

R.C. Reddy IAS Study Circle
TSPSC GROUP-1 SERVICES (2024 Notification)
PRELIMINARY TEST
CURRENT AFFAIRS TEST-3
(MARCH, APRIL & MAY 2024)

1. C

Context:

The Delhi High Court recently cancelled a trademark registration titled “Dolma Aunty Momos” in the name of one Mohammed Akram Khan, after Dolma Tsering moved court against him for using her trademark.

About ‘Passing off’ under Trademark Rules:

- Passing off action basically refers to the unauthorised use of goods, services, and the goodwill attached to another person’s business, which would amount to misrepresentation.
- The notion of Passing off in the Indian Trademarks Act, 1999, seeks to safeguard the goodwill associated with unregistered trademarks.
- When the trademark has been registered by the owner and infringement happens, then it becomes a suit for infringement, but if the trademark has not been registered by the owner and infringement happens, then it becomes a case of passing off.
- Passing off is a common law tort which occurs when a person sells his products as the goods of another, wherein the trademark owner can take legal action to remedy this violation.
- While passing off is not defined under the Indian Trademarks Act 1999, Section 27 recognizes the common law rights of a Trademark owner wherein the owner can initiate legal proceedings against any person for passing off goods or services as the goods of another person or as services provided by another person.
- **Passing off occurs when there is illegal use of a trademark or trade name in such a way that the public is misled into believing that the products or services supplied by one party are genuinely those of another.**
- This misrepresentation can harm the goodwill and reputation of the legitimate owner of the trademark.
- Establishing passing off can be difficult since claimants must demonstrate the possibility of public misunderstanding about the origin of the products or services.
- The essential question in passing off cases is whether the defendant’s behaviour is such that it causes uncertainty and possibly harms the plaintiff’s goodwill.

- Passing off encompasses a larger variety of commercial operations, including trade, business, and non-business initiatives, in addition to commodities and services.

2. D

Context:

Recently a youtuber was arrested for allegedly providing snake venom for a rave party and the use of snake venom as a recreational substance in India.

Regulation:

The use and trade of most psychoactive 'substances of abuse' come under the Narcotic Drugs and Psychotropic Substances (NDPS) Act, but not snake venom.

Statement I is incorrect.

- The NDPS Act, 1985, prohibits a person from producing, possessing, selling, purchasing, transporting, storing, and/or consuming any narcotic drug or psychotropic substances. **Statement II is correct.**

The matters related to snakes and their venom come under the purview of the Wildlife Protection Act.

Section 120A (criminal conspiracy) of the IPC also covers crimes related to snake venom for recreational use.

Psychoactive Fauna refers to animals whose body parts or secretions possess mind-altering properties when consumed in sufficient quantities.

Some of the commonly used psychoactive fauna are:

- Hallucinogenic fish such as clownfish and Rabbitfish,
- Amphibians such as toads, ants such as Red Harvester Ants and
- Reptiles such as the Indian Wall Lizard, and liver and bone marrow of giraffe.

These substances can induce various effects on the central nervous system, leading to altered states of consciousness, perception, and mood.

Engaging in the use of Psychoactive Fauna for recreational purposes can be dangerous and potentially lethal.

Snake venom use for intoxication is relatively common in India despite being under-reported.

3. A

Valleys	Located in
1. <i>Jatinga Valley</i>	<i>Assam</i>
2. <i>Pakke Valley</i>	<i>Arunachal Pradesh</i>
3. <i>Dzukou Valley</i>	<i>Nagaland</i>

- **Jatinga Valley, located in Dima Hasao district of Assam, experiences a strange phenomenon during the late monsoon season (September-November), between 7 PM and 10 PM.**
- The Phenomenon – Many birds, both local and migratory, crash into buildings, trees, or die after flying at high speeds. This event has earned Jatinga the nickname "Valley of Death."
- This phenomenon began in 1910. But in 1957, the general public became aware of this when British tea farmer and ornithologist EP Gee wrote about it in his book Wild Life of India.
- **According to the Kaziranga National Park Assam website, this phenomenon is also described as the "Bermuda Triangle for Birds".**

4. B

Context:

Arunachal Bugun Tribe donates land for critically endangered songbird Bugun Liocichla.

- **Bugun Liocichla is a small babbler bird (only 20 cm) with olive-grey plumage and black cap.**
- Bugun Liocichla is found only in the Eaglenest Wildlife Sanctuary and nowhere else in the world.
- The bird was identified by Ramana Athreya, a Pune-based astrophysicist.
- The avian species is critically endangered with only 14 individual birds spotted so far in the Braiduah village under the Singchung sub-division.
- Bugun Liocichla was the first bird to be discovered in India since its independence, in 2006.
- As a major step towards conservation, the Arunachal Pradesh government finally notified Braiduah Community Reserve under the Wildlife Protection Act, 1972.
- The reserve is situated adjacent to the Eaglenest Wildlife Sanctuary.
- Bugun Liocichla Utsav is a festival held to commemorate 15 years of the bird's discovery.



5. D

Context:

Mars resonance on Earth

Mars causes the churning of Earth's ocean every 2.4 million years, which is linked to periods of increased solar energy and a warmer climate.

- *Astronomical Grand Cycles - Deep-sea currents shifts every 2.4 million years, and this cycle is known as the astronomical grand cycles.* Statement 1 is correct.
- *This occurs due to the interaction between the orbits of Earth and Mars.* Statement 2 is correct.

Resonance - Mars and Earth are affecting each other through a phenomenon signified as resonance.

- Resonance is a concept wherein two bodies affect each other based on their gravitational push or pull on each other.
- This phenomenon is essential in keeping a balance in the solar system and ensuring the steady orbiting of the planets as every planet's orbiting affects its nearby one due to this resonance.

Eccentricity - Resonance affects the shape of their orbits, called eccentricity (a measure of how close to circular their orbits are).

- Due to this resonance, the Earth is pulled slightly closer to the sun by Mars' gravitational pull.
- This means, our planet is exposed to more solar radiation and hence has a warmer climate, before drifting backward again, all over a period of 2.4 million years.

Deep Ocean Currents - During warmer times, the deep-sea record shows more breaks, connected to stronger deep ocean currents.

Eddies – The stronger currents, known as giant whirlpools or eddies, may reach the seafloor at the deepest parts of the ocean, known as the abyss or abyssal seafloor.

- **Eddies don not move water like the AMOC, which shifts water between different latitudes.**
- **Contourites** – Once connected to the deep seafloor, these huge whirlpools could cause erosion and create large snowdrift-like buildups of sediments called “contourites”.

AMOC – Eddies may help the offsetting of ocean stagnation, which follows the slowing of Atlantic meridional overturning circulation (AMOC).

- AMOC is a vast system of ocean currents that carries warm water from the tropics to the North Atlantic Ocean.
- It is responsible for driving the Gulf Stream and maintaining warm climates in Europe.

6. C

Context:

NASA satellite imagery and Google Earth Engine computing power are helping scientists develop a real-time monitoring system for tiger habitat globally.

Tiger Conservation Landscape (TCL) 3.0:

- **TCL 3.0 is a joint initiative of the NASA, the European Space Agency (ESA), and the Google Earth Engine. Statement 1 is correct.**
- TCL 3.0 represents the third iteration of assessing tiger habitat across Asia and where tigers still occur.
- **Goal – To monitor changes in real time to help stabilize tiger populations across the range. Statement 2 is correct.**
- **TCL 3.0 uses Earth observations such as VIIRS, MODIS and Landsat products.**
- TCL 3.0 uses geographic information systems, known as GIS.
 - GIS is a technology that interprets and visualizes spatial data, such as how landscapes have changed over time, population densities, or the distance between different locations.
- This helps in holistically seeing the impact of human activity on the critical habitats of tigers.
- **TCL 3.0, the mapping system provides tiger-range countries the information they need to identify priority areas, and monitor changes in the habitat and populations.**
- Platform for governments to align with global initiatives, such as the Global Biodiversity Framework and Sustainable Development Goals, to address the challenges facing our ecosystems.

Working:

- Satellites provide constant, high-resolution imagery, which is used to analyse suitable landscapes from space.
- This data does not show what is going on under the tree canopy.
- Hence, the second layer of data comes from human footprint analysis, data collected from field surveys about the spread of urban areas and human activities.

7. C

Context:

The Centre has notified a set of rules called the Captive Elephant (Transfer or Transport) Rules, 2024 that liberalise the conditions under which elephants may be transferred within or between states.

- Released by – The Ministry of Environment Forest and Climate Change.
- Until August 2022, the Wildlife Protection Act explicitly prohibited the trade in wildlife including both wild and captive elephants.
- However, amendments to the Act brought in an exemption that for the first time allowed captive elephants to be transferred.
- Rules – Captive elephants can be transferred when an owner is no longer in a position to maintain the elephant, the elephant will likely have a better upkeep than in the present circumstances. Statement 1 is correct.
- Chief Wildlife Warden – Otherwise, when a state’s Chief Wildlife Warden deems it fit and proper in the circumstances of the case for better upkeep of the elephant.
- Before a transfer within the state, an elephant’s health has to be ratified by a veterinarian and the Deputy Conservator of Forests must establish that the animal’s current habitat and prospective habitat are suitable.
- The Chief Wildlife Warden on receipt of such documents may choose to reject or approve the transfer. Statement 2 is correct.
- If the transfer involves moving the elephant outside of a state, similar conditions apply.
- Genetic profile – Before a transfer is effected, the genetic profile of the elephant has to be registered with the Ministry of Environment, Forest and Climate Change. Statement 3 is correct.

Elephant exemption

- The elephant being transferred ought to be accompanied by a mahout and an elephant assistant.
- A health certificate from a veterinary practitioner to the effect that the elephant is fit for transport and is not showing any sign of musth or infectious or contagious disease, is to be obtained.
- The transport shall be carried out after the mandatory quarantine period as advised by the veterinary practitioner is over, in case of contagious disease
- The elephant shall be properly fed and given water before loading.

- Necessary arrangements shall be made to provide food and water to the elephant en-route.
- Tranquilisers/sedatives shall be used to control nervous or temperamental elephants upon prescription by the veterinary practitioner.
- **Committee - A Parliamentary Committee, led by Congress Rajya Sabha MP, Jairam Ramesh, had recommended the deletion of this exemption clause for elephants. It also recommended providing only an exemption for elephants owned by temple trusts.**
- *The final version of the amended act, however retains the clause on allowing the movement of captive elephants.* Statement 4 is incorrect. However, only animals with an existing certificate of ownership may be moved.

8. B

Context:

Army raises elite unit to work on critical technologies having military applications.

- STEAG will undertake research and evaluation of futuristic communication technologies like 6G, Artificial Intelligence (AI), Machine Learning (ML) and quantum computing for military use.
- STEAG will be headed by a Colonel rank officer.
- *STEAG is mandated to nurture technologies spanning the complete spectrum of wired and wireless systems.*
- **It will carry out technical scouting, evaluation, development, management of core ICT solutions, and provide user interface support by maintenance and upgradation of contemporary technologies available in the environment.**
- The setting up of STEAG is part of the Army's efforts to develop technologies considering the future battlefield.
- STEAG will help bridge the divide between the armed forces on the one hand and industry and academia on the other.
- STEAG is aligned with the tenets of Atmanirbhar Bharat and Start-Up India.

9. B

Context:

Genetic rescue is proposed as a method to conserve Ranthambore National Park's tiger population.

About Genetic Rescue:

- *Genetic rescue is the process of increasing population growth with new genetic variation by migrating individuals into another small population (i.e., gene flow).*

- **In practice, wildlife managers take individuals from a larger, healthier population, and bring them to a smaller population to introduce new variation and eventually help grow the population.**
- This conservation strategy aims to alleviate genetic load, decrease extinction risk, and enhance the viability of endangered species and populations.
- It is often employed in conservation biology to mitigate the negative effects of inbreeding depression, which can occur when individuals within a population mate with close relatives, leading to decreased reproductive success and viability of offspring.
- Genetic rescue can have both beneficial and deleterious effects, depending on factors such as the magnitude and duration of gene flow, as well as the genetic and non-genetic factors influencing population dynamics.
- **There can be risks involved with moving animals around, so it's often thought of as a last resort.**

10. D

About Barberton Greenstone Belt:

- *It is situated on the eastern edge of the Kaapvaal Craton in South Africa.*
- **It is known for its gold mineralisation and for its komatiites, an unusual type of ultramafic volcanic rock named after the Komati River that flows through the belt.**
- Some of the oldest exposed rocks on Earth (greater than 3.6 Ga) are located in the Barberton Greenstone Belt of the Eswatini-Barberton areas, and these contain some of the oldest traces of life on Earth, second only to the Isua Greenstone Belt of Western Greenland.
- **The Makhonjwa Mountains make up 40% of the Baberton belt.**
- Geological sampling indicates that some rock formations in these mountains are 3.2 to 3.6 billion years old.

11. D

Context:

Vikram Sarabhai Space Centre (VSSC), the Indian Space Research Organisation (ISRO) facility, has developed the multi-purpose app SAKHI to help astronauts on the Gaganyaan mission.

- *It is a multi-purpose app that will help astronauts on Gaganyaan space flight mission to carry out a range of tasks.* **Statement 1 is correct.**
- *Developed by - Indian Space Research Organisation (ISRO).* **Statement 2 is correct.**
- *It monitors the health of the astronauts, help them stay connected with Earth and even alert them about their blood pressure, heart rate and oxygen saturation, dietary schedules.* **Statement 3 is correct.**

- It will keep the crew connected with the onboard computer and ground-based stations, guaranteeing a seamless communication link.

Long-Term Challenges to Human Space Exploration:

- Outside of Earth's protective magnetosphere, astronauts are exposed to higher levels of cosmic radiation, which can damage DNA and increase the risk of cancer and other health issues.
- Access to medical care is limited during space missions, and emergencies such as injuries or acute illnesses require prompt and effective intervention.
- Sleep disturbances are the major challenge in space due to factors such as environmental noise, changes in light-dark cycles, and discomfort from sleeping in microgravity.

12. D

Context:

Exporters seeking to avail duty concessions on shipments to the UK will have to adhere to the new British rules under the Developing Countries Trading Scheme (DCTS).

About Developing Countries Trading Scheme (DCTS):

- *It is a scheme introduced by the UK Government to facilitate developing countries to integrate into the global economy, create stronger trade and investment partnerships and strengthen supply chains.* **Statement I is incorrect.**
- It is a simpler and more generous preferential trading scheme which has been designed to boost trade with developing countries in order to support their development.
- *It reduces or removes rates of duty, or tariffs, on imports from eligible developing countries into the UK.* **Statement II is correct.**
- It also enables UK businesses to access thousands of products from around the globe at lower prices, reducing costs for UK consumers.

The DCTS applies to 65 countries, that are:

- least developed countries (LDCs) as defined by the United Nations.
- low-income countries (LIC) and lower middle-income countries (LMIC) as defined by the World Bank.

DCTS will provide duty-free, quota-free trade to LDCs on everything but arms and duty-free, quota-free trade on 85% of eligible goods to most low LIC and LMIC countries.

The DCTS does not extend to countries and territories deemed by the World Bank as 'upper-middle income' for three consecutive years, or to LICs and LMICs who have a free trade agreement (FTA) with the UK.

13. C

Context:

Recently, a light combat aircraft Tejas crashed near Jaisalmer in Rajasthan during an operational training sortie. It is the first such incident involving the indigenously-built jet.

The Crash

- The indigenous fighter jet Tejas crashed today in Rajasthan's Jaisalmer near a hostel complex. This is the first-ever crash of the indigenous fighter in 23 years of its history which began with the first test flight in 2001.

Background of LCA Tejas

- The Light Combat Aircraft (LCA) Tejas is a domestically developed supersonic aircraft used by the Indian military.
- The programme was initiated by the Government of India in 1984, leading to the establishment of the Aeronautical Development Agency (ADA).
- Developed by Hindustan Aeronautics Limited (HAL), the Tejas succeeded the ageing Mig 21 fighter jets.
- Named 'Tejas,' which translates to 'radiance' in Sanskrit, by then Prime Minister Atal Bihari Vajpayee in 2003, the aircraft is the second supersonic fighter jet developed by HAL after the HAL HF-24 Marut. It is the lightest and smallest multi-role supersonic fighter aircraft in its category, designed to accommodate various types of weaponry. **Statement 2 is correct.**

Facts About Tejas Fighter Jet:

- Tejas is a single-seater fighter aircraft and a twin-seat trainer variant is also operated by the Air Force. The Indian Navy also operates the twin-seater variant.
- The first test flight of the Technology Demonstrator-1 (TD-1) took place in 2001 and the maiden flight of the Second Series Production (SP2) Tejas aircraft of Initial Operational Clearance (IOC) configuration took place on March 22, 2016.
- Light Combat Aircraft Tejas is a 4.5-generation multi-role fighter aircraft and is designed to take offensive air support and provide close combat support for ground operations. **Statement 1 is correct.**
- Tejas is the smallest and lightest aircraft in its class and the dimensions and the extensive use of composite structure make it lighter.

- In 2016, The first IAF Squadron to induct the Tejas was the No 45 Squadron, the 'Flying Daggers'. Statement 3 is correct.

Future Plans

- The Indian Air Force plans to replace the ageing MiG-21 aircraft with the LCA Tejas Mark 1A aircraft by 2025. The LCA program was envisioned in the late 1980s to replace the MiG-21s that have been serving the Air Force since 1963. The LCA was rechristened as 'Tejas' in 2003.

14. C

Context:

Children of the Lisu and Singpho communities in Arunachal Pradesh and Assam are named according to the order they are born in the family, incorporating numbers into their names.

About the Numbering Tradition:

- **Numbering names is a tradition in Lisu and Singpho communities.**
- Lisu boys and girls have separate sets of numbered names to indicate the order of their birth.
- **The eldest girl in a family has Ana in her name, and the ones after her are called Angyi, Acha, Ado, Achhi, Ata, Akhu, Agu, Aju, and Apshi, for a tenth daughter.**

Lisu and Singpho communities:

- **The Lisus belong to the Tibeto-Burman family and inhabit the contiguous hilly regions of Arunachal Pradesh, China, Myanmar, and Thailand. They number about 5,000 in India.**
- The Singphos is an ethnic group inhabiting 27 countries, including China's Yunnan province. In India, they mostly inhabit the Changlang and Namsai districts of Arunachal Pradesh, and the Tinsukia district of Assam.
- The Lisus and Singphos have similar usage of numbers in their names, probably because they belong to the Wunpong group, which has four more communities in the Kachin State of Myanmar.

15. B

Context:

Delhi was identified as the capital city with the poorest air quality, according to a new report by World Air Quality Report 2023.

About World Air Quality Report 2023:

- It is published by the Swiss organisation IQAir.

Highlights:

- **With an average air annual particulate matter 2.5 (PM2.5) concentration of 54.4 micrograms per cubic metre, India had the third worst air quality.**
- **India was better than only two of its neighbouring countries, Bangladesh and Pakistan.**
- While Bangladesh remained the most polluted country in the world, with an average PM2.5 concentration of 79.9 micrograms per cubic metre, Pakistan was second, with a level of 73.7.
- **It also identified Delhi as the most polluted capital city in the world for the fourth consecutive time. Bihar's Begusarai was termed the world's most polluted metropolitan area.**
- **Ten out of the top 11 most polluted cities in the world are from India, the other being Lahore in Pakistan.**
- 96 percent of the Indian population experiences PM2.5 levels more than seven times the WHO annual PM2.5 guideline.

16. C

About International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE):

- IPHE, established in 2003, is an international inter-governmental partnership currently consisting of 23 member countries and the European Commission.
Statement 1 is correct.
- Objective: To facilitate and accelerate the transition to clean and efficient energy and mobility systems using fuel cells and hydrogen technologies.
Statement 2 is correct.
- IPHE serves as a mechanism to organize and implement effective, efficient, and focused international research, development, demonstration, and commercial utilization activities related to hydrogen and fuel cell technologies.
- It also provides a forum for sharing information on policies and technology status, as well as on initiatives, codes, and standards to accelerate the cost-effective transition to the use of fuel cells and hydrogen in the economy.
- The IPHE also informs broad stakeholder groups, including policymakers and the public, on the benefits of, and challenges to, establishing widespread commercial hydrogen and fuel cell technologies in the economy.
- **Members: Australia, Canada, European Commission, India, Netherlands, Switzerland, Austria, Chile, France, Italy, Norway, UAE, Belgium, China, Germany, Japan, South Africa, United Kingdom, Brazil, Costa Rica, Iceland, South Korea, Singapore, and the United States.**

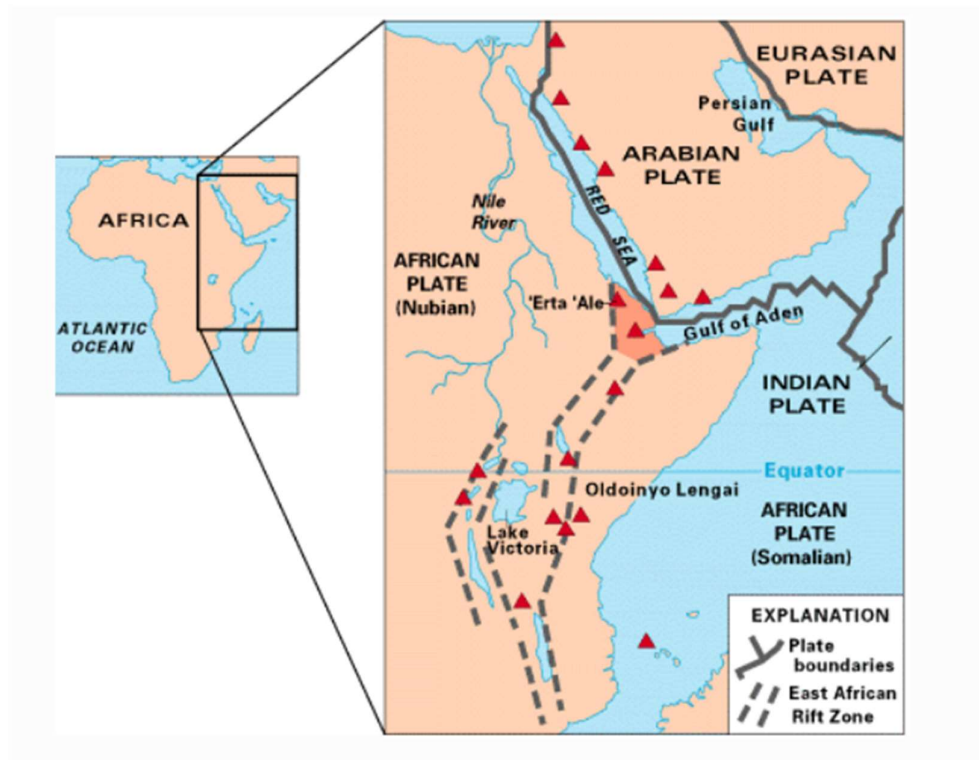
17. B

Context:

Geologists have discovered a fault in Africa's Afar Triangle, indicating a potential formation of the world's sixth ocean.

About Afar Triangle:

- It is part of the Great Rift Valley in East Africa and is a geological depression known for its significance in human evolution.
- It overlaps Eritrea, Djibouti, and the Afar Region of Ethiopia and contains Lake Assal, Africa's lowest point.
- The region experiences extreme heat and drought, with some of the hottest temperatures on Earth.
- It is bordered by the Ethiopian Plateau, the Danakil block, the Somali Plateau, and the Ali-Sabieh block.
- Fossil sites in the Afar region, such as Hadar and Dikika, have yielded important discoveries related to early hominins and human tool culture.



18. B



19. C

Context:

Lawmakers in the European Parliament recently voted overwhelmingly in favour of the Artificial Intelligence Act, putting the landmark legislation on track to take effect by the end of the year.

- *It is the world's first comprehensive Artificial Intelligence law. Statement 1 is correct.*
- It lays down rules and guidelines for specific risks associated with the use of AI in areas like biometric authentication, facial recognition, high-risk domains such as healthcare, and deep fakes.
- *Taking a horizontal, risk-based approach that will apply across sectors of AI development, the EU AI Act classifies the technology into four categories: Prohibited, high-risk, limited-risk, and minimal-risk. Statement 2 is correct.*
- Systems that violate or threaten human rights through, for example, social scoring – creating “risk” profiles of people based on “desirable” or “undesirable” behaviour – or mass surveillance are banned outright.
- *High-risk systems, which have a significant impact on people's lives and rights, such as those used for biometric identification or in education, health, and law enforcement, will have to meet strict requirements, including human oversight and security and conformity assessment, before they can be put on the market. Statement 3 is incorrect.*
- Systems involving user interaction, like chatbots and image-generation programmes, are classified as limited-risk and are required to inform users that they are interacting with AI and allow them to opt out.
- The most widely used systems, which pose no or negligible risk, such as spam filters and smart appliances, are categorised as minimal-risk. They will be exempt from regulation, but will need to comply with existing laws.

