALLY: WORLD BANK REPORT

Why in news?

➲ Recently, the World Bank launched a report titled, "Climate investment opportunities in India's cooling sector".

Details:

➲ From 2030, 160 million to 200 million people can be exposed to lethal heatwaves in India every year, and nearly 34 million Indians will face job losses due to heat stress-related productivity decline.

➲ By 2037, the demand for cooling is likely to be eight times more than the current level, as per the report.

➲ In this scenario, it is imperative for India to deploy alternative and innovative energy efficient technologies for keeping spaces cool.

Shifting to energy-efficient pathway:

➲ Investing in India's cooling sector could open an investment opportunity of $1.6 trillion by 2040, besides reducing greenhouse gas emissions significantly and creating 3.7 million jobs.

➲ With the demand for cooling shooting up, there will be a demand for a new air-conditioner every 15 seconds, leading to an expected rise of 435% in annual greenhouse gas emissions over the next two decades. Thus, there is a need to shift to a more energy-efficient

pathway which could lead to a reduction in expected CO_2 levels.

Roadmap:

➲ The report proposes a road map to support New Delhi's India Cooling Action Plan (ICAP), 2019, through new investments in three major sectors:
a) building construction
b) cold chains
c) refrigerants

➲ Adopting climate-responsive cooling techniques as a norm in both private and government-funded constructions can ensure that those at the bottom of the economic ladder are not disproportionately affected by rising temperatures.

➲ The report suggests that India's affordable housing programme for the poor, the Pradhan Mantri Awas Yojana (PMAY), can adopt such changes on scale.

District cooling:

➲ It proposed enacting a policy for "district cooling", which could lead to the consumption of 20-30% less power than the most efficient conventional cooling solutions.

➲ District cooling technologies generate chilled water in a central plant which is then distributed to buildings via underground insulated pipes.

➲ This brings down the cost for providing cooling to individual buildings. Apart from this, guidelines for implementation of local and city-wide urban cooling measures such as cool-roofs should also be considered.

Way Forward:

➲ India's cooling strategy can help save lives and livelihoods and reduce carbon emissions.

SC SEEKS CENTRE'S RESPONSE ON EVOLVING A PROGRAMME TO PROTECT GREAT INDIAN BUSTARD
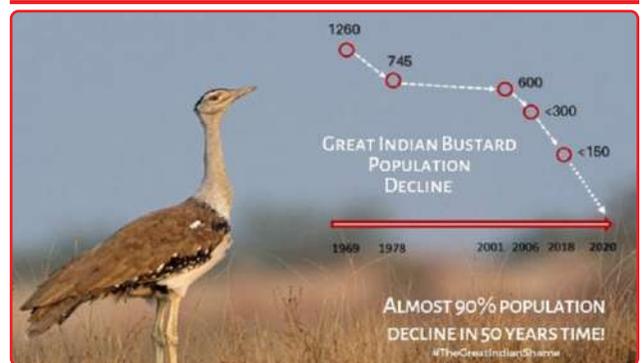
Why in news?

➲ Recently, the Supreme Court sought the government's response about evolving a "Project Great Indian Bustard" conservation programme like the Project Tiger to bring attention to the peril faced by the critically endangered bird.

⮞ Project Tiger is touted by the government as one of the most successful conservation programmes for a single species in the world.

Background:

⮞ The court is hearing a series of petitions highlighting the numerous deaths of Great Indian Bustards due to power transmission lines criss-crossing their habitat in Gujarat and Rajasthan.

Key directions by the Special Bench:

⮞ In its order, the Special Bench, directed the Chief Secretaries of Gujarat and Rajasthan to undertake and complete a comprehensive exercise within four weeks to find out the total length of the transmission lines in question and the number of bird diverters required in the priority areas of the birds' habitats.

⮞ The court was not, however, for the time being, ready to agree with the Centre's plea to expand its expert committee formed in April 2022 to study the problem.

⮞ The government wanted the court to allow the Additional Secretary of the Renewable Energy Ministry and the Chief Operating Officer of Central Transmission Utility of India Ltd. to join the committee as domain experts on transmission lines. Instead, the Bench said the expert committee was free to consult the firm's officer for his expert opinion for now.

About Great Indian bustard (GIB):

⮞ Locally called 'godawan', the Great Indian bustard (GIB) has been categorised as critically endangered by the International Union for Conservation of Nature (IUCN).

⮞ The bird, which once inhabited 12 states, is wiped out from 90% of its former habitat and is confined to three small pockets: Jaisalmer in Rajasthan, the grasslands of Kutch in Gujarat and the trijunction of Maharashtra, Karnataka and Andhra Pradesh. About 100 of these birds are in Jaisalmer alone.

⮞ Rajasthan's flagship species and state bird, it was once in the race to be India's national bird.

Threats:

⮞ Gaming and hunting had wiped out most of its population till 1972 when hunting was banned.

⮞ Its drastic falling numbers since then, from 1,000 in 1980 to less than 150 now has been attributed to the shrinking of its habitat due to the conversion of grasslands and scrublands for agricultural and industrial use, attack by feral dogs and wild pigs, and collision with windmills.

IEX SAYS IT HAS BECOME INDIA'S FIRST CARBON-NEUTRAL POWER EXCHANGE

Why in news?

⮞ India's leading energy trading platform IEX said had become the country's first carbon-neutral power exchange using market-based tradable instruments to offset its carbon emissions.

CERSs:

⮞ To reduce its carbon footprint, the Indian Energy Exchange (IEX) said that it voluntarily cancelled the certified emissions reductions (CERs) from clean projects registered under the Clean Development Mechanism of the United Nations Framework Convention on Climate Change.

⮞ A CER is a certificate issued by the United Nations to member countries for preventing one tonne of carbon dioxide emissions.

Reducing GHG emissions:

⮞ According to the recent UNEP 2022 report, global GHG emissions must be reduced by 45% by 2030 to get on track to limit global warming to 1.5 degrees. The total global GHG emissions were estimated at around 53 GTCO2eq in 2021.

⮞ The recently concluded COP27 reiterated the need to ramp-down GHG emissions. India has set a national target of net zero emissions by 2070.

⮞ Prime Minister Narendra Modi announced India's pledge at the COP26 Glasgow Summit in November 2021.

Way Forward:

⮞ Net zero, or becoming carbon neutral, simply means not adding to the amount of greenhouse gases already present in the atmosphere.

⮞ IEX is committed to fulfilling India's net zero emissions target by creating an ecosystem for reducing emissions.

CHHATTISGARH'S FIRST-EVER INTER-STATE BIRD SURVEY

Why in news?

⮞ Recently, Chhattisgarh's first-ever inter-state bird survey was conducted in the Kanger Valley National Park from November 25-27, 2022.

Details:

⮞ The survey was organised by the forest department of and birders from Chhattisgarh, in collaboration with non-profits Birds & Wildlife of Chhattisgarh and Bird Count India.

⮞ Bird watchers and forest department officials counted 200 types of birds here.

○ Nine species of owls (including the spot-bellied eagle-owl), 10 birds of prey, 11 species of woodpeckers (including white-bellied woodpecker, the largest woodpecker in peninsular India), and many other species were documented during the survey.

Key Highlights:

○ The survey revealed that the landscape of Kanger Valley can potentially host species found in the Himalayas, the Northeast, the Eastern and Western Ghats.

○ For instance, the Malabar trogon and white-bellied woodpecker are thought to be birds of the Western Ghats. Many species of flycatchers and warblers from temperate Eurasia visit the region during the winter.

○ Among visitors, pied wheatear and northern lapwing are new birds for Chhattisgarh, with the pied wheatear having never before been observed in Central India.

○ The Kanger Valley National Park is also home to a population of Chhattisgarh's state bird, the hill myna.

○ During the bird survey, participants also saw mammals like Malabar giant squirrel, chital, rhesus macaques, grey langurs, scat of sloth bears and pugmarks of leopards. The Indian wolf, an endangered species, was also seen.

Way Forward:

○ Periodic bird surveys can help monitor the health of the national park's bird populations for conservation and showcase to the world the unique diversity of the region.

5 BIHAR VILLAGES TO BE DEVELOPED INTO HUMAN-CARNIVORE COEXISTENCE ZONE

Why in news?

○ Five villages of the Valmiki Tiger Reserve in West Champaran district of Bihar will be developed into a model human-carnivore coexistence zone.

Objective:

○ The objective of the project is to end the human-carnivore conflict in the Valmiki-Chitwan-Parsa transboundary landscape.

Stakeholders:

○ The state government will join hands with the Wildlife Trust of India, a Nepalese organisation and a UK-based zoo for the project.

○ The WTI, National Trust for Nature Conservation (NTNC-Nepal) and Chester Zoo (UK) had jointly applied for the project and sought a letter of support from the Environment, Forest and Climate Change Department.

Human-wildlife conflict:

○ The Chester Zoo has been actively working on human-wildlife conflict worldwide for the last several years, including in Terai in Nepal, where human-tiger conflict is a matter of concern.

○ Human-wildlife conflict is among the most severe threats to many species around the world.

○ The project will focus on community engagement, develop methods to reduce livestock depredation and alter village practices and behavioral issues.

○ The three-year initiative will start in 2023.

Valmiki Tiger Reserve:

○ The Valmiki Tiger Reserve was recently in news as a man-eater tiger that had killed nine people and scores of domestic animals, was shot dead in October 2022.

○ The reserve plays a critical role in maintaining genetically robust populations of tigers.

○ The forest corridors between India and Nepal are extensively used by tigers and other large mammals.

Tiger population in Bihar:

○ The state government has taken several measures to protect the habitats of the big cats and conserve its population based on the National Tiger Conservation Authority's guidelines.

○ The tiger population of the state jumped by over 50 per cent between 2014 and 2018, from 32 to around 50.

INDIA'S GREENHOUSE-IN-A-BOX WINS PRINCE WILLIAM'S EARTH SHOT PRIZE 2022

Why in news?

○ India's Greenhouse-in-a-box was among the five winners announced by the Prince of Wales, Prince William, in Boston, United States.

Details:

○ It is a sustainable solution for small-scale farmers developed by an Indian startup, Kheyti, in Telangana which has won one million pounds ($1.2 million).

➲ Kheyti won the prize in the Protect and Restore Nature category which saw hundreds of entries from across the world.

Greenhouse-in-a-box:

➲ Kaushik Kappagantulu of Kheyti, had launched the solution for at least 100 million local smallholder farmers who are most impacted by climate change.

➲ The aim of greenhouse-in-a-box is to reduce costs and increase yields which in turn would help protect the livelihoods of these farmers.

➲ This simple solution has bigger implications than the Greenhouse-in-a-box, which can grow crops while offering them shelter from unpredictable elements including destructive pests.

➲ The plants in this greenhouse require 98 per cent less water while the yield is seven times higher than those grown outside. Furthermore, it also costs 90 per cent less than an average greenhouse.

Other winner from India:

➲ Among the 15 finalists, there was another Indian project named Fleather, developed by Founder and CEO Ankit Agarwal's Phool which is based in the state of Uttar Pradesh.

➲ The project began with the aim to clean up India's holiest river Ganges and eventually they were able to collect flowers dispensed into the river and turn them into sustainable leather called Fleather.

About 'Eco Oscars':

➲ Founded by Prince William, this was the second edition of the Earthshot prize which has also been dubbed the 'Eco Oscars' and witnessed the presence of several celebrities who walked the green carpet.

DESPITE DIFFERENCES, CONSERVATION CHALLENGES SIMILAR IN MADAGASCAR, BRAZIL

Why in news?

➲ Two recent studies by researchers affiliated with 50 organisations worldwide, provide a portrait of Madagascar's biological riches and the main threats to nature the conservation outlook.

Background:

➲ Madagascar's nature is so unique that 82 per cent of its plant species and 90 per cent of its animals are endemic, found exclusively on the island off the coast of Southeast Africa.

➲ A population so impoverished that the country's Human Development Index (HDI) is one of the lowest in the world and lives among this rare biodiversity, creating the problem of balancing conservation with economic and social growth.

Island's biodiversity:

➲ Madagascar has species that are unique in the world, but it's far more than that. There are categories broader than species that only exist there, such as the lemurs (Lemuroidea), an entire order of birds (Mesitornithiformes) and all Mantella frog species (Mantellidae) except three. Loss of one species could mean the end of an entire lineage that took millions of years to evolve.

➲ Indeed, three lemur lineages (koala, monkey, and sloth lemurs) have already become extinct, as have the island's two hippopotamus species, the Grandidier's giant tortoise (Aldabrachelys grandidieri), and the elephant bird order (Aepyornithidae). According to experts, megafauna extinctions have serious consequences for the ecosystem's functioning.

➲ The study includes updates that reveal 11,516 vascular plant species (82 per cent of which are endemic) and 1,215 bryophytes (28 per cent of which are endemic) have been described.

➲ In terms of terrestrial and freshwater vertebrates, 95 per cent of the island's mammals, 56 per cent of its birds, 81 per cent of its river fish, and 98 per cent of its reptiles are unique to the island and cannot be found anyplace else on the planet.

Opportunities:

➲ A considerable proportion of the population makes a living from woods by collecting firewood or hunting, represents an opportunity for development based on the sustainable use of biodiversity.

➲ Madagascar has 1,916 (5 per cent) of the 40,283 plant species used by people globally, with 595 being native to the island. With 28 million inhabitants, 10.4 per cent of the territory is legally protected.

➲ Given these challenges, the emphasis should be on restoring vegetation elsewhere rather than on creating additional protected areas in order to relieve

the strain on current conservation units. Among the options identified for the country are reforestation and conservation based on scientific evidence and efficacy.

➲ They advocated for increased biodiversity monitoring and the creation of species databases. Furthermore, they emphasise the importance of increasing the efficacy of existing protection by engaging communities and giving possibilities for training and revenue-generating.

Way Forward:

➲ Actions to conserve forests should take into account the main causes of biodiversity loss, which include poverty and food insecurity, problems that also affect Brazil, despite the peculiarities of each country.

INDIA TAKES ANOTHER BIG STEP TOWARDS ACHIEVING 500 GW OF NON-FOSSIL FUEL BASED ELECTRICITY INSTALLED CAPACITY BY 2030
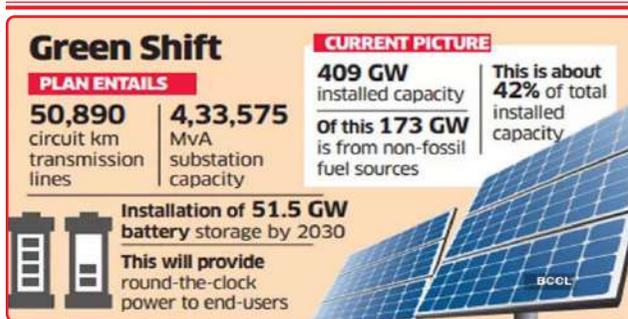
Why in news?

➲ Recently, the Union Minister for Power and NRE launched the plan "Transmission System for Integration of over 500 GW RE Capacity by 2030".

High-level committee:

➲ Ministry of Power had constituted a high-level committee under Chairperson, Central Electricity Authority with representatives from Solar Energy Corporation of India, Central Transmission Utility of India Ltd, Power Grid Corporation of India Ltd, National Institute of Solar Energy, and National Institute of Wind Energy for planning the transmission system required for having 500 GW of non-fossil fuel based installed capacity by 2030.

➲ The Committee prepared a detailed Plan titled "Transmission System for Integration of over 500 GW RE Capacity by 2030" in consultation with States and other stakeholders.

Key Highlights:

➲ The Plan is a major step towards achievement of the goal of integrating 500 GW of non-fossil fuel based capacity by 2030 by providing broad plan of required transmission system for having 537 GW of Renewable Energy capacity by the year 2030.

