

**Q: Consider the following statement regarding SIPRI report on Indo-Pacific in self-reliant defence production:**

1. According to the report, India stands at fourth position.
2. China topped the list.
3. SIPRI is an international institute function under United Nation.

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

Ans: a

Explanation:

- India stands at fourth position among 12 countries of the Indo-Pacific in self-reliant defence production, says a study by the Stockholm International Peace Research Institute (SIPRI) that assessed self-reliance in arms production.
- China dominated the list leaving others behind by a long margin.
- The SIPRI is an independent international institute dedicated to research into conflict, armaments, arms control and disarmament.
- Established in 1966 at Stockholm, SIPRI provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.

**Q: Consider the following statement:**

1. Duvalius Dokovici is a recently discovered frog species.
2. Duvalius Dokovici belongs to the Duvalius genus.
3. Serbian scientists have named the species after tennis great Novak Djokovic.

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

Ans: b

Explanation:

- Recently, Serbian scientists have named a new species of beetle after tennis great Novak Djokovic.
- It is named Duvalius Dokovici.
- It has been named after him due to its speed, strength, flexibility, durability and ability to survive in a difficult environment.
- The insect, which belongs to the Duvalius genus of ground beetles that are present in Europe, was discovered several years ago in an underground pit in western Serbia.
- A new species was a specialised underground Coleoptera beetle, a predator which had lost its eyes living deep underground.

**Q: Consider the following statement regarding Svante Pääbo research:**

1. DNA is concentrated in two different compartments within the cell.
2. Nuclear DNA stores most of the genetic information.

Choose the correct option from the codes given below:

- a) 1 Only
- b) 2 Only
- c) 1 and 2
- d) None of the above

Ans: c

Explanation:

- The Nobel Prize for Physiology 2022 has been awarded to Svante Pääbo, Swedish geneticist, who pioneered the field of palaeogenomics, or the study of ancient hominins by extracting their DNA.
- Pääbo is the Director of the Max Planck Institute of Evolutionary Anthropology in Leipzig, Germany and has, over three decades, uniquely threaded three scientific disciplines: palaeontology, genomics and evolution.
- DNA is concentrated in two different compartments within the cell: the nucleus and mitochondria, the latter being the powerhouse of the cell.
- Nuclear DNA stores most of the genetic information, while the much smaller mitochondrial genome is present in thousands of copies and therefore more retrievable.

**Q: Consider the following statement:**

1. OPEC is a group of Organization of the Petroleum Exporting Countries.
2. The objective of the organization is to coordinate and unify the petroleum policies of its member Countries and ensure the stabilisation of oil markets.
3. Russia is one of the allied country of OPEC+.

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

Ans: d

Explanation:

- OPEC+, which groups the Organization of the Petroleum Exporting Countries (OPEC) and 10 allied country, including Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, South Sudan and Sudan, agreed to steep production cuts, curbing supply in an already tight market.
- The founding member Iran, Iraq, Kuwait, Saudi Arabia and Venezuela, established OPEC in 1960. OPEC has since expanded and now has 13 member states.
- Qatar terminated its membership on 1st January 2019.
- The objective of the organization is to “coordinate and unify the petroleum policies of its Member Countries and ensure the stabilisation of oil markets in order to secure an efficient, economic and regular supply of petroleum to consumers, a steady income to producers and a fair return on capital for those investing in the petroleum industry.

**Q: Consider the following statement regarding Click Chemistry:**

1. It has to occur in the presence of oxygen and in water.
2. Azide-alkyne cycloaddition has become almost synonymous with click chemistry.
3. Azides and alkynes are of same chemical groups.

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

Ans: a

Explanation:

- A trio of chemists, Carolyn Bertozzi, Morten Meldal and Barry Sharpless won Nobel laureates 2022 for Chemistry.
- They won it for pioneering ‘click chemistry’, which underpins green chemistry.
- **For a chemical reaction to be called click chemistry**, it has to **occur in the presence of oxygen and in water**, which is a cheap and environmentally friendly solvent. While Sharpless gave examples of existing reactions that were potentially ‘click worthy’, the actual breakthrough came in a Copenhagen laboratory.

- This reaction, **the copper catalysed azide-alkyne cycloaddition** has now become almost synonymous with click chemistry.
- **Azides and alkynes are different chemical groups** that don't combine naturally but **can do so in the presence of copper ions**. Meldal who was tinkering with some routine reactions in his Copenhagen laboratory, discovered that these two had combined to form a third kind of chemical structure called triazole.