

1. C

- Underneath the calm turquoise waters off eastern Thailand, a rapidly spreading disease is killing corals over vast stretches of the sea floor, and scientists fear it may be getting worse because of climate change.
- Yellow-band disease—named for the color it turns corals before destroying them—was first spotted decades ago and has caused widespread damage to reefs in the Caribbean. There is no known cure.
- But it was detected for the first time off Thailand's eastern coast just last year, near the popular tourist city of Pattaya, and has already spread over roughly 600 acres (240 hectares) of the sea.
- Scientists believe overfishing, pollution and rising water temperatures because of climate change may be making the reefs more vulnerable to yellow-band disease. The disease's impact cannot be reversed, unlike the effects of coral bleaching.
- Hence option (c) is the correct answer.

2. A

- The T+1 settlement cycle means that trade-related settlements must be done within a day, or 24 hours, of the completion of a transaction. For example, under T+1, if a customer bought shares on Wednesday, they would be credited to the customer's demat account on Thursday. As many as 256 large-cap and top mid-cap stocks, including Nifty and Sensex stocks, will come under the T+1 settlement from Friday.
- After China, India will become the second country in the world to start the 'trade-plus-one' (T+1) settlement cycle in top-listed securities.
- Benefits of T+1 settlement cycle:
 - Ø The most important benefit of this shortening of the settlement cycle is that it reduces the risk of non-payment or non-delivery of shares by the broker by one day. A shortened settlement cycle also reduces the number of outstanding unsettled trades at any point in time, and thus decreases the unsettled exposure to Clearing Corporation by 50 percent. The narrower the settlement cycle, the narrower the time window for a counterparty insolvency/ bankruptcy to impact the settlement of a trade. Hence option 2 is correct.
 - Ø This will provide liquidity to the investors as they get their funds for the shares sold/ credited to their account a day earlier. The investors will have the benefit of profitably deploying their cash for a day more, either to buy shares or otherwise. The real advantage of such an early settlement can be experienced in a volatile market, as it can help in the efficient use of capital and resultant benefits to the investors. Hence option 1 is correct.
 - Ø With the additional liquidity provided by the improved system, there is every possibility of investors undertaking more transactions in the stock market, which will benefit the brokers as well, as they too will earn more through higher turnover.
 - Ø With increased turnover possible through quicker settlements, all the participants in the market— stock exchanges, depositories, depository participants, and even the government—will stand to benefit from increased fees and taxes, etc.
- Foreign investors were against SEBI's T+1 proposal and had written to the regulator and the Finance Ministry about the operational issues faced by them, as they operate from different geographies. Among the issues raised by them were time zone differences, information flow processes, and foreign exchange problems. Foreign investors said they would also find it difficult to hedge their net India exposure in dollar terms at the end of the day under the T+1 system. Hence option 3 is not correct.

3. B

- India's current account balance recorded a deficit of \$36.4 billion (or a nine-year high of 4.4% of GDP) in the quarter ended September, rising from \$18.2 billion (2.2% of GDP) in the previous quarter. While in absolute terms, the current account deficit was at its highest in more than a decade, as a percentage of GDP, it was at the highest since the June quarter of 2013.
- Underlying the current account deficit in Q2 was the widening of the merchandise trade deficit to \$83.5 billion from \$63.0 billion in the April-June quarter and an increase in net outgo under investment income. During the first half-year ended September, India recorded a current account deficit of 3.3% of GDP, again on the back of a sharp increase in the merchandise trade deficit, compared with 0.2% a year earlier.
- Services exports reported a growth of 30.2 per cent on a year-on-year (y-o-y) basis on the back of rising exports of software, business and travel services.
- Private transfer receipts in the September quarter, mainly representing remittances by Indians employed overseas, stood at \$27.4 billion, an increase of 29.7% from the same period last year.
- In the financial account, net foreign direct investment decreased to US\$ 6.4 billion from US\$ 8.7 billion a year ago. Net foreign portfolio investment recorded inflows of US\$ 6.5 billion, up from US\$ 3.9 billion during Q2:2021-22.
- Net external commercial borrowings to India recorded an outflow of US\$ 0.4 billion in Q2:2022-23 as against an inflow of US\$ 4.3 billion a year ago.
- There was a depletion of foreign exchange reserves, on a balance of payments basis, to the tune of \$30.4 billion in Q2, compared to an accretion of \$31.2 billion a year ago.
- Hence option (b) is the correct answer.