➲ The planned additional transmission systems required for having 500 GW of non-fossil fuel include 8120 ckm of High Voltage Direct Current Transmission corridors (+800 kV and +350 kV), 25,960 ckm of 765 kV ac lines, 15,758 ckm of 400 kV lines and 1052 ckm of 220 kV cable at an estimated cost of 2.44 lakh crore.

➲ The transmission plan also includes transmission system required for evacuation of 10 GW off-shore wind located in Gujarat and Tamilnadu at an estimated cost of Rs. 0.28 lakh crore. With the planned transmission system, the inter-regional capacity will increase to about 1.50 lakh MW by 2030 from 1.12 lakh MW at present.

➲ Considering the availability of Renewable Energy based generation for a limited period during day, the Plan also envisages installation of Battery Energy Storage Capacity of the order of 51.5 GW by 2030 to provide Round the Clock power to end-consumers.

Potential generation centres:

➲ The Plan has identified major upcoming non-fossil fuel based generation centres in the country, which include Fatehgarh, Bhadla, Bikaner in Rajasthan, Khavda in Gujarat, Anantapur, Kurnool RE Zones in Andhra Pradesh, offshore wind potentials in Tamil Nadu and Gujarat, RE park in Ladakh etc. and based on these potential generation centres, transmission systems have been planned.

➲ The planned transmission system projected will provide a visibility to the Renewable Energy Developers about the potential generation sites and scale of investment opportunity.

Way Forward:

➲ India has huge ambitions in energy transition and plans to have 500 GW of non-fossil fuel based electricity installed capacity by 2030, so that cleaner fuel comprises of 50% of the installed capacity mix by 2030.

➲ The installed electricity generating capacity in the country at present is 409 GW comprising of 173 GW from non-fossil fuel sources, which is about 42% of the total installed electricity generating capacity.

➲ For evacuation of power from the planned Renewable capacity by 2030, a robust transmission system needs to be in place in advance as the gestation period of wind and solar based generation projects is much less than that of associated transmission system.

RAJYA SABHA PASSES WILD LIFE (PROTECTION) AMENDMENT BILL

Why in news?

➲ Recently, the Rajya Sabha passed the Wild Life (Protection) Amendment Bill, 2022 which is intended to amend the Wild Life (Protection) Act, 1972 to incorporate more species protected under the law.

➲ The Lok Sabha passed the Bill during the Monsoon session earlier on August 2, 2022.

Key Highlights:

- The Bill, which had undergone the scrutiny of a parliamentary panel, seeks to conserve and protect wildlife through better management of protected areas and rationalise schedules, which list out species under the Wild Life (Protection) Act, 1972.
- According to the statement of objects and reasons of the Bill, the Wild Life (Protection) Act, 1972 was enacted to provide for the protection of wild animals, birds and plants with a view to ensure the ecological and environmental security of the country.
- The Bill seeks better management of protected areas and provides for certain permitted activities such as grazing or movement of livestock and bona fide use of drinking and household water by local communities.

Obligations under CITES:

- The Bill seeks to implement India's obligations under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which requires countries to regulate the trade of all listed specimens through permits.
- After being passed, the Bill will allow the transfer or transport of a captive elephant for religious and other purposes by a person with a valid ownership certificate.

30 RIVER LINKING COMPONENT SPOTTED: 16 UNDER PENINSULAR, 14 UNDER HIMALAYAN

Why in news?

- The National Water Development Agency (NWDA) under the Ministry of Jal Shakti has identified 16 links under peninsular rivers component and 14 links under Himalayan component of National Perspective Plan (NPP) for inter basin transfer.
- Pre-feasibility reports of all the 30 links have been completed and feasibility reports of 24 links and

detailed project reports of eight links have been completed.

Interlinking of rivers programme:

- The government has approved the implementation of the Ken-Betwa Link Project (KBLP), one of the links under Peninsular Rivers Component, in December 2021 with an estimated cost of Rs 44,605 crore with central support of Rs 39,317 crore through a special purpose vehicle - Ken Betwa Link Project Authority.
- Further, under the intra-state link projects, NWDA received 49 link proposals from 10 states, out of which pre-feasibility reports of 39 link projects and detailed project reports of six link projects were completed and sent to states concerned.
- The large temporal and spatial variation in availability of water in country leads to recurrent floods in some parts, while some other parts experience drought. Interlinking of rivers programme has been envisaged to reduce regional imbalance in the availability of water.

National Perspective Plan (NPP):

- The NPP for water resources development was formulated by the government of India in 1980 for providing storages and transfer of surplus waters to water deficit regions so as to mitigate the effect of annually recurring floods and also to minimise the incidence of droughts.
- The NPP would give additional benefits of 25 million hectares of irrigation from surface waters, 10 million hectares by increased use of ground water, 34,000 MW of hydropower generation and other benefits like augmenting domestic and industrial water supply, navigational facilities, employment generation, fisheries, salinity control, pollution abatement, etc.

CLEAN GANGA' CHANGES COURSE TO CONSERVATION, TOURISM, LIVELIHOOD

Why in news?

- Marking a shift in emphasis, the Union government's flagship Namami Gange programme, conceived to improve the sanitation levels in the Ganga River is now geared towards conservation, tourism and providing economic livelihoods.

Details:

➲ At a recent meeting, chaired by Union Jal Shakti Minister the thrust of decisions focused on having the Tourism Ministry develop a "comprehensive plan" for developing tourism circuits along the Ganga in line with "Arth Ganga," organic farming and cultural activities.

➲ Arth Ganga, or harnessing economic potential from the Ganga, follows from a directive by Prime Minister Narendra Modi in December 2019 after chairing a similar meeting of the Ganga taskforce.

Comprehensive Plan:

➲ Proceedings of the meeting, suggest that along with developing "tourism circuits" the Ministry was planning exhibitions and fairs in 75 towns along the main stem of the river;
  ➢ the Agriculture Ministry was taking steps to build organic farming and natural farming corridors;
  ➢ the Urban Affairs Ministry was focussed on mapping drains and solid waste management and,
  ➢ the Environment Ministry was scaling up afforestation and scaling up conservation efforts to protect the Gangetic river dolphin.

Treatment of water:

➲ The Power Ministry was working to reuse treated wastewater of thermal power and the Rural Development Ministry looking to rejuvenate small rivers and protect traditional water bodies.

➲ In States, the focus would be expeditiously completing projects and every Ganga district was expected to develop a scientific plan and health card for at least 10 wetlands and adopt policies for reuse of treated water and other by products.

Clean Ganga:

➲ Since 2014, when the cleaning of the Ganga was launched as a marquee government programme, close to ₹30,000 crore had been sanctioned for various projects, including building and improving sewers, and river rejuvenation activities.

➲ Updated estimates from the National Mission for Clean Ganga (NMCG) suggest that of 408 projects sanctioned under the programme, 228 have been completed, 132 are 'in progress,' with the rest in various stages of tendering.

BIHAR ACCOUNTS FOR 6 OUT OF 10 INDIAN CITIES WITH WORST AIR POLLUTION

Why in news?

➲ While the temperature is dipping across most of the country, the Air Quality Index (AQI) continues to remain above severe in most of the cities.

➲ In the list of 10 cities with the most air pollution, six are in Bihar.

Key Highlights:

➲ Saharsa is considered as the most air polluted city in the country having an air quality index of 366 which comes as health hazards for people having asthmatic problems.

➲ Besides Saharsa, Muzaffarpur was at 344, Bhagalpur at 330, Patna at 318, Begusarai at 270 and Purnea at 269.

➲ The AQI of Saharsa and Muzaffarpur crossed the 400 mark during the daytime.

Factors responsible:

➲ The dust is the main reason for deterioration of AQI in these cities.

➲ Rampant construction, and transportations of sand and construction materials are the main reasons for AQI deterioration.

➲ As a result of this, PM 2.5 and PM 10 levels increased five and threefolds from the normal days.

AQI:

➲ AQI from 0 to 50 is considered as good, from 51 to 100 moderate, from 101 to 150 is considered "unhealthy for the sensitive group, from 151 to 200 is considered unhealthy for all, from 201 to 300 is very unhealthy, and from 301 to 500 are hazardous for human health.

FOSSIL LIZARDS AND SNAKES INDICATE CLIMATE OF LATE MIOCENE HOMINID LOCALITY OF HARITALYANGAR, HIMACHAL PRADESH

Why in news?

➲ Remains of fossil lizards and snakes have been discovered recently from a late Miocene hominid locality of India (dated 9.1 Million Years) in Haritalyangar, Himachal Pradesh.

➲ It indicates a seasonally wet sub-humid to semi-arid climate in the area with mean annual temperature of around 15–18.6°C during that period.

➲ It was similar to condition in the area today.

Squamates:

➲ Lizards and snakes are cold-blooded squamates whose distribution, richness, and diversity of are

highly dependent on temperature and climatic conditions.

⮑ For this reason, squamates are widely regarded as excellent indicators of past climates, particularly ambient temperatures.
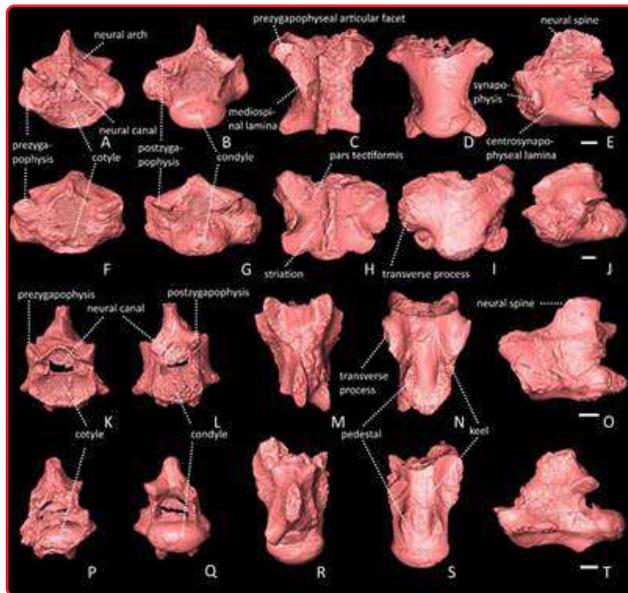
Taxa Varanus:

⮑ Wadia Institute of Himalayan Geology (WIHG), Dehradun in collaboration with other institutes, documented the taxa; Varanus, Python, a colubrid and a natricid from this region for the first time.

⮑ The occurrence of taxa Varanus in Haritalyangar is important in regard to its past biodiversity because varanids have a limited fossil record in Asia.

⮑ Also, the fossil Python from South Asia remains poor except for the earliest record from Pakistan (dated ca. 18 Ma) and Kutch, Gujarat (dated ca. 14-10 Ma).

⮑ A co-existence of Varanus and Python, two iconic squamates, revealed a wider distribution of the clade in this southern Asian territory.

Key Findings:

⮑ The overall Haritalyangar squamate fauna, which is dominated by both large and small semi-aquatic and terrestrial taxa, indicates a seasonally wet sub-humid to semi-arid climate in the area during the Late Miocene, 9.1 Ma.

⮑ Moreover, the mean annual temperature must have been high in the region at that time (not less than 15–18.6°C, similar to the mean annual temperature in this area today), indicated by the occurrence of important thermophilic elements such as Varanus and Python.

'COALITION FOR NATURE' FORMED BY SMALL ISLAND DEVELOPING STATES

Why in news?

⮑ A number of Small Island Developing States (SIDS) have agreed to form a 'Coalition for Nature' for the implementation and adoption of the Global Biodiversity Framework (GBF) at the 15th Conference of Parties (COP15) to the Convention on Biological Diversity.

Details:

⮑ The coalition is being led by Cabo Verde, Samoa and Seychelles.

⮑ The organisers of the event made a call to action for "enhancing means of implementing ambitious objectives for nature in SIDS under the Post-2020 Global Biodiversity Framework (GBF)."

Goal:

⮑ The goal of the coalition is to advocate for agreed common SIDS priorities and needs such as greater means of implementing biodiversity objectives in these places by putting up a unified front.

Significance of SIDS:

⮑ SIDS host 19 per cent of the world's coral reefs and their geographic isolation safeguards an array of endemic plants and animals found nowhere else on earth.

⮑ The island states are responsible for an ocean area 28 times the size of their land mass.

Members:

⮑ Belize, Cabo Verde, Comoros, Dominican Republic, Guinea Bissau, Kiribati, Samoa, Saint Lucia, Sao Tome and Principe, Seychelles, Solomon Islands, Tuvalu and Vanuatu are the current members of the coalition with Germany, France, Italy, Luxembourg, Monaco, Netherlands, Portugal, Spain and United Kingdom as Friends of the SIDS Coalition.

SIDS Coalition:

⮑ The purpose of the SIDS Coalition is to underline how SIDS are home to a large portion of the world's biodiversity and show that they have been using nature-based solutions and leading the world by example.

⮑ It will also highlight how enhancing the means of implementation of SIDS will be strategic to save the planet.

⮑ The SIDS Coalition called for "a capacity development plan for SIDS to support the implementation of the global biodiversity framework (GBF)". This will be a

strategic vehicle to catalyse technical and financial support for SIDS' national implementation of GBF.

Finance solutions:

➲ It called for increasing SIDS' access to concessional finance and finance solutions for biodiversity conservation such as:

➲ Supporting blended and innovative finance mechanisms, solutions and associated policy frameworks to incentivize and de-risk investment

➲ Supporting SIDS' technical cooperation, technological transfer and data management capacities by enhancing national capacities for creating science-policy interfaces. These would have a focus on national environmental accounting systems, valuation tools for ecosystem services and usability / accessibility of existing data banks

➲ Accelerating biodiversity mainstreaming across sectors and synergies across the three Rio Conventions.

Support:

➲ The SIDS Coalition will be supported by the Friends of the Coalition in the form of 'voice of support', implementation of the SIDS Call for Action or by contributing to the lean virtual secretariat support for the sustained operation of the Coalition.

➲ The UK committed doubling climate finance through a $500 million Blue Planet Fund to help SIDS develop blue economies.

UN CHIEF TO CONVENE 'NO-NONSENSE' CLIMATE AMBITION SUMMIT IN SEPT NEXT YEAR

Why in news?

➲ Recently, UN Secretary General announced that he will convene a no-nonsense climate ambition summit in September 2023.

➲ He said he will keep pushing for a Climate Solidarity Pact, in which all big emitters make an extra effort to reduce emissions this decade in line with the 1.5-degree goal and ensure support for those who need it.

Climate Ambition Summit:

➲ He will convene a Climate Ambition Summit in September 2023.

➲ He noted that while invitation to the summit is open, there will be a non-negotiable price of entry to the summit, which is credible, serious and new climate action and nature-based solutions that will move the needle forward and respond to the urgency of the climate crisis must be presented.

➲ Asserting it will be a no-nonsense summit, with no exceptions and no compromises, he cautioned that there will be "no room for back-sliders, greenwashers, blame-shifters or repackaging of announcements of previous years.

➲ He called on every leader to step up from governments, business, cities and regions, civil society and finance.

Way Forward:

➲ The Climate Ambition Summit will be convened alongside a crucial gathering of world leaders to accelerate action at the mid-way point of the Sustainable Development Goals.

THREE MORE SITES ADDED TO TENTATIVE LIST OF UNESCO

Why in news?

➲ Recently, Gujarat's Vadnagar town, the iconic Sun Temple at Modhera, and the rock cut sculptures of Unakoti in Tripura have been added to the tentative list of UNCESO World Heritage Sites.

➲ With this, India now has 52 sites on UNESCO Tentative List.

New editions to tentative list:

➲ The Sun Temple at Modhera which is dedicated to the sun god, is the earliest of such temples which set trends in architectural and decorative details, representing the Solanki style at its best.

Vadnagar:

➲ Vadnagar is a municipality in Mehsana district of Gujarat. A multi-layered historic town, Vadnagar has a recorded past stretching back to nearly 8th century BC.