- *The law will apply to any companies doing business in the European Union, and allows for penalties of up to 7% of global turnover or €35 million, whichever is higher, for those that don't keep their use of AI under control.* Statement 4 is correct.
- The act also enshrines the right of consumers to make complaints about the inappropriate use of AI by businesses, and to receive meaningful explanations for decisions taken by an AI that affect their rights.

20. B

Context:

The new annual State of the Global Climate report, published recently by the World Meteorological Organisation (WMO), found that 2023 was the hottest year on record.

State of Global Climate Report 2023

- *It is an annual report published by the World Meteorological Organisation (WMO).*
- Dozens of experts and partners contribute to the report, including UN organizations, National Meteorological and Hydrological Services (NMHSs), and Global Data and Analysis Centres, as well as Regional Climate Centres, the World Climate Research Programme (WCRP), the Global Atmosphere Watch (GAW), the Global Cryosphere Watch, and the Copernicus Climate Change Service operated by ECMWF.

Highlights of the 2023 Report:

- **2023 was the hottest year on record, with the global average near-surface temperature at 1.45 °Celsius (with a margin of uncertainty of ± 0.12 °C) above the pre-industrial baseline.**
- **It was the warmest ten-year period on record.**
- Numerous records for indicators of the climate system, including greenhouse gas levels (GHGs), surface temperatures, ocean heat, sea level rise, Antarctic Sea ice cover, glacier retreat, etc., were broken.
- On an average day in 2023, nearly one third of the global ocean was gripped by a marine heatwave, harming vital ecosystems and food systems.
- Towards the end of 2023, over 90% of the ocean had experienced heatwave conditions at some point during the year.
- **The global set of reference glaciers suffered the largest loss of ice on record (since 1950), driven by extreme melt in both western North America and Europe, according to preliminary data.**
- In 2023, renewable capacity additions increased by almost 50% from 2022, for a total of 510 gigawatts (GW), the highest rate observed in the past two decades.

21. D

Context:

The Chennai-based space start-up Agnikul Cosmos Private Limited will launch its first rocket Agnibaan Sub Orbital Technology Demonstrator from the Satish Dhawan Space Centre in Sriharikota on March 22.

- Agnibaan SOrTeD is a single-stage launch vehicle powered by AgniKul's patented Agnilet engine.
- It is a customisable launch vehicle that could be launched in one or two stages.
- The Agnilet engine is an entirely 3D-printed, single-piece, 6 kilonewton (kN) semi-cryogenic engine. **It is the world's sole single-piece 3D-printed engine.**
- It is capable of carrying payloads up to 100 kg to an altitude of 700 km in five different configurations. **Statement 1 is correct.**
- The rocket is also designed for launch from more than 10 different launch ports.
- It uses commercially available aviation turbine fuel (kerosene) and medical-grade liquid oxygen. This innovative propulsion system represents a significant step forward in space propulsion technology. **Statement 2 is correct.**

22. D

Context:

A shortage of cocoa beans has led to a near shutdown of processing plants in Ivory Coast and Ghana, the two countries responsible for 60% of global production.

About Cocoa

- It is an important plantation crop grown for chocolates around the world.
- It is known as a crop of humid tropics and is native to Amazon basin of South America.
- It is mainly grown in an area of land around the equator between 20 degrees latitude north and south.

Required climatic conditions

- It can be grown up to 300 m above mean sea level.
- Rainfall: It requires an annual rainfall of 1500-2000 mm.
- Temperature: The temperature range of 15°-39°C with optimum of 25°C is considered ideal.
- Soil: It requires deep and well drained soils. Majority of area under Cocoa cultivation is on clay loam and sandy loam soil.
- It grows well in the pH range of 6.5 to 7.0.

Shade requirement

- Cocoa was evolved as an under-storey crop in the Amazonian forests. Thus, commercial cultivation of cocoa can be taken up in plantations where 50 per cent of light is ideally available.

Major producing regions in the world: About 70 percent of the world's cocoa beans come from four West African countries: Ivory Coast, Ghana, Nigeria and Cameroon.

In India, it is mainly cultivated in Karnataka, Kerala and Tamil Nadu mainly as intercrop with Arecanut and Coconut.

23. C

Context:

As the world grapples with rising temperatures, a groundbreaking study led by the University of the Sunshine Coast, Australia exposes an unlikely menace of Lianas.

About Lianas

- *Lianas (also known as vines, climbing plants or climbers) are plants with long, flexible, climbing stems that are rooted in the ground, and usually have long dangling branches.*
- They particularly thrive in disturbed forest areas – such as those affected by logging, natural treefalls, landslides -- because they can quickly grow towards the forest canopy using trees as support.
- **In terms of climate, lianas are more resilient to variations in moisture and temperature, which gives them a competitive advantage over trees.**
- Lianas use their climbing ability, resilience to climatic stress, and efficient water and nutrient usage to outcompete trees for sunlight and resources.
- They compete for sunlight in the canopy and suppress trees.
- Their lower carbon sequestering capacity compared to trees further exacerbates the threat to carbon storage.

Impacts on forest ecosystem

- **An increase in lianas's competitive success over trees can significantly affect the forest ecosystem.**
- **Lianas, being a disturbance-favouring plant form, can impact trees from the understory to the canopy.**
- Their prolific growth following heavy disturbance can lead to decreased tree regeneration, growth and survival, altering forest structure and ecosystem function, which, in turn, can affect the subsequent recovery of forest.
- **Its proliferation can alter nutrient cycling within forests and decrease the overall resilience of forests to environmental changes, making ecosystems more susceptible to further disturbances.**

24. D

Context:

Recently, the United States' Environmental Protection Agency (EPA) announced a comprehensive ban on all forms of the deadly carcinogen asbestos.

About the Asbestos:

- *It is a naturally occurring mineral, has been widely used in various industries due to its heat and chemical resistance, tensile strength, and insulating properties.* **Statement 1 is correct.**
- However, it is a known carcinogen, and exposure to it can lead to serious health issues, including lung cancer, mesothelioma, and asbestosis, and it is linked to more than 40,000 deaths in the US each year.

The Global Scenario:

- **Currently, more than 65 countries, including the US, have imposed bans or severe restrictions on its use.**
- It continues to be used in many other countries, including India.

The Indian Context:

- *India banned asbestos mining in 1993.* However, there is no law in the country that prevents its use in construction, import, or trade. **Statement 2 is correct.**
- As a result, asbestos is widely used in everything from cement to brake parts.
- *In fact, India accounted for nearly half of global asbestos imports in 2021.* **Statement 3 is correct.**
- In India, in the coming decades, more than 6 million people could have an asbestos-related disease, including more than 600,000 cancer cases.

25. C

Context:

The National Internet Exchange of India (NIXI) is set to unveil the BhashaNet portal at the upcoming Universal Acceptance (UA) Day in a move towards advancing digital inclusion and promoting linguistic diversity in India.

About National Internet Exchange of India (NIXI):

- *It was established in 2003 as a not-for-profit organization under the Companies Act 2013.*
- *NIXI was set up to extend the use of Internet Service Protocols (ISPs) for the purpose of routing domestic traffic within the country instead of taking it all the way abroad, thereby resulting in a better quality of service (reduced latency) and reduced bandwidth charges for ISPs by saving on international bandwidth.*

- It is tasked to increase Internet penetration and adoption in India by facilitating the various infrastructure aspects to enable the Internet ecosystem to be managed and used by the masses.
- .IN is India's Country Code Top Level Domain (ccTLD). The Government of India delegated the operations of INRegistry to NIXI in 2004. The INRegistry operates and manages India's.IN ccTLD.
- Another activity being carried out by NIXI is that of National Internet Registry (NIR). The NIR is known as the Indian Registry for Internet Names and Numbers (IRINN).
- **It offers IXPs towards building Internet Exchange Points.**

What is Universal Acceptance (UA) Day?

- Held annually and organized by the community-led Universal Acceptance Steering Group (UASG) and the Internet Corporation for Assigned Names and Numbers (ICANN), UA Day was established as a means to rally local, regional, and global stakeholders to spread awareness and encourage UA adoption through a mix of virtual, in-person, and hybrid informational and training sessions.
- UA is a technical requirement that ensures all valid domain names and email addresses, regardless of script, language, or character length, can be equally used by all Internet-enabled applications, devices, and systems.
- **The first UA Day was held on 28 March 2023 and marked the first time a diverse set of technical and language communities, companies, governments, and Domain Name System (DNS) industry stakeholders mobilized to champion UA and a multilingual Internet on a global scale.**

26. A

Context:

According to the Global E-waste Monitor (GEM), the world's generation of electronic waste is rising five times faster than documented e-waste recycling.

The Global E-waste Monitor 2024

- It provides the most up-to-date overview of global e-waste data, statistics, and progress in policy and regulation since 2014.
- Prepared by - Global E-waste Statistics Partnership (GESp) with the support from Fondation Carmignac, a corporate foundation.

Findings of Global E-waste Monitor 2024

- **E-waste production - A record 62 million tonnes of e-waste was produced in 2022, 82% up from 2010.**
- It will rise another 32% to 82 million tonnes in 2030.
- **Just 1% of rare earth element demand is met by e-waste recycling.**

- Recycled waste - Less than one quarter (22.3%) of the year's e-waste mass was documented as having been properly collected and recycled in 2022.
- Among regions, Europe has the highest rate of documented formal collection and recycling of e-waste at 42.8% while Africa generates the lowest rates of e-waste but struggles to recycle it. Statement 1 is correct.
- Per-capita e-waste - Europe (17.6 kg), Oceania (16.1 kg) and the Americas (14.1 kg) generated the highest amount of e-waste per capita in 2022. Statement 2 is incorrect.
- **Challenges** - Technological progress, higher consumption, limited repair options, shorter product life cycles, society's growing electronification, design shortcomings, and inadequate e-waste management infrastructure.
- **Future perspective** - If countries could bring the e-waste collection and recycling rates to 60% by 2030, the benefits through minimizing human health risks would exceed costs by more than 38 billion dollars.

27. A

Context:

The European Central Bank, the Bank for International Settlements, the Bank of Spain, and the Bundesbank of Germany introduced Project Gaia.

About

- Project Gaia aims to help analysts search corporate climate-related disclosures and extract data quickly and efficiently using artificial intelligence (AI).
- The Project integrated Large Language Models (LLMs) into an application and leveraged it for data extraction.

Large Language Models (LLMs)

- A large language model (LLM) is a type of artificial intelligence (AI) algorithm that uses deep learning techniques and massively large data sets to understand, summarize, generate and predict new content.
- Deep learning involves the probabilistic analysis of unstructured data, which eventually enables the deep learning model to recognize distinctions between pieces of content without human intervention.

28. D

Context:

India launched 'Operation Indravati' to evacuate its nationals from Haiti.

Background

- Haiti has been witnessing violence for over two years since the July 2021 assassination of President Jovenel Moise.
- Now various armed groups launched coordinated attacks on key installations in Haiti in an attempt to force the resignation of the country's de facto leader Prime Minister Ariel Henry.

About Haiti

- Capital: Port-au-Prince
- Haiti, is a country on the island of Hispaniola in the Caribbean Sea, east of Cuba and Jamaica, and south of The Bahamas.



29. A

Context:

The Ministry of Environment and Forests (MoEF) has introduced a new set of amendments to India's Plastic Waste Management (Amendment) Rules, 2024.

About

- It defines biodegradable plastics as not only capable of degradation by biological processes in specific environments such as soil, landfill but also as materials that do not leave any microplastics.
- Rules specify that the makers of disposable plastic ware can label them as biodegradable only when they do not leave any microplastics behind.

Need for the Amendment

- Ambiguity: After the Union government banned single-use plastic in 2022, and recommended the adoption of biodegradable plastic, the question of what exactly constituted biodegradable plastic was unanswered.
- The Central Pollution Control Board (CPCB) refused to provide a 'provisional certificate' to licence the products as biodegradable because the CPCB only considers as biodegradable a plastic sample that has 90% degraded, and such a process takes at least two years.

Biodegradable and Compostable Plastics

- Biodegradable plastic involves plastic goods being treated before they are sold.
- When discarded, the material is expected to decompose naturally over time though there are no tests yet to determine if such plastics completely degrade. Statement 1 is correct.
- Compostable plastics, on the other hand, do degrade, but require industrial or large municipal waste management facilities to do so. Statement 2 is incorrect.
- Biodegradable plastic and compostable plastic are projected as the two broad kinds of technological fixes to India's burgeoning problem of plastic waste pollution.

30. D

Context:

Recently, the Prime Minister of India received Bhutan's highest civilian award, the 'Order of the Druk Gyalpo', during his two-day State visit to the neighbouring nation.

All pairs are correctly matched.

About Order of the Druk Gyalpo:

- It stands as Bhutan's most esteemed civilian accolade, reserved for individuals who have demonstrated exceptional contributions to society, embodying values of service, integrity, and leadership.
- As per ranking and precedence established, the Order of the Druk Gyalpo was instituted as the decoration for lifetime achievement and is the pinnacle of the honour system in Bhutan, taking precedence over all orders, decorations and medals.
- The award has been conferred to the PM in recognition of outstanding contribution to the growth of India-Bhutan relations and for his distinguished service to the Bhutanese nation and people.
- **The present Prime Minister of India became the first foreign head of government to receive Bhutan's highest civilian honour.**
- Others to receive this award include Her Majesty the Royal Queen Grandmother Ashi Kesang Choden Wangchuck in 2008; His Holiness Je Thrizur Tenzin Dendup in 2008; and His Holiness Je Khenpo Trulku Ngawang Jigme Choedra in 2018.

31. B

Context:

Sidhu Moose Wala parents welcome newborn amid exceptions under law to allow woman over 50 to opt for IVF in India

- Section 21(g)(i) of the Act essentially states that initially, the maximum age for a woman to avail ART services is set at 50 years or at the completion of menopause, whichever occurs earlier. However, the law does provide a bit of flexibility and allows exceptions.
- Women above 50 years of age may opt for IVF in India as long as they fulfil the stipulated medical and mental health criteria, despite the restrictions set by section 21(g)(i) of the Assisted Reproductive Technology (Regulation) Act, 2021. Statement 1 is incorrect.
- A child born through Assisted Reproductive Technology (ART) will be deemed to be a biological child of the couple (commission couple) and will be entitled to the rights and privileges available to a natural child of the commissioning couple. Statement 2 is correct.
- A donor will not have any parental rights over the child.

32. C

- The World Water Assessment Programme (WWAP) is a global initiative launched by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in response to growing concerns about the state of the world's freshwater resources.
- Established in 2000, WWAP serves as a platform for coordinating and synthesizing information on water-related issues from various UN agencies, international organizations, governments, and research institutions.
- **WWAP coordinates the work of 31 UN-Water members and international partners, under the umbrella mechanism of UN-Water, in the production of the World Water.**
- **Since 2007, UNESCO WWAP has been funded by the Government of Italy.**
- One of WWAP's primary objectives is to provide policymakers, stakeholders, and the public with comprehensive and up-to-date assessments of the world's water resources.

33. A

Context:

The principal bench of the National Green Tribunal (NGT) in New Delhi has initiated action on the Netravati Waterfront Promenade Development Project in Mangalore due to alleged violations of Coastal Regulation Zone (CRZ) norms and environmental regulations.

- The Netravati River originates in the Western Ghats in the Bangrabalike forest Valley of Yellaner Ghats of the Kudremukha range in Karnataka. **Statement 1 is incorrect.**

- It merges with the Kumaradhara River, major left-bank tributary at Uppinangadi before flowing to the Arabian sea. **Statement 2 is incorrect.**
- Along its course, the Netravati also flows through the popular pilgrim place called Dharmasthala. **Statement 3 is correct.**

What is National Green Tribunal?

- It has been established under the National Green Tribunal Act 2010.
- It is mandated to make disposal of applications or appeals finally within 6 months of the filing of the same.

Composition

- It comprises the Chairperson, the Judicial Members, and the Expert Members.
- They shall hold office for a term of 5 years and are not eligible for reappointment.
- The Chairperson is appointed by the Central Government in consultation with the Chief Justice of India (CJI).
- A Selection Committee shall be formed by the central government to appoint the Judicial Members and Expert Members.
- There are to be at least 10 and a maximum of 20 full-time Judicial members and Expert Members in the tribunal.

New Delhi is the Principal Place of Sitting of the Tribunal, and Bhopal, Pune, Kolkata and Chennai shall be the other four places of sitting of the Tribunal.

R.C.REDDY
IAS STUDY CIRCLE

34. D

Context:

Filing of nominations for the 1st phase of the Lok Sabha polls began recently.

- **Nomination Process** - The process of nomination starts with the release of the notification for the Lok Sabha elections.
- Under this process, the candidates register their names with the Election Commission and claim that they are the right contenders to get public votes in the Lok Sabha election field.
- After examining all the certificates submitted by the candidates, the Election Commission decides their candidature for the Lok Sabha elections.
- Only after their candidature is finalised, the candidates can enter the election field and spread their campaign and seek votes in their favour.
- **Eligibility - Any Indian citizen whose name is in the voter list can make nomination for the Lok Sabha seat. Statement 1 is correct.**
- When a candidate is nominated by a political party, it is said that the candidates has got a ticket from the party.

- **Independent candidates** - Independent candidates file their nominations with their symbols, Election Commission examines their application for the symbol and allocates the party symbol after that.
- **Submission authority** - *The nomination form can be submitted to the District Election Officer along with the prescribed amount as security deposit and submit an affidavit. Statement 2 is correct.*
- **Document submission** - The nominators have to submit their passport size photo, Aadhar card, PAN card, domicile, caste certificate.
- **Property details** - *The candidate has to give the details of their movable and immovable properties, income, expenditure, and loans of their wife and dependent children. Statement 3 is correct.*
- **Cases against the candidate** - If any criminal case is going on against the candidate, or a court case is registered or if punishment has been given in any case, they also have to inform the Election Commission about that.
- **Withdrawal process** - *The candidate can withdraw their name after a few days of nomination. Statement 4 is correct.*

35. A

Context:

The Election Commission of India (ECI) has, for the first time in the history of the Lok Sabha elections, extended its 'vote-from-home' facility to Persons with Disabilities (PwD) and senior citizens aged 85 and above.

About Vote-from-Home

Who is eligible?

- **People aged 85 and above.** Statement 1 is correct.
- **Persons with Disabilities:** The disability shall not be less than 40% of the prescribed handicap and certified by the certifying authority.
- **Media persons covering 'polling day activities':** Carrying authorisation letters from the Election Commission
- **Workers from essential services:** Services such as metros, railways and health care
- **Service voters:** Personnel of the armed forces posted away from their hometowns, Central Armed Police Forces personnel deployed away from home and those on poll duty.

How to avail the vote-from-home facility?

- **Key to the process is Form 12D, which is a letter informing the Assistant Returning Officer (ARO) that the person may not be in a position to go to the polling station to vote.**
- The form can be downloaded online from the ECI website or collected from the office of the representative district officer of a parliamentary constituency.

- The form has to be filled and submitted within five days of notification of the polling date. Statement 2 is correct.
- Once filed, two polling officials, accompanied by a videographer and a security person, will visit the elector's home and oversee the postal ballot voting process. Statement 3 is correct.
- The voter will receive an intimation about the date and approximate time of visit via SMS or through post. The home voting option will be attempted twice.
- The polling team will schedule a second visit if the elector fails to be at the given address during the first visit.
- If the voter is absent on the second visit, "a further visit will not be entertained." The voter will subsequently be ineligible to vote both at polling booths and through the home voting scheme. Statement 4 is incorrect.

36. C

- The Commission on the Limits of the Continental Shelf is one of the institutions established under the United Nations Convention on the Law of the Sea. Statement 1 is correct.
- The purpose of the Commission is to facilitate the implementation of the United Nations Convention on the Law of the Sea in respect of the establishment of the outer limits of the continental shelf beyond 200 nautical miles (M) from the baselines from which the breadth of the territorial sea is measured. Statement 2 is correct.
- The Commission performs key functions in the coastal State-process of delineating the outer limits of the continental shelf extending beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.
- **The Commission shall make binding recommendations to coastal States on matters related to the establishment of those limits.**

United Nations Convention on the Law of the Sea (UNCLOS):

- **The 'Law of the Sea Treaty', formally known as the United Nations Convention on the Laws of the Sea (UNCLOS) was adopted in 1982 to establish jurisdictional limits over ocean areas.**
- The convention defines a distance of 12 nautical miles from the baseline as Territorial Sea limit and a distance of 200 nautical miles distance as Exclusive Economic Zone limit.
- It provides for technology and wealth transfer from developed to underdeveloped nations and requires parties to implement regulations and laws to control marine pollution.
- **India became a signatory to the UNCLOS in 1982.**

UNCLOS created three new institutions:

- **International Tribunal for the Law of the Sea:** It is an independent judicial body established by UNCLOS to adjudicate disputes arising out of the convention.
- **International Seabed Authority:** It is a UN body set up to regulate the exploration and exploitation of marine non-living resources of oceans in international waters.
- **Commission on the Limits of the Continental Shelf:** It facilitates the implementation of the United Nations Convention on the Law of the Sea (the Convention) in respect of the establishment of the outer limits of the continental shelf beyond 200 nautical miles.

37. D

Context:

Recently, the Technology Development Board (TDB) of the Department of Science & Technology and others sanctioned the 'Project ANAGRANINF' for the development of a novel class of antibiotics against gram-negative bacterial-infections.

This initiative aims to foster healthcare innovation through a joint effort between Indian and Spanish companies.

About Gram-Negative Bacteria

- It has built-in abilities to find new ways to be resistant and can pass along genetic materials that allow other bacteria to become drug-resistant as well. **Statement 1 is correct.**
- It causes infections including pneumonia, bloodstream infections, wound or surgical site infections, and meningitis in healthcare settings. **Statement 2 is correct.**
- It is resistant to multiple drugs and is increasingly resistant to most available antibiotics.

Threat:

- Gram-negative bacteria, such as Acinetobacter Baumannii and Pseudomonas Aeruginosa, are associated with severe hospital-acquired infections.
- These bacteria have been acknowledged as 'red alert' pathogens due to their exceptional ability to develop resistance to all currently available antibiotics.

Parameter	Gram-positive bacteria	Gram-negative bacteria
Cell Wall	A single-layered, smooth cell wall	A double-layered, wavy cell-wall
Cell Wall thickness	The thickness of the cell wall is 20 to 80 nanometres	The thickness of the cell wall is 8 to 10 nanometres
Peptidoglycan Layer	It is a thick layer/ also can be multi-layered.	It is a thin layer/ often single-layered.
Teichoic acids	Teichoic acids are present.	Teichoic acids are not present.
Lipopolysaccharide	Lipopolysaccharide is not present.	Lipopolysaccharide is present.
Outer membrane	The outer membrane is not present.	The outer membrane is mostly present.
Lipid content	The Lipid content is very low.	The Lipid content is 20% to 30%.
Resistance to Antibiotic	These are very susceptible to antibiotics.	These are very resistant to antibiotics.

38. D

Context:

Recently, India criticised the Uniting for Consensus (UfC) Model at the United Nations for opposing reforms to the Security Council.

About the Uniting for Consensus (UfC) Model:

- It is a significant initiative at the United Nations (UN) which was initiated by Italy in the 1990s.
- *It is also known as the 'Coffee Club' that comprises 12 member countries (Argentina, Canada, Colombia, Costa Rica, Italy, Malta, Mexico, Pakistan, the Republic of Korea, San Marino, Spain, and Turkiye) and 2 observers (China and Indonesia).*
- It primarily aims to counter bids for permanent seats in the United Nations Security Council by G4 nations – India, Brazil, Germany, and Japan.

The UfC Model and Its Criticism

- UfC proposes a Security Council with 26 seats, with an increase only in the non-permanent, elected members.
- It does not support the representation of Africa and the Global South in the permanent category as a 'non-negotiable' goal.
- It stands against the idea advocated by a majority of the UN member states, which is an expansion in both the permanent and non-permanent categories of an expanded security council.

39. C

Context:

- Operation Sankalp in the Gulf of Aden completed 100 days, which involve deployment of 5000-person, 21 ships and 900 hour of maritime surveillance aircraft.

- It also involves 40 hours of operation by destroyer INS Kolkata to secure Vessel Ruen and forced surrender of 35 pirates and freed 17 crews.
- This operation was carried out at a distance of 2600 km away from Indian coast by IAF C-17 aircraft dropped Marine commando and combat boat.

What is Operation-Sankalp?

- *The Indian Navy has launched 'Operation Sankalp' in the Persian Gulf and the Gulf of Oman as a measure to assure the safety and security of the Indian vessels.*
- After the attacks on merchant ships in the Gulf of Oman in June 2019, Indian Navy had commenced Maritime Security Operations, code named Op-Sankalp, in the Gulf Region to ensure safe passage of Indian Flag Vessels transiting through the Strait of Hormuz.

Why Indian Navy vigil now:

Rising Incident of attack on merchant vessels passing through international shipping lanes in red sea, Gulf of Aden and central and northern Arabian sea.