4. B

- The Global Environment Facility (GEF) is a financial mechanism established to assist developing countries in addressing the global environmental issues of biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants.
- It was established in 1991 and is administered by the World Bank in 1992, at the Rio Earth Summit, the GEF was

restructured and moved out of the World Bank system to become a permanent, separate institution. Since 1994, however, the World Bank has served as the Trustee of the GEF Trust Fund and provided administrative services. The GEF provides grants and low-interest loans to developing countries for projects and programs that address these global environmental issues. Hence statement 1 is not correct and statement 2 is correct.

- The GEF also serves as a funding mechanism for the implementation of several international environmental conventions and agreements. These are:
 - Ø Convention on Biological Diversity (CBD)
 - Ø United Nations Framework Convention on Climate Change (UNFCCC). Hence statement 3 is incorrect.
 - Ø United Nations Convention to Combat Desertification (UNCCD)
 - Ø Stockholm Convention on Persistent Organic Pollutants
 - Ø Minamata Convention on Mercury
 - Ø The GEF also supports implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer (MP)
5. A
- The national green hydrogen mission is to provide a clean, renewable, and sustainable source of energy that can be used in a variety of applications, including transportation, industrial processes, and power generation. Green hydrogen is hydrogen produced through the electrolysis of water using renewable energy sources such as solar or wind power, rather than through fossil fuels.
 - As a part of green hydrogen mission, Green Hydrogen Hubs will be identified and developed in regions capable of supporting large-scale hydrogen production and/or utilisation. Under the Strategic Interventions for Green Hydrogen Transition Programme (SIGHT), the Mission will provide two distinct financial incentive mechanisms aimed at domestic manufacturing of electrolyzers and green hydrogen production. Hence option (a) is the correct answer.
 - Monitoring System for Tigers' - Intensive Protection and Ecological Status (MSTriPES) is a software monitoring system launched by the Indian Government in 2010 in some tiger reserves to reduce vulnerability of Tigers. The system would enable field managers to assist intensity and spatial coverage of patrols in a geographic information system (GIS) domain.
 - The Department of Heavy Industry is administering the scheme "Faster Adoption and Manufacturing of Electric and Hybrid Vehicles in India", popularly known as FAME India scheme. FAME India is a part of the National Electric Mobility Mission Plan. Main thrust of FAME is to encourage electric vehicles by providing subsidies.
 - To compensate the loss of forest area and to maintain the sustainability, the Government of India came up with a well-defined Act, known as CAMPA (Compensatory Afforestation Fund Management and Planning Authority) and not the SIGHT initiative.
6. B
- Recently Global Carbon Project Report 2022 was released by Global Carbon Project. Global Carbon Project was established in 2001. It is a shared partnership between International Geosphere-Biosphere Programme, International Human Dimensions Programme on Global Environmental Change and World Climate Research Programme and Diversitas. Hence statement 1 is not correct.
 - Ø This partnership constituted the Earth Systems Science Partnership (ESSP) which subsequently evolved into Future Earth.
 - The Global Carbon Project is a Global Research Project of Future Earth and a research partner of the World Climate Research Programme.
 - Ø It was formed to work with the international science community to establish a common and mutually agreed knowledge base to support policy debate and action to slow down and ultimately stop the increase of greenhouse gases in the atmosphere.
 - The overwhelming realization that anthropogenic climate change is a reality has focused the attention of the scientific community, policymakers and the general public on the rising atmospheric concentrations of the main greenhouse gases, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O).
 - Ø The GCP has approached this challenge by focusing comprehensively on the global biogeochemical cycles which govern these three greenhouse gases, including their natural and human drivers, and opportunities for low carbon pathways. Hence statement 2 is correct.
 - IGBP was launched in 1987 to coordinate international research on global-scale and regional-scale interactions between Earth's biological, chemical and physical processes and their interactions with human systems. IGBP views the Earth system as the Earth's natural physical, chemical and biological cycles and processes and the social and economic dimensions.
 - The International Nitrogen Initiative (INI) is an international program, set up in 2003 under sponsorship of the Scientific Committee on Problems of the Environment (SCOPE) and from the International Geosphere-Biosphere Program (IGBP).
 - Climate Watch is an online platform designed to empower policymakers, researchers, media and other stakeholders with the open climate data, visualizations and resources they need to gather insights on national and global progress on climate change. Climate Watch is implemented by World Resources Institute.
7. A
- The Pradhan Mantri Innovative Learning Programme - DHRUV has been started by the Ministry of Education, Government of India to identify and encourage talented children to enrich their skills and knowledge.
 - In centres of excellence across the country, gifted children will be mentored and nurtured by renowned experts in different areas to reach their full potential.
 - SALIENT FEATURES OF DHRUV
 - Ø The program is named after a pole star called DHRUV TARA.
 - Ø The program's main objective is to allow students to realize their complete potential and contribute to society.
 - Ø The program aims to cover two areas namely Science and Arts. Hence, statement 1 is not correct.
 - Ø The program is to be launched by Indian Space Research Organisation (ISRO). Hence, statement 2 is correct.

