

**Q: Recently, ISRO successfully carried out the landing experiment of the Reusable Launch Vehicle-Technology Demonstration (RLV-TD) programme. Consider the following statement:**

1. For the first time in the world, a winged body has been carried to an altitude of 4.5 km and released for carrying out autonomous landing on a runway.
2. RLV is essentially a space plane with a low lift to drag ratio.
3. The configuration of RLV-TD is similar to that of an launched vehicle only.

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:

- An Indian Air Force (IAF) Chinook helicopter was used to drop the RLV-TD from an altitude of 4.5 km and the ISRO executed the landing experiment of the RLV-TD as planned.
- For the first time in the world, a winged body has been carried to an altitude of 4.5 km by a helicopter and released for carrying out autonomous landing on a runway.
- The configuration of RLV-TD is similar to that of an aircraft and combines the complexity of both launch vehicles and aircraft.
- RLV is essentially a space plane with a low lift to drag ratio requiring an approach at high glide angles that necessitates a landing at high velocities of 350 kmph.

**Q: Consider the following statement:**

1. Human being immune system are not vulnerable to fungal infection.
2. Rising temperature is one of the major reasons for fungal infection to human beings.
3. Fungi, in order to invade human being, have to be able to evade the phagocytosis pathway.

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:

- Human beings with a compromised immune system are most vulnerable to fungal infection.
- In 2021, many people in India who had developed COVID-19 contracted a secondary fungal infection from black fungus, resulting in over 4,500 deaths.
- Rising temperature due to global warming is thought of as one of the major reasons for this new threat to human beings. Most fungi thrive in the range of 12°C to 30°C. However, many species are thermotolerant and can withstand high temperatures.
- In order to invade human cells, fungi, on one hand, have to be able to evade the phagocytosis pathway and, on the other hand, should have the ability to grow at 35-37 °C temperature. Global warming could have a significant effect on fungal populations.

**Q: Consider the following statement regarding Chondrostereum purpureum:**

1. This cause silver leaf disease in plants.
2. This fungus does not infect the human being.

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 fungus, Chondrostereum purpureum, is known to **cause Silver leaf disease in plants**, especially in species of rose families. However, there were no reported instances of this fungus infecting human beings from any part of the world.
- Of the hundreds of millions of fungal species, only a few cause infections in humans. This may be the start of a new phenomenon when **plant fungus is adapting to invade human cells by evading the process of ‘phagocytosis’**.

- The process, which means ‘cell eating’, happens when a cell uses its plasma membrane to engulf a large particle, giving rise to an internal compartment called **the ‘phagosome’**. Organisms clean and defend themselves by this process.

**Q: Recently, the Prime Minister unveiled the Bharat 6G Vision Document. Consider the following statement regarding the indicative goals:**

1. Guarantee every citizen a minimum bandwidth of 100Mbps.
2. Ensure every gram panchayat has half a terabit per second of connectivity.
3. Blanket the country with over 50 million internet hotspots.

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:

- Recently, the Prime Minister unveiled the Bharat 6G Vision Document, a starting point for policymakers and the industry to gear up for the next generation of telecommunication.
- Beyond encouraging greater participation in standardisation discussions, the vision document says the government will financially support “research pathways” where breakthroughs are most likely to advance connectivity goals, leveraging talent in academia and companies. The government said an “apex body” will be set up to shepherd these groups through roadblocks.
- Some indicative goals are to
  - a) guarantee every citizen a minimum bandwidth of 100Mbps;
  - b) ensure every gram panchayat has half a terabit per second of connectivity; and
  - c) blanket the country with over 50 million internet hotspots, with thirteen per square kilometre.

**Q: Consider the following statement:**

1. West Asia has been warming more rapidly than other tropical land regions.
2. Northern Arabian-Sea warming is the cause for increase in heavy rainfall events over northwest India in the monsoon season.
3. 2023 is expected to be an La-Lina year.

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 study recently reported that West Asia has been warming more rapidly than other tropical land regions. The northern Arabian Sea has also been warming.
- The combination of this land and ocean warming has enhanced the duration, frequency, and intensity of heat waves over India in the pre-monsoon season.
- Meteorologists have also blamed the northern Arabian-Sea warming for the increase in heavy rainfall events over northwest India in the monsoon season.
- A warmer Arabian Sea in the pre-monsoon season tends to favour a good monsoon. On the other hand, 2023 is expected to be an El Niño year, and an El Niño tends to suppress the monsoon, especially when it follows a La Niña winter, which was the case in 2022.