➲ The town still retains a large number of historic buildings that are primarily religious and residential in nature.

Unakoti:

➲ Unakoti is an ancient holy place associated with Shaiva worship.

⮱ The site is a massive gallery set in a forested area displaying a number of towering low-relief images in a unique style, making it a masterpiece of human creative genius.

What is tentative list?

⮱ The UNESCO tentative list is an "inventory of those properties which each State Party intends to consider for nomination".

⮱ As per Operational Guidelines, 2019 of UNESCO, it is mandatory to put any monument/site on the Tentative List (TL) for one year before it is considered for the final nomination dossier.

⮱ Once the nomination is done, it is sent to the World Heritage Centre (WHC).

BOMB CYCLONE, THE WINTER STORM THREATENING UNITED STATES

Why in news?

⮱ The recent winter storm in United States is expected to worsen into a rare phenomenon known as a bomb cyclone as it gains strength.

⮱ An arctic blast is bringing extreme cold, heavy snow and intense wind across much of the US.

What is bomb cyclone?

⮱ A bomb cyclone is a mid-latitude storm in which the central pressure drops fast at one millibar per hour for at least 24 hours. However, the millibar readings can change based on where the storm is forming.

⮱ Air pressure is the measurement of the force exerted by the weight of the atmosphere. The lower this pressure, the stronger is the storm.

How it is formed?

⮱ A bomb cyclone is formed when the air of different air masses (cold, dry) comes together.

⮱ As the warm air rises, it creates a cloud system lowering air pressure and forming into a storm circulating counterclockwise around the low-pressure area.

⮱ The bomb cyclone will be characterised by cold winds, which are also expected to pick up, and wind chill temperatures could drop to dangerous lows far below zero, enough to cause frostbite within minutes.

What's next?

⮱ The dangerous storm is expected to hit everyone east of the Rockies, around two-thirds of the country. Though much of the West Coast will be shielded from the cold, the Arctic front is expected to pass east and south all the way through Florida.

SECRET OF HOW FROGS TURN TRANSPARENT REVEALED

Context:

⮱ While lizards change colour based on their surroundings, some frog species have a unique ability to turn their appearance on and off. These species found in South and Central America use their ability to become transparent as a form of camouflage during the day.

⮱ Researchers have now observed that these frogs are able to maintain a high level of transparency because a large proportion of their red blood cells are "hidden" in the liver. Researchers said that this allows the frogs to attain transparency when they are the most vulnerable.

Defence mechanism:

⮱ The frogs use their transparency as a form of security against external dangers.

⮱ Their delicate, greenish transparent forms don't cast shadows, rendering them almost invisible to birds and other predators passing overhead or underneath.

⮱ However, when northern glass frogs wake up and hop around in search of insects and mates, they take on an opaque reddish-brown colour.

⮱ Transparency in animals is a complex form of camouflage involving mechanisms that reduce light scattering and absorption throughout the organism. In vertebrates, attaining transparency is difficult because their circulatory system is full of red blood cells (RBCs) that strongly attenuate light.

Other Findings:

⮱ While asleep, the frogs concentrate, or "hide," nearly 90% of their red blood cells in their liver. Because they have transparent skin and other tissues, it's the blood circulating through their bodies that would otherwise give them away.

‣ The frogs also shrink and pack together most of their internal organs.

Way Forward:

‣ Understanding this liver-packing process may inform our understanding of hemodynamics more broadly.

‣ Further research on the species could provide useful clues for the development of anti-blood clotting medications.

FEWER POLLUTED RIVER STRETCHES BUT WORST STRETCHES UNCHANGED

Why in news?

‣ The number of polluted stretches in India's rivers has fallen from 351 in 2018 to 311 in 2022 though the number of most polluted stretches is practically unchanged, according to a report from the Central Pollution Control Board (CPCB).

‣ The CPCB network monitors water quality at 4,484 locations in 28 States and seven Union Territories including rivers, lakes, creeks, drains and canals.

Terminology:

‣ Bio-chemical Oxygen Demand (BOD) exceeding 3.0 mg/L (milligram per litre) are identified as polluted locations.

‣ Two or more polluted locations identified on a river in a continuous sequence are considered as a "polluted river stretch."

‣ A BOD less than 3 mg/L means the river stretch is fit for 'Outdoor Bathing.'

‣ Further, stretches with a BOD exceeding 30 mg/L are considered 'Priority 1,' meaning, the most polluted and thus needing the most urgent remediation.

‣ There are five such categories with 'Priority 2' indicating a BOD of 20-30 mg/L and 'Priority 5' indicating 3-6 mg/L.

‣ The success of river-cleaning programmes are measured by the number of stretches moving from 1 to 2, 2 to 3 until those in 5 (requiring the least action) too reduce.

Key Findings:

‣ In 2018, when the CPCB published its report (after analysing stretches in 2016 and 2017), there were 45 stretches categorised in Priority 1, 16 in Priority 2,

43 in Priority 3, 72 in Priority 4 and 175 in Priority 5. The latest report counts 46 in P1, 16 in P2, 39 in P3, 65 in P4 and 145 in P5. All of the improvement thus, were in river stretches that required relatively lesser intervention.

‣ No change/ slight change in Priority I & II category of polluted river stretches indicates that further stringent actions are required for control of organic pollution from various point sources of pollution.

‣ While Gujarat and Uttar Pradesh had the maximum number of 'Priority 1' river stretches (6), Maharashtra had the maximum number of polluted river stretches i.e. 55, followed by Madhya Pradesh (19), Bihar (18), Kerala (18), Karnataka (17) and Uttar Pradesh (17).

‣ The overall decrease in the net number of identified polluted river stretches, which have shown improvement in the water quality, "could be attributed" to the efforts being made for development of infrastructure for sewage management, industrial effluent management, waste management and enforcement of regulations for prevention and control of pollution in rivers.

NGT Orders:

‣ In 2018, the National Green Tribunal had passed orders that the CPCB and the Jal Shakti Ministry monitor river pollution and ensure that all acts of river pollution were dealt with.

‣ Every State had to ensure that at least one river stretch was "restored" to the extent that it was at least fit for bathing. States were also directed to implement 'Action Plans' detailing how they were addressing different stretches of their rivers.

SCIENCE & TECH

SCIENTISTS REVIVE 48,500-YEAR-OLD 'ZOMBIE VIRUS' BURIED IN ICE IN RUSSIA

Scientists revive 48,500-year-old 'Zombie Virus' buried in ice in Russia

Why in news?

‣ Climate change due to global warming is rapidly thawing the ancient permafrost, which may pose a new threat to humans, according to researchers who revived nearly two dozen viruses, including one frozen under a lake more than 48,500 years ago.

New pathogens:

- European researchers examined ancient samples collected from permafrost in the Siberia region of Russia. They revived and characterized 13 new pathogens, what they termed "zombie viruses," and found that they remained infectious despite spending many millennia trapped in the frozen ground.
- The oldest, dubbed as Pandoravirus Yedoma, is known to be 48,500 years old, which breaks the previous record held by a 30,000-year-old virus that was uncovered by the same team in 2013.
- Scientists have long warned that the thawing of permafrost due to atmospheric warming will worsen climate change by freeing previously trapped greenhouse gases like methane. But its effect on dormant pathogens is less well understood.

Way Forward:

- The potential revival of a virus that could infect animals or humans is much more problematic, they said, warning that their work can be extrapolated to show the danger is real.

A LARGE STUDY SHOWS IMMENSE BENEFITS OF REDUCING SALT INTAKE

Why in news?

- A recent study showed a higher incidence of heart attacks, heart failure and strokes with higher frequency of adding salt to one's food. This did not include the salt used for cooking.

DASH diet:

- After adjusting for all other risk factors, it was found that adding less salt with food was associated with fewer heart attacks and strokes. This was found to be true even in participants who were following the DASH diet (Dietary Approaches to Stop Hypertension).
- DASH is the best recommended diet to prevent cardiovascular events.
- DASH diet involves eating fruits, vegetables, lean meat, poultry, nuts, whole grains, and reducing the intake of saturated fats, cholesterol, and sugar.

Recommendation by WHO:

- The WHO recommends only 5gm of salt per day. The recent study points to the immense benefit of avoiding salt on the table.

Case in India:

- A study conducted by Sapiens heath foundation amongst school and college students in Chennai showed a 10% prevalence of hypertension.
- Intake of salt may be worse in Indians since pickles are often introduced early in life. We cannot forget the hidden salt in preserved and packaged foods. The consumer is not given a choice to choose food items based on salt content.

High sodium content:

- Another confusion is that the majority of labels show sodium content. The ordinary consumer is not aware that 1 gm of sodium is 2.5 gm of salt. It is high time that a product is available in two forms; normal and low salt content like the fat content in milk.
- Salt substitutes are good since majority of them contain upto 25% potassium chloride.
- A 2001 study found salt substitutes reduced the incidence of stroke and heart attack by almost 10%, and deaths too.

BENGALURU RESEARCHERS DEVELOP HIGHLY ENERGY-EFFICIENT COMPUTER PLATFORM
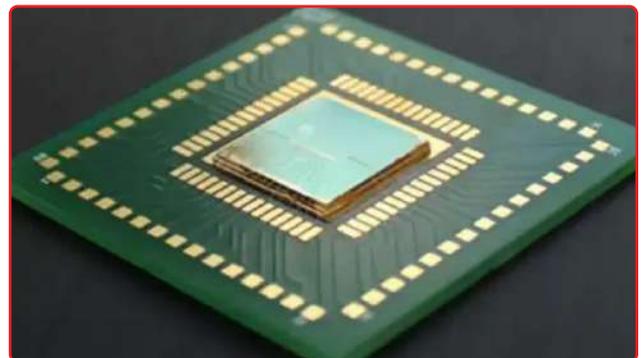
Why in news?

- Researchers at the Centre for Nano Science and Engineering (CeNSE), have developed a highly energy-efficient computing platform that offers promise in building next-generation electronic devices.
- With rising demand for faster and more intelligent computers and devices, there is a pressing need to develop alternatives to traditional electronic components that will make these devices more energy-efficient.

Memristors:

- Instead of using complementary metal-oxide semiconductors (CMOS) which are the building blocks of most electronic circuits today, the team of researchers used components called memristors that can both store data and perform computation.
- By designing unique memristors based on metal-organic complexes, the team could cut down the number of components needed in a circuit, greatly increasing the speed and efficiency.

New Vs. Old:

◐ Existing computing architectures process and store data at separate physical locations. The back-and-forth communication between two locations consumes the lion's share of the computing energy. They are resolving this problem by performing both computation and storage at the same physical location.

◐ Previously developed memristor-based circuits also suffer from limitations in speed and have a greater chance of errors accumulating because they carry out operations sequentially. The design of the new platform reduces the number of operational steps, increasing speed and reducing error.

New platform:

◐ The metal-organic complexes used to build their platform were designed by specialist scientist at CeNSE. These (complexes) are like electron sponges that can take and give away electrons for billions of cycles without degradation.

◐ By making small chemical modifications adding or swapping out one or two ions in the complexes, for example researchers might be able to adapt the same circuit for multiple functions.

◐ When they built circuits that carry out mathematical operations and compared them with a typical CMOS circuit, the team found that the new platform offered 47 times higher energy efficiency and 93 times faster operating speed, while only taking up nine per cent of the physical footprint.

Way Forward:

◐ Moving forward, they plan to connect the platform to a sensor for example, a smartphone screen that senses touch and study how efficiently the platform processes the data it collects.

TINY UNDERWATER SAND DUNES SHED LIGHT ON LARGER TERRESTRIAL AND MARTIAN FORMATIONS

Why in news?

◐ Researchers have been studying the dynamics of how crescent-shaped sand dunes are formed.

◐ Until now, however, there has been a glaring lack of grain-scale computations of the growth and evolution of barchan dunes.

Barchans:

◐ Known as barchans, these formations are commonly found in various sizes and circumstances, from finger-length dunes on the ocean floor, to stadium-sized dunes in the Earth's deserts, to dunes that extend for a kilometer across the surface of Mars.

Key Highlights:

◐ Using a computational fluid dynamics approach, they carried out simulations by applying the equations of motion to each grain in a pile being deformed by a fluid flow, showing the ranges of values for the proper computation of barchan dunes down to the grain scale.

◐ Using a CFD-DEM (computational fluid dynamics/discrete element method) approach, they carried out simulations by applying the equations of motion to each grain in a pile being deformed by a fluid flow.

◐ Indeed, while Martian and terrestrial barchans influenced by wind occur on much larger time and length scales compared to aquatic cases, which occur in a matter of minutes and centimeters, they share many similar dynamics.

Way Forward:

◐ This is relevant to geophysicists, hydrologists, climate scientists, and engineers, as it will help accurately predict the future of barchan fields on Earth and Mars and provide an account of their histories.

VIKRAM SARABHAI SPACE CENTRE GETS NEW TRISONIC WIND TUNNEL
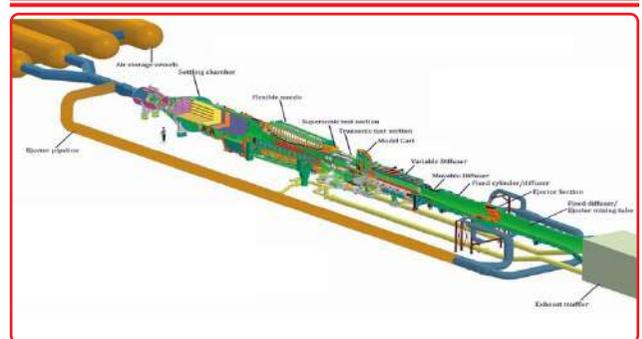
Why in news?

◐ Recently, the new trisonic wind tunnel at the Vikram Sarabhai Space Centre (VSSC) was inaugurated by conducting the first blow-down test successfully.

◐ The massive structure, which can perform tests in three speed regimes, equips the Indian Space Research Organisation (ISRO) with a robust in-house support system for space missions.

What are wind tunnels?

◐ Wind tunnels are devices used to study the effects of air flows on solid objects; in this case, scale models of ISRO rockets and spacecraft.

Trisonic wind tunnel:

- The Trisonic Wind Tunnel is a system to aid aerodynamic design of rockets and re-entry spacecrafts by characterizing a scaled model by evaluating forces, moments, load distribution, unsteady pressures, acoustic levels etc.
- The tunnel has an overall length of about 160m and has a maximum cross section of 5.4m.
- The tunnel can be used for testing various space vehicles in three flight regimes - below the speed of sound, at the speed of sound and above the speed of sound: hence the name trisonic wind tunnel.
- The tunnel can simulate flight conditions from 0.2 times the speed of sound (68 m/s) to 4 times the speed of sound (1360 m/s).

What is blow down test?

- In a 'blow down test', stored gases are released and blown through the tunnel's test section, simulating flight conditions.
- The tunnel can simulate flight conditions from 0.2 times the speed of sound to four times the speed of sound, according to the space agency.

Way Forward:

- It is a big step towards self-reliance in the aerospace sector by India.

JAPANESE STARTUP LAUNCHES COUNTRY'S FIRST EVER LUNAR MISSION

Why in news?

- Recently, a Japanese startup's spacecraft was launched to the Moon in the country's first-ever lunar mission and the first of its kind by a private company.
- So far only the United States, Russia and China have managed to put a robot on the lunar surface.

Details:

- The launch was carried out by Elon Musk's SpaceX in Cape Canaveral in the US state of Florida.
- The spacecraft, produced by Tokyo-based startup ispace, blasted off aboard a Falcon 9 rocket.

ispace mission:

- The ispace mission is the first of a program called Hakuto-R, which means "white rabbit" in Japanese.