- Ø Around 60 students are selected broadly from Class 9 to Class 12 all over the country.
8. B
- Recent context: A Japanese space startup launched a spacecraft to the moon on December 11, 2022, a first for the nation and for a private company.
 - Tokyo-based ispace Inc.'s Hakuto-R mission took off from Cape Canaveral, Florida, on a SpaceX Falcon 9 rocket with its own private lander.
 - The M1 lander will deploy two robotic rovers, a two-wheeled, baseball-sized device from Japan's JAXA space agency and the four-wheeled Rashid rover, a first for the United Arab Emirates.
 - The Rashid rover is part of the United Arab Emirates' ambitious space program.
 - It will also be carrying an experimental solid-state battery made by NGK Spark Plug Co.
 - The company is designed its craft to use minimal fuel to save money and leave more room for cargo. So it's taking a slow, low-energy path to the moon, flying 1 million miles (1.6 million kilometers) from Earth before looping back and intersecting with the moon by the end of April 2023.
 - Hence option (b) is the correct answer.
9. B
- Recently Energy Conservation (Amendment) Act, 2022 came into force.
 - It amends Energy Conservation Act, 2001 which provides a framework for regulating energy consumption and promoting energy efficiency and energy conservation.
 - Ø While 2001 act deals with saving energy, 2022 amendment deals with saving the environment and tackling climate change, thus broadening scope and objective of principal Act.
 - Key Features
 - Ø Carbon credit trading: It empowers central government to specify a carbon credit trading scheme. Hence statement 1 is not correct.
 - § Carbon credit implies a tradable permit to produce a specified amount of carbon dioxide or other greenhouse emissions.
 - Ø Obligation to use non-fossil sources of energy: The 2001 Act empowered the central government to specify energy consumption standards.
 - § The amendment adds that government may require designated consumers to meet a minimum share of energy consumption from non-fossil sources like green hydrogen, green ammonia, etc. Hence statement 2 is correct.
 - § Failure to meet obligation will be punishable with a penalty of up to Rs 10 lakh.
 - Ø Energy Conservation code for buildings: The 2001 Act empowered central government to specify Energy Conservation Code for buildings. The amendment amends this to provide an 'Energy Conservation and Sustainable Building Code'.
 - § This new code will provide norms for energy efficiency and conservation, use of renewable energy, and other requirements for green buildings.
 - § Under 2022 amendment, new Code will also apply to the office and residential buildings meeting above criteria. It also empowers state governments to lower the load thresholds.
 - Ø Standards for vehicles and vessels: Under 2001 Act, energy consumption standards may be specified for equipment and appliances which consume, generate, transmit, or supply energy.
 - § The amendment expands the scope to include vehicles (as defined under the Motor Vehicles Act, 1988), and vessels (includes ships and boats)
 - Ø Regulatory powers of SERCs: The 2001 Act empowers State Electricity Regulatory Commissions (SERCs) to adjudge penalties under the Act.
 - § The 2022 amendment adds that SERCs may also make regulations for discharging their functions.
 - Ø State Energy Conservation Fund: The amendment requires State Governments to constitute energy conservation funds for promotion of energy efficiency and conservation measures. This fund shall receive contributions by both Union and State govt. Hence statement 3 is correct.
 - Ø Composition of governing council of BEE: The 2022 amendment increases and diversifies number of members and secretaries in governing council of BEE.
10. B
- Indian snow leopard experts Charudutt Mishra and Koustubh Sharma, along with Chyngyz Kochorov of Kyrgyzstan, received the Madrid-based BBVA Foundation's Worldwide Biodiversity Conservation Award on behalf of a 12-nation intergovernmental alliance Global Snow Leopard Ecosystem Protection Program (GSLEP) that they helped create and manage.
 - The Global Snow Leopard and Ecosystem Protection Program (GSLEP) seeks to address high-mountain development issues using the conservation of the charismatic and endangered snow leopard as a flagship.
 - The 12 snow leopard range countries established the Global Snow Leopard and Ecosystem Protection Program (GSLEP) to help achieve the goals of the Bishkek Declaration. The program also brings together multilateral agencies, NGOs, funding agencies and conservationists as partners on a single platform. Hence statement 1 is correct.
 - Ø Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan and Uzbekistan.
 - Ø Since the inception of the GSLEP program, several projects have been developed and are being implemented within and across snow leopard range countries to support activities that were highlighted as priorities in the Bishkek Declaration.
 - GEF has a long history of supporting conservation of the snow leopard (*Panthera uncia*) and its habitat, having approved 24 total projects and invested nearly USD \$100 million toward UNDP-implemented projects in all 12 range countries since 1991.
 - Ø A series of projects emerging since the Global Forum in 2013 were funded by GEF, representing an investment of about