- Eg: Piracy Incident on MV Ruen (700 nautical miles from Indian coast)

India being a largest Naval power of Indian Ocean region (IOR) so its responsibility of Indian Navy to ensure safe, secure and stable Indian Ocean region for free, open, inclusive and rule-based order is maintained.

Recent Attack led to the ships following cape of Good Hope routes (40 -50% company reroutes their shipping through Cape of Good hope.

The cost insurance rates will go up, With Declaration of Red Sea as high risk area insurance rates goes up by (35-40) % and cost of container have gone up by \$500 to \$2000.

Shifting Maritime Incident closer to Indian EEZ (Exclusive economic zones 200 nautical miles) so effective surveillance of EEZ is essential to secure coast.

Drone attack on MV Chem Pluto (220 Nautical miles from Porbandar).

- Indian ocean act as important of sea lanes of communication for flow of oils 40 % of total oil transported through through Arabian sea.
- Help in Promoting India as first responder in case of Emergency Under Security and growth for all in the region (SAGAR) initiative and Humanitarian Assistance and Disaster Reliefs (HADR).

Deployment by Indian Navy: P 8I long range patrol Aircraft for surveillance, INS Mormugao, INS Kochi and INS Kolkata.

40. C

Context:

Observing that preventive detention is a draconian measure and any such move based on a capricious or routine exercise of powers must be nipped in the bud, the Supreme Court has set aside a Telangana High Court order rejecting a detenu's appeal.

- **Article 22 of the Indian Constitution grants protection to individuals who are arrested or detained.**
- It has two parts – the first part deals with cases of ordinary law, which includes situations where an individual is detained as part of a criminal investigation.
- The second part deals with cases of preventive detention law, which pertains to the detention of individuals without a trial or conviction.
- *The detainee is entitled to know the grounds of his detention. The state, however, may refuse to divulge the grounds of detention if it is in the public interest to do so.* Statement 1 is correct.
- *No law providing for preventive detention shall authorise the detention of a person for a longer period than three months unless – an Advisory Board consisting of persons who are, or have been, or are qualified to be appointed as, Judges of a High Court has reported before the expiration of the said period of three months that there is in its opinion sufficient cause for such detention.* Statement 2 is correct.

Who can make laws under Preventive Detention?

- Parliament has the exclusive power to enact a law for preventive detention for reasons connected with defence, foreign affairs, or security of India.
- *Both Parliament and State Legislature have powers to enact a law for preventive detention for reasons related to the maintenance of public order or the maintenance of supplies or services essential to the community.* Statement 3 is correct.

41. A

Context:

The recently released list of corporate contributors to political parties under electoral bonds is under examination, although many of these have been frequent donors, paying large sums to political parties through electoral trusts.

- **An Electoral Trust is a Trust set up by companies with the sole objective to distribute the contributions received by it from other Companies and individuals to the political parties.**

Mechanism for Distribution of Funds:

- For administrative expenses, the Electoral Trusts are permitted to set aside a maximum of 5% of the total funds collected during a financial year.
- The remaining 95% of total income of the Trusts is required to be distributed to eligible political parties.

Only the companies registered under Section 25 of the Companies Act, 1956 are eligible to make an application for approval as an Electoral Trust. The electoral trusts have to apply for renewal every three financial years. **Statement 1 is correct.**

- An association having objects to promote commerce, art, science, religion, charity or any other useful purpose and not having any profit motive can be registered as Non-Profit Company under Section 25 of the Companies Act, 1956.

Contributions to Electoral Trusts:

They may receive contributions from:

- An individual who is a citizen of India
- A company registered in India
- A firm or Hindu undivided family or an Association of persons or a body of individuals, resident in India.

They shall not accept contributions from:

- An individual who is not a citizen of India or from any foreign entity whether incorporated or not; **Statement 2 is incorrect.**
- Any other electoral trust registered under the scheme.

42. B

Context:

R.C.REDDY

Nearly 282 million people faced high levels of acute food insecurity in 59 countries in 2023, according to the 2024 Global Report on Food Crisis (GRFC), released recently.

- GRFC is produced annually by the Food Security Information Network (FSIN) and launched by the Global Network Against Food Crises, a multi stake holder initiative that includes United Nations agencies, the European Union, the United States Agency for International Development, and non-governmental agencies working to tackle food crises. **Statement 1 is incorrect.**
- Sudan is facing one of the worst food crises in the world, with almost a third of the population in need of emergency food aid.
- Meanwhile, weather extremes were the main driver for 18 countries, with over 72 million people facing high levels of acute food insecurity because of such extreme weather events.
- **The 10 countries with the world's largest food crisis in 2023 were the Democratic Republic of the Congo, Nigeria, Sudan, Afghanistan, Ethiopia, Yemen, the Syrian Arab Republic, Bangladesh, Pakistan, and Myanmar.**
- On a positive note, the situation improved in 17 countries in 2023, including the Democratic Republic of Congo and Ukraine.

Highlights of GRFC 2024:

- The report analysed a population of 1.3 billion in 2023 across 59 countries.
- 2023 was the fifth consecutive year of rises in the number of people suffering acute food insecurity, defined as when populations face food deprivation that threatens lives or livelihoods, regardless of the causes or length of time.
- Nearly 282 million people faced high levels of acute food insecurity in 59 countries in 2023.
- The report identifies conflicts, extreme weather events, and economic shocks as the three main drivers behind the exacerbation of food crises in the world.
- With food crisis escalating alarmingly in conflict hotspots in 2023, notably Palestine (Gaza Strip) and Sudan, conflict / insecurity became the primary driver in 20 countries, directly affecting 135 million people.
- The Gaza Strip became the area with the most severe food crisis in the last eight years of GRFC reporting. Statement 2 is correct.

43. C

- This initiative aims to combat the release of toxic persistent organic pollutants (POPs) into the environment caused by the use of harmful chemicals in farming. Statement 1 is correct.
- It intends to shift financial incentives towards farmers to adopt low- and non-chemical alternatives, promoting sustainable practices.
- By phasing out hazardous pesticides and Agri-plastics and encouraging better management standards, the program aims to prevent the release of over 51,000 tons of hazardous pesticides and 20,000 tons of plastic waste, while also reducing carbon dioxide emissions and protecting over 3 million hectares of land.
- FARM, led by the UN Environment Programme (UNEP) with support from the Global Environment Facility (GEF), intends to shift financial incentives towards farmers to adopt low- and non-chemical alternatives, promoting sustainable practices. Statement 2 is correct.
- Seven countries – Ecuador, India, Kenya, Laos, Philippines, Uruguay, and Vietnam – have initiated a program called the Financing Agrochemical Reduction and Management Programme (FARM) to address pollution from pesticides and plastics in agriculture.

44. A

Context:

The International Astronomical Union (IAU) working group for Planetary System Nomenclature has approved the name 'Statio Shiv Shakti' for the landing site of Chandrayaan-3's Vikram lander.

According to the Gazetteer of Planetary Nomenclature, planetary nomenclature, like terrestrial nomenclature, is used to uniquely identify a feature on the surface of a planet or satellite so that it can be easily located, described, and discussed.

- The Prime Minister announced that the point where the moon lander of Chandrayaan-3 touched down will be called 'Shiv Shakti'. Pair 3 is incorrect.
- The point where the lander of the Chandrayaan-2 mission had crashed in September 2019 was named as "Tiranga point". Pair 2 is incorrect.
- Former President A.P.J. Abdul Kalam suggested the name "Jawahar Point" for where the Chandrayaan-1 moon impact probe landed in November 2008. Pair 1 is correct.

45. B

Context:

In the first such largescale exercise in decades, the Archaeological Survey of India (ASI) has put out a list of 18 centrally protected monuments which it wants to delist as, according to the central agency, they no longer hold national importance.

The list has been drawn up from a list of 24 "untraceable" monuments, which the Union Ministry of Culture submitted to a parliamentary committee last year.

De-listing of monument:

- Delisting of the monuments effectively means the central agency won't have any onus to protect them, and activities related to construction and urbanisation in the area can be carried out in a regular manner. Statement 2 is correct.
- Currently, the ASI has 3,693 monuments under its purview, which will fall to 3,675 once the delisting exercise is completed in the next few weeks.
- The powers conferred by section 35 of AMASR Act, the Central Government can declare any monument ceased to be of national importance for the purposes of AMASR Act. Statement 1 is incorrect.
- Under the AMASR Act, monuments of national importance are to be conserved and maintained by the ASI as an important site pertaining to history and culture, and any kind of construction-related activity is not allowed around the protected site.

46. B

Context:

Questions are being asked about whether the Delhi Chief Minister can continue to occupy a public office as the Rouse Avenue Magistrate remanded him to the custody of the Enforcement Directorate (ED).

Senthil Balaji case

- Judgments in the Supreme Court and High Courts have previously concluded that constitutional morality, good governance, and constitutional trust are the basic norms for holding a public office.
 - A judgment by the Madras High Court in **S. Ramachandran versus V. Senthil Balaji** referred to arguments made in court on whether a Minister must forfeit his right to occupy a public office that demands a high degree of morality if he is accused of a “financial scandal”.
 - Mr. Balaji, a former Tamil Nadu Electricity Minister, was arrested by the ED on money-laundering charges last year.
 - He continued to be a state minister without portfolio while he was in judicial custody.
- The arguments referred to a 2014 Constitution Bench judgment of the Supreme Court in **Manoj Narula versus Union of India**, which had held that the basic norm for holding a public office was constitutional morality, that is, to avoid acting in a manner contradictory to the rule of law.
 - The second norm was good governance.
 - It was argued in the Madras High Court that “the government has to rise above narrow private interests or parochial political outlook and aim at doing good for the larger public interest”.
- The third was constitutional trust, that is, to uphold the high degree of morality attached to a public office.

47. B

R.C.REDDY
IAS STUDY CIRCLE

Context:

Recently, the Dravida Munnetra Kazhagam (DMK) filed a complaint against the Prime Minister for appealing to religious sentiments during his campaign.

The Representation of the People Act, 1951 contains provisions relating to the following electoral matters:

- Qualifications and disqualifications for membership of Parliament and State Legislatures
- Notification of general elections
- Administrative machinery for the conduct of elections
- Registration of political parties
- Conduct of elections
- Free supply of certain material to candidates of recognised political parties

The Representation of the People Act, 1950 contains provisions related to the:

- Allocation of seats in the House of the People, the State Legislative Assemblies and the State Legislative Councils.
- Delimitation of Parliamentary, Assembly and Council Constituencies.

About the Section 123(3) of RPA 1951:

- It provides that appeals by a candidate, or any other person with the consent of a candidate, to vote or refrain from voting on the ground of his religion, race, caste, community, or language is a corrupt electoral practice.
- It denounces any attempt by a candidate to promote feelings of enmity or hatred among citizens on these grounds during elections.
 - It aims to ensure that elections are conducted in a free and fair manner, without appealing to the communal or sectarian sentiments of the voters.
- It underscores the principle that the appeal for votes should be based on policies, performance, and public welfare, rather than on narrow communal or sectarian lines.

48. D

Context:

In recently published a review of 34 currently licensed vaccines for the duration of their protective immunity, and found that only five vaccines provide long-lasting protection spanning more than 20 years and only three provide lifelong protection.

Statement I is incorrect.

About post-vaccination immunity

- **In the fundamental immunological mechanism, our lymph nodes first produce the memory B cells that confer long-term protection against a disease.**
- **These cells 'memorise' the antigen the vaccine has delivered.**
- **When a foreign object like a virus enters the body bearing the same antigen, the B cells will trigger the production of a large number of potent antibodies to destroy it, removing the infection.**
- These memory B cells require T cell support, and only vaccines that stimulate T cells can also induce the body to produce them. Further, not all vaccines – including the polysaccharide typhoid and the pneumococcal vaccines – prompt the body to make B cells.
- In some cases, frequent boosters are required to enhance the duration of immunity the cells confer, ranging from six months to a few years.
- **Also, vaccines trigger the production of memory B cells to different degrees, plus having memory B cells alone does not guarantee protection.**
- **Another essential immune cell, called long-lasting plasma cell (LLPC), migrates from the lymph node to the bone marrow and may endure for decades.**
- LLPCs are the main immunological factor in vaccine-induced immunity. Every vaccine tries to create long-lasting plasma cells for lifelong protection.
- **The measles and rubella vaccines produce these cells in the bone marrow. However, some potent vaccines, such as the mRNA COVID-19 shots, fail to activate these cells in the bone marrow.**

- To provide long-term protection, then, vaccines must generate memory B cells and LLPCs in the bone marrow. Different vaccines differ in their ability to produce these cells, explaining the disparity in their durability. Statement II is correct.

49. A

- NDRF is a fund managed by the Central Government to meet the expenses for emergency response, relief, and rehabilitation due to any threatening disaster situation or disaster.
- NDRF is constituted to supplement the funds of the State Disaster Response Funds (SDRF) in case of a disaster of severe nature, provided adequate funds are not available in SDRF.
- It is placed in the "Public Account" of the GOI under "reserve funds not bearing interest". Since it is placed in the public accounts, the government does not require parliamentary approval to take money out of this fund. Statement 1 is correct.
- NDRF guidelines state that natural calamities of cyclones, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloud burst, pest attack, and cold wave and frost considered to be of severe nature by the Government of India (GoI) and requiring expenditures by a state government in excess of the balances available in its own SDRF will qualify for immediate relief assistance from NDRF.
- The NDRF also covers man-made disasters such as terrorist attacks, chemical or biological disasters, or nuclear disasters as notified by the Central Government. Statement 2 is incorrect.
- NDRF is financed through the levy of a cess on certain items, chargeable to excise and customs duty, and approved annually through the Finance Bill.
- The requirement for funds beyond what is available under the NDRF is met through general budgetary resources.
- The National Executive Committee (NEC) of the National Disaster Management Authority takes decisions on the expenses from NDRF.
- The NDRF accounts are audited by the Comptroller and Auditor General (CAG) every year. Statement 3 is incorrect.

50. D

- Afanasy Nikitin Seamount is a major seamount in the central Indian Ocean Basin.
- It is located about 3,000 km away from India's coast.
- It is rich in deposits of cobalt, nickel, manganese and copper.
- Seamounts are underwater mountains formed through volcanic activity and are recognized as hotspots for marine life.

- India has applied to the International Seabed Authority (ISBA) for rights to explore the Afanasy Nikitin Seamount (AN Seamount), a cobalt-rich region in the Indian Ocean.
- This move, motivated partly by Chinese activity in the area, aims to secure strategic resources.
- The application faces challenges due to overlapping claims by Sri Lanka and international regulations governing seabed exploration. Also, the cost of exploration and extraction is very high.

51. D



- Article 191 of the Constitution of India deals with disqualifications for membership of the State Legislative Assembly or Legislative Council. Statement 1 is correct.
- According to Section 8(1) of the Representation of the People Act, 1951, a legislator convicted of an offence under the Prevention of Corruption Act (PCA), 1988, should be disqualified for six years, from the date of conviction, if the punishment is limited to a fine. Statement 2 is correct.
- However, if a legislator is sentenced to any term of imprisonment under the PCA, 1988, then he or she should be disqualified from the date of conviction till the entire period of imprisonment and also for a further period of six years from the date of release, the Act says.
- The disqualification can be avoided only if the conviction, and not just the sentence, gets stayed or set aside.

52. C

Context:

Globally, and in India, tuberculosis (TB) continues to loom large as a public health challenge impacting millions.

- Tuberculosis (TB) is an infectious disease that most often affects the lungs and is caused by the bacteria *Mycobacterium tuberculosis*.
- It spreads through the air when infected people cough, sneeze or spit.
- Tuberculosis is preventable and curable.
- Tuberculosis disease is treated with antibiotics.
- *The Bacillus Calmette-Guérin (BCG) vaccine remains the only licensed vaccine against TB; it provides moderate protection against severe forms of TB (TB meningitis) in infants and young children.* Statement 1 is correct.
- *New Drugs: Newer drugs such as Bedaquiline and Delamanid for the treatment of drug-resistant TB have been included in the government's basket of drugs provided free TB patients.* Statement 2 is correct.
- R&D for Treatment: Researchers have been studying shorter three- and four-month courses of anti-tubercular drugs, instead of the existing six-month therapy.
- **Vaccine Development:** Trials are underway to test the effectiveness of a vaccine called Immuvac, which was initially developed to prevent leprosy, in preventing TB.
- India accounts for around 27% of TB cases worldwide – which is the world's highest country-wise TB burden.
- **National Tuberculosis Elimination Program (NTEP):** The Government of India has developed a National Strategic Plan (2017-25) for Ending TB in the country by 2025.
- **Pradhan Mantri TB Mukh Bharat Abhiyan (PMTBMBA):** Launched in 2022 for community support to TB patients with the objective to provide nutritional, diagnostic and vocational support.
- **Ni-kshay portal:** An online Ni-kshay portal has been set up to track the notified TB cases.

53. B

Context:

A cornerstone of election planning process is the District Election Management Plan (DEMP), a comprehensive document that uses statistics and analysis to ensure the smooth conduct of elections.

- *It is a comprehensive document that uses statistics and analysis to ensure the smooth conduct of elections.* Statement 1 is correct.
- *As per the Election Commission of India, the DEMP is to be prepared at least six months before the tentative poll day.* Statement 2 is incorrect.
- However, it becomes necessary to revise/update the plan occasionally.

- Executing the DEMP requires a collaborative effort involving election officials, administrative authorities, law enforcement agencies etc.
- Regular interactions with political parties and media are also planned to brief them on electoral rules.
- **The critical component of the DEMP is the Systematic Voters' Education and Electoral Participation (SVEEP) plan, which focuses on increasing electoral participation. Statement 3 is correct.**
- Activities under the SVEEP plan include the use of social media, engagement with various community and youth organisations, and organising events leading up to the poll day to increase awareness and participation.
- **The plan also includes training district-level teams to enforce the Model Code of Conduct (MCC) and providing a training program for all election personnel to ensure they have the necessary skills and knowledge.**
- **Electronic Voting Machines (EVMs) - Material management is a crucial component of the DEMP involving procuring 61 essential items, including indelible ink, seals, stamps, stationary and statutory forms.**

54. A

- **Purple - Carbon captured through the air or industrial emissions.**
- Blue - Carbon stored in ocean plants and sediments
- **Teal - Carbon stored in freshwater and wetland environments. Pair 3 is correct.**
- Green - Carbon stored in terrestrial plants
- **Black - Carbon released through the burning of fossil fuels.**
- Gray - Carbon released through industrial emissions
- Brown - Carbon released by incomplete combustion of organic matter
- **Red - Carbon released through biological particles on snow and ice that reduce albedo. Pair 1,2 and 4 are incorrect.**

55. B

Context:

Recently, scientists at the Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST), Srinagar, reported that altitude and temperature play an important role in the development of mushk budiji aroma.

About Mushk Budiji Rice:

- **It is an indigenous aromatic rice variety that is usually grown at an altitude ranging from 5000 to 7000 ft above mean sea level in Highland Himalayas. Statement 1 is incorrect.**
- It is short, bold aromatic rice grown in the higher reaches of Kashmir valley.

- The cooked rice is unique and possesses a harmonious blend of taste, aroma and rich organoleptic properties.
- It is mainly grown in areas of Sagam, Panzgam and Soaf Shali of district Anantnag and Beerwah belt of district Budgam.
- The consumption of aromatic rice in Kashmir has now been limited to special occasions, marriages, and festivals.
- It has received a Geographical Indication (GI) tag. Statement 2 is correct.

56. C

Mountains	Located in
1. <i>Mount Speke</i>	<i>Uganda</i>
2. <i>Mount Emin</i>	<i>Democratic Republic of Congo</i>
3. <i>Mount Meru</i>	<i>Tanzania</i>
4. <i>Mount Gessi</i>	<i>Uganda</i>

Context:

A recent study in southern Africa has unearthed a wealth of previously undocumented biodiversity in a newly recognised ecoregion called the South East Africa Montane Archipelago (SEAMA).

About South East Africa Montane Archipelago (SEAMA)

- It is a newly recognised mountainous ecoregion.
- It stretches across northern Mozambique to Mount Mulanje in Malawi, southern Africa's second-highest mountain.
- The ecoregion encompasses 30 granitic inselbergs reaching > 1000 m above sea level, hosting the largest (Mt Mabu) and smallest (Mt Lico) mid-elevation rainforests in southern Africa, as well as biologically unique montane grasslands.
- SEAMA has distinctly higher annual rainfall and humidity, especially in the dry season, compared to surrounding regions.

57. B

Context:

India and South Africa formally opposed the adoption of IFD agreement for consideration during the 13th Ministerial Conference (MC13) of WTO. Statement 2 is correct.

- IFD - A most-favoured-nation-based, plurilateral agreement of World Trade Organization (WTO). Statement 1 is incorrect.
- The agreement explicitly excludes market access, investment protection and investor-state dispute settlement.

- Originally launched in 2017 on a plurilateral basis by few WTO countries through a process known as the Joint Statement Initiative, it was finalized in 2023.
- Aim - To create legally binding provisions to facilitate investment flows.
- To develop predictable, transparent and open investment rules that will contribute to more efficient investment flows and increased business confidence.
- **Membership** - Open for all WTO members to join.
- **Currently, it has 120 of 166 WTO member countries (more than 70% of the membership).**
- India is not a member as it opined that investment-related issues can't be brought under the WTO's ambit.
- **Plurilateral agreement** - The 120 countries wanted to include the IFD Agreement as a plurilateral agreement (PA) within Annex 4 of the WTO Agreement.
- While the WTO is a multilateral trade organisation, Article II.3 of the WTO Agreement categorically allows for PAs.
- According to the Marrakesh Agreement (the WTO's constitution), a new PA can only be adopted through 'Annexure 4' rules, by explicit consensus of all WTO Members.
- Unlike multilateral agreements, PAs under the WTO are binding only on those members that have accepted them.

58. A

- ISDS is a system through which individual companies can sue countries for alleged discriminatory practices. Statement 1 is correct.
- Investor-state dispute settlement (ISDS) is a mechanism in a free trade agreement (FTA).
- It provides foreign investors with the right to access an international tribunal to resolve investment disputes.
- An ISDS tribunal cannot overturn domestic laws and regulations. Statement 2 is incorrect.

What is India's stance on ISDS mechanism?

- **Historical Perspective:** India has had a history of mixed experiences with ISDS cases. The country has faced several investment arbitration cases, some of which have resulted in unfavourable outcomes, leading to concerns about sovereignty and regulatory autonomy.
- **Balancing Investor Rights and Public Interest:** India has expressed a desire to strike a balance between protecting foreign investors' rights and safeguarding its ability to regulate in the public interest. The government is cautious about ISDS provisions that could potentially undermine its policy space in areas like public health, environmental protection, and social welfare.

- **Policy Reforms:** India has undertaken policy reforms to attract foreign investment and create a more conducive investment climate. While doing so, it has also sought to negotiate investment treaties that incorporate safeguards to mitigate the risks associated with ISDS, such as allowing claims only for expropriation without adequate compensation.

59. D

Context:

UNESCO's Executive Board has endorsed the addition of 18 sites to the UNESCO Global Geoparks network.

- **Geoparks - UNESCO Global Geoparks are areas with internationally important rocks and landscapes, all of which are managed responsibly for conservation, education and sustainable development.**
- With Geology at its foundation, UNESCO Global Geoparks build upon by bringing together other aspects of heritage such as archaeology, history, culture and biodiversity.

Global Geoparks Network (GGN)

- **In 2004, 17 European and 8 Chinese geoparks came together at UNESCO headquarters in Paris to form the Global Geoparks Network (GGN).**
- The Global Geoparks Network was founded under the umbrella of UNESCO.
- **Headquarters - Paris**
- During the 38th session of UNESCO's General Conference in 2015, the 195 Member States of UNESCO ratified the creation of a new label, the UNESCO Global Geoparks.
- The GGN is a dynamic network where members work together to share examples of good practice and join together in common projects.
- The Geopark tag is akin to that of a 'World Heritage Site' for historical monuments that can bring famed geological features to the global stage.
- **India - India is a signatory to the establishment of UNESCO Global Geoparks.**
- **However, it does not have any legislation and policy for conservation of geo-heritages.**
- Geological Survey of India (GSI) identifies sites as National Geological Monuments.
- India is one of those countries which do not have a single geopark registered and acknowledged under UNESCO Global Geopark list.