- The lunar lander was expected to touch down on the visible side of the Moon in April 2023, the year of the rabbit in Japan.
- The ispace lunar lander is also carrying two robots produced by Japan's space agency and a disc with the song "SORATO" by Japanese rock band Sakanaction, which was originally written in support of the Google competition.
- Measuring just over 2 by 2.5 meters, the spacecraft has a payload that includes a 10-kilogram rover built by the United Arab Emirates.
- The Gulf country is a newcomer to the space race but recently sent a probe into Mars' orbit last year. If the rover, named Rashid, successfully lands, it will be the Arab world's first Moon mission.

Way Forward:

- ispace "aims to extend the sphere of human life into space and create a sustainable world by providing high-frequency, low-cost transportation services to the Moon."

GALAXEYE PLANS TO LAUNCH WORLD'S FIRST MULTI-SENSOR SATELLITE FOR EARTH OBSERVATION
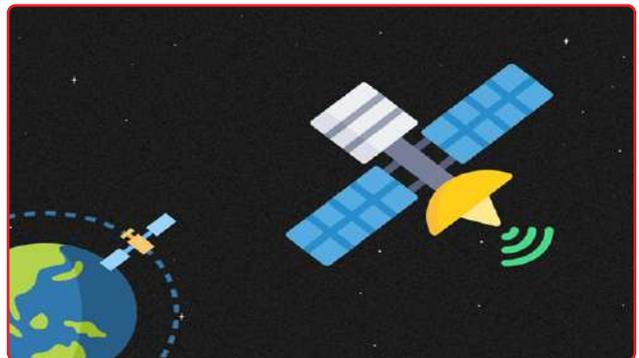
Why in news?

- GalaxEye, a spacetech start-up in Karnataka's Bengaluru, has raised 3.5 million dollars in fresh funding as it aims to launch the world's first multi-sensor satellite for earth observation.

Key Highlights:

- The company aims to launch its own small satellite constellation, which, once fully operational, will provide global coverage in under 12 hours.
- The data fusion technology developed in-house by the firm will bring insights and data from space, enabling satellite constellations to perform all-weather imaging at all times without atmospheric interference typical of single-sensor satellites.

About GalaxEye:

- Founded in 2020, GalaxEye is the brainchild of several entrepreneurs emerging from Avishkar Hyperloop, a team of scientists brought together via global competition organised by Elon Musk's aerospace

manufacturer and space transportation services company SpaceX.

NEWLY DISCOVERED TWIN KEPLER PLANETS COULD BE UNIQUE WATER WORLDS
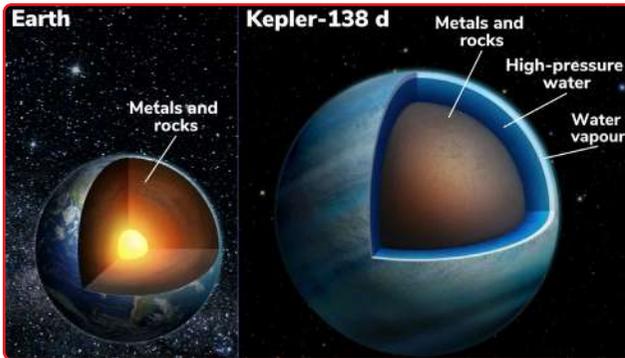
Why in news?
➲ Astronomers have discovered that two exoplanets orbiting a red dwarf star that are unique in their composition.
➲ These two exoplanets are unlike any other discovered outside the Solar System. These two planets are filled with water.

Details:
➲ These exoplanets located in a planetary system 218 light-years away in the constellation Lyra are unique since the liquid makes up a large volume of their composition.
➲ Astronomers observed exoplanets Kepler-138c and Kepler-138d with Hubble and the retired Spitzer space telescopes to make the watery discovery.

How they were discovered?
➲ The planets, which are about one and a half times the size of the Earth, were discovered along with its host star by NASA's Kepler Space Telescope.
➲ While the water wasn't detected directly, researchers, by comparing the sizes and masses of the planets to models, conclude that a significant fraction of their volume should be made of materials that are lighter than rock but heavier than hydrogen or helium.
➲ The most common of these candidate material is water.

Density:
➲ The researchers maintained that with volumes more than three times that of Earth and masses twice as big, planets c and d have much lower densities than Earth.
➲ This is surprising because most of the planets just slightly bigger than Earth that has been studied in detail so far all seemed to be rocky worlds like ours.

TOI-1452 b:
➲ Recently, another team at the University of Montreal found another planet, called TOI-1452 b, that could potentially be covered with a liquid-water ocean.

INDIAN TELESCOPE REVEALS THE SECRET OF MYSTERIOUS CIRCLES IN SPACE
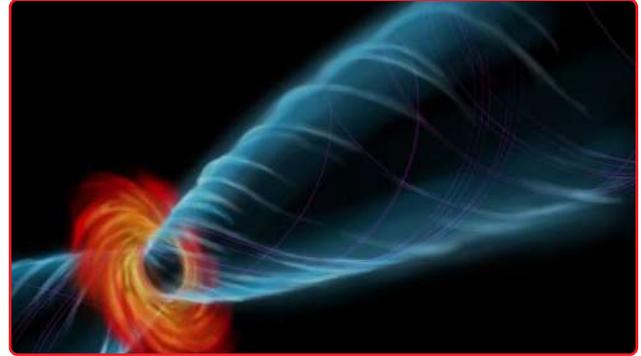
Why in news?
➲ Recently, an international team of researchers, including from India, has revealed that mysterious hazy circles of radio emission deep in celestial space could be remnants of supernovas, the biggest explosions in the universe.
➲ The emission circles known as Odd Radio Circles (ORCs) were detected recently using some of the most sensitive international radio telescopes.

Details:
➲ Astronomers used the Square Kilometer Array (SKA) in Australia & South Africa, the Giant Metrewave Radio Telescope (GMRT) in India, and the Low-Frequency Array (LOFAR) in the Netherlands to identify these radio emission circles, which are not seen in any other form of radiation.
➲ Researchers believe that some of these objects could be 1 million light-years across, about 10 times larger than our Milky Way, and are considered mysterious, as these objects could not be explained by any previously known astrophysical phenomena.

Contribution by Indian side:
➲ The discovery was led by Dr. Amitesh Omar, a Scientist at Aryabhatta Research Institute of observational sciences (ARIES), Nainital.
➲ His research indicates that these could be remnants of thermonuclear supernovas triggered by the explosion of a white dwarf star in a binary system heavier than 1.4 times the mass of the Sun.
➲ He invoked a widely known mechanism of disruption of a star by extreme tidal forces exerted by a massive black hole as the star comes in close proximity to the central massive black hole in a galaxy.
➲ In this process, the star is destroyed, and about half its mass is thrown away from the black hole at very high speeds. This disruption process releases a huge amount of energy, similar to that produced in a supernova explosion.
➲ The sudden release of huge energy creates shocks, which can traverse to around a million light-years in intergalactic space.

Conclusion:

➲ Researchers maintain that these radio circles are associated with distant galaxies as their centers have a known optical galaxy, therefore cannot be considered intergalactic supernovae.

GENES RESPONSIBLE FOR LONG LIFESPAN OF BANYAN, PEEPAL TREES IDENTIFIED
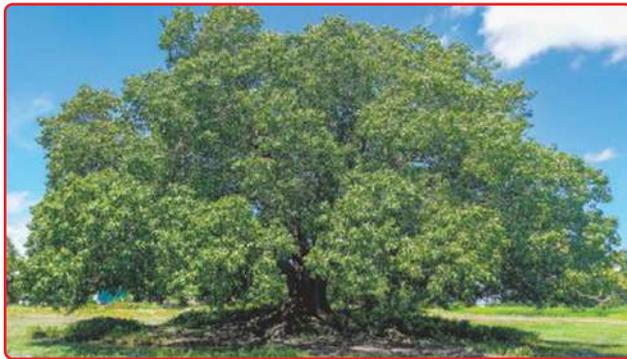
Why in news?

➲ Researchers at the Indian Institute of Science Education and Research (IISER) Bhopal have carried out whole genome sequencing of banyan (Ficus benghalensis) and peepal (Ficus religiosa) from leaf tissue samples.

➲ They also undertook a comprehensive genome-wide phylogenetic analysis with 50 other angiosperm plant species, including four other sequenced Ficus species.

➲ Genome sizes of these two Ficus species were corrected compared to the previously estimated genome sizes.

Adaptive Evolution:

➲ The work helped in identifying 17 genes in the case of banyan and 19 genes of peepal with multiple signs of adaptive evolution (MSA) that play a pivotal role in long-time survival of these two Ficus species.

➲ The genes with multiple signs of adaptive evolution came about in response to population bottleneck faced by both trees around 0.8 million years ago.

➲ The inclusion of coding genes from other Ficus species helped the researchers identify plausible species-specific genes responsible for the morphological characteristics and evolutionary adaptation in these two plant species.

MSA genes:

➲ Genes showing multiple signs of adaptive evolution in banyan were mainly associated with root development, leaf formation, metabolism, pollen tube and seed development and other developmental processes.

➲ The MSA genes of peepal trees were mainly associated with root development, reproduction, metabolism.

➲ Gene family expansion/contraction analysis undertaken by the researchers revealed that the highly expanded gene families of both the species were involved in disease resistance functions in plants.

➲ Disease resistance gene families showed gene expansion as well as high gene expression in these species, which can be used as a signature of long-lived plants.

Stress tolerance:

➲ In the case of banyan tree, 15 of 17 MSA genes were also associated with tolerance against environmental stress; drought, oxidative stress, and pathogens. In peepal trees, 17 out of 19 MSA genes were associated with stress tolerance activities.

➲ In addition, the researchers identified seven genes involved in two pathways that produce volatile organic compounds in floral scents, which attract wasps for pollination.

Key Findings:

➲ The adaptive evolution in genes in two cellular mechanisms might explain the well-developed aerial roots that is unique to banyan trees.

➲ These aerial roots help provide much support for the growth and survival of large trees against environmental challenges particularly strong winds that uproot many other similarly large trees.

➲ Both plants show genes with signatures of multiple adaptive evolution involved in phytohormone signalling pathways. These pathways function to regulate plant developmental senescence and ageing processes. This could be one more reason why banyan and peepal trees have a long lifespan.

➲ Both banyan and peepal trees have select plant disease resistance gene families that have been expanded through gene duplication events in the course of evolution which confers greater longevity.

➲ Also, 88% and 89% of the MSA genes in banyan and peepal trees, respectively, are associated with tolerance against biotic and abiotic stress responses. This, in turn, helps these plants to survive when faced with environmental challenges.

Way Forward:

➲ To survive in tropical and sub-tropical ecosystems as keystone species, Ficus trees have evolved their developmental and stress tolerance mechanisms. Stress tolerance mechanisms are also responsible for the medicinal properties of these trees.

➲ Availability of their genome sequences will aid in further studies on this ecologically important genus and other comparative aspects, including medicinal properties between short-lived and long-lived plants.

NASA LAUNCHES FIRST-EVER MISSION SWOT TO OBSERVE NEARLY ALL WATER ON EARTH

New satellite to provide crucial data on Earth's surface water

Surface Water and Ocean Topography (SWOT) satellite, developed by NASA and French space agency*, to survey for the first time nearly all Earth's surface water and measure height of oceans, lakes and rivers

LAUNCHED
Dec 16, 2022,
SpaceX Falcon 9 rocket
from Vandenberg
Air Base, California

IN ORBIT
- Survey at least 90%
of globe twice every 21 days
- 10 x current resolution

SWOT MISSION AIMS
Improve:
• flood forecasts
• drought monitoring
• sea level rise predictions
• understanding of oceans'
role in absorbing heat
from the atmosphere

Interferometer
Antenna 1

Interferometer
Antenna 2

Altimeter

10 metres

Source: NASA   *Centre National d'Etudes Spatiales (CNES)   UK and Canadian Space Agencies also contributing to the mission   AFP●

Why in news?
➲ NASA has launched the first-ever global satellite mission that will observe nearly all water on Earth's surface, measuring the height of water in the planet's lakes, rivers, reservoirs, and the ocean.
➲ The Surface Water and Ocean Topography (SWOT) spacecraft atop a SpaceX Falcon 9 rocket was launched from Vandenberg Space Force Base in California.

Details:
➲ SWOT, the advanced radar satellite is designed to give an unprecedented view of the life-giving fluid covering 70% of the planet, shedding new light on the mechanics and consequences of climate change.
➲ If all goes as planned, the SUV-sized satellite will produce research data within several months.
➲ Nearly 20 years in development, the SWOT incorporates advanced microwave radar technology that scientists say will collect height-surface measurements of oceans, lakes, reservoirs and rivers in high-definition detail over 90% of the globe.

Salient features:
➲ The satellite will measure the height of water in freshwater bodies and the ocean on more than 90 per cent of Earth's surface.
➲ This information will provide insights into how the ocean influences climate change; how a warming world affects lakes, rivers, and reservoirs; and how communities can better prepare for disasters, such as floods,.
➲ SWOT will cover the entire Earth's surface between 78 degrees south and 78 degrees north latitude at least once every 21 days, sending back about one terabyte of unprocessed data per day.
➲ One major thrust of the mission is to explore how oceans absorb atmospheric heat and carbon dioxide in a natural process that moderates global temperatures and climate change.

Better results:
➲ Scanning the seas from orbit, the SWOT was designed to precisely measure fine differences in surface elevations around smaller currents and eddies, where much the oceans' drawdown of heat and carbon is believed to occur. The SWOT can do so with 10 times greater resolution than existing technologies.
➲ The SWOT's ability to discern smaller surface features will help study the impact of rising ocean levels on coastlines. More precise data along tidal zones would help predict how far storm-surge flooding may penetrate inland.
➲ Freshwater bodies are another key focus of the SWOT, equipped to observe the entire length of nearly all rivers wider than 330 feet and more than 1 million lakes and reservoirs larger than 15 acres.

Way Forward:
➲ SWOT measurements will also help researchers, policymakers, and resource managers better assess and plan for things, including floods and droughts.

INDIA THIRD IN GLOBAL RANKING IN SCIENTIFIC PUBLICATIONS

Why in news?
➲ India has jumped to the third position in the global ranking in scientific publications.
➲ According to the National Science Foundation (NSF)'s Science & Engineering Indicators 2022 report of the United States, India's position globally in scientific publications, has improved from seventh position in 2010 to third position in 2020.

Details:
➲ India's scholarly output increased from 60,555 papers in 2010 to 1,49,213 papers in 2020.
➲ India now ranks third in terms of number of PhDs in science and engineering.
➲ The number of patents granted to Indian scientists at India Patent Office (IPO) during the last three years has also increased from 2,511 in 2018-19 to 4,003 in 2019-20 and 5,629 in 2020-21.

Funding:
➲ The Department of Science and Technology (DST) was likely to get 20 per cent more allocation in the upcoming Union Budget 2023-24 in comparison to last year.

- In the 2022-23 budget, the DST received Rs 6,002 Crore, which was 42 per cent of the total fund of Rs 14,217 Crore allocated to the Ministry of Science and Technology.
- The Department of Scientific and Industrial Research received Rs 5,636 crore (40%), while the Department of Biotechnology got Rs 2,581 crore (18%).

GII 2022:

- According to the Global Innovation Index (GII) 2022 brought out by World Intellectual Property Organization (WIPO), India's GII ranking has also improved significantly from 81st in 2014 to 40th position in 2022.

National Science Foundation:

- The National Science Foundation is an independent agency of the United States government that supports fundamental research and education in all the non-medical fields of science and engineering.

METEORITE FOUND IN ASSAM HIDES SECRETS OF THE ORIGIN OF LIFE ON EARTH

Why in news?

- Researchers at the Indian Institute of Technology (IIT) Kharagpur have found evidence of vesicles in minerals for the first time in any chondrite meteorite from the outer solar system and may find new clues about the origin of life.

Origin of life:

- Seven years after it survived a fiery entry through Earth's thick atmosphere and crashed near Kamargaon town in the Golaghat district of Assam, the piece of space rock is on the verge of unraveling the origin of life on Earth.
- The chemical composition hints that it all began in the core of stars and stardust.