\$45 million to support snow leopard range countries in meeting their national targets toward achieving GSLEP objectives. Hence statement 2 is correct.

- The Snow Leopard Trust is the largest and oldest organization working solely to protect the endangered snow leopard (*Panthera uncia*) and its habitat in 12 countries of Central Asia. The trust is a non-profit organization with its headquarters in Seattle, Washington.
- Ø In 1981 Helen Freeman founded the Snow Leopard Trust. Though it works closely with GSLEP it is not an initiative of GSLEP.
- Ø Hence statement 3 is not correct.

11. D

- Recent context: The 2022 Nobel Prize for Physics is an award for experiments establishing the foundational concepts of quantum mechanics.
- Classical physics is the study of the dynamics of a system that uses Newton's laws of motion at their most basic level.
- However, many of the concepts that were useful in visualizing the movement of particles in the classical realm break down when applied to particles obeying quantum mechanics, such as light quanta.
- Quantum physics describes reality at the subatomic scale, where the objects are particles like electrons. In this realm, one cannot pinpoint the location of an electron. One can only know that it will be present in a given volume of space, with a probability attached to each point in the volume. Hence statement 1 is correct.
- At the heart of quantum physics is the concept of quantum entanglement.
- Ø Quantum entanglement is a phenomenon by which a pair of particles, say photons, is allowed to exist in a shared state where they have complementary properties, such that by measuring the properties of one particle, you automatically know the properties of the other particle.
- This is true however far apart the two particles are, provided the entanglement is not broken. Hence statement 2 is correct.
- Electronic devices use transistors that apply quantum mechanical ideas. Lasers have been built that apply the quantum properties of light.
- Quantum technologies of the future include quantum cryptography, quantum computation and precise timekeeping as is done in atomic clocks. Hence statement 3 is correct.