Newly added GGNs

Geopark	Country/ Region
Schelde Delta Geopark	Belgium & Netherlands
<u>Uberaba Geopark</u>	<u>Brazil</u>
Enshi Grand Canyon-Tenglongdong Cave	China
Linxia Geopark	China
Longyan Geopark	China
Mount Changbaishan Geopark	China
Wugongshan Geopark	China
Xingyi Geopark	China
Biokovo-Inotski Lakes Geopark	Croatia
South Fyn Archipelago Geopark	Denmark
Impact Crater Lake - Lappajarvi Geopark	Finland
Armorique Geopark	France
Normandie-Maine Geopark	France
<u>Meteora Pyli Geopark</u>	<u>Greece</u>
Bukk Region Geopark	Hungary
<u>Land of Extinct Volcanoes Geopark</u>	<u>Poland</u>
<u>Oeste Geopark</u>	<u>Portugal</u>
Calatrava Volcanoes Geopark	Spain

60. D

Basmati Rice: Punjab, Haryana, Himachal Pradesh, Delhi, Uttarakhand, Uttar Pradesh, Jammu & Kashmir

- Basmati in Sanskrit means perfumed or fragrant happens to be long-grain aromatic rice.
- Basmati gets its name also from the region it's like Taraori basmati and Dehraduni basmati and so on.

Kala Namak Rice: Uttar Pradesh

- This rice also known as Bhuddha Rice as this is a rare, ancient and aromatic rice.
- Kalanamak cultivation almost dates back to 600BC.

Gobindobhog rice and Tulaipanji rice: West Bengal

- Gobindobhog is cultivated during the Kharif season.
- As the cooked rice is offered to Lord Krishna (Govind) hence the name Gobindobhog.
- The fragrance of the Tulaipanji rice remains for almost a year.

Navara rice, Kaipad, Pokkali rice, Gandhakasala, Wayanad Jeerakasala and Palakkadan: Kerala

- Navara also known as Sastika rice.
- The unpolished type is mostly used in many Ayurvedic therapies.
- This one finds a mention even in Ayurvedic texts.
- The Palakkadan or the Kerala Rice is also called as Rose Matta rice.
- Pokkali rice is a single season paddy, has the ability to survive adverse climatic conditions.
- Pokkali is known to have therapeutic effects.

Chak-Hao rice: Manipur

- Also known as Manipuri black rice Chak means rice and Hao means delicious.
- Being high in anthocyanins it is also a potent antioxidant.

Ambemohar rice and Ajara Ghansal: Maharashtra

- Ambemohar means mango blossom as the rice has the aroma of mango blossoms.
- The Ajara Ghansal gets its name from words ghan which means fragrance, and sal which means gracefully thin.

Katarni rice: Bihar

- It's best known for its sweet, soft, and fragrant cheura (beaten rice).

Joha rice, Boka Chaul rice and Chokuwa rice: Assam

- The Joha rice is farmed in the Garo Hills.
- It is also known by the names winter rice, Jaha rice or mi Jaha.
- Boka Chaul also known as mud rice.
- The rice does not need to be cooked and is edible by adding water to the rice.

61. C

Context:

According to the journal Nature, the accelerated pace of the Antarctic Circumpolar Current (ACC) poses concerns for the resilience of Antarctica's ice sheets.

- These ice sheets are already experiencing a net loss of approximately 150 billion metric tons annually, exacerbating sea-level rise.
- The ACC flows from west to east around Antarctica, connecting the Atlantic, Indian, and Pacific Oceans. **Statement 1 is correct.**
- It is the only current that flows completely around the globe. **Statement 2 is correct.**
- It is exceptionally wide, with a width of about 1250 kilometres, making it the widest of all ocean currents.
- **It plays a crucial role in global ocean circulation and climate regulation. It redistributes heat and influences the global climate system.**
- **The ACC is also known as the West Wind Drift because it is primarily driven by the strong westerly winds that circle Antarctica in the Southern Hemisphere.**
- It forms the Antarctic Convergence, where the cold Antarctic waters meet the warmer waters of the subantarctic, creating a zone of upwelling nutrients and high biological productivity.

62. C

Context:

The India Meteorological Department (IMD) declared 2024's first heatwave conditions for isolated pockets of west Rajasthan on March 27, 2024.

- The basic criteria for IMD to declare a heatwave is when the temperature of a place crosses 40 degrees Celsius (°C) in the plains, 37°C in the coastal areas and 30°C in the hills. **Statement I is correct.**
- These temperature values are the thresholds set by IMD for the declaration of heatwaves in India.
- Apart from this, the temperature of a particular day has to be above normal by at least 4.5°C for two consecutive days for a heatwave to be declared.
- When the temperature crosses 45°C, the weather agency immediately declares a heatwave without considering the deviation from normal temperature for that particular place.
- The basic criteria for IMD to declare a heatwave currently does not include take into account relative humidity. **Statement II is incorrect.**

63. B

Context:

Recently, the World Health Organisation (WHO) has launched a new network for coronaviruses, CoViNet. **Statement 1 is incorrect.**

About CoViNet

- *It is a network of global laboratories with expertise in human, animal and environmental coronavirus surveillance.*
- It will identify and monitor potentially novel coronaviruses that could emerge shortly.
- The network will now have animal health and environmental surveillance and timely risk assessment to feed WHO policies and protective measures.
- *In low- and middle-income countries, CoViNet will support the building of more laboratories to monitor MERS-CoV and novel coronaviruses of public health importance. Statement 2 is correct.*
- Data generated through CoViNet's efforts will guide the work of WHO's Technical Advisory Groups on Viral Evolution (TAG-VE) and Vaccine Composition (TAG-CO-VAC) and others, ensuring global health policies and tools are based on the latest scientific information.
- **It currently comprises 36 laboratories from 21 countries in all six WHO regions.**
- **Three Indian laboratories namely:** the Council of Scientific and Industrial Research-National Environmental Engineering Research Institute, the Indian Council of Medical Research-National Institute of Virology in Pune, and the Translational Health Science and Technology Institute **are part of this network.**



64. C

Context:

R.C. REDDY

Recently, Skyroot Aerospace, the leading space-tech company, has successfully test-fired the Kalam-250 at the propulsion testbed of the Indian Space Research Organisation (ISRO), at its Satish Dhawan Space Centre (SDSC) in Sriharikota, Andhra Pradesh.

About Kalam-250

- *It is a stage-2 of the Vikram-1 space launch vehicle.*
- *It is a high-strength carbon composite rocket motor, which uses solid fuel and a high-performance Ethylene-Propylene-Diene terpolymers (EPDM) thermal protection system (TPS).*
- The stage includes a carbon ablative flex nozzle along with high-precision electro-mechanical actuators for thrust vector control of the vehicle, aiding in achieving the desired trajectory.
- The second stage of Vikram-1 will play a crucial role in the ascent of the launch vehicle, propelling it from the atmosphere to the deep vacuum of outer space.

65. D

All are correctly matched.

About:

- Elephant corridors can be described as a strip of land that enables elephant movement between two or more friendly habitats.
- The corridors were reported by respective state governments and ground validation methods were used to verify them.

State Wise Distribution:

- According to the report, West Bengal leads with 26 corridors, constituting 17% of the total.
- East central India contributes 35% (52 corridors), while the North East region has 32% (48 corridors).
- Southern India has 21% (32 corridors), and northern India has the lowest with 12% (18 corridors).

Context:

The Union Ministry of Environment, Forest and Climate Change (MoEFCC) recently directed the forest departments of Arunachal Pradesh and Assam to prepare a proposal to notify the Dulung-Subansiri elephant corridor.

The corridor facilitates the east-west movement of elephants across the Subansiri River.

66. B

R.C.REDDY
IAS STUDY CIRCLE

Context:

The Punjab and Haryana high court has made it clear that courts can order release of an accused of money laundering under police custody without fulfilling twin conditions as mandated under the Prevention of Money Laundering Act (PMLA), 2002.

About Prevention of Money Laundering Act (PMLA), 2002

It is an act to prevent money laundering and to provide for the confiscation of property derived from or involved in money laundering. Statement 1 is correct.

The Act was formulated for the following objectives:

- Prevent money-laundering.
- Combat/prevent the channelising of money into illegal activities and economic crimes.
- Provide for the confiscation of property derived from, or involved/used in, money laundering.
- Penalise the offenders of money laundering offences.

- Appointing an adjudicating authority and appellate tribunal for taking charge of money laundering matters.
- Provide for matters connected and incidental to the acts of money laundering.

The Enforcement Directorate (ED) in the Department of Revenue, Ministry of Finance, is responsible for investigating the offences of money laundering under the PMLA.

Financial Intelligence Unit-India (FIU-IND), under the Department of Revenue, is the central national agency responsible for receiving, processing, analysing, and disseminating information relating to suspect financial transactions. Statement 2 is incorrect.

The scheduled offences are separately investigated by the agencies mentioned under respective acts, for example, the local police, CBI, customs departments, SEBI, or any other investigative agency, as the case may be. Statement 3 is correct.

Actions that can be initiated against the person involved in money laundering:

- Seizure/freezing of property and records, and attachment of property obtained with the proceeds of crime.
- Any person who commits the offence of money laundering shall be punishable with:
- Rigorous imprisonment for a minimum term of three years, and this may extend up to seven years.
- Fine (without any limit).

The PMLA and rules notified thereunder impose obligations on banking companies, financial institutions, and intermediaries and persons carrying on a designated business or profession, to verify identity of clients, maintain records and furnish information to FIU-IND.

67. C

Context:

Red Fort

- **The Red Fort Complex was built by the fifth Mughal Emperor of India, Shah Jahan.**
- **It was built as the palace fort of Shahjahanabad, the new capital of the Mughal Emperor.**
- **Named for its massive enclosing walls of red sandstone, it is adjacent to an older fort, the Salimgarh, built by Islam Shah Suri in 1546, with which it forms the Red Fort Complex.**
- **The private apartments consist of a row of pavilions connected by a continuous water channel, known as the Nahr-i-Behisht (Stream of Paradise).**

- The Red Fort is considered to represent the zenith of Mughal creativity which, under the Shah Jahan, was brought to a new level of refinement.
- The Red Fort Complex is a layered expression of both Mughal architecture and planning, and the later British military use of the forts.
- **Red Fort was recognised UNESCO World Heritage Centre in 2007.**

Mughal Monuments

Akbar

- Agra Fort
- Great White Mosque Islamia College Peshawar
- Humayun's Tomb
- Fatehpur Sikri
- Tomb of Salim Chisti

Jahangir

- Begum Shahi Mosque
- Tomb of I'timād-ud-Daulah

Shah Jahan

- Taj Mahal
- Wazir Khan Mosque
- Shalimar Gardens
- Shah Jahan Mosque
- Shahi Hammam



R.C. REDDY
IAS STUDY CIRCLE

Aurangzeb

- Badshahi Mosque
- Bibi ka Maqbara

68. D

Context:

A recent study says that India generated about 100 kilo tonnes (kt) of solar waste in the financial year (FY) 2022-2023.

- Solar waste - Solar waste refers to the waste generated during the manufacturing of solar modules and waste from the field (project lifetime).
- Findings - India to generate 600 kilo tonnes of solar waste by 2030.
- India's current installed solar capacity will generate about 340 kt, 3 times more than the present by 2030.
- **Around 67% of this waste is expected to be produced by 5 states, including Rajasthan, Gujarat, Karnataka, Tamil Nadu, and Andhra Pradesh.**

69. C

Context:

CERN has launched the White Rabbit Collaboration (WRC) to foster the uptake of White Rabbit technology by industry. The Collaboration aims to provide dedicated support and training, facilitate R&D projects in the technology.

White Rabbit technology:

- White Rabbit (WR) is a technology developed at European Organization for Nuclear Research (CERN).
- **It synchronizes devices in order to solve the challenge of establishing a common notion of time across a network.**
- **It's an open-source, fully deterministic Ethernet-based network for time synchronization and general-purpose data transfer.**
- It was included in the worldwide industry standard known as Precision Time Protocol (PTP), governed by the Institute of Electrical and Electronics Engineers (IEEE).

70. A

Protected Areas	Located in
1. <i>Eturnagaram Wildlife Sanctuary</i>	<i>Telangana</i>
2. <i>Shoolpaneshwar Wildlife Sanctuary</i>	<i>Gujarat</i>
3. <i>Sepahijala wildlife sanctuary</i>	<i>Tripura</i>
4. <i>Debrigarh wildlife sanctuary</i>	<i>Odisha</i>

IAS STUDY CIRCLE

Context:

Telangana is presently grappling with forest fires in Tadvai region of Eturnagaram Wildlife Sanctuary in Mulugu and Amrabad Tiger Reserve.

Eturnagaram Wildlife Sanctuary:

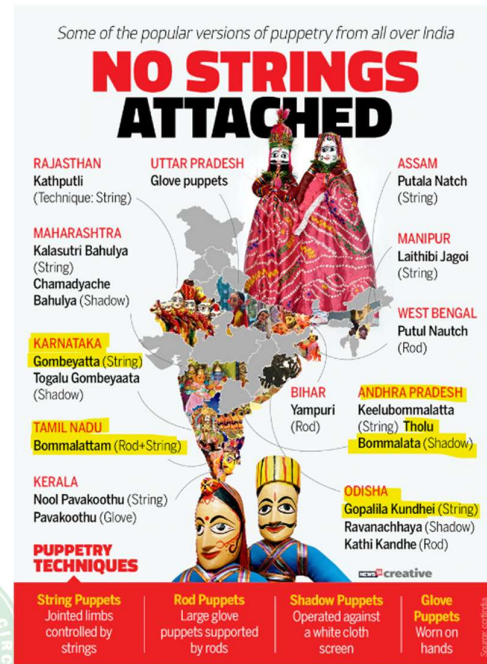
- It was declared as a wildlife reserve in 1953.
- The vegetation here is tropical dry deciduous.
- The sanctuary is bordered by the Laknavaram Lake.
- The perennial river Dayyam Vagu flows through this sanctuary.
- The sanctuary is also famous for the Sammakka Saralamma Jatara.
- Sammakka Saralamma Jatara is a tribal festival for honouring the goddesses' Sammakka and Saralamma.

71. D

Context:

The Sangeet Natak Akademi began the revival of leather puppetry, by grooming young disciples through 'Kala Diksha' initiative that aims at preserving traditional arts and crafts in India.

- Puppetry is a form of theatre or performance that involves the manipulation of puppets, often resembling some type of human or animal figure that are manipulated by a human called a puppeteer.
- The history of puppetry can be traced back to the Indus Valley Civilization in 2500 B.C. a terracotta doll with a detachable head was found by archaeologists.
- The root of Puppet is derived from the Latin word 'Pupa' meaning a doll.
- The earliest reference to the art of puppetry is found in Tamil classic 'Silappadikaaram' written around the 1st or 2nd century B.C.
- Almost all types of puppets are found in India.



72. B

Context:

R.C.REDDY
IAS STUDY CIRCLE

Recently, the India-led Group of Friends (GOF) deliberated on strategies to strengthen legal frameworks against perpetrators of malicious acts targeting Peacekeepers, focusing on supporting measures for ensuring accountability.

About the India-led Group of Friends (GOF):

- It is a significant initiative launched in 2022 by India during its presidency of the UN Security Council (UNSC). Statement 1 is incorrect.
- It represents the 'political will' of member states, particularly of the troop and police contributing countries, to champion the implementation of the provisions of UNSC Resolution 2589.
- It comprises 40 member states, and India, Bangladesh, Egypt, France, Morocco, and Nepal serve as co-chairs of the GOF. Statement 3 is correct.

Objectives and Functions:

- It aims to promote accountability for all acts of violence against United Nations (UN) peacekeepers and provide capacity building and technical assistance to the host state authorities. Statement 2 is correct.

- It serves as an informal platform at the UN to exchange information, share best practices, and mobilise resources directed at facilitating accountability for crimes committed against peacekeepers.
- It monitors progress on bringing accountability for crimes against peacekeepers.
- It convenes two meetings of its members per year and organises one event per year involving Permanent Missions and other stakeholders to take the plan forward, thereby ensuring greater safety and security for peacekeepers.

73. C

Context:

The Eco-Niwas Samhita (ENS) introduced the Residential Envelope Transmittance Value (RETV), a metric measuring heat transfer through a building's envelope.

About Eco-Niwas Samhita:

- *It is a Residential Energy Conservation Building code developed by Bureau of Energy Efficiency (BEE). Statement 1 is correct.*
- *The code sets standards to limit heat gain and loss and ensure adequate natural ventilation and daylighting potential. Statement 2 is correct.*

It was launched in two parts:

- ENS 2018 (Part 1) sets minimum standards for building envelope designs for energy-efficient residential buildings.
- ENS Part 2 launched by the Bureau as ENS 2021 focuses on the building's code compliance and electromechanical systems. It also addresses other aspects such as, Energy Efficiency in Electro-Mechanical Equipment for Building Operation, Renewable Energy Generation, Embodied Energy of Walling Materials and Structural Systems.

What is Residential Envelope Transmittance Value?

- It is a metric measuring heat transfer through a building's envelope.
- Lower RETV values lead to cooler indoor environments and decreased energy usage. For optimal efficiency, improved occupant comfort, and lower utility expenses, it's recommended to maintain an RETV of 15W/m² or less.

74. D

Context:

Earth was recently hit by an X-class solar flare that was strong enough to ionize part of the planet's atmosphere.

What are Solar Flares?

- **Solar flares are large explosions that occur at the sun's surface when twisted magnetic-field lines suddenly snap, emitting large bursts of electromagnetic radiation.**
- **Flares are our solar system's largest explosive events.**
- They are seen as bright areas on the sun, and they can last from minutes to hours.
- In a matter of just a few minutes, they heat the material to many millions of degrees and produce a burst of radiation across the electromagnetic spectrum, including from radio waves to x-rays and gamma rays.
- Although solar flares can be visible in white light, they are often more readily noticed via their bright X-ray and ultraviolet emissions.

Effect of Solar Flare on Earth:

- **The intense radiation emitted during a solar flare can affect satellite communications, disrupt radio signals, and even pose a risk to astronauts in space.**
- Additionally, the increased solar radiation can lead to geomagnetic storms, which may impact power grids and cause auroras (northern and southern lights) at lower latitudes.

About X-Class Solar Flares

- Flares are classified according to their strength. The smallest ones are B-class, followed by C, M, and X, the largest. Statement 1 is correct.
- Similar to the Richter scale for earthquakes, each letter represents a ten-fold increase in energy output. Statement 2 is correct.
- So, an X is 10 times an M and 100 times a C.
- Within each letter class, there is a finer scale from 1 to 9.
- C-class flares are too weak to noticeably affect Earth. M-class flares can cause brief radio blackouts at the poles and minor radiation storms that might endanger astronauts.
- The biggest X-class flares are by far the largest explosions in our solar system.
- X-class flares are most common during solar maximum. Statement 3 is correct.

75. D

Context:

In a groundbreaking conservation endeavour, the Global Society for the Preservation of Baobabs and Mangroves (GSPBM) has initiated a mission to rejuvenate the iconic baobab trees in Madagascar.

About Baobab Tree:

- It is a long-lived deciduous, small to large tree with broad trunks and compact tops which is also known as the upside-down tree.

Distribution:

- There are 9 species of baobab tree. Two are native to mainland Africa, six to Madagascar, and one to Australia.
- *Mandu, in the Dhar district of Madhya Pradesh, is perhaps the only place in India where baobab trees are found in abundance.*

Features:

- It can live to become thousands of years old.
- They only have very faint growth rings. Mature trees have massive trunks that are bottle-shaped or cylindrical and tapered from bottom to top.
- The fruit of the tree is round or oval-shaped and is highly nutritious.
- It is also known as 'Tree of Life'

Ecological significance

- Baobabs are keystone species in Madagascar's unique landscapes.
- Their massive trunks and extensive root systems are vital for storing water in arid environments, providing a critical resource for both the trees and the surrounding ecosystem during drought periods.
- This ability to store water enables baobabs to support a wide array of life, from microorganisms to larger animals, fostering biodiversity in their habitats.

R.C.REDDY
IAS STUDY CIRCLE

76. A

Context:

The Government of India has come up with a new digital platform called CDP-SURAKSHA to disburse subsidies to horticulture farmers under the Cluster Development Programme (CDP). Statement 1 is correct.

About CDP-SURAKSHA Platform:

- *System for Unified Resource Allocation, Knowledge, and Secure Horticulture Assistance (SURAKSHA) is a platform which will allow an instant disbursement of subsidies to farmers in their bank account by utilising the e-RUPI voucher from the National Payments Corporation of India (NPCI)*. Statement 2 is incorrect.
- Features: Database integration with PM-KISAN, cloud-based server space from NIC, UIDAI validation, eRUPI integration, local government directory (LGD), content management system, geotagging, and geo-fencing.

Working

- The platform allows access to farmers, vendors, implementing agencies (IA), and cluster development agencies (CDAs), and officials of the National Horticulture Board (NHB).
- A farmer can login using their mobile number and place an order for planting material such as seeds, seedlings, and plants based on their requirement.
- Once the demand has been raised by the farmer, the system will ask them to contribute their share of the cost of planting material. The subsidy amount paid by the government will appear on the screen automatically.
- After the farmer pays their contribution, an e-RUPI voucher will be generated. This voucher will then be received by a vendor, who will provide the required planting material to the farmer.
- Once the ordered planting material is delivered to the farmer, they have to verify the delivery through geo-tagged photos and videos of their field.
- It is only after the verification that the IA will release the money to the vendor for the e-RUPI voucher.
- **Hence, the CDP-SURAKSHA platform will provide subsidies to farmers upfront, at the time of purchasing the planting material. Vendors, who will supply planting materials to farmers, will receive their payment only after farmers verify the delivery of their orders. Statement 3 is incorrect.**
- The vendor will be required to upload an invoice of the payment on the portal. The IA will collect all the documents and share them with the CDA for subsidy release, then only the subsidy will be released to the IA.

What is e-RUPI?

- The voucher is a one-time payment mechanism that can be redeemed without a card, digital payments app or internet banking access, at the merchants accepting e-RUPI.
- It can be shared with the beneficiaries for a specific purpose or activity by organisations or government via SMS or QR code.

77. C

Context:

The NIIF has invested \$200 million in iBUS Network and Infrastructure Pvt Ltd., a connectivity technology firm, to support the growth of India's digital infrastructure

About National Investment and Infrastructure Fund (NIIF)

- NIIF is a fund manager that invests in infrastructure and related sectors in India.
- **It is India's first-ever sovereign wealth fund (SWF), which was set up in 2015. Statement 1 is correct.**
- **An institution anchored by the Government of India, NIIF is a collaborative investment platform for international and Indian investors with a mandate to invest equity capital in domestic infrastructure.**

- NIIF invests across asset classes such as infrastructure, private equity, and other diversified sectors in India, with the objective of generating attractive risk-adjusted returns for its investors.
- **It invests in greenfield (new), brownfield (existing), and stalled projects.**
- **NIIF is 49% owned by the Indian government and has more than \$4.9 billion in assets under management, making it the country's biggest infrastructure fund.**
- NIIF benefits from its association with the Government yet is independent in its investment decisions.
- It is majority-owned by institutional investors and managed professionally by a team with experience in investments and infrastructure.
- **The funds are registered as Alternative Investment Fund (AIF) with the Securities Exchange Board of India (SEBI) and are currently raising capital from domestic and international institutional investors.**

NIIF Investors

The NIIF signed the first investment deal of worth USD 1 billion with the Abu Dhabi Investment Authority (ADIA) in October 2017. The ADIA became the first-ever international investor in the NIIF's master fund. Statement 2 is correct.

NIIF has three funds under its umbrella: Master Fund, Fund of Funds and Strategic Opportunities Fund.

- **The Master Fund** invests primarily in core infrastructure sectors such as transportation, energy, water, sanitation and urban infrastructure.
- **The Fund of Funds** invests in funds managed by third-party managers in infrastructure and associated sectors such as green energy, affordable housing and digital infrastructure.
- **The Strategic Opportunities Fund** invests in sectors adjacent to infrastructure such as logistics, industrial parks and special situations.

78. B

Context:

Scientists have for the first time successfully visualized the elusive Wigner crystal, a strange kind of matter that is made entirely of electrons.

About Wigner Crystal

- **A Wigner crystal is the solid phase of electrons, first predicted by Eugene Wigner in 1934.**
- It is one of the very first proposed many-body phases stabilized by the electron-electron interaction.

Formation:

- **Interaction among electrons could lead to their spontaneous arrangement into a crystal-like configuration, or lattice, of closely packed electrons.**

- *This could only occur because of their mutual repulsion and under conditions of low densities and extremely cold temperatures.*
- *This is because the potential energy dominates the kinetic energy at low densities, so the detailed spatial arrangement of the electrons becomes important.*
- To minimize the potential energy, electrons form a crystal-like configuration.

A true Wigner crystal, instead of following the familiar laws of physics in the everyday world, would follow the laws of quantum physics, in which the electrons would act not like individual particles but more like a single wave.

Wigner crystal is stable at extremely low densities. If the density increases, the kinetic energy becomes important, and eventually the crystal melts.

Wigner crystal is very difficult to observe experimentally. The reason is that it is very fragile with respect to the environment.

79. D

Context:

India has begun to post military and defence attachés to several new countries in a big move to expand strategic ties with key regions across the globe.