Kamargaon meteorite:

- The meteorite found in Assam comes from the asteroid belt located between Mars and Jupiter.
- The space rock broke down from another source following a collision with an asteroid at a high velocity.
- This collision resulted in the breaking of the asteroid into small pieces. A few of these asteroid pieces fell on the Earth's surface as the Kamargaon meteorite.

- The Kamargaon meteorite came from an asteroid over 6.4 kilometers in size.

Findings:

- The findings of the study states that it is the first occurrence of vesicular olivine and pyroxene in an ordinary chondrite.
- The shocked meteorites are extraterrestrial rocks that experience transient high-pressure and high-temperature conditions caused by planetary collisions in outer space and contain abundant fractures subsequently filled with frictional melt known as shock veins.
- The study provides evidence of volatile elements, for example sulfur, sodium, manganese, and iron in the Kamargaon meteorite, which are crucial elements for the origin of life.

Way Forward:

- Researchers said that the volatile elements present in rocks become mobile at high temperatures and try to escape the rock. Such types of volatile escape from the rock systems create holes on the surface of the rocks known as vesicles.
- Therefore, these vesicles can be used as a tool to understand the outgassing mechanisms, quantity, and type of volatiles present in the rocks.

SCIENTISTS DISCOVER HAMMERHEAD SHARK NURSERY IN ECUADOR'S GALAPAGOS

Why in news?

- Recently, a team of researchers has discovered a nursery of baby hammerhead sharks off an island in Ecuador's Galapagos archipelago, a finding that could help protect the species from the threat of extinction.
- It was discovered near Isabela Island, the Galapagos' largest island, and offers refuge for the sharks during mating and early development stages.

IUCN Status:

- The International Union for Conservation of Nature (IUCN) considers the scalloped hammerhead shark, the species found in the Galapagos, as 'critically endangered.'

Threat:

- It is largely threatened by commercial fishing and demand for their fins, which are used to make shark fin soup.

- Researchers spent months scouring the archipelago for possible nursery sites as part of a hammerhead shark monitoring program.

Galapagos Islands:

- The Galapagos Islands with its unique wildlife was critical to British scientist Charles Darwin's theory of evolution.
- It is home to many species not found elsewhere such as giant tortoises, flightless cormorants and marine iguanas.

IIT ROORKEE ANNOUNCES DEVELOPMENT OF LOW-COST SOLAR CELLS BY RESEARCHERS

Why in news?

- Recently, Indian Institute of Technology (IIT) Roorkee announced that its researchers have successfully developed high-quality, efficient, and low-cost perovskite solar cells.

Perovskite solar cells:

- Perovskite solar cells are thin-film devices built with layers of materials, either printed or coated from liquid inks or vacuum-deposited.
- Perovskite solar cells have demonstrated competitive power conversion efficiencies with potential for higher performance, but their stability is limited compared to leading alternatives.
- The main aim is to optimise the efficiency and to reduce the cost of manufacturing for Perovskite solar Cells as much as possible.

Outcome:

- The modified perovskite solar cell leads to the optimum phase distribution, enlarged grain size, and improved crystallinity.
- The power conversion efficiency achieved for the developed perovskite solar cells is 17.05 per cent.

Way Forward:

- This technological development would boost self-reliance in India in the field of renewable energy.
- Moreover, this finding will offer new opportunities and the development of highly efficient perovskite solar cells with long-term operational stability, said the institute.

GAGANYAAN TARGETED TO BE LAUNCHED IN THE FOURTH QUARTER OF 2024

Why in news?

- Science & Technology Minister said that India's maiden human space flight 'H1' mission is targeted to be launched in the fourth quarter of 2024.
- The minister in a written reply informed that the paramount importance is that of the safety of the crew.

Uncrewed 'G1' mission:

- In view of the paramount importance of crew safety, two Test Vehicle missions are planned before the 'G1' mission to demonstrate the performance of crew escape system and parachute-based deceleration system for different flight conditions.
- The uncrewed 'G1' mission is targeted to be launched in the last quarter of 2023 followed by the second uncrewed 'G2' mission in the second quarter of 2024, before the final human space flight 'H1' mission in the fourth quarter of 2024.
- The first uncrewed flight of Gaganyaan programme i.e., 'G1' mission is aimed at validating the performance of Human rated launch vehicle, Orbital module propulsion system, mission management, communication system and recovery operations. The mission will carry a humanoid as payload.

IMAT:

- ISRO in November 2022 conducted the Integrated Main Parachute Airdrop Test (IMAT) of its crew module deceleration system.
- The test was conducted at the Babina Field Fire Range (BFFR) in the Jhansi district of Uttar Pradesh during which a 5-ton dummy mass, equivalent to the Crew module mass, was taken to an altitude of 2.5 kilometers and dropped using the Indian Air force's IL-76 aircraft.
- The test simulated a unique situation when one main parachute failed to open.

What's next?

- The astronaut designates for human space flight mission are identified and are currently undergoing their mission specific training at Bengaluru.

NASA RETIRES MARS INSIGHT LANDER MISSION AFTER 4 YEARS
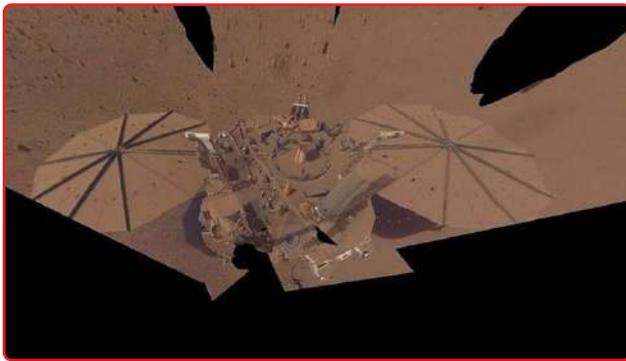
Why in news?
➲ Recently, the National Aeronautics and Space Administration (NASA) retired its Mars InSight lander, 4 years after it arrived on the surface of the red planet.

Details:
➲ The mission controllers at the agency's Jet Propulsion Laboratory (JPL) in Southern California were unable to contact the lander after two consecutive attempts, leading them to conclude the spacecraft's solar-powered batteries have run out of energy.
➲ NASA had previously decided to declare the mission over if the lander missed two communication attempts.

About InSight:
➲ InSight, short for Interior Exploration using Seismic Investigations, Geodesy and Heat Transport, is the first outer space robotic explorer and will study the crust, mantle, and core of the fourth planet in our solar system.
➲ The lander was launched on May 5, 2018, from the Vandenberg Air Force Base in California and took a six-month cruise from Earth to Mars ever since, is NASA's first spacecraft to land on Mars since Curiosity.
➲ It touched down on the red planet on November 27, 2018.

Findings:
➲ Its highly sensitive seismometer, along with daily monitoring performed by the French space agency Centre National d'Etudes Spatiales (CNES) and the Marsquake Service managed by ETH Zurich, detected 1,319 marsquakes, including quakes caused by meteoroid impacts, the largest of which unearthed boulder-size chunks of ice late last year.
➲ Such impacts helped scientists to determine the age of the planet's surface, and data from the seismometer provided scientists a way to study the planet's crust, mantle and core.

BF.7: NEW COVID SUB-VARIANT EMERGING IN CHINA
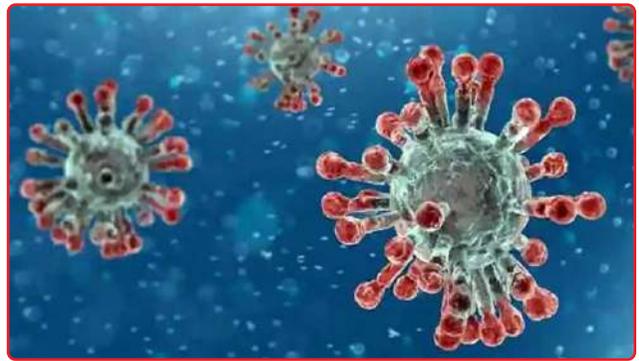
Why in news?
➲ India has so far reported four cases of Omicron subvariant BF.7, the strain driving China's current surge in Covid-19 cases. The four cases have been reported since July 2022. While three have been detected in Gujarat, one case has been traced to Odisha.
➲ Meanwhile, in view of a sudden spurt in Covid cases in China and some other countries, Union Health Minister chaired a meeting and reviewed the situation in the country.

What is BF.7, the Sub Variant of Omicron?
➲ The BF.7 is an abbreviated form for BA.5.2.1.7. It is a sub-lineage of the BA.5 Omicron variant.
➲ The BF.7 variant is reportedly more infectious than the other variants of coronavirus known so far.
➲ The variant is capable of infecting even those fully vaccinated against the virus.
➲ The variant is believed to have a reproduction value, which means persons infected with the BF.7 variant are very likely to transmit the virus to others.
➲ BF.7 accounted for more than 5 per cent of Covid-19 cases in the US and 7.26 per cent in the UK in October.

What are the symptoms of BF.7 Variant?
➲ Persons infected with the BF.7 variant of Omicron may experience symptoms similar to other sub-variants. Common symptoms include fever, cough, sore throat, runny nose, vomiting, fatigue and diarrhea.
➲ However, the variant is likely to cause severe illness among those with pre-existing medical conditions and weaker immune systems.

Recommendations by Health Ministry:
➲ It has asked people to follow Covid-appropriate behaviour, including wearing masks in crowded places, and getting vaccinated.
➲ It also directed all concerned departments to be alert and strengthen surveillance.
➲ Noting that only 27-28 per cent of India's eligible population have taken the precautionary dose of Covid-19, it urged people to take the jab.

BHARAT BIOTECH'S INTRANASAL COVID VACCINE APPROVED BY GOVT., TO BE AVAILABLE ON CO-WIN SOON

Why in news?

➲ Bharat Biotech's intranasal Covid vaccine has been approved by the Union Health Ministry as a booster dose for those above 18 years of age.

iNCOVACC:

➲ The nasal vaccine, BBV154 received approval of the Drugs Controller General of India in November for restricted use in an emergency situation for those above 18 years as a heterologous booster dose.

➲ Unlike Covaxin, which is an inactivated coronavirus injected along with an adjuvant, iNCOVACC is an adenovirus-vectored vaccine with a "prefusion stabilised spike protein", which is more like the technology employed in the Covishield vaccines.

➲ iNCOVACC has been specifically formulated to allow intranasal delivery through nasal drops.

➲ The nasal delivery system has been designed and developed to be cost-effective in low- and middle-income countries.

➲ iNCOVACC was developed in partnership with Washington University, St. Louis, which had earlier designed and developed the recombinant adenoviral vector construct and evaluated it in preclinical studies for efficacy.

Vaccination status:

➲ The approval for the vaccine comes amid a spurt in Covid cases in China and some other countries.

➲ So far, over 220 crore vaccines have been administered to those aged 12 and above in India.

➲ Though 90% of the population has got two doses, only 27% have taken a third dose. Of those above 60 years, 60% are yet to get a third (precaution) dose.

What's next?

➲ The needle-free vaccine will be available at private centres. It will be introduced on the Co-WIN platform soon.

➲ It is likely to be rolled out in the national Covid vaccination programme soon.

NEW ARTIFICIAL NANOSTRUCTURES FOR INFRARED ABSORPTION TECHNOLOGIES CAN BE USEFUL IN DEFENSE, IMAGING & SENSING
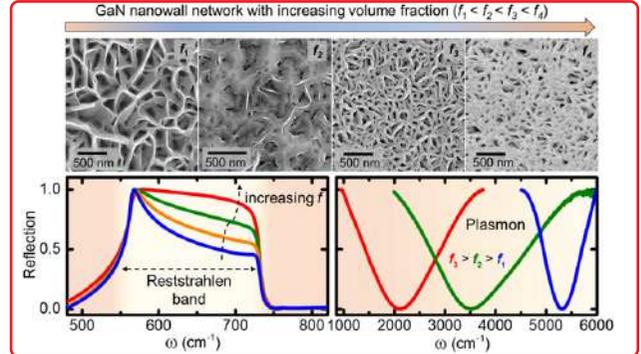
Why in news?

➲ Researchers in Bengaluru's Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), have shown for the first time infrared light emission and absorption with GaN nanostructures.

Details:

➲ Though blue light emission from GaN has been known for some time, and it is used in LEDs, this is the first time that infrared light-matter interactions are demonstrated in GaN.

➲ For this demonstration, they have utilized a scientific phenomenon called surface polariton excitations in GaN nanostructures that lead to light-matter interactions at IR spectral range.

Background:

➲ A new method to confine and absorb infrared (IR) light with GaN nanostructures can help develop highly efficient infrared absorbers, emitters, and modulators that are useful in defense technologies, energy technologies, imaging, sensing, and so on.

➲ GaN, a widely used material for blue light emission, is one of the most advanced semiconductors. Though visible and ultraviolet light applications of GaN have already been realized, with LEDs and laser diodes commercially available, utilization of GaN for IR light harvesting or development of GaN-based IR optical elements is lacking.

Surface polaritons:

➲ Surface polaritons are special modes of electromagnetic waves traveling at the interface of a conductor and an insulator such as air.

➲ By altering the morphology and shape of the nanostructures, they are also able to excite plasmon polaritons in GaN, which results in extending the light-matter coupling to further reaches of the electromagnetic spectrum. These polaritons are quasi-particles which have both light and matter characteristics.

Molecular beam epitaxy:

➲ To grow these GaN nanostructures, the researchers utilized a specialized material deposition instrument called molecular beam epitaxy.

➲ This instrument uses ultra-high vacuum, similar to the conditions of outer space, to grow high-quality material nanostructures with dimensions about 100000 times smaller than the width of a human hair.

➲ Such cutting-edge materials allow the creation of polariton-based devices, which offer several advantages to conventional electronic devices.

Applications:

➲ Polaritonic technologies have attracted a wide range of applications, such as secure high-speed light-based communication (LiFi), next-generation light sources, solar energy converters, quantum computers, and waste-heat converters.

Way Forward:

➲ This work will greatly benefit in addressing the demand for IR sources and detectors for energy, security, imaging, and other applications.

SCIENTISTS FREEZE GREAT BARRIER REEF CORAL IN WORLD-FIRST TRIAL

Why in news?

➲ Scientists working on Australia's Great Barrier Reef have successfully trialed a new method for freezing and storing coral larvae they say could eventually help rewild reefs threatened by climate change.

Why it matters?

➲ Scientists are scrambling to protect coral reefs as rising ocean temperatures destabilise delicate ecosystems.

➲ The Great Barrier Reef has suffered four bleaching events in the last seven years, including the first-ever bleach during a La Niña phenomenon, which typically brings cooler temperatures.

Cryomesh:

➲ Cryogenically frozen coral can be stored and later reintroduced to the wild but the current process requires sophisticated equipment including lasers. Scientists say a new lightweight "cryomesh" can be manufactured cheaply and better preserves coral.

➲ In a December lab trial, the world's first with Great Barrier Reef coral, scientists used the cryomesh to freeze coral larvae at the Australian Institute of Marine Sciences (AIMS).

➲ The coral had been collected from the reef for the trial, which coincided with the brief annual spawning window.

➲ The cryomesh was previously trialled on smaller and larger varieties of the Hawaiian corals.

Mesh technology:

➲ The mesh technology, which will help store coral larvae at -196°C (-320.8°F), was devised.

➲ It was first tested on corals.

What is coral bleaching?

➲ Bleaching happens when corals experience stress in their environment due to changes in temperature, pollution or high levels of ocean acidity.

➲ Under stressed conditions, the zooxanthellae or food-producing algae living inside coral polyps start producing reactive oxygen species, which are not beneficial to the corals.

➲ So, the corals expel the colour-giving zooxanthellae from their polyps, which exposes their pale white exoskeleton, giving the corals a bleached appearance. This also ends the symbiotic relationship that helps the corals to survive and grow.