12. A

- Recent context: CERVAVAC, India's first indigenously developed vaccine to prevent cervical cancer, has been developed by the Pune-based Serum Institute of India (SII).
- Cervical cancer, the second most common cancer in females after breast cancer, is a major threat faced by women in India.
- Reports suggest that over 15 percent of the total cervical cancer deaths in the world occur in India, with one woman succumbing to cervical cancer every eight minutes.
- Cervical cancer is a type of cancer that starts in the cells of the cervix. The cervix is the lower, narrow end of the uterus (womb). Cervical cancer usually develops slowly over time.
- Cervical cancer is associated with human papillomavirus (HPV) infection, as the HPV virus is found in more than 90 percent of cervical cancers.
- The HPV virus is considered to be the most important risk factor for cervical cancer.
- Certain types of the HPV virus can transform normal cervical cells into abnormal ones, and over a long period, some of these abnormal cells may then develop into cervical cancer. Hence statement 1 is correct.
- The indigenous HPV vaccine, called CERVAVAC, developed by SII is a quadrivalent human papillomavirus (qHPV) vaccine for the prevention of cervical cancer.
- The vaccine protects against the risk of infection from four types of HPV (6, 11, 16 and 18) and lowers the risk of genital warts and a few other types of cancer as well.
- CERVAVAC is likely to be rolled out by mid-2023.
- The vaccine has received the approval of the Drugs Controller General of India and was cleared by the government advisory panel, the National Technical Advisory Group for Immunisation (NTAGI), for use in the Universal Immunisation Programme (UIP).
- A one-time catch-up vaccine will be given to 9-14-year-old adolescent girls before it is introduced at nine years.
- Besides widespread vaccination, the World Health Organization (WHO) has set up 90-70-90 targets for cervical cancer elimination by 2030, which include getting 90% of girls fully vaccinated with the HPV vaccine by age 15 and screening 70% of women with a high-performance test by age 35 and again by age 45. It has also set a cervical cancer treatment target of 90% of women identified with the disease. Hence statement 2 is not correct.

13. D

- The metaverse is a deeply immersive virtual space combining Virtual Reality (VR), Augmented Reality (AR), and Artificial Intelligence powered by real-time computer graphics running on powerful servers. Hence statement 1 is correct.
- Essentially, it is a world of endless, interconnected virtual communities where people can work, meet, play, and socialise, using virtual reality headsets, augmented reality glasses, smartphone apps, or other devices. Hence statement 2 is correct.
- The metaverse also allows people to shop, exercise, do business, buy land, or even make art in a virtual environment.
- Ø Digital assets can be owned through non-fungible tokens (NFTs), which are nothing but cryptographic tokens in which the ownership details of the virtual assets are coded.