About Defence Attache (DA):

- A DA is a member of the armed forces who serves in an embassy as a representative of his/her country's defence establishment abroad.
- DA is a generic term that covers personnel from all branches of the armed services, although some larger countries may appoint a DA to represent an individual service branch, such as an air force or naval attaché.
- *It is the DAs job to protect, develop, and promote the defence interests of their country in the nation they are assigned, as well as in bilateral military and defence relations.*
- Some DAs are deployed to work on specific issues, like migration, and they can also serve as part of a military mission with organisations such as NATO, the EU, or the UN.
- If serving on such military deployments, DAs usually operate as the head of the mission or a military adviser, with these assignments usually multilateral.

The Diplomatic Status of the DA:

- The Vienna Convention on Diplomatic Relations of 18th April, 1961, provides immunity to persons according to their rank in a diplomatic mission. It defines the legal status of the DA in Article 7.
- Under the Convention, DAs are considered members of the diplomatic staff, enjoying full immunity.

80. A

Context:

The Rs 5-trillion domestic fast-moving consumer goods (FMCG) market still faces hurdles on its path to complete recovery from the current slowdown.

About Fast-Moving Consumer Goods (FMCG)

- FMCG, or Consumer Packaged Goods (CPG), are products sold quickly and at a relatively low cost.
- The FMCG industry is characterized by high-volume sales, quick inventory turnover, and various products catering to consumer needs.
- These goods include essential everyday items such as food and beverages, toiletries, cleaning supplies, and other low-cost household items.
- FMCGs have a short shelf life because of high consumer demand (e.g., soft drinks and confections) or because they are perishable (e.g., meat, dairy products, and baked goods).

FMCG Industry in India:

- *The FMCG sector is the fourth-largest sector in the Indian economy.* Statement 1 is correct.
- In 2022, the urban sector accounted for 65% of the overall annual FMCG sales, while rural India contributed over 35%.
- *Household and personal care products make up 50% of the industry's sales, healthcare claims 31-32%, and food and beverage products account for the remaining 18-19%.* Statement 2 is incorrect.
- It provides employment to around 3 million people, accounting for approximately 5% of the total factory employment in India.

81. B

Context:

In a bid to manage the teeming population of invasive chital (spotted deer) in Ross Island the Andaman and Nicobar Islands administration recently sought help from the Wildlife Institute of India.

About Invasive Alien Species:

- **These are the species whose introduction and/or spread outside their natural past or present distribution threatens biological diversity.**
- **These include animals, plants, fungi, and even microorganisms, and can influence all kinds of ecosystems.**
- These species need an introduction either through natural or human intervention, survive on native food resources, reproduce at a fast rate, and edge out native species in the competition over resources.
- Invasive species act as disruptors in the food chain and disturb the balance of the ecosystem. In habitats where there is no competition, invasive species can dominate the entire ecosystem.

Characteristics: Common characteristics of Invasive Alien Species include rapid reproduction and growth, high dispersal ability, phenotypic plasticity (ability to

adapt physiologically to new conditions), and ability to survive on various food types and in a wide range of environmental conditions.

Areas more susceptible for Invasive Alien species are:

- Native ecosystems that have undergone human-induced disturbance are often more prone to alien invasions because there is less competition from native species. Statement I is correct.
- Islands are especially vulnerable to Invasive Alien Species because they are naturally isolated from strong competitors and predators.
- Islands often have ecological niches that have not been filled because of the distance from colonizing populations, increasing the probability of successful invasions. Statement II is correct but not the correct explanation for Statement I.

The list of invasive wildlife in India is dominated by certain species of fish such as the African catfish, Nile tilapia, red-bellied piranha, and alligator gar, and turtle species such as the red-eared slider.

82. A

Context:

Guerrilla fighters from Myanmar's Karen ethnic minority claimed to be close to seizing control of a major trading town bordering Thailand.

About Karen Ethnic minority

- Karen people are indigenous to the Thailand-Burma border region in Southeast Asia, primarily in Karen State of Myanmar.
- They trace their origins to the Gobi Desert, Mongolia, or Tibet.

<i>Ethnic Community</i>	<i>Countries</i>
1. Anuak Tribe	Ethiopia (Anuakia), South Sudan (lanBoma)
2. Sami Tribe	Scandinavia (Norway, Sweden, Finland, and Russia)
3. Karen Tribe	Thailand-Burma border region in Southeast Asia, Myanmar
4. Caddo community	United States (Oklahoma)

83. C

Context:

A tiny "sungrazer" comet was discovered, photographed and destroyed during the recent total solar eclipse.

About Sungrazing Comets

- Sungrazing comets are a special class of comets that come very close to the sun at their nearest approach, a point called perihelion.
- To be considered a sungrazer, a comet needs to get within about 850,000 miles from the sun at perihelion. Statement 1 is correct.
- Many come even closer, even to within a few thousand miles.

Being so close to the sun is very hard on comets for many reasons.

- They are subjected to a lot of solar radiation, which boils off their water or other volatiles.
- The physical push of the radiation and the solar wind also helps form the tails.
- As they get closer to the sun, the comets experience extremely strong tidal forces, or gravitational stress.
- In this hostile environment, many sungrazers do not survive their trip around the sun.
- Although they don't actually crash into the solar surface, the sun is able to destroy them.
- Most usually evaporate in the hot solar atmosphere.

Orbit: Most of the sungrazing comets observed follow a similar orbit, called the Kreutz Path, a single orbit that takes 800 years to complete. Statement 2 is correct.

- They collectively belong to a population called the Kreutz Group.
- These Kreutz comets are fragments from a single large comet that was shattered thousands of years ago.
- The far end of the Kreutz path lies 160 times farther from the sun than the orbit of Earth.

84. C

Context:

The Adjudicating Authority under the PMLA recently confirmed the attachment of assets worth Rs 751.9 crore belonging to the National Herald newspaper.

About Adjudicating Authority under the PMLA

- Under PMLA, an adjudicating authority determines within 180 days whether the properties attached by the Enforcement Directorate (ED) are involved in money laundering or not.

Functioning:

- Section 5 of the PMLA provides for the attachment of any property that is suspected to have been acquired with the proceeds of crime in a case of any offence that is listed in the schedule of the law. Statement 3 is correct.
- The attachment order is issued if the ED Director feels that "such proceeds of crime are likely to be concealed, transferred, or dealt with in any manner

which may result in frustrating any proceedings relating to confiscation of such proceeds of crime”.

- **This provisional attachment order is valid for a period of 180 days.**
- **It must be confirmed within this time by an adjudicating authority appointed by the central government, failing which the property is automatically released from attachment. Statement 1 is correct.**
- **Because the initial attachment is provisional, the accused can continue to enjoy the property until the adjudicating authority confirms the attachment, after which the ED has the power to claim possession. Statement 2 is correct.**

What happens after the Adjudicating Authority confirms the attachment?

- **The accused has the right to challenge the adjudicating authority's confirmation order at the PMLA's Appellate Tribunal within 45 days.**
- **If the Appellate Tribunal too confirms the order, the accused can file a plea in the High Court, and so on.**
- **Unless the property is released along the way, it shall remain out of bounds for the owner until the trial is completed.**
- **Following final confirmation, in the case of a residential property, the ED will ask the owner to vacate the premises along with his belongings, and will take over possession.**
- **In case of a conviction, the trial court may order confiscation of the attached property, and vest the rights to the property with the central government.**
- **Attached properties may remain locked for years as the legal process continues, and may start to crumble and decay.**

85. D

Context:

Mount Etna, the largest volcano in Europe, and among the world's most active volcanoes, has been sending up almost perfect rings of smoke into the air, which is a rare phenomenon that scientists refer to as volcanic vortex rings.

What are Vortex Rings?

- **Vortex rings are generated when gas, predominantly water vapour, is released rapidly through a vent in the crater.**
- **The vent that has opened up in volcano's crater is almost perfectly circular, so the rings that have been seen are also circular.**
- **Volcanic vortex rings were first observed at Etna in 1724 and have since been documented at various volcanoes worldwide.**
- **These rings can remain in the air for up to 10 minutes but tend to disintegrate quickly if conditions are windy and turbulent.**

What are the Key Facts About Mount Etna?

- **Mount Etna is a stratovolcano, which means it is composed of layers of lava, ash, and rocks that have accumulated over thousands of years of eruptions.**
- **Etna's summit has five craters, which are responsible for most of the volcano's eruptions and hundreds of lateral vents that can produce different types of eruptions, such as explosive, effusive, or mixed.**
- **It is located on the east coast of Sicily, an island in the Mediterranean Sea that belongs to Italy.**

Mount Etna has been erupting almost continuously since 1500 BC, making it one of the most active volcanoes in the world.

Etna has been a UNESCO World Heritage Site since 2013.

- *In more recent times, volcanic vortex rings have been observed at volcanoes such as Redoubt in Alaska, Tungurahua in Ecuador, Pacaya in Guatemala, Eyjafjallajökull and Hekla in Iceland, Stromboli in Italy, Aso and Sakurajima in Japan, Yasur in Vanuatu, Whakaari in New Zealand, and Momotombo in Nicaragua.*

86. D

Context:

Recently, Mr. Jagjit Pavadia was re-elected to the International Narcotics Control Board (INCB) by secret ballot for the third term for five years from March 2025-2030.

- *The INCB, established in 1968, is an independent and quasi-judicial monitoring organisation that oversees the execution of the United Nations' international drug control conventions.* **Statement 1 is incorrect.**
- **INCB was established by the Single Convention on Narcotic Drugs of 1961 by merging two bodies viz. the Permanent Central Narcotics Board and the Drug Supervisory Body.**
- *It is made up of 13 individuals elected by the Economic and Social Council to serve in their individual capacities rather than as government representatives.* **Statement 2 is incorrect.**
- **INCB members may be re-elected.**
- **Ten of the members are elected from a list of persons nominated by Governments. The remaining three members are elected from a list of persons nominated by the World Health Organization (WHO) for their medical, pharmacological or pharmaceutical experience.**

87. D

Context:

Recently, the Prime Minister said that India is rapidly reducing its dependence on fossil fuels, and in that mission, sugarcane by-products have been of immense help due to Ethanol Blending.

- The amended National Biofuel Policy-2018 has now set the new target for 2025-26 instead of 2030. Statement 1 is correct.
- To achieve this target within the timeframe the central government announced premium rates for ethanol produced from sugar syrup, cane juice as well as B-heavy molasses.
- Ethanol is a biofuel produced naturally by yeast fermentation or through petrochemical processes such as ethylene hydration.
- Ethanol has a high oxygen concentration, which allows an engine to burn fuel more thoroughly.
- Ethanol blending is the process of blending a motor fuel that contains ethyl alcohol obtained from agricultural goods with petrol. Statement 2 is correct.
- In India, the Department of Food and Public Distribution (DFPD) is the nodal department for the promotion of fuel-grade ethanol-producing distilleries in the country. Statement 3 is correct.
- It launched the Interest Subvention Scheme for enhancement and augmentation of the ethanol production capacity.

88. B

Context:

Following three years of intensive research, an international team of researchers has compiled the first ever 'World Cybercrime Index'

About World Cybercrime Index:

- It identifies the globe's major cybercrime hotspots by ranking the most significant sources of cybercrime at a national level.
- **It has been developed as a joint partnership between the University of Oxford and UNSW Canberra.**
- The data that underpins the index was gathered through a survey of 92 leading cybercrime experts from around the world who are involved in cybercrime intelligence gathering and investigations.
- It ranks roughly 100 countries and identifies key hotspots based on various categories of cybercrime, including ransomware, credit card theft, and scams.

Key Findings:

- It shows that the threat of cybercrime is not evenly distributed worldwide.
- A relatively small number of countries house the greatest cybercriminal threat.
- **Russia tops the list, followed by Ukraine, China, the USA, Nigeria, and Romania.**
- 97 countries were named by at least one expert as being a hub for a particular category.
- **India captured the number 10 spot in the rankings.**
- The researchers also found that certain kinds of cybercrime were associated with particular countries. For example, the United States was associated with

data and identity theft, while those related to technical products or services seemed to often originate from China.

- It is estimated that cybercrime costs the world around \$9.22 trillion in 2024, and this is expected to grow to \$13.82 trillion in 2028.

89. C

Context:

SC quashes Rs.7687-crore arbitral award against Delhi Metro's DAMEPL as patently illegal.

Curative Petition – A curative petition is a petition which requests the court to review its own decision even after a review petition is dismissed.

Curative Petitions are the final remedy where the SC can reconsider a dismissed review petition.

- **Rupa Hurra Case – In 2002, in Rupa Hurra vs Ashok Hurra, the SC allowed curative writs as the last resort to correct judgments that are oppressive to judicial conscience and would cause perpetuation of irremediable injustice.**

They held that the Supreme Court could entertain a curative petition under the following grounds:

- Violation of principles of natural justice,
- Question of bias against the presiding judge,
- Abuse of the process of the court.

Procedure – A curative petition is supported by Article 137 of the Constitution of India. Statement 2 is correct.

As per the article, in matters of law and regulations made under Article 145, the Supreme Court has the power to review any judgements or orders made by it.

A curative petition needs to be made within 30 days from the date of the judgement passed. Statement 3 is correct.

Criteria:

- **A petitioner can file a curative petition only if the review petition has been dismissed. Statement 1 is correct.**
- It is also required from the petitioner to state or assert specifically the grounds on which the review petition was undertaken and that it was dismissed by circulation, which is in turn certified by a senior advocate.
- A curative petition is entertained if it has been established that there has been a violation of the principles of natural justice.
- Additional grounds of considering the petition are that he/she was not heard by the court when passing the judgement.
- The curative petition is circulated to a Bench consisting of the three senior-most judges, and the judges who had passed the original sentence if possible.

- When and only a majority of the judges decided that the matter needs a hearing, can the petition be listed before the same Bench.
- Should a request for an open-court hearing be made, then such a hearing is allowed, but a curative petition is usually decided by judges in the chamber.
- If the petition lacks any grounds for reasonable consideration, then the court could impose “exemplary costs” on the petitioner.

90. C

Context:

A contentious recent decision by the Science Based Targets Initiative (SBTi), permitting carbon offsetting for Scope 3 emissions of businesses with SBTi-based climate targets, has stirred controversy and scepticism.

About Science Based Targets Initiative (SBTi)

- SBTi is a global initiative established in 2015 that aims to encourage and support companies to set science-based targets (SBTs) to reduce greenhouse gas emissions and limit global warming to well below 2°C above pre-industrial levels. **Statement 1 is correct.**
- The SBTi is a partnership between CDP, the United Nations Global Compact, the World Resources Institute (WRI) and the World-Wide Fund for Nature (WWF). **Statement 2 is correct.**
- The SBTi provides a framework and guidelines for companies to set targets that are in line with the latest climate science, including the goals of the Paris Agreement.
- This involves setting targets that are consistent with limiting warming to 1.5 °C above pre-industrial levels, which is the more ambitious goal of the Paris Agreement.
- Companies can have their targets independently verified and approved by the SBTi, which helps to ensure that they are aligned with the latest science and are in line with the goals of the Paris Agreement.
- By setting science-based targets, companies can demonstrate their commitment to addressing climate change and reducing their carbon footprint.

The SBTi distinguishes between near- and long-term goals and commitments.

- Near-term targets show how organizations intend to reduce emissions over the next 5-10 years, crucial for significant progress by 2030 and a prerequisite for net zero targets.
- Long-term targets indicate how organizations need to reduce their emissions to achieve net zero, according to the criteria of the SBTi Corporate Net-Zero Standard, by 2050 at the latest (2040 for the energy sector).

SBTi oversees the SBTi Net-Zero Standard, a pioneering framework for corporate net-zero target establishment.

- **It is the world's only framework for corporate net-zero target setting in line with climate science.**
- It provides the guidance and tools companies need to set science-based net-zero targets.

91. B

Context:

Recently, there was a controversy when a president of one of India's national parties mentioned Article 371 at a public rally in Rajasthan.

About Article 371

- Article 371, under part XXI of the Indian Constitution, grants some temporary, transitional and special powers for certain States.
- It has been part of the Constitution since 26 January, 1950.
- However, Articles 371(A-J) was brought in via amendments through Article 368.

Article 371

- It deals with the States of Maharashtra and Gujarat. As per the provision, the Governor of Maharashtra has a special responsibility to establish separate development boards for Vidarbha, Marathwada, and the rest of the State.
- The Governor of Gujarat has a similar responsibility towards Saurashtra, Kutch and the rest of Gujarat.

Article 371A

- **Under the provision, no Act of Parliament about the religious or social practices of the Nagas, their customary law and procedure, including civil and criminal justice matters, and ownership or transfer of land and resources will apply to Nagaland, unless the State's Legislative Assembly passes a resolution to do so.**
- It further gives the Governor a 'special responsibility' regarding law and order in the State.

Article 371B

- **It deals with Assam, and was brought in 1969. It allows the President to deal with the Constitution and functioning of a committee of the Legislative Assembly comprising members elected from the tribal.**

Article 371C

- It applies to Manipur and was inserted into the Constitution in 1972. It provides for the constitution of a committee of legislators from the Hill Areas of Manipur.
- It gives the Governor a special responsibility to make an annual report to the President on the administration of the Hill Areas.

Articles 371D and E

- It includes special provisions for Andhra Pradesh and Telangana.
- The President can pass an order to provide equitable opportunities and facilities to people belonging to different parts of Andhra Pradesh in public employment and education.

Article 371F

- It is applicable to Sikkim and it states that the State Legislative Assembly shall consist of at least 30 members.
- The Governor has a special responsibility for the maintenance of peace and equitable arrangements for ensuring the social and economic advancement of different sections.

Article 371G

- *It applies to Mizoram.* It includes special provisions to preserve the religious and social practices, customary law, and procedure of Mizos in Mizoram, as well as for the administration of criminal and civil justice, besides ownership and transfer of land.

Article 371H

- *It confers a special responsibility on the Governor of Arunachal Pradesh concerning law and order.*

Article 371I

- It relates to Goa. It requires the Legislative Assembly of Goa to consist of not less than 30 members.

Article 371J

- It accords special status to the Hyderabad-Karnataka Region (Kalyana Karnataka), and provides for the establishment of a separate development board for the area.

92. D

Context:

Researchers at the Indian Institute of Science (IISc) have designed a sustainable hydrogel to remove microplastics from water.

About Sustainable hydrogel:

- *The sustainable hydrogel has a unique intertwined polymer network that can bind the contaminants and degrade them using UV light irradiation.*
Statement 1 is correct.

- It consists of three different polymer layers - chitosan, polyvinyl alcohol and polyaniline - intertwined together, making an interpenetrating polymer network (IPN) architecture. Statement 2 is correct.
 - The team infused this matrix with nanoclusters of a material called copper substitute polyoxometalate (Cu-POM).
 - These nanoclusters are catalysts that can use UV light to degrade the microplastics.
 - The combination of the polymers and nanoclusters resulted in a strong hydrogel with the ability to adsorb and degrade large amounts of microplastics.
- The hydrogel was found to be highly efficient - it could remove about 95% and 93% of two different types of microplastics in water at near-neutral pH (~6.5).

Microplastics:

- Microplastics are small plastic pieces less than five millimetres long which can be harmful to our ocean and aquatic life.
- They pose a great threat to human health as these tiny plastic debris can enter our bodies through the water we drink and increase the risk of illnesses.
- They are an environmental hazard and found even in remote areas such as polar ice caps and deep ocean trenches, endangering aquatic and terrestrial lifeforms.

93. C

Context:



Bogota, one of the highest capital cities in the world, started water rationing.

What is Water Rationing?

- Water rationing is the act of limiting everyday water use when the resource is in scarce supply.
- It is a temporary suspension of water supply, or reduction of pressure below that required for adequate supply under normal conditions.

About Bogota

- Bogota is Colombia's sprawling, high-altitude capital.
- Bogota is located on a plateau in the Andes known as the Altiplano Cundiboyacense.



94. B

Context:

Russia successfully test-launched its Angara-A5 space rocket from the Vostochny Cosmodrome.

About:

- The Angara-A5 is a 42.7-metre, three-stage rocket weighing about 773 tonnes and capable of carrying 24.5 tonnes into space.
- It is set to replace the Proton M as Russia's heavy-lift rocket.
- It is Russia's first post-Soviet space rocket
- Timeline: Russia began the Angara project after the 1991 break-up of the Soviet Union as a Russian-made launch vehicle that would ensure access to space even without the Baikonur Cosmodrome, which Russia rents from Kazakhstan.
- The first Angara-A5 test flight took place in 2014, and another followed in 2020, both from Plesetsk in northern Russia.
- A partial test followed in 2021 that was a failure.

95. C

Context:

China National Space Administration (CNSA) recently said its launch of Queqiao-2 satellite was a "complete success".

About Queqiao-2

- Queqiao-2 (Magpie Bridge 2) is a relay satellite launched by China to serve as a communications bridge between ground operations on earth and upcoming lunar probe missions on the far side of the moon until at least 2030.
- It has a mass of 1,200 kilograms and carries a large, 4.2-meter-diameter (13.8-foot) parabolic antenna that will be deployed once in space and is one of the largest sent beyond Earth orbit.

- Queqiao-2's first task will be supporting China's Chang'e-6 lunar far-side sample return mission. It will further support the future Chang'e-7 and -8 lunar missions.
- Queqiao 2 carries three science payloads: an Extreme Ultraviolet Camera (EUC), a Grid-based Energetic Neutral Atom Imager (GENA), and a very long baseline interferometer, the Lunar Orbit VLBI Experiment (LOVEX).
- It has a planned lifetime of over 8 years.

The mission will also be deploying two experimental CubeSats, Tiandu-1 and Tiandu-2, which will orbit the Moon to test navigation and communication technologies.

- Tiandu-1 has a Ka-band communications system and a laser retroreflector. It has a mass of 61 kg.
- Tiandu-2, the smaller of the two cubesats with a mass of 15 kg, also has a communications system.
- The two satellites will be in formation in an elliptical lunar orbit. Navigation tests include laser ranging to the Moon, and microwave ranging between satellites.

96. A

Context:

FSIB recently recommended the name of IFCI Managing Director Manoj Mittal as SIDBI Chairman and Managing Director.

About Financial Services Institutions Bureau (FSIB):

- *It's a government body set up under the Department of Financial Services (DFS), Ministry of Finance. Statement 3 is incorrect.*
- The primary role of FSIB is to identify manpower capabilities and ensure proper selection of talent for senior positions at financial institutions owned by the government.
- It replaced the Bank Board's Bureau (BBB), which was declared an incompetent authority.

Structure:

- *FSIB would be headed by a chairman, a central government nominee. Statement 2 is incorrect.*
- *The board would comprise the Secretaries of the DFS, the chairman of IRDAI, and a deputy governor of the RBI.*
- Additionally, it will have three part-time members who are experts in banking and three more from the insurance sector.

Functions:

- *To recommend persons for appointment as whole-time directors (WTDs) and non-executive chairpersons (NECs) on the Boards of Directors in Public*

Sector Banks (PSBs), financial institutions (FIs) and Public Sector Insurers (PSIs). Statement 1 is correct.

- To advise the Government on matters relating to appointments, transfers or extension of term of office and termination of the services of the said directors;
- It would also issue guidelines for selecting general managers and directors of public sector general insurance companies.
- The final decision on the FSIB recommendation would be taken by the Appointments Committee of the Cabinet, headed by the Prime Minister.
- To advise the Government on the desired management structure at the Board level for PSBs, FIs and PSIs;
- To advise the Government on a suitable performance appraisal system for WTDs and NECs in PSBs, FIs, and PSIs;
- To build a databank containing data related to the performance of PSBs, FIs and PSIs;
- To advise the Government on the formulation and enforcement of a code of conduct and ethics for WTDs in PSBs, FIs, and PSIs;
- To advise the Government on evolving suitable training and development programmes for management personnel in PSBs, FIs, and PSIs;
- To help PSBs, FIs, and PSIs in terms of developing business strategies and capital raising plan etc.;
- To carry out such process and draw up a panel for consideration of competent authority for any other bank, financial institution, or insurer for which the Government makes a reference, after consultation with the regulator concerned with that bank, financial institution, or insurer.

97. B

Context:

Researchers have developed synthetic platelets that can be used to stop bleeding and enhance healing at the site of an injury.

About Platelets:

- **Platelets, or thrombocytes, are small, colourless cell fragments in our blood that help clotting. Statement 1 is incorrect.**
- Platelets are our body's natural bandage to stop bleeding.

Where are platelets made?

- **Platelets form in the soft tissue of our bones (bone marrow). The largest cells in our bone marrow (megakaryocytes) make platelets. Statement 2 is correct.**
- They form in the shape of a plate, which is where they get their name.
- They are smaller than red or white blood cells.

How do platelets control bleeding?

- If one of your blood vessels gets damaged, it sends out signals to the platelets.

- The platelets then rush to the site of damage and form a plug (clot) to fix the damage.
- **The process of spreading across the surface of a damaged blood vessel to stop bleeding is called adhesion.**
- This is because when platelets get to the site of the injury, they grow sticky tentacles that help them stick (adhere) to one another.
- They also send out chemical signals to attract more platelets.
- **The additional platelets pile onto the clot in a process called aggregation.**

What is a healthy platelet count?