About Great Barrier Reef:

➲ The reef is located in the Coral Sea (North-East Coast), off the coast of Queensland, Australia.

➲ It is the world's most extensive and spectacular coral reef ecosystem composed of over 2,900 individual reefs and 900 islands.

➲ It was selected as a World Heritage Site in 1981.

RESEARCH THROWS LIGHT ON SECRET LANGUAGE OF PHOTOSYNTHESIS

Why in news?

➲ Scientists have been perplexed by the signals plants transmit to start photosynthesis, the process of converting sunlight into sugars, for decades. Academics from UC Riverside have finally cracked these earlier enigmatic communications.

Background:

➲ The nucleus, the administrative centre of a plant cell, sends messages to other cell parts compelling them to continue photosynthesis, as botanists have known for 50 years.

➲ These instructions are carried by proteins, and without them, plants cannot become green or grow.

Photosynthesis process as a symphony:

➲ Previously, they demonstrated that certain proteins in plant nuclei are activated by light, kicking off photosynthesis. These four newly identified proteins

are part of that reaction, sending a signal that transforms small organs into chloroplasts, which generate growth-fueling sugars.

- They compared the whole photosynthesis process to a symphony.
- The conductors of the symphony are proteins in the nucleus called photoreceptors that respond to light. Both red and blue light-sensitive photoreceptors initiate the symphony. They activate genes that encode the building blocks of photosynthesis.
- The unique situation, in this case, is that the symphony is performed in two "rooms" in the cell, by both local (nucleus) and remote musicians.
- As such, the conductors (photoreceptors), who are present only in the nucleus, must send the remotely located musicians some messages over a distance. This last step is controlled by the four newly discovered proteins that travel from the nucleus to the chloroplasts.

A remedy for cancer cure:

- This work was funded by the National Institutes of Health, in the hopes that it will help with a cure for cancer. This hope is based on similarities between chloroplasts in plant cells and mitochondria in human cells. Both organelles generate fuel for growth and both harbour genetic material.
- Currently, a lot of research describes communication from organelles back to the nucleus. If something is wrong with the organelles, they'll send signals to the nucleus "headquarters." Much less is known about the activity-regulating signals sent from the nucleus to the organelles.
- The nucleus may control the expression of mitochondrial and chloroplast genes in a similar fashion.

Other applications:

- Human settlements on another planet would likely require indoor farming and creating a light scheme to increase yields in that environment.
- Even more immediately, climate change is posing challenges for crop growers on this planet.

MISCELLANEOUS

BOOK ON CHIPKO MOVEMENT WINS KAMALADEVI CHATTOPADHYAY NIF BOOK PRIZE

Why in news?

- The Kamaladevi Chattopadhyay NIF Book Prize 2022 has been awarded to 'The Chipko Movement: A

People's Movement' by historian and activist Shekhar Pathak, translated from Hindi by Manisha Chaudhry.

About Shekhar Pathak:

- Historian and Padma Shri-awardee Shekhar Pathak has lived in the Himalayan region for years and conducted extensive research into the Chipko Movement, engaging with local communities and leaders.
- He established the People's Association for Himalaya Area Research (PAHAR) in 1983 and also penned Asia ki Peeth Per (On Asia's Back), a biography of the Himalayan explorer Pandit Nain Singh Rawat, along with Uma Bhatt.
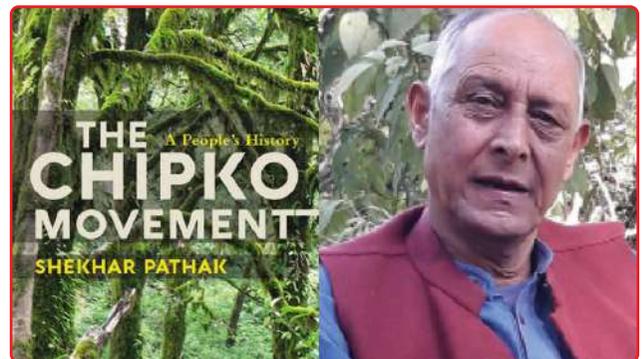
Chipko movement:

- The 1973 Chipko movement is regarded as the harbinger of modern environmentalism in India.
- A non-violent protest, the movement curbed the felling of trees and spurred debate about Indian forest policy, sustainable development, and the need for ecological balance between forests and local communities.
- While several works have focused on Chandi Prasad Bhatt and Sunderlal Bahugana, the movement's major leaders, the book covers the ordinary people of the movement, such as Gaura Devi, and shows that it was "diverse in leadership and ideology and was never a singular Gandhian movement".

Kamaladevi Chattopadhyay NIF Book Prize 2022:

- The award, now in its fifth edition, is given for non-fiction on contemporary India by writers of any nationality, and carries a cash award of 15 lakhs, a trophy and a citation.
- The Kamaladevi NIF Book Prize was named for Kamaladevi Chattopadhyay, an eminent freedom fighter who also championed the cause of women's rights, refugee rehabilitation and local handicrafts.
- In 2021, the prize went to Dinyar Patel for the biography 'Naoroji: Pioneer of Indian Nationalism'.

PRACTICE QUESTION FOR UPSC PRELIMS EXAM

1. Consider the following statement regarding Great Indian Bustard:
   1. It is locally called "Godawan".
   2. It has been categorised as critically endangered by the International Union for Conservation of Nature (IUCN).
   3. It is the State Bird of Haryana.
   Choose the correct option from the codes given below:
   a) 1 and 2   b) 2 and 3
   c) 1 and 3   d) 1, 2 and 3

2. "Zombie Viruses" is also known as
   a) Yersinia pestis   b) Yersinia pestis
   c) Variola major   d) Pandoravirus Yedoma

3. Consider the following statement regarding Maternal Mortality Ratio:
   1. It is the number of maternal deaths during a given time period per 100,000 live births.
   2. The present rate is 97/ lakh live births.
   Choose the correct option from the codes given below:
   a) 1 Only   b) 2 Only
   c) 1 and 2   d) None of the above

4. Consider the following statement:
   1. 'Migration and Development Brief' report is released by World Bank.
   2. In 2022, India is expected to received more than USD 100 billion remittances.
   3. India's remittance inflow will be ahead of China, Mexico and the Philippines.
   Choose the correct option from the codes given below:
   a) 1 and 2   b) 2 and 3
   c) 1 and 3   d) 1, 2 and 3

5. Consider the following statement regarding Supreme Court Collegium:
   1. It is a five-member judges' body headed by the Chief Justice of India.
   2. A High Court Collegium consists of a Chief Justice and two senior most judges of that court.
   3. The collegium system is governed by any specific law enacted by the Parliament.
   Choose the correct option from the codes given below:
   a) 1 and 2   b) 2 and 3
   c) 1 and 3   d) 1, 2 and 3

6. Consider the following statement regarding Shekhar Pathak:
   1. He established the People's Association for Himalaya Area Research (PAHAR).
   2. He was the author of "Asia ki Peeth Per (On Asia's Back)".
   3. He was awarded Padma Vibhshan and Padma Bhushan.
   Choose the correct option from the codes given below:
   a) 1 and 2   b) 2 and 3
   c) 1 and 3   d) 1, 2 and 3

7. Consider the following statement regarding DigiYatra:
   1. It is a biometric-based digital processing of passengers at Railway Stattion.
   2. Passengers will be automatically processed based on a facial recognition system at checkpoints.
   3. It will facilitate paperless travel and avoids identity check at multiple points.
   Choose the correct option from the codes given below:
   a) 1 and 2   b) 2 and 3
   c) 1 and 3   d) 1, 2 and 3

8. Consider the following statement regarding Chipko Movement:
   1. The movement is regarded as the harbinger of modern environmentalism in India.
   2. Chandi Prasad Bhatt and Sunderlal Bahugana were the important leaders of this movement.
   Choose the correct option from the codes given below:
   a) 1 Only   b) 2 Only
   c) 1 and 2   d) None of the above

9. Consider the following statement regarding Groups of G20:
   1. It is a premier forum comprising world's advanced and developing economies as well as the European Union.
   2. It was formed in 1999 in the backdrop of the financial crisis of the late 1990s.
   3. Spain is invited as a permanent guest.
   Choose the correct option from the codes given below:
   a) 1 and 2   b) 2 and 3
   c) 1 and 3   d) 1, 2 and 3

10. Consider the following statement regarding UN Security Council:
    1. It has 15 members, the five permanent members and ten non-permanent members elected for two-year terms.
    2. India, for the eighth time, has entered the UNSC as a non-permanent member.
    3. The council's presidency is a capacity that rotates every year among its 15 members.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

11. Consider the following statement regarding IFFCO:
    a) It is one of India's biggest cooperative societies owned by Indian Cooperatives.
    b) It has developed the world's first nano Robots.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

12. Consider the following statement:
    1. Kanger Valley National Park is located in Jharkhand.
    2. Malabar trogon and white-bellied woodpecker found in Western Ghats.
    3. Myna is the State Bird of Chhattisgarh.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

13. Consider the following statement regarding Haryana Textile Policy 2019:
    1. It aims to promote value-added textile activities with suitable policy interventions.
    2. It aims at fostering an ecosystem of self-reliance and innovation by offering a robust incentive framework.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

14. Consider the following statement regarding 'Erra Matti Dibbalu':
    1. It is the coastal red sand dunes of Visakhapatnam.
    2. This site was declared as a geo-heritage site by the Geological Survey of India (GSI) in 2014.
    3. It have seen in both the glacial and the warm periods.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

15. Consider the following statement:
    1. Pamban bridge is India's first vertical lift railway sea bridge.

2. Pamban rail sea bridge is located in Kerala.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

16. Consider the following statement regarding Meetei Mayek:
    1. The State of Manipur adopted Meetei Mayek script.
    2. This script will replace Bengali script.
    3. Manipuri language was not included in the Eighth Schedule of the Constitution.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

17. Consider the following statement regarding DASH Diet:
    1. The WHO recommends only 10 to 15gm of salt per day.
    2. It is a Dietary Approaches to Stop Hypertension.
    3. It is the best-recommended diet to prevent cardiovascular events
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

18. Consider the following statement:
    1. India is home to nearly 60% Asian elephants.
    2. Asian elephants is listed as 'Endangered' on the IUCN Red List of threatened species.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

19. Consider the following statement:
    1. Asiatic Cheetah is found in Iran.
    2. India carries out a census of the tiger population in every four years.
    3. India has 53 tiger reserves as of early 2022.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

20. Consider the following statement regarding Great Indian Bustard (GIB):
    1. Listed in Schedule I of the Indian Wildlife (Protection) Act, 1972.
    2. They are Critically Endangered on the IUCN Red List.
    3. They are great fliers.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

21. Consider the following statement:
    1. Akash is the first state-of-the-art indigenous surface-to-air missile system.
    2. It is inducted by Indian Army only.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

22. Consider the following statement regarding Valmiki Tiger Reserve:
    1. There is continuous decrease in Tiger population from this reserve.
    2. The reserve plays a critical role in maintaining genetically robust populations of tigers.
    3. The forest corridors between India and Nepal are extensively used by tigers and other large mammals.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

23. Consider the following statement regarding Earth shot Prize 2022:
    1. The award was founded by Prince William.
    2. The aim of greenhouse-in-a-box is to reduce costs and increase yields.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

24. Consider the following statement regarding Digital Rupee:
    1. It will be issued by RBI.
    2. It can be used for both person-to-person and person-to-merchant transactions.
    3. It is recognised as legal tender by the RBI.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

25. Consider the following statement:
    1. World Soil Day (WSD) 2022, will be observed on December 10.
    2. The main drivers contributing to soil degradation are industrial activities.
    3. WSD 2022, with its guiding theme, 'Soils: Where food begins'.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

26. Recently, the Parliamentary Standing Committee on Finance has prepared a comprehensive report on the Reserve Bank of India (RBI). Consider the following statement:
    1. It recommended moving state-owned banks under RBI's purview.
    2. It had suggested a six-year term for the RBI Governor from the existing three years.
    3. It recommended to decrease the number of deputy governors from four to two.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

27. Consider the following statement:
    1. Section 59 of the Prisons Act empowers States to make rules.
    2. Prisons Act, 1894, and the Prisoners Act, 1900, contain any specific provision pertaining to parole.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

28. Consider the following statement regarding Intergovernmental Negotiating Committee (INC-1):
    1. INC-1 was managed by the European Union.
    2. The first session of this meeting was tasked with developing an international legally binding instrument to end plastic pollution.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

29. Consider the following statement regarding the species in Madagascar:
    1. Monkey belongs to Lemur lineage.
    2. Animals in lemur lineage have already become extinct.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

30. Consider the following statement:
    1. According to OECD, 109 Mt of plastic material leaked into the environment.
    2. Global plastic production triple from 2019 to 2020.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

31. Consider the following statement regarding black soil:
    1. It is extremely fertile soil.
    2. It constitutes 5.6 per cent of global soils.
    3. This soil does not suffered from erosion processes.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

32. Consider the following statement:
    1. IMF release India Development Report titled 'Navigating the Storm'.
    2. It revised the GDP forecast considering the strong upturn in the July-to-September.
    3. The Bank expects the Indian economy to grow at a slightly slower 6.6% in 2023-24.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

33. Consider the following statement:
    1. Y.K. Alagh devised the first ever poverty estimates based on calorie requirements.
    2. He reorganised Indian planning on an agro-climactic basis.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

34. Consider the following statement:
    1. Section 188 of the IPC related to disobedience to order duly promulgated by public servant.
    2. Section 144 empowers police and district magistrates to issue order in urgent cases of nuisance of apprehended danger.
    3. The maximum punishment under the Section 188 is six months imprisonment
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

35. Consider the following statement:
    1. Sunflower seeds, small millet, sugar beet and potatoes were harvested from black soils.
    2. North America, Latin America and the Caribbean and Asia account for 70 percent of Black soil.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

36. Consider the following statement:
    1. India and plans to have 500 GW of non-fossil fuel-based electricity installed capacity by 2030.
    2. The installed electricity generating capacity in the country at present is 259 GW.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

37. Consider the following statement:
    1. The report "Climate Investment Opportunities in India's Cooling Sector" is published by IMF.
    2. The rising heat across India can hit economic productivity.
    3. The lost labour from rising heat and humidity could put up to 4.5 per cent of India's GDP at risk by the end of this decade.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

38. Consider the following statement regarding SpaceTech Innovation Network (SpIN):
    1. It is India's first dedicated platform for innovation, curation, and venture development for the burgeoning space entrepreneurial ecosystem.
    2. ISRO has signed an MoU with Social Alpha to launch SpaceTech Innovation Network (SpIN).
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

39. Consider the following statement regarding central government initiatives of One District One Product (ODOP):
    1. It aimed at fostering balanced regional development across all districts of the country.
    2. The objective is to focus on District of the country as unit for converting into a manufacturing and export hub by identifying products with export potential in the district.
    3. Department of Commerce, with the Department for Promotion of Industry and Internal Trade (DPIIT) as a major stakeholder.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

40. Consider the following statement:
    1. Epsilon Iron Oxide can absorb millimetre waves with a powerful coercive force.
    2. South Korea succeeded to produce pure epsilon iron oxide.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

41. Consider the following statement:
    1. Silk Route connected India with Central Asia.
    2. Kazakhstan has one of the biggest reserves of uranium.
    3. Tajikistan has one of the world's largest reserves of natural gas.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

42. Recently, the Rajya Sabha passed the Wild Life (Protection) Amendment Bill, 2022. Consider the following statement:

1. With the passage of bill, it will prohibit the transport of a captive elephants for religious and other purposes.
2. The bill intended to amend the Wild Life (Protection) Act, 1972 to incorporate more species protected under the law.
3. The bill will help country to regulate the trade of all listed specimens through permits.