- Ø They are unique and cannot be replaced by another token, which makes them ideal for representing items in the metaverse.
 - Ø In the virtual world, NFTs grant you ownership of anything from avatar wearables to digital property. Hence statement 3 is correct.
 - The metaverse eliminates all types of barriers, physical or otherwise.
 - It's an endless space where there are no limits to how many people can use it at the same time, the number of hours it can be visited, what types of activities can take place, what industries can enter it, etc.
14. B
- The Food and Agriculture Organization (FAO) releases the 'Blue Transformation - Roadmap 2022–2030' document. Hence statement 1 is not correct.
 - Ø The document outlines a roadmap for the transformation of aquatic food systems, providing a compass for the FAO's work on aquatic food systems for the period 2022–2030. It aligns with the 2021 Declaration for Sustainable Fisheries and Aquaculture of the Committee on Fisheries (COFI) of the FAO and FAO's Strategic Framework 2022–2031.
 - Ø Blue Transformation is a targeted effort by which agencies, countries and dependent communities, use existing and emerging knowledge, tools and practices to secure and sustainably maximize the contribution of aquatic (both marine and inland) food systems (AFS) to food security, nutrition and affordable healthy diets for all.
 - Ø The roadmap recognizes the importance of aquatic food systems as drivers of employment, economic growth, social development and environmental recovery, which all underpin the SDGs. Hence statement 2 is correct.
 - Ø It also recognizes the need to support the 2030 Agenda through the transformation to more efficient, inclusive, resilient and sustainable aquatic food systems for better production, better nutrition, a better environment, and a better life, leaving no one behind
 - Outcomes envisioned in Blue Transformation Roadmap:
 - Ø Reduce global fish loss and waste by half by 2030.
 - Ø 100% of fisheries under effective management.
 - Ø All illegal, unreported and unregulated activities to be phased out.
 - Ø At least 35% growth in global sustainable fish production by 2030.
 - Ø Achieve full and productive employment and decent work in the aquaculture sector for all women and men by 2030.
 - Ø Significantly increase global per capita fish consumption, especially across global South. Hence statement 3 is correct.
 - Ø Current and potential exporters in developing countries to comply fully with import market requirements.
 - Ø All forms of discrimination and abuse against women throughout the value chain to be phased out.
15. A
- At COP27, the '123 Pledge' kicked off to accelerate action to reduce food loss and waste worldwide. The new Pledge challenges governments, businesses, chefs and other important actors in the food system to commit to concrete steps that will make reducing food loss and waste a part of their action agendas on greenhouse gas emissions.
 - The way food is produced and consumed today results in high rates of food loss and waste. An estimated 14% of food is lost in the food supply chain from post-harvest up to wholesale included.
 - Ø Meanwhile, 17% of food is wasted at the retail and consumer levels. This food loss and waste cost the global economy over USD \$1 trillion annually. It's also responsible for more than four times the greenhouse gas emissions of all annual aviation combined.
 - The '123 Pledge' is coordinated by Champions 12.3, UN Environment Programme (UNEP), and UN Food and Agriculture Organization (FAO). It is also supported by WRAP, WWF, and Rabobank.
 - Ø Champions 12.3 is a coalition of executives from governments, businesses, international organizations, research institutions, farmer groups, and civil society dedicated to inspiring ambition, mobilizing action, and accelerating progress toward achieving Sustainable Development Goal Target 12.3 by 2030.
 - Groups taking the '123 Pledge' must meet a number of requirements designed to ensure impact, progress and transparency toward a worldwide goal of halving food loss and waste by 2030, in line with the UN Sustainable Development Goal 12.3.
 - Ø Commitments must include a climate angle, be timebound, and be measurable. Those taking the Pledge must commit to providing annual progress reports to the Food Is Never Waste Coalition or to Champions 12.3. Annual progress reports will contribute to the Global Stocktake (GST), which will conclude at COP28 in 2023.
 - Commitments must also tie to at least one of five priority areas:
 - Ø Integrating food loss and waste reduction into country and company climate strategies
 - Ø Reducing food loss and waste along supply chains
 - Ø Stimulating action at the national and subnational (city) level
 - Ø Measuring, reporting, and creating policy and regulatory frameworks for food loss and waste reduction
 - Ø Supporting behaviour change at the consumer level through awareness, education, and enabling conditions.
 - ☑ Hence option (a) is the correct answer.
16. A
- The term "zero-day attack" refers to a previously unidentified vulnerability in a system that is unknown to the developers.
 - A zero-day attack occurs when hackers exploit this flaw to gain unauthorised access to the system. Here, the word system can refer to a software, a device, or a network.
 - A zero-day attack gets its name from the number of days the software developers have to fix the vulnerability, i.e. "zero-day".
 - A zero-day vulnerability is detected only when an attack takes place exploiting one, or when companies discover them and issue

fixes.

- Hackers sometimes weaponize and sell exploit kits on the dark web. Other hackers pay for these exploit kits so they can launch their own zero-day attacks, including lucrative ransomware, cryptojacking, or other advanced threats, multiplying the number of potential attacks.
- Pegasus, the spyware developed by the Israeli company NSO Group, also used zero-day vulnerabilities.
- Hence option (a) is the correct answer.