- *A normal platelet count ranges from 150,000 to 450,000 platelets per microliter of blood.* **Statement 3 is correct.**
- **Having more than 450,000 platelets is a condition called thrombocytosis; having less than 150,000 is known as thrombocytopenia.**
- Symptoms of low platelets include bruising easily and unusual bleeding, such as excessive bleeding from a small cut or blood in urine or stool.
- Platelets can be essential to surviving surgeries such as organ transplant, as well as fighting cancer, chronic diseases, and traumatic injuries.
- Donor platelets are given to patients who don't have enough of their own, or when a person's platelets aren't working correctly.

98. A

Context:

Adani Green Energy Ltd (AGEL) recently established the world's largest renewable energy park in Gujarat's Khavda region.

About Khavda Renewable Energy Park:

- **It is the world's largest renewable energy park.**
- **It is located at Khavda in Gujarat's Kutch region, boasting an impressive 45 GW capacity predominantly fuelled by solar energy.**
- The region has the second-best solar radiation in the country after Ladakh and wind speeds five times that of the plains.
- Situated just one kilometre from the international border with Pakistan, the energy park maintains a buffer zone manned by the Border Security Force (BSF).
- Originally accessed only by a modest airstrip without air traffic control, the site now gears up for a significant clean energy venture.
- **It spans 538 square kilometres, approximately five times the size of Paris.**
- **It is being built by Adani Green Energy Ltd (AGEL), India's largest renewable energy company.**
- Investment: AGEL will invest about Rs 1.5 lakh crore to generate 30 megawatts of clean electricity. It would comprise 26 GW of solar and 4GW of wind capacity.

- The Khavda Park, at its peak, is projected to generate 81 billion units of electricity, a quantity capable of powering entire nations such as Belgium, Chile, and Switzerland.

99. B

Context:

In recent, doxxing incidents are increasing over the internet across the globe.

About Doxxing:

- The word “doxxing” is derived from “dropping dox”.
- ***It is a form of online harassment involving the publication of personal information about an individual without their consent.***
- This information can include details such as their full name, home address, telephone number, place of work, and other sensitive information.
- Doxxing is often carried out to expose, threaten, or intimidate someone and can lead to severe consequences, such as physical harm, stalking, or loss of employment.
- Such information is usually obtained through illegal methods such as hacking or theft.

100. C

Context:

NASA is now publicly distributing science-quality data from its newest Earth-observing PACE satellite.

About PACE Satellite

- **The Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) satellite is placed in Sun-synchronous orbit.**
- **The primary science instrument for PACE is the Ocean Colour Instrument (OCI) which is designed to measure the ocean’s colour across a spectrum from ultraviolet to shortwave infrared.**
- **It features two polarimeters – the Spectro-polarimeter for Planetary Exploration (SPeXone) and the Hyper Angular Research Polarimeter (HARP2).**
- These two working together will offer complementary spectral and angular sampling, polarimetric accuracy, and spatial coverage.
- This combination aims to provide improved atmospheric correction and a comprehensive range of aerosol and cloud science data beyond what the OCI alone could achieve.
- **The synergistic payload of OCI, SPeXone and HARP2 is poised to make significant breakthroughs in aerosol-cloud-ocean research.**
- The OCI observes the ocean, land, and atmosphere across a spectrum of ultraviolet, visible, and near infrared light. With this extensive spectral range, scientists can identify specific communities of phytoplankton.



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- **Significance: The data will allow researchers to study microscopic life in the ocean and particles in the air, advancing the understanding of issues** including fisheries health, harmful algal blooms, air pollution, and wildfire smoke.
- With PACE, scientists also can investigate how the ocean and atmosphere interact with each other and are affected by a changing climate.

101. A

Context:

The tranquil flow of the Jiadhal river is now being disrupted by the harsh realities of climate change.

About Jiadhal River

- **It is a northern tributary of the Brahmaputra River.**

Course:

- It originates in the sub-Himalayan mountains of Arunachal Pradesh at an altitude of 1247m.
- After passing through a narrow gorge in Arunachal Pradesh, the river enters the plains of Assam in Dhemaji district, where it flows in braided channels.
- The river finally debouches into the Brahmaputra near Selamukh in Lakhimpur district.
- But after the construction of the embankment over the Kherkutiya Suti of the Brahmaputra, the river confluences with the Subansiri River.
- The total length of the river is 187 km.

Left bank Tributaries of Brahmaputra:

- Dibang
- Lohit
- Burhi Dihang
- Dhansari
- Kelang

Right bank Tributaries of Brahmaputra:

- **Subansari**
- **Kameng**
- **Manas**
- **Sankosh**

102. B

Context:

A year-long conflict in Sudan unleashed waves of ethnic violence and driven millions into extreme hunger and creating large displacement crisis.

<i>Countries in news</i>	<i>Reasons</i>
1. <i>Sudan</i>	<i>Clashes are between the regular army and the Rapid Support Forces (RSF)</i>
2. <i>Libya</i>	<i>Forces fight to capture rich oil fields.</i>
3. <i>Democratic Republic of Congo</i>	<i>M23 rebellion</i>
4. <i>Somalia</i>	<i>Conflict with Al- Shabaab.</i>

103. D

Context:

A fleeting visit by the BepiColombo mission to Venus has revealed surprising insights into how gases are stripped away from the upper layers of the planet's atmosphere.

About:

- **It is an international mission comprised of two spacecraft riding together to Mercury to orbit and study the planet from unique vantage points. The mission was named after Giuseppe "Bepi" Colombo, an Italian mathematician and engineer who made significant contributions to the understanding of Mercury's orbit.**
- It will be the second mission ever to orbit Mercury and the most complex one.
- The first spacecraft to visit Mercury was NASA's Mariner 10, which imaged about 45% of the surface.
- The spacecraft were launched on October 20, 2018, aboard an Ariane 5 rocket from French Guiana. It is scheduled to begin orbiting Mercury in 2025.
- **The primary scientific objectives of the mission are to study Mercury's magnetic field, its composition, the geology of its surface, and its interaction with the solar wind. Statement 1 is incorrect.**
- The mission will also investigate the planet's exosphere and study its geological history.
- **It is a joint project between the European Space Agency (ESA) and the Japanese counterpart JAXA. Statement 2 is incorrect.**
- ESA's Mercury Planetary Orbiter (MPO) will study the planet's surface and interior.
- JAXA's Mercury Magnetospheric Orbiter (MIO) will study the planet's magnetic field.
- ESA is also responsible for the launcher, the interplanetary cruising engine, and the placement of BepiColombo into Mercury's orbit.

104. B

Context:

In a study published recently, scientists from Germany and the U.K. led with a radical explanation for the Hubble tension.

About Hubble Tension

- The "Hubble tension" refers to a discrepancy between the measurements of the rate of expansion of the universe, known as the Hubble constant.
- The Hubble constant, denoted as H_0 , describes the rate at which galaxies are moving away from each other due to the expansion of the universe.
- If a researcher wants to estimate the Hubble constant, they have two main avenues. These are the cosmic distance ladder and the cosmic microwave background (CMB).

Cosmic Microwave Background (CMB):

- CMB is a sea of photons, the particles of light, present throughout the universe. They are left over from the Big Bang, its afterglow.

Cosmic Distance Ladder:

- It is a set of techniques used to measure the distance to objects that are close, further away, or very far away from the earth. One object in particular is the Cepheid variable star.

Thus, these measurements have yielded slightly different values for the Hubble constant. This discrepancy is known as the Hubble tension.

The significance of the Hubble tension is that it could potentially indicate unknown physics or systematic errors in the measurements.

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105. C

Context:

Recently, it is highlighted that Kuchipudi artists are struggling for survival and going through a tough phase due to lack of patronage.

About Kuchipudi

- It is one of the Indian Classical dances belonging to Andhra Pradesh.

History

- It was originally performed by a group of itinerant actors known as Bhagavathalu, who would travel from village to village, performing plays and dances based on Hindu mythology. Statement 1 is correct.
- In the 15th century, the great poet and musician, Siddhendra Yogi, played a major role in the development of Kuchipudi. He is credited with transforming the dance form from a simple folk art to a sophisticated and refined classical dance form. Statement 2 is correct.

Features

- The dance form is characterized by its intricate footwork, graceful movements, and subtle facial expressions.
- It incorporates both pure dance (Nritya) and expressive dance (Nritya) elements, as well as storytelling through dance (Natya).
- It is also performed on the edge of a brass plate (known as Tarangam) on the beats of Carnatic music.
- It is largely developed as a Hindu god Krishna-oriented Vaishnavism tradition, and it is most closely related to Bhagavata Mela.
- The Kuchipudi performer apart from being a dancer and actor has to be skilled in Sanskrit and Telugu languages, music and manuscripts of the performance.
- The Kuchipudi dancers wear light make-up and ornaments like the Rakudi (head ornament), Chandra Vanki (arm band), Adda Bhasa and Kasina Sara (necklace). A long plait is decorated with flowers and jewelry. The ornaments are made of light wood called Boorugu.
- The typical musical instruments in Kuchipudi are mridangam, cymbals, veena, flute and the tambura.

106. C

<i>Operations by Indian Armed Forces</i>	<i>Description</i>
1. <i>Operation Vijay (1999)</i>	<i>To push back the infiltrators from the Kargil Sector during Kargil War.</i>
2. <i>Operation Good Samaritan (1995)</i>	<i>Humanitarian tasks in Manipur and Nagaland.</i>
3. <i>Operation Sankat Mochan (2016)</i>	<i>An operation to evacuate Indian citizens from South Sudan during the South Sudanese Civil War.</i>
4. <i>Operation Steeplechase (1971)</i>	<i>Combined operation against Naxalites</i>

Context:

The Indian Army recently commemorated 40 years since 'Operation Meghdoot' began, securing the Siachen Glacier.

About Operation Meghdoot

- It was the code-name for the Indian Armed Forces operation to capture the Siachen Glacier, a strategically crucial region dominating Northern Ladakh.
- Siachen has been a bone of contention between India and Pakistan ever since the Karachi Agreement of 1949, when the area was left undivided due to the hostile terrain and extremely rough weather.
- Operation Meghdoot was India's bold military response to what New Delhi calls Pakistan's "cartographic aggression" in the uncharted territory of

Ladakh, north of map reference NJ9842, where New Delhi and Islamabad had agreed the Line of Control (LoC) ran up to.

- Intelligence inputs about impending Pakistani military action prompted India to secure strategic heights on Siachen, deploying troops via airlifts and air-dropping supplies to high-altitude airfields.
- The primary objective behind this operation was to pre-empt the seizure of Sia La and Bilafond La passes by the Pakistan Army.
- Launched on April 13, 1984, this military operation was unique as the first assault launched on the world's highest battlefield.
- It was launched under the leadership of Lieutenant General Manohar Lal Chibber, Lieutenant General PN Hoon, and Major General Shiv Sharma.
- It is distinguished by being one of the greatest examples of seamless coordination and synergy between the Indian Army and the Air Force.
- The military action resulted in Indian troops gaining control of the entire Siachen Glacier.

Strategic Importance of the Siachen:

- Located at a height of around 20,000 feet in the Karakoram Mountain range, the Siachen Glacier is known as the highest militarised zone around the world.
- It is located so strategically that while it dominates Shaksgam Valley (ceded to China by Pakistan in 1963) in the north, controls the routes coming from Gilgit Baltistan to Leh from the west, and at the same time, it dominates the ancient Karakoram Pass in the eastern side too.
- Further, towards the west, it observes nearly the entire of the Gilgit Baltistan, which too is an Indian territory illegally occupied by Pakistan in 1948.

107. D

Context:

Indiscriminate attacks against civilians in Sudan could constitute “war crimes and crimes against humanity,” UN Secretary-General Antonio Guterres has said recently.

The Nile River's basin spans across the countries of Egypt, Sudan, South Sudan, Eritrea, Ethiopia, Kenya, the Democratic Republic of the Congo, Burundi, Rwanda, Uganda, and Tanzania.

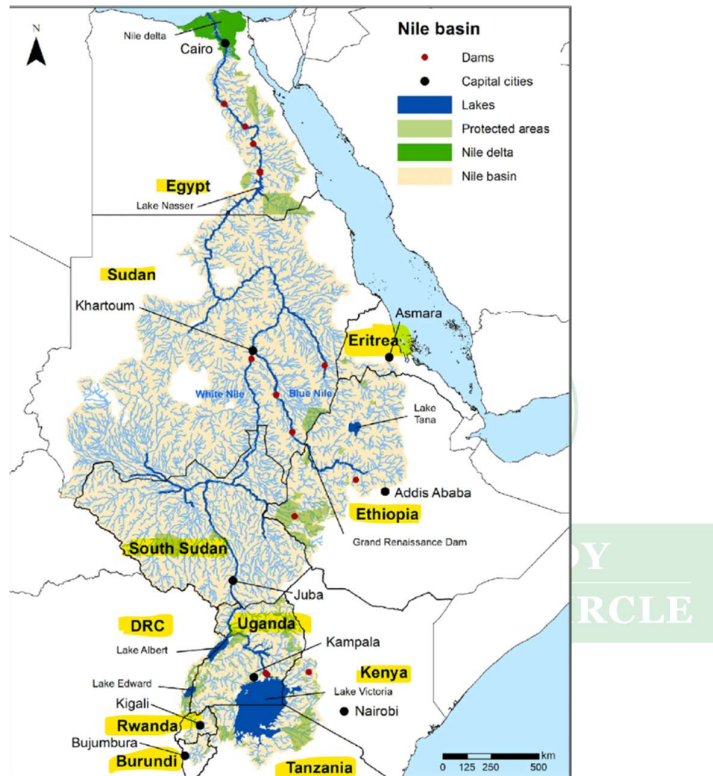
About Sudan:

- It is located in northeastern Africa.
- It is the third largest nation in all of Africa with an area of 1,886,068 sq. km.
- Sudan shares a border with its seven neighbours: South Sudan, Ethiopia, Eritrea, Egypt, Libya, Chad, and the Central African Republic.
- Sudan also has a significant coastline along the Red Sea.

- This narrow strip of water gives vital access to the Indian Ocean as well as the Mediterranean Sea through the Suez Canal.

Geography:

- Sudan is mainly composed of vast plains and plateaus that are drained by the Nile River and its tributaries.
- Much of Sudan consists of deserts and arid grasslands with little in the way of vegetation.
- The northern part of this plain is a primarily rocky desert area called the Nubian Desert.



108. D

Context:

Global goods trade is expected to pick up gradually this year following a contraction in 2023: the World Trade Organization (WTO).

About Global Trade Outlook and Statistics report:

- Released By – World Trade Organisation (WTO).
- The report indicates primary signs of fragmentation in trade flows.

Findings:

- An evident recovery in the demand for tradable goods is already observable in 2024.
- The trade scenario appears more positive on the services side, with a 9% increase in commercial services exports to \$7.54 trillion, partially counterbalancing the decline in goods trade.
- Global GDP growth at market exchange rates will hover around 2.6% in 2024 and 2.7% in 2025, marking a slight deceleration from 3.1% in 2022 to 2.7% in 2023.
- With geopolitical tensions affecting trade patterns marginally, the report says the global trade in non-fuel intermediate goods, which provides a useful gauge of the status of global value chains, was down 6%.
- High energy prices and persistent inflation have adversely impacted the demand for manufactured goods, leading to a 1.2% drop in the volume of world merchandise trade for 2023.
- This decline is more pronounced in value terms, with merchandise exports decreasing by 5% to \$24.01 trillion.
- India - India's goods exports stood at \$451 billion in FY23 and \$394.99 billion in FY24 so far (April-February).
- The country's share in global goods exports and imports stood at 1.8% and 2.8% in 2023, respectively.

109. C

Context:

The primary source of hydrocarbons in the rocky underground is called kerogen: lumps of organic matter.

About Kerogen:

- **Kerogen is the portion of naturally occurring organic matter that is non-extractable using organic solvents i.e. it is insoluble in solvents.**
- **Kerogen represents about 90% of the organic carbon in sediments.**
- It occurs in source rock and may expel hydrocarbons upon thermal cracking.
- Typical organic constituents of kerogen are algae and woody plant material.
- **It consists of lighter as well as heavier hydrocarbons and acts like a precursor of oil and natural gas.**
- Kerogens have a high molecular weight relative to bitumen, or soluble organic matter. Bitumen forms from kerogen during petroleum generation.
- Kerogens are described as Type I, consisting of mainly algal and amorphous (but presumably algal) kerogen and highly likely to generate oil; Type II, mixed terrestrial and marine source material that can generate waxy oil; and Type III, woody terrestrial source material that typically generates gas.
- The types of kerogens present in a rock largely control the type of hydrocarbons generated in that rock.

Different types of kerogens contain different amounts of hydrogen relative to carbon and oxygen. The hydrogen content of kerogen is the controlling factor for oil vs. gas yields from the primary hydrocarbon-generating reactions.

110. B

Context:

Water levels at Lake Kariba in Zimbabwe have dropped dramatically because of the latest El Nino drought.

<i>Lakes</i>	<i>Forms border between</i>
1. <i>Lake Kariba</i>	<i>Zambia and Zimbabwe</i>
2. <i>Heaven Lake</i>	<i>North Korea and China</i>
3. <i>Cami Lake</i>	<i>Argentina and Chile</i>
4. <i>Lake Rweru</i>	<i>Rwanda and Burundi</i>

About Lake Kariba:

- It is the world's largest man-made lake and reservoir by volume.
- It lies approximately 1300 kilometers upstream from the Indian Ocean, along the border between Zambia and Zimbabwe.
- It is 200 kilometers downstream of Victoria Falls.
- The lake was filled following the completion of the Kariba Dam wall at its northeastern end, flooding the Kariba Gorge on the Zambezi River.

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111. C

Context:

The 23rd session of UN Permanent Forum on Indigenous Issues in New York highlights slow progress in protecting indigenous territories, crucial for meeting biodiversity targets.

About UN Permanent Forum on Indigenous Issues:

- It is as an outcome of the UN's International Year for the World's Indigenous People in 1993, within the first International Decade of the World's Indigenous People (1995–2004).
- Advisory body- It is an advisory body within the framework of the United Nations System that reports to the UN's Economic and Social Council.
Statement 1 is correct.
- Mandate- To deal with indigenous issues related to economic and social development, culture, the environment, education, health and human rights.
- Members- It is composed of 16 independent experts, functioning in their personal capacity.

- Tenure- Appointed for 3-year terms. At the end of their term, they can be re-elected or re-appointed for one additional term.
- Sessions- The first meeting of the Permanent Forum was held in 2002, with yearly sessions thereafter.

23rd session of UN Permanent Forum on Indigenous Issues:

- **2024 theme- “Enhancing Indigenous Peoples’ right to self-determination in the context of the United Nations Declaration on the Rights of Indigenous Peoples: emphasizing the voices of Indigenous youth”.**
- Indigenous Territories- It covers 22% of land and home to 80% of remaining biodiversity, these areas are vital but receive less than 1% of climate finance.
- Amazon protection- The “Amazonia for Life: Protect 80% by 2025” initiative urges for rapid action to prevent ecological tipping points in the Amazon. **Statement 2 is correct.**
- Target 3 of this framework proposes that 30 per cent of land and water on the earth is protected by 2030.

112. D

Context:

According to a new report, the Arctic is a ‘hemispheric sink’ for chemicals & plastics accumulating in the region from local as well as global sources.

- Plastics and chemicals produced all over the world deposit and accumulate in the Arctic.
- Chemicals and plastics are transported to the region on atmospheric and oceanic currents from lower latitudes, through a process known as global distillation or the “grasshopper effect.”
- Global distillation or the grasshopper effect is the geochemical process by which certain chemicals, most notably persistent organic pollutants (POPs), are transported from warmer to colder regions of the Earth, particularly the poles and mountain tops.

113. B

Context:

The Reserve Bank of India (RBI) green lighted investments in the country’s Sovereign Green Bonds (SGrBs) by Foreign Institutional Investors (FIIS).

Sovereign Green Bonds (SGrBs):

- The green Government-Securities (G-Secs) were classified under the Statutory Liquidity Ratio (SLR), a liquidity rate fixed by the RBI that financial institutions must maintain with themselves before they lend to their customers. **Statement I is correct.**

- SGrBs yield lower interest than conventional G-Secs, and the amount foregone by a bank by investing in them is called a greenium.
- But central banks and governments the world over are encouraging financial institutions to embrace greeniums to hasten the transition to a greener future.
- The Reserve Bank of India (RBI) green lighted investments in the country's Sovereign Green Bonds (SGrBs) by Foreign Institutional Investors (FIIS) – investors such as insurance companies, pension funds and nation-states' sovereign wealth funds. Statement II is correct but not the correct explanation for Statement I.
- SGrBs are a kind of government debt that specifically funds projects attempting to accelerate India's transition to a low carbon economy.

114. D

Context:

Astronomers recently spotted the most massive known stellar black hole in the Milky Way galaxy named Gaia-BH3.

About Gaia-BH3

- It is the most massive stellar black hole yet discovered in the Milky Way galaxy. Statement 3 is correct.
- This black hole was spotted in data from the European Space Agency's Gaia mission because it imposes an odd 'wobbling' motion on the companion star orbiting it.
- The researchers used the European Southern Observatory's Very Large Telescope in Chile's Atacama Desert and other ground-based observatories to confirm the mass of Gaia BH3.
- It has a mass that is nearly 33 times that of our sun, and it's located 1,926 light-years away in the Aquila constellation, making it the second-closest known black hole to Earth.
- The closest black hole is Gaia BH1, which is located about 1,500 light-years away and has a mass that is nearly 10 times that of our sun.
- Most Massive Black Hole in Milky Way galaxy: The title for the most massive black hole in our galaxy will always belong to Sagittarius A*, the supermassive black hole located at the centre of the Milky Way, which has about 4 million times the mass of the sun, but that is because it's a supermassive black hole, rather than a stellar black hole.

Stellar black hole vs Supermassive black hole

- Stellar-mass black holes are formed from the gravitational collapse of a single star or from the merger of two neutron stars. Statement 1 is correct.
- Therefore, stellar-mass black holes have masses similar to the masses of stars.
- More specifically, stellar-mass black holes have masses ranging from about 3 times the mass of our sun to about 50 times the mass of our sun.

- In contrast, supermassive black holes have a mass greater than about 50,000 times the mass of our sun and are typically millions to billions of times the mass of our sun.
- Supermassive black holes are far too large to have formed from the gravitational collapse of a single star.
- However, scientists do not currently know how supermassive black holes form.
- **Supermassive black holes are always found at the centre of a galaxy and almost all galaxies have a supermassive black hole at its centre. Statement 2 is correct.**

115. A

Context:

Nigeria has become the 1st country in the world to roll out a new vaccine (called Men5CV) against meningitis.

Men5CV Vaccine

- It protects people against 5 strains (A, C, W, Y and X) of the meningococcus bacteria.
- It was recommended by the World Health Organization (WHO).
- The vaccine and emergency vaccination activities are funded by Gavi, the Vaccine Alliance.
- Nigeria is one of the 26 meningitis hyper-endemic countries of Africa, situated in the area known as the African Meningitis Belt.

Meningitis:

- Meningitis is a serious infection that leads to the inflammation of the membranes (meninges) that surround and protect the brain and spinal cord.
- There are multiple causes of meningitis, including viral, bacterial, fungal and parasitic pathogens.
- Bacterial meningitis is the most serious, can also result in septicaemia (blood poisoning), and can seriously disable or kill within 24 hours those that contract it.
- Symptoms - Headache, fever and stiff neck.

Road map to meningitis - In 2019, WHO and partners launched the global roadmap to defeating meningitis by 2030.

The roadmap sets a comprehensive vision towards a world free of meningitis, and has 3 goals:

- Elimination of bacterial meningitis epidemics;
- Reduction of cases of vaccine-preventable bacterial meningitis by 50% and deaths by 70%; and

- reduction of disability and improvement of quality of life after meningitis due to any cause.

116. A

Context:

As per recent news, Chennai's main drinking water source Veeranam Lake has dried up.

About Veeranam Lake:

Veeranam Lake serves as a crucial drinking water source for Chennai. It is located in Cuddalore district in Tamil Nadu. It was considered one of the longest man-made lakes in the world with a length of 14 km.

History:

- It was built during the period of Greater Cholas between 907-955 AD, by the Chola Prince- Rajaditya Chola who was the son of Parantaka the 1st. He'd named this waterbody after his father's title-Veeranarayanan.
- This lake was used as a reference, in the famous Historical novel Ponniyin Selvan, written by Kalki.
- The source of Veeranam is the river of Kollidam; which is the Northern distributary of the Cauvery River, where the Vadavaru River links both the Veeranam and Kollidam.

<i>Lakes</i>	<i>Located in</i>
1. <i>Veeranam Lake</i>	<i>Tamil Nadu</i>
2. <i>Hamirsar Lake</i>	<i>Gujarat</i>
3. <i>Badkhal Lake</i>	<i>Haryana</i>
4. <i>Haflong Lake</i>	<i>Assam</i>

117. B

Context:

India has simplified the payment mechanism for traders importing pulses from Myanmar, requiring them to use the Rupee/Kyat direct payment system through the Special Rupee Vostro Account (SRVA) through the Punjab National Bank.