Choose the correct option from the codes given below:

a) 1 and 2　　　　　　　　b) 2 and 3
c) 1 and 3　　　　　　　　d) 1, 2 and 3

43. Consider the following statement:
1. Barchan are sand dunes formed on the surface of the Earth.
2. Barchans are formed on the ocean floor and on the surface of the Earth.

Choose the correct option from the codes given below:

a) 1 Only　　　　　　　　b) 2 Only
c) 1 and 2　　　　　　　　d) None of the above.

44. Consider the following statement regarding Global Combat Air Programme:
1. It is a joint programme of India and France.
2. It is a next generation Combat Air Teaming System (CATS) programme.

Choose the correct option from the codes given below:

a) 1 Only　　　　　　　　b) 2 Only
c) 1 and 2　　　　　　　　d) None of the above.

45. Consider the following statement:
1. The National Water Development Agency (NWDA) is under the Ministry of Jal Shakti.
2. National Perspective Plan (NPP) was formulated for providing storages and transfer of surplus waters to water deficit regions.

Choose the correct option from the codes given below:

a) 1 Only　　　　　　　　b) 2 Only
c) 1 and 2　　　　　　　　d) None of the above

46. Consider the following statement regarding Trisonic Wind Tunnel system:
1. It is a system to aid aerodynamic design of rockets and re-entry spacecrafts.
2. The tunnel can be used only for testing various space vehicles below the speed of sound.

Choose the correct option from the codes given below:

a) 1 Only　　　　　　　　b) 2 Only
c) 1 and 2　　　　　　　　d) None of the above

47. Recently, the government introduced four Bills that seek to modify the Scheduled Tribes (ST) list in the four States. Consider the following statement:
1. The states in which the ST list is modified is Chhattisgarh, Madhya Pradesh and Kerala.

2. The Bill seeks to add the Narikoravan and Kuruvikkaran hill tribes to the ST list.
3. The Hattee community of Trans-Giri region in Sirmaur district was added to the ST list.

Choose the correct option from the codes given below:

a) 1 and 2　　　　　　　　b) 2 and 3
c) 1 and 3　　　　　　　　d) 1, 2 and 3

48. Consider the following statement regarding ILO:
1. It is the only tripartite U.N. agency.
2. It got the Nobel Peace Prize in 1969.

Choose the correct option from the codes given below:

a) 1 Only　　　　　　　　b) 2 Only
c) 1 and 2　　　　　　　　d) None of the above

49. Consider the following statement regarding the portal name GHAR:
1. It is developed by National Commission for Protection of Child Rights (NCPCR).
2. Digital tracking and monitoring of children who are in the Juvenile Justice system
3. Digital transfer of cases of children to the concerned Juvenile Justice Board.

Choose the correct option from the codes given below:

a) 1 and 2　　　　　　　　b) 2 and 3
c) 1 and 3　　　　　　　　d) 1, 2 and 3

50. Recently, three medicinal plant species found in the Himalayas have made it to IUCN Red List of Threatened Species following a recent assessment. Consider the following statement:
1. The three plants are Meizotropis pellita, Fritillaria cirrhosa and Dactylorhiza hatagirea.
2. Meizotropis pellita, commonly known as Patwa.
3. Dactylorhiza hatagirea is a vulnerable species.

Choose the correct option from the codes given below:

a) 1 and 2　　　　　　　　b) 2 and 3
c) 1 and 3　　　　　　　　d) 1, 2 and 3

51. Consider the following statement regarding CORPAT:
1. It will be executed along the International Maritime Boundary Line (IMBL).
2. It helps to enhance the operational synergy by exchange of information for prevention of smuggling.
3. India and Japan have been carrying out this exercise yearly.

Choose the correct option from the codes given below:

a) 1 and 2　　　　　　　　b) 2 and 3
c) 1 and 3　　　　　　　　d) 1, 2 and 3

52. Several ministries are working on a "comprehensive plan" for developing tourism circuits along the Ganga. Consider the following statement:
1. Urban Affairs Ministry is taking steps to build organic farming and natural farming corridors.

2. Environment Ministry was scaling up afforestation and scaling up conservation efforts to protect the Gangetic river dolphin.
3. Arth Ganga is harnessing economic potential from the Ganga.

Choose the correct option from the codes given below:
a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

53. Consider the following statement:
1. The share of women MPs in Lok Sabha and Rajya Sabha stands at 14.94% and 14.05%, respectively.
2. The average number of women MLAs in Assemblies across the nation accounts for only 8%.

Choose the correct option from the codes given below:
a) 1 Only   b) 2 Only
c) 1 and 2   d) None of the above

54. Consider the following statement regarding ispace mission:
1. It is the first of a program called Hakuto-R, which means "white rabbit" in Japanese
2. The ispace lunar lander is also carrying two robots produced by Japan's space agency.
3. The rover of this spacecraft mission is built by the United Arab Emirates.

Choose the correct option from the codes given below:
a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

55. Consider the following statement regarding End-to-End encryption:
1. It is a communication process that encrypts data being shared between two devices.
2. It prevents third parties like cloud service providers and internet service providers (ISPs).
3. It failed to transforms standard text into an unreadable format.

Choose the correct option from the codes given below:
a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

56. Consider the following statement:
1. The Ministry of Tribal Affairs has revamped the "Special Central Assistance" to Tribal Sub-Scheme.
2. It aims at transforming villages with significant tribal population into model village.
3. It includes preparing Village Development Plan based on the needs, potential, and aspirations.

Choose the correct option from the codes given below:
a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

57. Consider the following statement:
1. Patna is the most polluted city in Bihar.
2. Dust is the main reason for deterioration of AQI in Bihar.
3. AQI from 0 to 50 is considered as good.

Choose the correct option from the codes given below:
a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

58. Which among the following is not among the non-fossil sources?
a) Green hydrogen   b) Green ammonia
c) Hydropower   d) Ethanol

59. Consider the following statement regarding Andaman Smooth hound:
1. It is facing the risk of extinction due to overfishing.
2. It has been included in the Red List as Vulnerable.
3. This new species is currently only known from the Andaman Sea and endemic to India.

Choose the correct option from the codes given below:
a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

60. Consider the following statement regarding Yellow Himalayan Fritillary plant:
1. In the Indian Himalayas, the species is threatened due to unorganised harvest.
2. It has been included in the Red List as Critically Endangered.

Choose the correct option from the codes given below:
a) 1 Only   b) 2 Only
c) 1 and 2   d) None of the above

61. Recently, the Parliamentary Standing Committee on Finance recommended various changes to Competition (Amendment) Bill. Consider the following statement:
1. It proposed to reduce the timeline for CCI to 20 days.
2. It has proposed cutting down the timeline for approval of combinations to 150 days from 210 days.
3. Reducing the timeline, will relief understaffed commission.

Choose the correct option from the codes given below:
a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

62. Consider the following statement regarding recently published UNEP Report 2022:
1. Global GHG emissions must be reduced by 35% by 2030.
2. The total global GHG emissions were estimated at around 53 GTCO2eq in 2021.
3. India has set a national target of net zero emissions by 2070.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3

c) 1 and 3   d) 1, 2 and 3

63. Recently, the Kerala government has tabled University Laws (amendment) Bill in the State Assembly to remove Governor from the post of Chancellor of State universities. Consider the following statement:

1. The Bill will supplant the Governor and give the government power to appoint eminent academicians as Chancellors.

2. The Bill also provides provision to limit the term of the appointed chancellor to five years.

Choose the correct option from the codes given below:

a) 1 Only   b) 2 Only

c) 1 and 2   d) None of the above

64. Consider the following statement regarding fusion reaction:

1. It happens when two light nuclei merge to form a single heavier nucleus.

2. The total mass of that single nucleus is less than the mass of the two original nuclei.

3. Current efforts focus on fusing a pair of hydrogen isotopes, deuterium and tritium to release more energy.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3

c) 1 and 3   d) 1, 2 and 3

65. Consider the following statement regarding Tawang sector in Arunachal Pradesh:

1. Yangtse area lies in this sector.

2. This area hold the strategic importance for China as it provides a strategic entry into India's northeastern region.

3. To the south of Tawang lies the important Bum La Pass.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3

c) 1 and 3   d) 1, 2 and 3

66. Consider the following:

1. Gamosa   2. Tandur Redgram

3. Chanderi Fabric

Which among the following recently received GI Tag?

a) 1 and 2   b) 2 and 3

c) 1 and 3   d) 1, 2 and 3

67. Consider the following statement regarding Constitution (Scheduled Castes and Scheduled Tribes) Order (Second Amendment) Bill:

1. It aims to move Santhal communities from schedule caste to schedule tribes list.

2. The existing criteria for defining tribes has been set out by the Lokur Committee in the 1960s.

3. Indications of primitive traits, distinctive culture, geographical isolation, shyness of contact with the community at large, and backwardness is the five criteria listed by Lokur committee.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3

c) 1 and 3   d) 1, 2 and 3

68. Consider the following statement:

1. Namami Gange initiatives were declared World Restoration Flagships.

2. World Restoration Flagships programme is coordinated by UNEP and FAO.

Choose the correct option from the codes given below:

a) 1 Only   b) 2 Only

c) 1 and 2   d) None of the above

69. Person's genetic code is a several permutations of which among the following codes?

a) Adenine   b) Guanin

c) Thymine   d) All the above

70. Consider the following statement regarding Geographical Indications (GI) Tag:

1. It is primarily an agricultural, natural or a manufactured product originating from a definite geographical territory.

2. The government has supported the promotion of GIs by approving an expenditure of Rs 75 crore for three years

3. Bihar is among the top five states holding maximum number of GIs.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3

c) 1 and 3   d) 1, 2 and 3

71. Consider the following statement regarding 16th Edition of "SURYA KIRAN" exercise:

1. The aim of the exercise is to enhance interoperability in jungle warfare & counter terrorism operations in mountainous terrain.

2. The 15th Edition of this exercise was held in India.

3. The exercise is held between India and Bangladesh.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3

c) 1 and 3   d) 1, 2 and 3

72. Consider the following statement regarding GalaxEye:

1. India's fastest super-computer is being built by GalaxEye.

2. It is the brainchild of several entrepreneurs emerging from Avishkar Hyperloop.

3. Avishkar Hyperloop is organised by Elon Musk's aerospace manufacturer and space transportation services company SpaceX.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

73. Consider the following statement:
   1. Pradhan Mantri Kaushal Ko Kaam Karyakram (PMKKK) has been named as Pradhan Mantri Virasat Ka Samvardhan (PM VIKAS) Scheme.
   2. PM VIKAS aims to improve livelihoods of the minorities.

   Choose the correct option from the codes given below:

   a) 1 Only   b) 2 Only
   c) 1 and 2   d) None of the above

74. Consider the following statement:
   1. Microplastics are very tiny pieces of plastic waste.
   2. The microplastic emanates from packaging, clothing, vehicles and other sources.
   3. These small plastic particles are "flowing into the oceans via wastewater.

   Choose the correct option from the codes given below:

   a) 1 and 2   b) 2 and 3
   c) 1 and 3   d) 1, 2 and 3

75. Consider the following statement regarding Youth Co:Lab:
   1. It aims to establish a common agenda for Asia-Pacific countries to invest in and empower youth.
   2. It is an initiative of Finance Commission.

   Choose the correct option from the codes given below:

   a) 1 Only   b) 2 Only
   c) 1 and 2   d) None of the above

76. Consider the following statement regarding recently discovered two exoplanets:
   1. They are discovered outside the solar system.
   2. Their volumes are more than three times that of Earth.
   3. These planets have much higher densities than Earth.

   Choose the correct option from the codes given below:

   a) 1 and 2   b) 2 and 3
   c) 1 and 3   d) 1, 2 and 3

77. Consider the following statement:
   1. Lizards and snakes are warm-blooded squamates.
   2. Remains of fossil lizards and snakes have been discovered recently from a late Miocene hominid in Himachal Pradesh.
   3. Varanids have a limited fossil record in Asia.

   Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

78. Consider the following statement:
   1. The Supreme Court has 193 working days a year.
   2. High Courts function for approximately 210 days.

   Choose the correct option from the codes given below:

   a) 1 Only   b) 2 Only
   c) 1 and 2   d) None of the above.

79. Consider the following:
   1. Attappady Attukombu Avara
   2. Attappady Thuvara
   3. Onattukara Ellu

   Which among the following agricultural product from Kerala is given GI Tag?

   a) 1 and 2   b) 2 and 3
   c) 1 and 3   d) 1, 2 and 3

80. Consider the following statement regarding "Groups of Friends":
   1. India has launched a 'Group of Friends' to promote accountability for crimes against peacekeepers.
   2. Bangladesh and Egypt are not the co-chairs of the 'Group of Friends.

   Choose the correct option from the codes given below:

   a) 1 Only   b) 2 Only
   c) 1 and 2   d) None of the above.

81. Consider the following statement regarding NASA SWOT Mission:
   1. It incorporates advanced microwave radar technology.
   2. The first-ever global satellite mission that will observe nearly all water on Mars Surface.

   Choose the correct option from the codes given below:

   a) 1 Only   b) 2 Only
   c) 1 and 2   d) None of the above

82. Consider the following statement regarding formation of "Coalition of Nature":
   1. United Nation is leading the coalition.
   2. It is for the implementing and adoption of the Global Biodiversity Framework (GBF) at the 15th Conference of Parties (COP15).

   Choose the correct option from the codes given below:

   a) 1 Only   b) 2 Only
   c) 1 and 2   d) None of the above

83. Consider the following statement:
   1. SIDS host 19 per cent of the world's coral reefs.
   2. The island states are responsible for an ocean area 28 times the size of their land mass.

   Choose the correct option from the codes given below:

   a) 1 Only   b) 2 Only
   c) 1 and 2   d) None of the above

84. Consider the following statement regarding Tal Chhapar Sanctuary:
1. It is famous for Blackbucks.
2. It is located in Rajasthan.
3. The issues confronting the sanctuary include hyper-aridity and grazing pressure.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

85. Consider the following statement regarding Quantum Computing (QC):
1. 2022 Nobel Prize for Physics was given for QC.
2. Indian government launched a National Mission to study quantum technologies in 2021.
3. The Gaussian is the fundamental unit of a QC.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

86. Consider the following statement regarding INS Mormugao:
1. It is propelled by four powerful Gas Turbines.
2. The ship has enhanced stealth features resulting in a reduced Radar Cross Section.
3. The ship is not capable to fight under nuclear warfare condition.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3d)   1, 2 and 3

87. Consider the following statement:
1. National Science Foundation (NSF)'s Science & Engineering Indicators 2022 report is published by World Intellectual Property Organization (WIPO).
2. India ranks third in the global ranking in scientific publications.
3. Global Innovation Index (GII) 2022 brought out by World Intellectual Property Organization (WIPO).

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

88. Consider the following statement:
1. The Citizenship Amendment Act (CAA), 2019, that intends to grant citizenship to undocumented (or illegal) migrants.
2. Hindu, Sikh, Parsi, Christian, Buddhist and Jain are included in minority list.

Choose the correct option from the codes given below:

a) 1 Only   b) 2 Only
c) 1 and 2   d) None of the above

89. Consider the following statement:
1. The study title "Striving for Clean Air: Air Pollution and Public Health in South Asia" is published by World Health Organisation.
2. According to the report, nearly 60 percent of South Asia countries population lives in areas where concentrations of PM2.5
3. In the densely populated Indo-Gangetic Plain, it is over 20 times the level that the WHO.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

90. Consider the following statement regarding Deepfakes:
1. It is a compilation of artificial images and audio put together with machine-learning algorithms.
2. This technology is now being used for nefarious purposes like scams and hoaxes.
3. The term deepfake originated in Pakistan.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

91. Consider the following statement regarding Surety Bond Insurance:
1. It act as a security arrangement for infrastructure projects.
2. It will cater to the requirements of a diversified group of contractors.
3. It requires large collateral from the contractor.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

92. Consider the following statement regarding Kamargaon meteorite:
1. This meteorite came from moon.
2. The pieces of this meteorites were found from Assam.
3. The space rock broke down from another source following a collision

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

93. Consider the following statement:
1. Scalloped hammerhead shark is found in Galapagos Islands.
2. Scalloped hammerhead shark is considered 'critically endangered' by IUCN.