17. B

- ISRO has established a regional navigation satellite system called Navigation with Indian Constellation (NavIC) to meet the positioning, navigation and timing requirements of the nation.
- NavIC is designed with a constellation of 7 satellites and a network of ground stations operating 24x7. Three satellites of the constellation are placed in geostationary orbit and four satellites are placed in inclined geosynchronous orbit.
- The ground network consists of a control center, precise timing facility, range, and integrity monitoring stations, two-way ranging stations, etc.
- NavIC's coverage area includes India and a region up to 1500 km beyond the Indian border. Hence statement 1 is not correct.
- To meet the navigation requirements of civil aviation, ISRO and the Airports Authority of India (AAI) have implemented the GPS Aided Geo Augmented Navigation – GAGAN as a satellite-based augmentation system (SBAS) for the Indian airspace. Hence statement 2 is correct.
- GAGAN system is interoperable with other international SBAS systems like USWAAS, European EGNOS, Japanese MSAS, etc.
- GAGAN provides the additional accuracy, availability, and integrity necessary for various phases of flight, from en-route through approach for all qualified airports within the GAGAN service volume.

18. C

- Semiconductors are the thumbnail-sized building blocks of almost every modern electronic device, from smartphones to connected devices in the Internet of Things (IoT).
- Semiconductors possess specific electrical properties. A material that conducts electricity is called a conductor, and a material that does not conduct electricity is called an insulator. Semiconductors are materials with properties somewhere between these two. Their resistivity changes according to the temperature. At a low temperature, almost no electricity passes through them. But when the temperature rises, electricity passes through them easily.
- This electrical property, where their electrical conductivity can be continuously varied, makes semiconducting materials so valuable in electronics and other device applications. Hence statement 1 is correct.
- Semiconductors can be pure elements, the most commercially important being silicon or germanium, or compounds, such as gallium arsenide or cadmium selenide. Hence statement 2 is correct.
- In a process called doping, small amounts of impurities are added to pure semiconductors, causing large changes in the conductivity of the material.
- Semiconductor and display manufacturing is a very complex and technology-intensive sector involving huge capital investments, high risk, long gestation and payback periods, and rapid changes in technology, which require significant and sustained investments.
- In December 2021, India announced its roughly 10 billion U.S. dollar production-linked incentive (PLI) scheme to encourage semiconductor and display manufacturing in the country.
- It also announced fiscal support for a design-linked initiative (DLI) scheme to drive global and domestic investment related to design software, IP rights, etc.

19. C

- On September 1, 2022, super typhoon Hinnamnor, the strongest tropical cyclone of the year, was hurtling towards Taiwan from the western Pacific Ocean. Another tropical storm called Gardo was moving towards Hinnamnor from its southeast.
- As the two approached each other, they started a dance around the central line between them, showcasing a textbook example of what is known as the Fujiwhara Effect.
- The Fujiwhara Effect is any interaction between tropical storms formed around the same time in the same ocean region with their centers or eyes at a distance of less than 1,400 km, with an intensity that could vary between a depression (wind speed under 63 km per hour) and a super typhoon (wind speed over 209 km per hour). The interaction could lead to changes in the track and intensity of either or both storm systems. In rare cases, the two systems could merge, especially when they are of similar size and intensity, to form a bigger storm. Hence, option (c) is the correct answer.
- In late 2016, USA diplomats and other employees stationed in Havana (the capital of Cuba) reported feeling ill after hearing strange sounds and experiencing odd physical sensations. The symptoms included nausea, severe headaches, fatigue, dizziness, sleep problems, and hearing loss, which have since come to be known as the Havana Syndrome.