About SRVA

- The settlement of international trade through Indian Rupees (INR) is an additional arrangement to the existing system of settlement that uses freely convertible currencies and works as a complimentary system.
- Freely convertible currency is a currency which is permitted by the rules and regulations of the country concerned to be converted into major reserve currencies like the U.S. Dollar, Pound Sterling.
- This will reduce dependence on hard (freely convertible) currency.

- SRVA requires prior approval of RBI before opening, unlike Rupee Vostro account. Statement 1 is incorrect.

How does SRVA arrangement function?

The framework entails three important components, namely, invoicing, exchange rate, and settlement. Statement 2 is correct.

- Invoicing entails that all exports and imports must be denominated and invoiced in INR.
- The exchange rate between the currencies of the trading partner countries would be market-determined.
- The final settlement also takes place in Indian National Rupee (INR).
- The authorised domestic dealer banks (those authorised to deal in foreign currencies) are required to open SRVA accounts for correspondent banks of the partner trading country.
- Domestic importers are required to make payment (in INR) into the SRVA account of the correspondent bank against the invoices for supply of goods or services from the overseas seller/supplier.
- Similarly, domestic exporters are to be paid the export proceeds (in INR) from the balances in the designated account of the correspondent bank of the partner country.
- As for availing an advance against exports, it would be the responsibility of the domestic bank to accord foremost priority to ensuring that the available funds are used to meet existing payment obligations, that is, from the already executed export orders or export payments in the pipeline.
- All reporting of cross-border transactions is to be done in accordance with the extant guidelines under the Foreign Exchange Management Act (FEMA), 1999.

What are the eligibility criteria of banks?

- Banks from partner countries are required to approach an authorised domestic dealer bank for opening the SRVA.
- The domestic bank would then seek approval from the apex banking regulator, providing details of the arrangement.
- It would be the responsibility of the domestic banks to ensure that the correspondent bank is not from a country mentioned in the updated Financial Action Task Force (FATF) Public Statement on High-Risk and Non-Co-operative jurisdictions.
- Domestic banks must also put forth, for perusal, financial parameters pertaining to the corresponding bank.
- Authorised banks can open multiple SRV accounts for different banks from the same country. Statement 3 is correct.
- Further, balances in the account can be repatriated in freely convertible currency and/or the currency of the beneficiary partner country, depending on the underlying transaction, that is, for which the account was credited.

118. D

Context:

The Asian Development Bank recently warned that India could face imported inflation as the rupee could depreciate amid the rise in interest rates in the West.

About Imported Inflation:

- *It is a general and sustainable price increase due to an increase in the costs of imported products.*
- This price increase concerns the price of raw materials and all imported products or services used by companies in a country. It is also referred to as cost inflation.

Several factors cause imported inflation:

- **Exchange Rates:** The more the currency depreciates on the foreign exchange market, the higher the price of imports. Effectively, more money is needed to buy goods and services outside the country.
- **Commodity Prices:** When commodity prices rise globally, it directly impacts the cost of imports and can lead to higher inflation in the importing country.
- **Trade Policies and Global Supply-Chains:** Changes in trade policies, such as tariffs and quotas, can influence the cost of imported goods.
- **Transportation Costs:** Fluctuations in transportation costs, influenced by factors like fuel prices and logistical challenges, can affect the final cost of imported goods.

119. C

Context:

The ISRO recently said that it has successfully developed a lightweight Carbon-Carbon (C-C) nozzle for rocket engines.

C-C nozzle

- It is a lightweight Carbon-Carbon (C-C) nozzle to enhance the vital parameters of rocket engines.
- *Developed by - Indian Space Research Organisation (ISRO). Statement 3 is correct.*
- *The key feature of the nozzle is its anti-oxidation coating of Silicon Carbide, which extends its operational limits in oxidizing environments. Statement 2 is correct.*
- This coating reduces thermally induced stresses and enhances corrosion resistance, allowing for extended operational temperature limits in hostile environments.
- *Polar Satellite Launch Vehicle (PSLV)-4 currently employs twin engines with nozzles made from Columbiun alloy.*

- By replacing the engines with C-C nozzle, a mass reduction of approximately 67% can be achieved.
- This substitution is projected to increase the payload capability of the PSLV by 15 kg. Statement 1 is correct.

Features:

- Low density
- High specific strength
- Excellent stiffness
- Capable of retaining mechanical properties even at high temperatures.

120 .D

Context

The Central Board of Direct Taxes (CBDT) has entered into a record 125 Advance Pricing Agreements (APAs) in FY 2023-24 with Indian taxpayers.

About

- This marks the highest ever APA signings in any financial year since the launch of the APA programme in 2012.
- During FY 2023-24 CBDT also signed the maximum number of Bilateral APAs in any financial year till date. Statement 2 is correct.
- The BAPAs were signed as a consequence of entering into Mutual Agreements with India's treaty partners namely Australia, Canada, Denmark, Japan, Singapore, the UK and the US.
- An advance pricing agreement (APA) is a formal arrangement between a tax authority and a multinational enterprise (MNE) in which the parties jointly agree on the MNE's transfer pricing methodology, estimated taxable income, and tax payments for a fixed period, thus reducing the likelihood of an income tax dispute. Statement 1 is correct.
- The APA program addresses actual or potential disputes and provides tax certainty to MNCs by allowing them to negotiate how profit margins for India operations will be calculated.

121. C

Context:

An international team of researchers has discovered the "nitroplast" – first known nitrogen-fixing organelle within a eukaryotic cell.

About:

This finding challenges the long-held belief that only bacteria can fix nitrogen.

- Nitrogen fixation is the process by which nitrogen is taken from its molecular form (N₂) in the atmosphere and converted into nitrogen compounds useful for other biochemical processes.

The nitroplast organelle discovery marks the fourth instance of primary endosymbiosis in history, a process where a prokaryotic cell is engulfed by a eukaryotic cell and evolves into an organelle.

- A symbiotic relationship where one organism lives inside the other is known as endosymbiosis.

Prokaryotic and Eukaryotic Cells: The cell is the basic unit of life and forms the building blocks of all living organisms. It was discovered by Robert Hooke in 1665.

- Some cells have membrane-bound organelles and some do not. Depending upon the internal structure of the cell, two types of cells are found in an organism namely Eukaryotic and Prokaryotic.
- Prokaryotic cells are simpler and smaller in size, while eukaryotic cells are more complex and larger.

122. B

Context:

Recently, a state-of-the-art Submersible Platform for Acoustic Characterisation and Evaluation (SPACE) was inaugurated by Secretary, Department of Defence (R&D) and Chairman DRDO in Kerala.

About Submersible Platform for Acoustic Characterisation and Evaluation (SPACE):

- It is set up by the Naval Physical & Oceanographic Laboratory of the Defence Research and Development Organisation (DRDO).
- *It has been designed as a premier testing and evaluation hub for sonar systems destined for the Indian Navy onboard various platforms including ships, submarines and helicopters.*
- **Features:** It will consist of two distinct assemblages - a platform which floats on the water surface, and a submersible platform which can be lowered to any depth up to 100 m using winch systems.
- **Uses:** It will mainly be utilised for the evaluation of a complete sonar system, allowing for quick deployment and easy recovery of scientific packages such as sensors and transducers. It will be suitable for survey, sampling and data collection of air, surface, mid-water, and reservoir floor parameters using modern scientific instrumentation.
- It will cater to the needs of data processing and sample analyses in modern, well equipped scientific laboratories heralding a new era of Anti-Submarine Warfare research capabilities.

123. A

Context:

India, through ISRO, aims to achieve debris-free space missions by 2030, as declared at the 42nd Inter-Agency Space Debris Coordination Committee (IADC) annual meet held on April 16, 2024. Statement 2 is incorrect.

Inter-Agency Space Debris Coordination Committee (IADC):

- The Inter-Agency Space Debris Coordination Committee (IADC) is an international intergovernmental forum that coordinates activities related to man-made and natural debris in space.
- The IADC was founded on October 25, 1993, to coordinate efforts to deal with debris in orbit around the Earth. Statement 1 is correct.
- The IADC is recognized as the internationally recognized technical authority on space debris.
- **India, through ISRO, aims to achieve debris-free space missions by 2030, as declared at the 42nd Inter-Agency Space Debris Coordination Committee (IADC) annual meet.**
- This initiative seeks the participation of all Indian space actors, governmental and non-governmental, to ensure long-term sustainability in outer space.
- ISRO has a comprehensive plan for space exploration and utilization, with a focus on disposing of non-functional spacecraft and preventing the creation of debris.

124. D

Context:

Recently, NASA confirmed a Dragonfly rotorcraft mission to Saturn's organic compound-rich moon Titan with a budget of \$3.35 billion and a launch date set for July 2028.

About Dragonfly Mission

- It is a "dual quadcopter" designed to fly across the surface of Titan, Saturn's largest moon. Statement 1 is incorrect.
- It will explore a variety of locations on Saturn's moon Titan.
- It will spend most of its time on the moon's surface making science measurements.
- It will use a radioisotope power system like the Curiosity rover on Mars.
- Its flights, data transmission and most science operations will happen during the day, and it will have a lot of time to recharge during night on Titan.
- It is a rotorcraft, targeted to arrive at Titan in 2034, will fly to dozens of promising locations on the moon, looking for prebiotic chemical processes common on both Titan and the early Earth before life developed. Statement 2 is incorrect.
- It marks the first time NASA will fly a vehicle for science on another planetary body. The rotorcraft has eight rotors and flies like a large drone.

125. C

Context:

The DRDO is reported to be testing a prototype of its DURGA-2 (Directionally Unrestricted Ray Gun Array) system.

About DURGA-2

- *It damages or destroys its target using focused energy by means of lasers, microwaves or particle beams.*
- Advantages: These weapons have several advantages over conventional munitions.
- They transmit lethal force at the speed of light (about 300,000 km per second).
- Their beams are not affected by the constraining effects of gravity or atmospheric drag.
- They are extremely precise. Fourth, their effects can be tailored by varying the type and intensity of energy delivered against targets.

Significance

- The aerospace industry can transform the way wars will be fought.
- This will enable us to produce cutting edge platforms, weapons, sensors, and networks essential to fight and win a future war.

Other countries which have this system: Russia, France, Germany, the United Kingdom, Israel, and China.

R.C.REDDY
IAS STUDY CIRCLE

126. D

Context:

Chief of the army staff inaugurated a high-tech IT laboratory at the Academy of Armed Forces in Uzbekistan. The Lab was established with Indian assistance.

About Uzbekistan:

- It is a double landlocked country in Central Asia.
- Kazakhstan, Kyrgyzstan, Tajikistan, Afghanistan, and Turkmenistan are the bordering countries.



127. A

Context:

Mount Ruang initiated its eruption recently, propelling an ash cloud upwards of a mile into the sky.

Mount Ruang

- *It is a stratovolcano located in Indonesia's North Sulawesi province.*
- It is a 725-meter (2,400-foot) volcano.
- The summit of Ruang stands 10,932 feet above sea level, with a caldera that is about two miles wide.

Stratovolcano

- **It is a tall, steep, and cone-shaped type of volcano.**
- **Unlike flat shield volcanoes, they have higher peaks.**
- **They are typically found above subduction zones, and they are often part of large volcanically active regions, such as the Ring of Fire that frames much of the Pacific Ocean.**
- **Strato Volcanoes comprise the largest percentage (~60%) of the Earth's individual volcanoes, and most are characterized by eruptions of andesite and dacite, lavas that are cooler and more viscous than basalt.**
- **These more viscous lavas allow gas pressures to build up to high levels. Therefore, these volcanoes often suffer explosive eruptions.**
- **They are usually about half-half lava and pyroclastic material, and the layering of these products gives them their other common name of composite volcanoes.**

- At the peak, stratovolcanoes usually have a small crater. The crater may be filled with water or ice, or it may contain a volcanic dome during a period of relative inactivity.

128. C

Context:

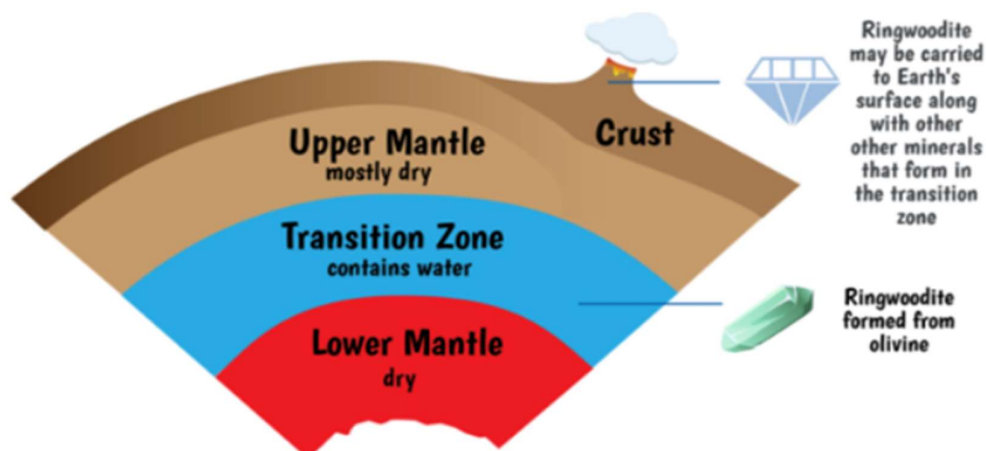
Recently, scientists discovered a hidden ocean which is 700 km below earth's Surface located within a mineral called ringwoodite.

About Ringwoodite:

- It is a fascinating mineral that exists in the Earth's transition zone.
Statement 1 is correct.
- It has a unique crystal structure that allows it to absorb water and hydrogen, acting like a sponge. This mineral can hold a significant amount of water.
Statement 2 is correct.
- It is a rare type of mineral that forms from olivine under very high pressures and temperatures. Statement 3 is correct.
- The weight of hundreds of kilometres of rock and very high temperatures above 1,000 degrees Celsius (1,832 Fahrenheit) break down water into its components.
- When the minerals containing this water reach certain depths, they break down in a process called dehydration and release the water to form magmas.
- **Such "dehydration melting" is common in the shallow mantle and forms the source for magmas in many volcanoes.**

Implications for Earth's water cycle

- The discovery of this deep-water reservoir has significant implications for our understanding of the Earth's water cycle.
- It suggests that water can be transported to the Earth's surface from deep within its mantle, contributing to the water found in oceans, rivers, and lakes.



129. A

Context:

Sweden and Slovenia became the 38th and 39th country respectively to sign the Artemis Accords.

About

- The Artemis Accords are a set of principles and guidelines for international cooperation in space exploration. **Statement 1 is correct.**
- They are not a legally binding instrument. **Statement 2 is incorrect.**
- They were announced by NASA in 2020 and named after NASA's Artemis program which is aimed at returning humans to the Moon by the mid-2020s.
- The Accords mirror principles set out in 1967, as part of the Outer Space Treaty to help govern international cooperation space.
- Members: Artemis Accords has 39 members including Australia, France, Germany, India, Japan, United Kingdom, United States of America etc.
- India joined the Artemis Accords in 2023.
- Russia and China are not part of the Artemis Accords. **Statement 3 is incorrect.**

Activities under Artemis programme

The initial three missions of the programme are Artemis-I, II and III.

Under Artemis-I, NASA launched its spacecraft 'Orion' on its indigenously built super heavy-lift launch vehicle (SLS) directly to the moon on a single mission.

- In 2022, the SLS carrying Orion commenced its first uncrewed integrated flight test.

Artemis-II programme will commence, with a crew of four astronauts onboard the SLS performing multiple manoeuvres on an expanding orbit around the Earth.

Artemis-III, mission will witness the four-member crew land on the moon, conduct a week-long lunar exploration, perform a lunar flyby, and return to earth.

130. C

Context:

Recently, the Indian Navy has seized drugs in the Arabian Sea as part of an operation led by Combined Maritime Forces.

About the Combined Maritime Forces

- It is a Bahrain-based multilateral and multinational naval partnership, established in 2001, to counter the threat of international terrorism. **Statement 1 is correct.**

- It has expanded its focus to include counter-narcotics, counter-smuggling operations, and suppressing piracy. Statement 3 is correct.
- It exists to uphold the Rules-Based International Order (RBIO) by countering illicit non-state actors on the high seas and promoting security, stability, and prosperity across approximately 3.2 million square miles of international waters, which encompass some of the world's most important shipping lanes.
- India's Association with CMF: India formally commenced cooperation in November 2021. Statement 2 is correct.

Composition and Structure

- It has 42 member and partner nations including Australia, Canada, Denmark, France, Pakistan, Japan, Germany, the UK, and the US.
- Other nations who have participated: Italy, India, Malaysia, Netherlands, New Zealand, Portugal, Singapore, Spain, Thailand, and Turkey.
- Partner Nations: Djibouti, Oman and Sri Lanka.
- The command of the task force rotates among the different participating navies, with commands usually lasting between four and six months.

The work of the CMF is divided into four Combined Task Forces (CTF):

- CTF 150: Gulf of Oman and the Indian Ocean;
- CTF 151: Counter Piracy;
- CTF 152: Persian Gulf;
- CTF 153: Red Sea and the Gulf of Aden.



131. D

R.C. REDDY

Context: The World Crafts Council International (WCCI) has picked Srinagar for mapping its craft clusters before its final nomination as the World Craft City (WCC) from India this year.

About World Crafts Council International

- It is a Kuwait-based organisation working on the recognition and preservation of traditional crafts across the globe. Statement 1 is correct.
- It was founded by Ms. Aileen Osborn Vanderbilt Webb, Ms. Margaret M. Patch, and Smt Kamaladevi Chattopadhyay at the 1st World Crafts Council General Assembly in New York on June 12, 1964. Statement 2 is correct.
- Since its inception, the World Crafts Council AISBL has been affiliated with UNESCO under Consultative Status for many years.
- Objective: The main objective of the World Crafts Council AISBL is to strengthen the status of crafts in cultural and economic life.
- **Aim:** The Council aims to promote fellowship among crafts persons by offering them encouragement, help, and advice.
- It fosters and assists cultural exchange through conferences, international visits, research study, lectures, workshops, exhibitions, and other activities.

World Craft City Programme:

- It is a groundbreaking initiative launched in 2014 by the World Crafts Council AISBL (WCC-International) in recognition of the pivotal role local authorities, craftspeople, and communities play in cultural, economic, and social development worldwide. Statement 3 is correct.
- It establishes a dynamic network of craft cities across the globe, aligning with the principles of the creative economy.
- This initiative responds to the increasing acknowledgment of the valuable contributions made by local entities to the multifaceted dimensions of development.
- Under these initiatives Jaipur (Rajasthan), Mammalapuram (Tamil Nadu) and Mysore have been added as craft cities from India. Statement 4 is correct.

132. A

Context:

Recently, the fourth global mass coral bleaching event has been triggered by extraordinary ocean temperatures, according to the US National Oceanic and Atmospheric Administration (NOAA). Statement 2 is incorrect.

Third Mass Bleaching event took place during 2020.

What is Coral Bleaching?

- It 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. Statement 1 is correct.
- 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.

Reasons for Coral Bleaching

- **Change in Ocean Temperature:** Increased Ocean temperature caused by climate change is the leading cause of coral bleaching.
- **Runoff and Pollution:** Storm generated precipitation can rapidly dilute ocean water and runoff can carry pollutants, which can bleach near shore corals.
- **Overexposure to sunlight:** When temperatures are high, high solar irradiance contributes to bleaching in shallow water corals.
- **Extremely low tides:** Exposure to the air during extremely low tides can cause bleaching in shallow corals.

133. B

Context:

The Archaeological Survey of India (ASI), Mumbai Circle celebrated World Heritage Day at Panhala Fort.

<i>Forts</i>	<i>Located in</i>
1. <i>Panhala Fort</i>	<i>Maharashtra</i>
2. <i>Fort Emmanuel</i>	<i>Kerala</i>
3. <i>Uparkot Fort</i>	<i>Gujarat</i>
4. <i>Srirangapatna Fort</i>	<i>Karnataka</i>

About Panhala Fort:

- *It is located in Maharashtra and occupies a prime place in the state's history.*
- Locally, the site was known as the abode of serpents and traditionally associated with the sage Parashar.
- It is strategically placed in proximity to the trade routes connecting the Sahyadri mountains, the Deccan plateau, and the Konkan coast, the fort became the centre of interest for several dynasties.
- The antiquity of the fort goes back to the Shilahara dynasty ruler Bhoja of 11th century CE.
- The fort, as evidenced by the different structures, reflects the transfer of power in the hands of the Yadavas of Devgiri, the Bahamani of Bidar, the Adilshahi of Bijapur, the Marathas and the Mughals.

About Fort Emmanuel:

- *It is a ruined fort located at Fort Kochi Beach in Kochi, Kerala.* It was originally built in 1503 and reinforced in 1538.
- It was a symbol of the strategic alliance between the Maharajah of Kochi and the Monarch of Portugal, after whom it was named.
- It was a massive structure, and the entire township was within its confines. It greatly helped in strengthening the Portuguese occupation of the area.
- Fort Kochi remained in Portuguese possession until 1683, when the Dutch colonial troops captured the territory and destroyed the Portuguese institutions.

Uparkot Fort

- *Uparkot is a fort located in east side of Junagadh, Gujarat, India.*
- A fort and town were established at the foothills of Girnar hill during reign of the Maurya Empire and continued to be used during Gupta period, but it lost its importance when the capital of Saurashtra region was moved from Junagadh to Vallabhi by Maitraka.

Srirangapatna Fort

- *Srirangapatna Fort is a historical fort located in Srirangapatna, the historical capital city in the South Indian state of Karnataka.*
- Built by the Timmanna Nayaka in 1454.
- The fort was fully fortified and the architecture was modified with the help of French architects to meet the growing needs of saving against invaders.
- The river Kaveri surrounds the fort in one of the sides. The fort is protected in the West and Northern directions by river Cauvery.

134. B

Context:

As the Lok Sabha elections are round the corner, the classic symbol of Indian polls is visible everywhere – a left hand with only its index finger extended, marked by a purple-black indelible ink.

Legal Basis

- *Representation of the People Act (RoPA) 1951: The RoPA specifies the use of indelible ink to mark the thumb or any other finger of electors to prevent duplicate voting. Statement 2 is correct.*
- Historical Evolution: Over time, the method and location of applying the indelible ink on voters' fingers have evolved based on electoral practices and technological advancements.

Composition and Durability

- *Silver Nitrate: Indelible ink contains silver nitrate, which remains colourless until exposed to ultraviolet light, making the ink's mark visible. Statement 1 is correct.*
- **This water-based ink also contains a solvent like alcohol to allow its faster drying.**
- **Durability:** The ink's durability is enhanced by its chemical composition, allowing it to remain visible for up to 72 hours despite exposure to water, soap, and other cleansing agents.

Manufacturing and Distribution

- *Mysore Paints & Varnish Ltd.: This Karnataka Government Undertaking is the sole manufacturer of indelible ink in India, producing a substantial quantity for each election cycle. Statement 3 is incorrect.*
- **Research and Development:** The ink's formulation originated from research conducted by the Council of Scientific & Industrial Research (CSIR) in the 1950s, later patented by the National Research Development Corporation (NRDC).

Export and International Use: *Indelible ink manufactured in India is exported to over 25 countries worldwide, including Canada, Ghana, Nigeria, Mongolia,*

Malaysia, Nepal, South Africa, and the Maldives, highlighting its global relevance in electoral processes. Statement 4 is incorrect.

135. A

Context:

Senior IPS officer Nalin Prabhat has been appointed as the Director-General of National Security Guard (NSG), the country's counter-terrorism force, according to a Personnel Ministry order.

National Security Guard (NSG):

- It is a special force in India that has primarily been utilised for counter-terrorism activities.
- The NSG is an elite force providing a second line of defence for the nation.
- The NSG members are also known as Black Cats because of the black drill cotton coveralls and balaclavas, or helmets, they wear.

Establishment:

- It was raised in 1984, following Operation Blue Star and the assassination of Indira Gandhi.
- It was created by the Cabinet Secretariat under the National Security Guard Act of the Indian Parliament in 1986. Statement 1 is correct.
- It was modelled on the pattern of the SAS of the UK and the GSG-9 of Germany. Statement 2 is correct.

The Union Ministry for Home Affairs exercises administrative and operational control over NSG.

- Motto: Sarvatra Sarvottama Suraksa.
- Headquarters: New Delhi.

The NSG's specific goals include:

- Neutralization of terrorist threats.
- Handling hijacking situations in the air and on land.
- Bomb disposal (search, detection, and neutralisation of IEDs).
- PBI (Post Blast Investigation).
- Hostage Rescue.
- VIP Security.