Choose the correct option from the codes given below:

a) 1 Only   b) 2 Only
c) 1 and 2   d) None of the above

94. Consider the following statement:
    1. 15th Conference of Parties to the UN Convention on Biological Diversity adopted the "Kunming-Montreal Global Biodiversity Framework" (GBF).
    2. COP15 delegates agreed to establish within the GBF a multilateral fund for the equitable sharing of benefits.
    3. Global Biodiversity Framework" (GBF) is to be finalised at COP 16 in Turkey in 2024.

    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

95. Consider the following statement regarding Global Tax Agreement:
    1. EU members have agreed to implement a minimum tax rate of 15% on big businesses.
    2. Global corporate tax rates reduced from 1980s to 2020.
    3. Global Tax agreement is framed by World Bank.

    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

96. Consider the following statement regarding Social Progress Index (SPI):
    1. It measures country's social progress at the national and sub-national levels in holistic manner.
    2. Basic Human Needs, Foundations of Wellbeing, and Opportunity are its three critical dimensions.
    3. Chandigarh has the highest SPI score and Chhattisgarh has the lowest SPI score.

    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

97. Consider the following statement regarding Perovskite solar cells:
    1. It is built with layers of nano-particles.
    2. It has demonstrated competitive power conversion efficiencies with potential for higher performance.
    3. The main aim is to optimise the efficiency and to reduce the cost of manufacturing.

    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

98. Consider the following statement:
    1. Sun Temple at Modhera is dedicated to the sun god.
    2. The temple represents Solanki style of architecture.

    Choose the correct option from the codes given below:

a) 1 Only   b) 2 Only
c) 1 and 2   d) None of the above

99. Which among the following sites is currently listed in the tentative list of UNCESO World Heritage Sites:
    a) Vadnagar town
    b) Sun Temple at Modhera
    c) Rock cut sculptures of Unakoti in Tripura
    d) All the above

100. Consider the following statement regarding the objectives of MONUSCO's mission:
    1. Protect civilians of Congo, threatened by violence.
    2. Disarm, demobilize and reintegrate combatants.
    3. To disarm Congo's security sector.

    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

101. Consider the following statement:
    1. G1' mission of ISRO is aimed at validating the performance of Human rated launch vehicle.
    2. ISRO conducted the Integrated Main Parachute Airdrop Test (IMAT) of its crew.
    3. In G2 mission, human space flight is to be conducted.

    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

102. Consider the following statement:
    1. GRC address gender issues under Mission Shakti.
    2. Gender Resource Centers (GRCs) are run and managed by Cluster Level Federations.
    3. Government is setting up Hub for Empowerment of Women (HEW) at National, State and District levels.

    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

103. Consider the following statement regarding Multi-State Co-operative Societies (Amendment) Bill, 2022:
    1. It seeks to bring transparency and accountability in cooperative societies.
    2. The bill also seeks to strengthen governance, reform the electoral process.

    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

104. Consider the following statement regarding Anti-Piracy Bill:
    1. India did not have a domestic anti-piracy law on the books.
    2. The jurisdiction of the bill applies to the waters adjacent to or beyond India's Exclusive Economic Zone (EEZ).

3. The bill defines piracy as "any illegal act of violence, detention, or destruction committed against a ship.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

105. Consider the following statement regarding INS Mormugao:

1. The warship 'Yard 12705', named after the Goan port city of Mormugao.

2. The destroyer has combat capabilities which include surface-to-surface missiles, surface-to-air missiles and modern surveillance radar.

Choose the correct option from the codes given below:

a) 1 Only   b) 2 Only
c) 1 and 2   d) None of the above

106. Recently NASA retired its Mars InSight lander. Consider the following statement:

1. It is the first outer space robotic explorer.

2. It studied the crust, mantle, and core of the fourth planet in our solar system.

3. It was NASA second spacecraft to land on Mars since Curiosity.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

107. Consider the following statement regarding BF.7, the Sub Variant of Omicron:

1. The variant is not capable of infecting even those fully vaccinated against the virus.

2. It is more infectious infectious than the other variants of coronavirus known so far.

3. The variant is believed to have a reproduction value.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

108. The J&K Lieutenant Governor's administration, recently notified fresh land rules under J&K Land Grant Rules-2022. Consider the following statement:

1. The leases of current land owners will not be extended.

2. The lease period has been reduced to 40 years.

Choose the correct option from the codes given below:

a) 1 Only   b) 2 Only
c) 1 and 2   d) None of the above

109. Consider the following statement:

1. Keki Mistry-headed committee is set up by SEBI to review the buyback regulations, under the stock exchange route.

2. As per the recommendation of Keki Mistry, SEBI will phase out buyback through the stock exchange route with effect from April 1, 2025.

3. The aim of this move is to make the buyback process more robust.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

110. Consider the following statement:

1. There is no international binding agreement to ensure rocket stages always perform controlled re-entries.

2. Liability Convention 1972, recommends that bodies aim for an ocean in order to avoid human casualties.

3. The Liability Convention 1972 requires countries to prevent damages, but not to pay for damages.

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

111. Consider the following statement:

1. Covaxin, is an inactivated coronavirus injection.

2. iNCOVACC is an adenovirus-vectored vaccine.

3. Covaxin is a prefusion stabilised spike protein

Choose the correct option from the codes given below:

a) 1 and 2   b) 2 and 3
c) 1 and 3   d) 1, 2 and 3

112. Consider the following statement:

1. Large proportion of red blood cells are "hidden" in the heart of the frog.

2. Frog from South and Central America have the ability to become transparent as a form of camouflage.

Choose the correct option from the codes given below:

a) 1 Only   b) 2 Only
c) 1 and 2   d) None of the above.

113. Consider the following statement regarding Bomb Cyclone:

1. It is a mid-latitude storm.

2. This storm is stronger when pressure is lower.

Choose the correct option from the codes given below:

a) 1 Only   b) 2 Only
c) 1 and 2   d) None of the above.

114. Consider the following statement:

1. "EX DHARMA GUARDIAN-2022" was conducted between India and Japan.

2. JIMEX Exercise is conducted between India and USA.

Choose the correct option from the codes given below:

a) 1 Only   b) 2 Only
c) 1 and 2   d) None of the above.

115. Consider the following statement:
    1. The bomb cyclone will be characterised by cold winds.
    2. A bomb cyclone is formed when only cold air comes together.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above.

116. Consider the following statement:
    1. GaN nanostructures is a widely used material for blue light emission.
    2. Surface polaritons are special modes of electromagnetic waves traveling at the interface of a conductor.
    3. Polaritons are quasi-particles, which have only light characteristics.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

117. Consider the following statement regarding the "Khurda Model of redevelopment":
    1. Khurda station in West Bengal.
    2. The scheme's target is the introduction of new amenities as well as to upgrade and replace existing facilities.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

118. Consider the following statement:
    1. "Cryomesh" is the technology used to preserve corals.
    2. This technology was first used to preserve larger varieties of the Hawaiian corals.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above

119. Consider the following statement:
    1. Mesh Technology help to preserve coral larvae.
    2. Bleaching happens when corals experience stress in their environment.
    3. Under stressed conditions, the zooxanthellae inside coral polyps start producing reactive oxygen species, which are not beneficial to the corals.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

120. Consider the following statement regarding Great Barrier Reef:
    1. It was selected as a World Heritage Site in 1981.
    2. It is the world's most extensive and spectacular coral reef ecosystem.
    3. It is located in the North-East Coast of New Zealand.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

121. Consider the following statement regarding Pralay Missile:
    1. The missile is equipped with an infrared or thermal scanner.
    2. It is capable of striking and destroying targets in the range of 150-500 km.
    3. Shaheen 3 missile of Pakistan is on the same category of Pralay Missile.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

122. Consider the following statement:
    1. Cell membrane is the administrative centre of plant cell.
    2. The nucleus sends messages to other cell parts.
    3. The instructions are carried by proteins.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

123. Consider the following statement:
    1. According to the report of Central Pollution Control Board (CPCB), number of polluted stretches in India's rivers has fallen from 2018 to 2022.
    2. A BOD less than 3 mg/L means the river stretch is fit for 'Outdoor Bathing'.
    Choose the correct option from the codes given below:
    a) 1 Only   b) 2 Only
    c) 1 and 2   d) None of the above.

124. India has completed the final location survey of strategic railway lines in the Northeast India. Which among the following railway line is listed:
    a) Railway line between Bhalukpong to Tawang.
    b) Railway line between Silapathar to Along via Bame.
    c) Railway line between Rupai to Pasighat
    d) All the above

125. Consider the following statement regarding the effects of Climate Change on Antarctic terrestrial species:
    1. The populations of 37% of species would decline.
    2. The emperor penguin relies on ice for breeding.
    3. Emperor penguin is the extinct of Antarctica's species.
    Choose the correct option from the codes given below:
    a) 1 and 2   b) 2 and 3
    c) 1 and 3   d) 1, 2 and 3

PRACTICE QUESTION FOR UPSC MAINS EXAM

1. 'Global crypto regulation seems to be high on the G-20 agenda. India can use its presidency to mould standard operating procedures (SOPs) on superintendence of the virtual-digital-assets space in line with developing-economy priorities.' Comment.

2. What is CBDC or the digital rupee recently launched by Reserve Bank of India (RBI? How will RBI's CBDC Digital Rupee work, how is it different from digital money?

3. 'In implementing India's Indo-Pacific strategy, voices from the Northeast and eastern parts of the India must be heard'. Comment.

4. Why have alien invasive plant species become a bigger threat than poachers across rhino habitats in India and Nepal? Why are elephants on the endangered list?

5. 'Today, more than ever, healthy soils are critical to sustaining life. Soil degradation can have irreparable consequences on human and ecosystem health, which cannot be ignored'. Elaborate.

6. 'Without any common legal framework on parole and furlough in place to guide the States and check misuse, arbitrariness is likely to creep in, endangering the entire criminal justice system'. Comment.

7. What are the provisions of the new Inflation Reduction Act of the United States? Why has the French President described the Act as super aggressive towards European companies?

8. 'India can successfully use the instrument of bilateralism over regionalism to pursue its interests'. In the light of above statement, discuss how BIMSTEC provides SAARC countries a unique opportunity to connect with ASEAN?

9. 'Under the guiding philosophy for India's presidency of G20, Vasudhaiva Kutumbkam, which sees the world as "One Earth, One Family, and One Future", the Comptroller and Auditor General (C&AG) of India proposed the collaboration of G20 SAIs on two priority areas: blue economy and responsible artificial intelligence.' Elaborate.

10. 'The benefits under National Food Security Act (NFSA), 2013, should not be restricted as per the census of 2011 and more and more needy persons/citizens get the benefit under the National Food Security Act". Comment.

11. 'The long incarceration of undertrials holed up in the prisons of India is a "crying shame on the judicial system". Comment.

12. Discuss how public health in India prioritise individual-oriented interventions over societal oriented population-based approaches. Also discuss why all forms of individualistic approaches in public health need to be resisted to safeguard its original principles of practice, viz., population, prevention and social justice.

13. Give a brief note on the Wild Life (Protection) Amendment Bill, 2021. Discuss how regressive policing allowed by the Wild Life (Protection) Amendment Bill and other forest legislation hinders the full and beneficial scope of the Forest Rights Act.

14. Discuss how use of the fusion process for generating electricity at a commercial scale is decades away, but the latest experiment by US scientists is still a big deal?

15. 'The Small Island Developing States (SIDS) of the Indian Ocean Region (IOR) can leverage their strategic position and use it to their advantage to make the larger powers acknowledge their security interests and issues'. Elaborate.

16. The silent women led changes are transforming our society politically and economically. What are the challenges that remain in women fulfilling their true potential as modern nation builders of India?

17. What do quantum computers do that classic computers cannot? What are the elements that need to be in place before practical quantum computers become a reality? How long will it take to gain quantum supremacy?

18. Why was there an emphasis on criminal jurisprudence behind the penal provisions in the GST law? Should imposing penal laws be discouraged to attract investors and businesses? What are the recommendations of the 48th GST Council meeting?

19. The recently passed Energy Conservation (Amendment) Bill, 2022 empowers the Government to establish carbon markets in India and specify a carbon credit trading scheme. Give a brief note on carbon markets, types and various challenges surrounding them.

20. Discuss why in sorting out the method by which the Election Commission of India is constituted, the guiding principle must be functional and effective independence from the executive?

21. 'With the Rajya Sabha Standing Committee on Health expressing concern over the high cost of cancer treatment, the Government invoking Section 100 of the Patents Act is a way forward'. Elaborate.

22. What are the different stages of a rocket launch? How does uncontrolled re-entries of rockets into the Earth's orbit cause damage? What are the dangers and how they can be minimized?

23. Achieving the 'Kunming-Montreal Global Biodiversity Framework' (GBF) targets will require strong leadership and mechanisms to ensure that

countries adhere to the commitments. Discuss how China's missed opportunity presents India with an opportunity to offer credible climate leadership?

24. What was the Indian government's response to the war in Ukraine and the stand-off with China on the Line of Actual Control? Where does it stand on Russia?

25. 'Democratic and transparent consultations help achieve the objectives of ensuring the rights of forest dwellers and fulfilling conservation. If there are plans to declare areas as 'protected', there must first be consultations with the local population first.' Comment

PRACTICE QUESTION FOR UPSC PRELIMS EXAM

ANSWER KEY

1.	(a)	2.	(b)	3.	(c)	4.	(d)	5.	(a)	6.	(a)	7.	(b)	8.	(c)	9.	(d)	10.	(a)
11.	(a)	12.	(b)	13.	(c)	14.	(d)	15.	(a)	16.	(a)	17.	(b)	18.	(c)	19.	(d)	20.	(a)
21.	(a)	22.	(b)	23.	(c)	24.	(d)	25.	(b)	26.	(a)	27.	(a)	28.	(b)	29.	(c)	30.	(d)
31.	(a)	32.	(b)	33.	(c)	34.	(d)	35.	(a)	36.	(a)	37.	(b)	38.	(c)	39.	(d)	40.	(a)
41.	(a)	42.	(b)	43.	(c)	44.	(d)	45.	(c)	46.	(a)	47.	(b)	48.	(c)	49.	(d)	50.	(a)
51.	(a)	52.	(b)	53.	(c)	54.	(d)	55.	(a)	56.	(a)	57.	(b)	58.	(c)	59.	(d)	60.	(a)
61.	(a)	62.	(b)	63.	(c)	64.	(d)	65.	(a)	66.	(a)	67.	(b)	68.	(c)	69.	(d)	70.	(a)
71.	(a)	72.	(b)	73.	(c)	74.	(d)	75.	(a)	76.	(a)	77.	(b)	78.	(c)	79.	(d)	80.	(a)
81.	(a)	82.	(b)	83.	(c)	84.	(d)	85.	(a)	86.	(a)	87.	(b)	88.	(c)	89.	(d)	90.	(a)
91.	(a)	92.	(b)	93.	(c)	94.	(d)	95.	(a)	96.	(a)	97.	(b)	98.	(c)	99.	(d)	100.	(a)
101.	(a)	102.	(b)	103.	(c)	104.	(d)	105.	(c)	106.	(a)	107.	(b)	108.	(c)	109.	(d)	110.	(a)
111.	(a)	112.	(b)	113.	(c)	114.	(a)	115.	(a)	116.	(a)	117.	(b)	118.	(c)	119.	(d)	120.	(a)
121.	(a)	122.	(b)	123.	(c)	124.	(d)	125.	(a)										

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