Director General (DG):

- The head of the NSG, designated as Director General (DG), is selected by the Home Ministry. Statement 3 is incorrect.
- All the selected DGs have been officers from the Indian Police Service (IPS). Statement 4 is correct.

It is designed to be employed as a specialised counter-terrorism force “only in exceptional situations,” not to take over “functions of the State Police Forces or other paramilitary forces.”

The teams of NSG work on a basic philosophy of swift and speedy strike and immediate withdrawal from the theatre of action.

The force is task-oriented and has two main elements in the form of the Special Action Group (SAG), comprising Army personnel, and the Special Ranger Group (SRG), comprising personnel drawn from the Central Armed Police Forces and State Police Forces.

136. C

Context:

Recently, Data released by the Ministry of finance showed India’s net direct tax collections in 2023-24 hit ₹19.58 trillion, up 17.7% from 2022-23.

- According to the recent data released by India net direct tax collections in 2023-24 hit ₹19.58 trillion, up 17.7% from 2022-23. Statement 1 is correct.
- The figure exceeded what was initially budgeted on this account by ₹1.35 trillion and the revised figure mentioned in the interim budget by ₹13,000 crore.
- India’s net direct tax collections grew 17.7% in 2023-24 to hit ₹19.58 lakh crore, marginally surpassing the revised estimates for the year, thanks to a surge in personal income taxes whose share of the tax kitty rose to 53.3% from 50.06% in the previous year while corporate taxes’ contribution dipped to 46.5% from 49.6%. Statement 2 is correct.

137. B

Context:

Recently, the PM inaugurated the 2550th Bhagwan Mahaveer Nirvan Mahotsav on the auspicious occasion of Mahaveer Jayanti at Bharat Mandapam in New Delhi.

About Mahaveer Jayanti (aka Mahavir Janma Kalyanak)

- It celebrates the birth of Mahavira, the last Tirthankara and the founder of Jainism.
- Mahavira was born on the 13th day of the bright half of the Hindu month of Chaitra, which usually falls in March or April.

Difference Between Jainism and Buddhism:

Dimension	Buddhism	Jainism

Soul	<u>Does not believe in the soul.</u> No soul theory is propounded (Nairatmyavada).	<u>Believe in the soul, which is present in everything.</u> Statement 1 is correct.
God	Generally silent on questions related to the existence of God.	<u>Does believe in God, not as a creator, but as a perfect being.</u> Statement 4 is incorrect.
Varna System	<u>Condemn it.</u>	<u>Do not condemn it.</u> Statement 2 is incorrect.
Incarnation	<u>Do not believe in incarnations.</u> Statement 3 is correct.	Believe in incarnations.

138. D

Context:

Earth Day is marked across the globe on April 22 to support environmental conservation efforts.

About World Earth Day:

- Earth Day is now globally coordinated by EARTHDAY.ORG, which is a non-profit organisation. It was formerly known as Earth Day Network. Statement I is incorrect.
- It aims to “build the world’s largest environmental movement to drive transformative change for people and the planet”.
- *Earth Day was first observed in 1970 when 20 million took to the streets to protest environmental degradation on the call of US Senator Gaylord Nelson.*
- *The event was triggered by the 1969 Santa Barbara oil spill, as well as other issues such as smog and polluted rivers.*
- It recognizes a collective responsibility, as called for in the 1992 Rio Earth Declaration (Earth Summit), to promote harmony with nature and the Earth to achieve a just balance among the economic, social and environmental needs of present and future generations of humanity.
- The theme for Earth Day 2024 is “Planet vs. Plastics “. Statement II is correct.
- “ This theme emphasises the need for collective action to repair and heal the planet’s ecosystems, combat climate change, and preserve biodiversity

139. A

Context:

Russian peacekeepers have begun withdrawing from Nagorno-Karabakh following Azerbaijan's recapture of the disputed territory from Armenian separatists last year.

Armenia is bordered by Turkey, Iran, Azerbaijan, Georgia



140. B

Context:

The Indian Navy recently conducted Exercise Poorvi Lehar on the East Coast.

About Exercise Poorvi Lehar (XPOL):

- It is a maritime exercise conducted by the Indian Navy along the East Coast, under the operational direction of the Flag Officer Commanding-in-Chief, Eastern Naval Command. Statement 1 is incorrect.
- The exercise aimed at validation of procedures towards assessment of Indian Navy's preparedness to meet Maritime Security challenges in the region.
- The exercise witnessed participation of Ships, Submarines, Aircrafts and Special Forces.
- XPOL was conducted in multiple phases including combat training in a realistic scenario during the Tactical Phase and successful conduct of various firings during the Weapon Phase towards reaffirming Indian Navy's capability to deliver ordnance on target.
- With operation of aircraft from diverse locations, a near continuous Maritime Domain Awareness was maintained throughout the Area of operations.
- In addition to the participation of assets from Eastern Naval Command, the exercise also witnessed participation of assets from IAF, Andaman & Nicobar Command and Coast Guard indicating a very high degree of interoperability amongst the Services. Statement 2 is correct.
- The Exercise offered valuable lessons to participating forces operating under realistic conditions, thereby enhancing their readiness to respond effectively to maritime challenges in the region.

141. B

About Karman Line

- Located at 100 km (62 miles) above sea level, it is an imaginary line that demarcates the earth's atmosphere from space. Statement 1 is correct.
- It was established in the 1960s by a record-keeping body called the Fédération Aéronautique Internationale (FAI).
- It was named after aerospace pioneer Theodore von Kármán.
- Though not all scientists and spacefarers accept it (for example, the Federal Aviation Administration, NASA, and the U.S. military place the line between outer space and the atmosphere at 80 km (50 miles) above the Earth's surface), a majority of countries and space organisations recognise this boundary between earth sky and space. Statement 2 is incorrect.
- It is based on physical reality in the sense that it roughly marks the altitude where traditional aircraft can no longer effectively fly. Statement 3 is correct.
- Anything traveling above the Kármán line needs a propulsion system that doesn't rely on lift generated by Earth's atmosphere – the air is simply too thin that high up.
- In other words, the Kármán line is where the physical laws governing a craft's ability to fly shift. Anyone who crosses this line qualifies as an astronaut.

Why do we need a Karman line?

- **The 1967 Outer Space Treaty says that space should be accessible to all countries and can be freely and scientifically investigated.**
- Defining a legal boundary of what and where space can help avoid disputes and keep track of space activities and human space travel.

142. C

Context:

Recently the wife of Delhi Chief Minister was appointed as a 'star campaigner' by the Aam Aadmi Party (AAP) for its campaign in Gujarat.

- A star campaigner is a celebrity vote seeker in an election for a party. This person can be anyone, a politician or even a film star.
- A 'recognised' National or State party declared as such by the ECI can nominate a maximum of 40 star campaigners.
- An unrecognised political party can nominate a maximum of 20 star campaigners. Statement 1 is correct.
- **Expenditure incurred on electioneering by the star campaigner is not added to a candidate's poll expenditure giving him/her more scope for expenditure.**
- However, for an individual candidate to get relief from campaign expenditure, the star campaigner has to limit oneself to general campaigning for the party.

- The Model Code of Conduct guidelines say when a prime minister or a former prime minister is a star campaigner, the expenditure incurred on security including on the bullet-proof vehicles will be borne by the government and will not be added to the election expenses of the party or the individual candidate. Statement 2 is correct.

143. B

Context:

The Centre for Food Safety in Hong Kong recalled Everest Fish Curry Masala from India alleging the presence of a pesticide called ethylene oxide at levels exceeding permissible limit.

About Ethylene Oxide

- It is a flammable gas with a somewhat sweet odour. It dissolves easily in water. Statement 1 is incorrect.
- It appears as a clear colourless gas with an ethereal odour.
- Ethylene oxide is a man-made chemical that is used primarily to make ethylene glycol.
- Applications: A small amount (less than 1%) is used to control insects in some stored agricultural products and a very small amount is used in hospitals to sterilize medical equipment and supplies. Statements 2 and 3 are correct.
- Ethylene oxide is used as an intermediate in the production of other chemicals used to manufacture products, such as fabrics for clothes, upholstery, carpet, and pillows.
- It is used to produce ethylene glycols for engine antifreeze that keeps our automobiles performing.
- **Health impacts:** It mainly impacts human central nervous system depression and irritation of the eyes and mucous membranes. Chronic exposure to ethylene oxide in humans can cause irritation of the eyes, skin, nose, throat, and lungs, and damage to the brain and nervous system.

144. D

Context:

Recently, the European Union has announced that Indian nationals can now be issued long-term multi-entry Schengen visas valid for two years after having obtained and lawfully used two visas within the previous three years.

About Schengen Visa:

- It is an official document mandatory for some non-Europeans to travel to all the 27 countries which are part of the Schengen area.

- Once granted, this visa allows the traveller to cross the borders of the other member-states without going through identity checks at the border.
- The Schengen visas allow visitors to travel freely in the Schengen area for short stays of a maximum of 90 days in any 180-day period.
- **The visas do not give the right to work.**

What is the Schengen Area?

- It is a group of 27 European nations that have abolished their internal borders, for the free and unrestricted movement of people.
- Members of this area include 23 of the 27 EU member states (except for Bulgaria, Cyprus, Ireland and Romania) and all members of the European Free Trade Association (Iceland, Liechtenstein, Norway and Switzerland).
- Switzerland, Iceland, and Norway are not in the EU but are inside of the Schengen Area.

Being part of this area means that countries:

- Do not carry out checks at their internal borders, except in cases of specific threats;
- Carry out harmonized controls at their external borders, based on clearly defined criteria.



145. D

Context:

R.C. REDDY

The Chipko movement, which began in Uttarakhand in early 1973, marks its 50th anniversary.

- The Chipko Movement was a renowned environmental movement that originated in the Himalayan region of India, specifically in the state of Uttarakhand (formerly part of Uttar Pradesh). Statement I is incorrect.
- The movement gained prominence during the 1970s and 1980s and was centred around the protection of forests and the sustainable use of natural resources.
- Sunder Lal Bahuguna is often considered the main leader and spokesperson of the Chipko Movement.
- Chandi Prasad Bhatt was another key figure in the Chipko Movement. He was instrumental in organising local communities, particularly women, to participate in the movement. Statement II is correct.

Causes for Movement

- There was reckless deforestation which denuded much of the forest cover, resulting in the devastating Alaknanda River floods of July 1970.
- The incidences of landslides and land subsidence due to rapid increase in civil engineering projects.

Impact and Spread of the Movement:

- It quickly spread throughout the Indian Himalayas, inspiring a nationwide environmental concern and influencing policy formulation to balance economic development with environmental protection.

Role of Women

- Women were not only the backbone of the Chipko Movement but also its mainstay, as they were the ones most affected by the rampant deforestation.
- The movement is seen as an ecofeminist movement, where women stood up to protect their environment with a message to loggers: 'Our bodies before our trees'.

Major environmental movements:

Name	Year	Place	Leaders	Details
Bishnoi Movement	1700	Khejarli, Marwar region, in Rajasthan	Amrita Devi	
Chipko Movement	1973	Uttarakhand	Sunderlal Bahuguna Chandi Prasad Bhatt	Used to hug trees to stop their felling The main objective was to protect the trees on the Himalayan slopes from the axes of contractors of the forest.
Silent River Valley Project	1978	Kantipuzha river in Kerala	Kerala Sastra Sahitya Parishad Sughathakumari	To protect the Silent Valley, the moist evergreen forest from being destroyed by a hydroelectric project. In November 1983 the Silent Valley Hydroelectric Project was called off. In 1985, Prime Minister Rajiv Gandhi formally inaugurated the Silent Valley National Park.
Jangal Bachao Aandolan	1982	Singbhum district of Bihar	Tribals of Singbhum	Against governments decision to replace the natural sal forest with Teak.
Appiko Movement	1983	Karnataka	Lakshmi Narasimha Yuvak Mandali Pandering Hegde.	To stop felling of natural trees. Against commercial forestry of teak and eucalyptus trees
Tehri dam	1980s to 1990s	Bhagirathi and Bhilangama rivers at Tehri in Uttaranchal	Tehri Badh Virodhi Sangarshan Committee Sunderlal Bahuguna and Veera Dutt Saklani	
Narmada Bachao Aandolan	1980s to present	Gujarat Madhya Pradesh and Maharashtra Total 33 dams Two main are Sardar Sarovar Dam and the Indira Sagar Project	Medha Patkar Arundhati Roy Sundarlal Bahuguna Baba Amte Arundhati Roy	

Recent movements:

Name	Year	Place	Leaders	Details
Climate Action Strike	2019	Students in metro cities of Delhi, Mumbai, Bengaluru, Kolkata and Chennai	Greta Thunberg, Bittu KR	
Right to Breathe Protest	Nov 5, 2019	New Delhi India Gate.	Leonardo Di Caprio posted about this movement	New Delhi has been the world's most polluted city for the past 2 years. Its Air Quality Index (AQI) plummeted to 494
Save Dehing-Patkai	April 2020	Tinsukia district of Assam	Rohit Chaudhary Adil Hussain, Randeep Hooda, and Joi Barua. Jadav Payeng, known as the Forest Man of India, All Assam Students' Union (AASU) and All Assam Matak Youth Students' Union	This movement began as a protest against the April 2020 decision by the National Board of Wildlife (NBWL) to allow North-Eastern Coal Fields (NEC) to do opencast mining in 98.59 hectares of Dehing-Patkai Wildlife Sanctuary. Known as the 'Amazon of the East.'
Save Aarey	2019-20	Aarey National Park in Mumbai		Against the felling of the Aarey Colony for the Mumbai Metro Rail Corporation Limited's (MMRLC) metro 3 car-shed.
Save the Sundarbans	May 2020	The Sundarbans are the largest mangrove forest in the world. They are located in the delta region of Ganga and Brahmaputra rivers	A campaign emerged online to #SavetheSundarbans.	The recent cyclone Amphan in May 2020, the worst cyclone since 1737, left a trail of misery in the Sundarbans.

146. D

Context:

The Supreme Court in **MK Ranjitsinh And Ors. v. Union of India** has ruled that people have a “right to be free from the adverse effects of climate change”, which should be recognized by the combined reading of Article 14 and Article 21.

Brief overview of the case:

- **Habitat and Species Status:** Desert National Park in Rajasthan shelters the critically endangered Great Indian Bustard and Lesser Florican.
- **Threats to Species:** Overhead cables, particularly in solar parks, pose a significant threat to the survival of these birds.
- **Mortality Statistics:** The Power Line Mitigation, 2018 report highlighted that around 1 lakh birds die annually due to collisions with power lines, necessitating urgent action to prevent the extinction of the Great Indian Bustard.
- **Ministry of Power's Statement:** The Ministry of Power acknowledged the vulnerability of Great Indian Bustards to power lines due to their lack of frontal vision, emphasizing the risk of collision and electrocution.
- **Case filed:** A writ petition filed in 2019 (**MK Ranjitsinh And Ors. v. Union of India**) sought conservation directives amid the declining population of Great Indian Bustards.
- **Court Orders:** In April 2021, the Supreme Court ordered all power lines be buried in Bustard habitat.
- However, the court later agreed to review its order due to practical challenges highlighted by the centre and considering the importance of renewable energy and climate commitments.

Recent Developments

- **Revision by Supreme Court:** In 2024, while the Supreme Court underscored the importance of protection of Bustard, it modified its order with respect to conversion of overhead transmission line to underground transmission lines. Court has further said that other factors such as low fecundity, fragmentation, habitat loss, predators, and loss of prey must be addressed.

Article 14 and climate change: Supreme Court held that climate change affects the right to equality, the Court reasoned that “If climate change and environmental degradation lead to acute food and water shortages in a particular area, poorer communities will suffer more than richer ones. The right to equality would be impacted in each of these instances”.

Article 21 and right to clean environment: Article 21 of the constitution states that “no person shall be deprived of his life or personal liberty except according to procedure established by law”. Article 21 has received liberal interpretation from time to time after the decision of the Supreme Court in Maneka Gandhi vs. Union of India, Article 21 guarantees fundamental right to life. Right to an environment, free of danger of disease and infection is inherent in it.



147. D

Context:

Recently India and Mauritius sign protocol to amend tax treaty.

Key terms in India-Mauritius Treaty Amendments:

Base Erosion and Profit Shifting:

- It refers to tax planning strategies used by multinational enterprises that exploit gaps and mismatches in tax rules to avoid paying tax.
- Organisation for Economic Co-operation and Development (OECD) actively working to combat BEPS.
- OECD/G20 Inclusive Framework on BEPS is implementing 15 actions to tackle tax avoidance, improve the coherence of international tax rules, ensure a more transparent tax environment, and address the tax challenges arising from the digitalisation of the economy.

Treaty Shopping:

- **It typically involves the attempt by a person to indirectly access the benefits of a tax treaty between two jurisdictions without being a resident of one of those jurisdictions.**
- **It is a means of tax avoidance that involves the use of tax driven structures to take advantages of favourable double taxation agreements.**

- It undermines tax sovereignty by claiming treaty benefits in situations where these benefits were not intended to be granted, thereby depriving jurisdictions of tax revenues.

Double Taxation Avoidance Agreement (DTAA):

- It is essentially a bilateral agreement entered into between two countries with the basic objective to promote and foster economic trade and investment between two countries by avoiding double taxation.
- Double taxation relief is one of the goals of DTAA, which aims to promote the nation as an appealing investment destination.
- Anti-abusive clauses are included in DTAA's to make sure that only legitimate citizens of the two countries benefit from them.

Principal Purpose Test (PPT):

- It was introduced as a part of BEPS project, which aims to prevent treaty abuse and treaty shopping by ensuring that tax treaty benefits are granted only in appropriate circumstances.
- **It is designed to deny tax treaty benefits if it can be determined that obtaining these benefits was one of the principal purposes of any arrangement or transaction.**
- This test is intended to counteract aggressive tax planning strategies that exploit the provisions of tax treaties.

General Anti Avoidance Rules (GAAR):

- It is an anti-tax avoidance law under Income Tax Act, 1961 framed by the Department of Revenue under the Ministry of Finance.
- The regulation allows tax officials to deny tax benefits, if a deal is found without any commercial purpose other than tax avoidance.
- It allows tax officials to target participatory notes and deny double taxation benefits if it were found to avoid taxes.

OECD's multilateral instrument:

- It is a multilateral convention to implement tax treaty related measures to prevent BEPS.
- It offers concrete solutions for governments to close loopholes in international tax treaties by transposing results from the BEPS Project into bilateral tax treaties worldwide.
- It allows governments to implement agreed minimum standards to counter treaty abuse and to improve dispute resolution mechanisms while providing flexibility to accommodate specific tax treaty policies.

148. D

Context:

Nobel prize-winning British physicist Peter Higgs, who proposed the existence of a mass-giving particle, which became known as the Higgs boson or the "God particle", has died aged 94.

About Higgs Boson

- The Higgs boson is the fundamental force-carrying particle of the Higgs field, which is responsible for granting fundamental particles their mass.
- This field was first proposed in the mid-sixties by Peter Higgs, for whom the particle is named.
- The particle was finally discovered on July 4, 2012, by researchers at the Large Hadron Collider (LHC), the most powerful particle accelerator in the world, located at the European particle physics laboratory CERN, Switzerland.
- The LHC confirmed the existence of the Higgs field and the mechanism that gives rise to mass and thus completed the standard model of particle physics.
- It is one of the 17 elementary particles that make up the Standard Model of particle physics, which is scientists' best theory about the behaviours of the universe's most basic building blocks.
- Higgs boson plays such a fundamental role in subatomic physics that it is sometimes referred to as the "God particle."

Features:

- The Higgs boson has a mass of 125 billion electron volts, **meaning it is 130 times more massive than a proton.**
- It is also **chargeless with zero spin**, a quantum mechanical equivalent to angular momentum.
- It is the **only elementary particle with no spin.**

What is a Boson?

- A boson is a "force carrier" particle that comes into play when particles interact with each other, with a boson exchanged during this interaction. For example, when two electrons interact, they exchange a photon, the force-carrying particle of electromagnetic fields.
- Because quantum field theory describes the microscopic world and the quantum fields that fill the universe with wave mechanics, a boson can also be described as a wave in a field.
- So, a photon is a particle and a wave that arises from an excited electromagnetic field, and the Higgs boson is the particle or "quantized manifestation" that arises from the Higgs field when excited.

That field generates mass via its interaction with other particles, and the mechanism carried by the Higgs boson called the Brout-Englert-Higgs mechanism.

Particles that interact – or "couple" – with the Higgs field more strongly are granted greater masses.

Even the Higgs boson itself gets its mass from its own interaction with the Higgs field.

One particle not granted mass by the Higgs field is the basic particle of light, the photon. This is because spontaneous symmetry breaking doesn't happen for photons as it does for its fellow force-carrying particles.

149. B

Context:

The Food Safety Standards Authority of India (FSSAI) have recently increased the Maximum Residue Limit (MRL) of pesticides in herbs and spices from 0.01 milligrams per kilogramme (mg / kg) to 0.1 mg / kg.

- The Food and Agriculture Organization (FAO) defines Maximum residue limit (MRL) as the highest legally tolerable level of pesticide in food or animal feed. Statement 1 is correct.
- The MRLs of pesticides for food and commodities, including spices and culinary herbs, are specified under the Food Safety and Standards (Contaminants, Toxins and Residues) Regulation, 2011. Statement 2 is correct.
- Central Insecticides Board and Registration Committee (CIBRC) - These MRLs are fixed based on the field trial data received through the CIBRC, Union Ministry of Agriculture and Family Welfare. Statement 3 is incorrect.
- CIBRC does not conduct field trials of pesticides. The manufacturing companies generally provide the data, which is reviewed by CIBRC to approve pesticides.
- The CIBRC never sets any limits on residues.
- There is no declared procedure of using this data to fix MRLs.
- If the pesticide is not registered with CIBRC, then the MRL of 0.1 mg / kg will be applicable for the spices and herbs.

Centre's Monitoring of Pesticide Residues at National Level (MPRNL) scheme - For certain pesticides without field trial data available, the MRL was arrived at based on data generated by the Centre's Monitoring of Pesticide Residues at National Level (MPRNL) scheme.

- But MPRNL does not have data on all pesticides and neither does it include spices in monitoring.
- MPRNL scheme was started in 2005-06 by the Department of Agriculture, Cooperation & Farmers Welfare (DAC&FW), Ministry of Agriculture & Farmers Welfare.

- The scheme regularly monitors pesticide residues in food commodities and environmental samples, such as soil.
- **The All-India Network Project on Pesticide Residues (AINP-PR), ICAR-Indian Agricultural Research Institute (ICAR) implements the scheme.**
- The Information has been gathered through the provisions of the Right to Information Act, 2005, from the AINP-PR for the last five years.
- It indicates that the percentage of samples detected with the presence of residues has increased from 22.6 % in 2018-19 to 35.9 % in 2022-23.

Codex Alimentarius - MRLs specified by Codex Alimentarius, a collection of internationally adopted food standards, are to be applied.

- **It was established by FAO and the World Health Organization in 1963.**
- **In the absence of Codex, regulating authorities in the country of export will specify the MRLs.**
- **For food commodities besides spices and culinary herbs, MRL is applicable under Codex.**

150. B

Context:

The BJP's candidate from the Surat Lok Sabha constituency in Gujarat has been declared elected unopposed.

This follows the rejection of the nomination paper of the candidate set up by the Congress party and the withdrawal of nominations by other candidates.

What is the law for nomination?

- Section 33 of the Representation of the People Act, 1951 (RP Act) contains the requirements for a valid nomination. Statement 1 is correct.
- As per the RP Act, an elector above 25 years of age can contest Lok Sabha election from any constituency in India.
- The proposer(s) of the candidate should however be elector(s) from that respective constituency where the nomination is being filed.
- In case of a recognised party (national or State), the candidate needs to have one proposer.
- Candidates set up by unrecognised parties and independents need to be subscribed by ten proposers. Statement 2 is incorrect.
- A candidate can file up to four nomination papers with different sets of proposers. Statement 3 is incorrect.
 - This is to enable the acceptance of nomination of a candidate even if one set of nomination papers is in order.
- Section 36 of the RP Act sets out the law with respect to the scrutiny of nomination papers by the Returning Officer (RO). Statement 4 is correct.

- It provides that the RO shall not reject any nomination for a defect that is not of a substantial character.
- However, it specifies that the signature of the candidate or proposer found not genuine is grounds for rejection.
- The election rules allow for a substitute candidate to be fielded by a political party.
 - The nomination of this substitute candidate would be accepted if the nomination of the original candidate is rejected
- **Legal recourse:** Article 329(b) of the Constitution read with RP Act provides that no election shall be called into question except by an election petition before the concerned High Court.
 - One of the grounds on which such an election petition can be filed is improper rejection of nomination papers.
 - Hence, the legal recourse available is to file an election petition in the Gujarat High Court.
 - The RP Act provides that High Courts shall endeavour to conclude such trials within six months, which has mostly not been followed in the past.
 - Speedy disposal of election petitions would be a step in the right direction.



R.C.REDDY
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