20. A

- State of Climate Action Report is released by Climate Action Tracker (an independent analytic group comprising Climate Analytics and New Climate Institute), the United Nations High-Level Climate Change Champions, World Resources Institute and others). Hence pair 1 is correctly matched.
 - Ø It provides a comprehensive assessment of the global gap in climate action across the world's highest emitting systems.
 - Ø Highlights
 - ü Total global greenhouse gas emission in 2019 was 58.5 gigatonnes of CO₂ equivalent.
 - ü Getting on track to achieve 2030 targets will require an enormous acceleration in effort like Phasing out coal power generation 6 times faster.
- Breakthrough Agenda Report was released by the International Energy Agency, the International Renewable Energy Agency and the UN Climate Change High-Level Champions. Hence pair 2 is not correctly matched.

- Ø This is a first-of-its-kind annual progress report, requested at the UN Climate Change Conference COP26 in November 2021 as part of the launch of the Breakthrough Agenda (BA).
- Ø The BA currently covers more than 2/3rd of the global economy, including G7, China and India.
- Ø BA aims to align actions and coordinate investment across five key sectors (account for nearly 60 % of global greenhouse gas emissions); Power, road transport, steel, hydrogen and agriculture.
- Greenhouse Gas Bulletin is an annual report of the UN's World Meteorological Organization (WMO). Hence pair 3 is not correctly matched.
- Ø WMO is the specialized agency of the UN for meteorology (weather and climate), operational hydrology and related geophysical sciences.
- Ø Key findings of the 2022 report.
 - ü Atmospheric levels of the 3 main greenhouse gases warming our planet - carbon dioxide, methane and nitrous oxide- all reached new record highs in 2021.
 - ü This is the result of both biological and human-induced processes.
 - ü Emissions will also increase by 10.6% by 2030 from 2010 levels

21. C

- A Collective Investment Scheme (CIS), is an investment scheme wherein several individuals come together to pool their money for investing in a particular asset(s) and for sharing the returns arising from that investment as per the agreement reached between them prior to pooling in the money. Hence statement 1 is correct.
- A Collective investment scheme is any scheme or arrangement, which satisfies the conditions, referred to in sub-section (2) of section 11AA of the SEBI Act. Any scheme or arrangement made or offered by any company under which the contributions, or payments made by the investors, are pooled and utilised with a view to receive profits, income, produce or property, and is managed on behalf of the investors is a CIS. Investors do not have day to day control over the management and operation of such scheme or arrangement. Hence statement 2 is not correct.
- CISs are regulated by the securities market regulator – SEBI - under SEBI (Collective Investment Scheme) Regulations, 1999. Hence statement 3 is correct.
- To strengthen the regulatory framework for collective investment schemes, Securities and Exchange Board of India (SEBI) has enhanced the net worth criteria and track record requirements for entities managing such schemes. The markets regulator has mandated a minimum of 20 investors and a subscription amount of at least ₹20 crore for each Collective Investment Scheme (CIS).

22. D

- The Indian Government's summit for developing nations, called the "Voice of the Global South Summit", as its first big leadership-level G20 event, is an extremely important signal. It is also a departure from New Delhi's looking towards the "high-table" of global leadership, involving its relationship with the UNSC P5 and G-7 (the most developed economies), to focusing on a more just view of the world and how the developing world is being affected by global inequities.
- The Voice of Global South Summit is aimed at achieving "Unity of Voice, Unity of Purpose" and is inline with the Hon'ble Prime Minister's vision to shape a positive G20 agenda through consultation with G20 countries and members of the global south. While addressing the first session of the two-day special virtual summit, the Voice of Global South summit, which began on Thursday, PM Modi said, "We, the Global South, have the largest stakes in the future. Most of the global challenges have not been created by the Global South. But they affect us more". Hence, option (d) is the correct answer.
- India has always shared its developmental experience with our brothers of the Global South. As India begins its G20 Presidency this year, it is natural that its aim is to amplify the Voice of the Global South. This "Summit envisages bringing together countries of the Global South to share their perspectives and priorities on a common platform. More than 120 countries have been invited to participate in this Summit.

23. C

- The Bayraktar TB2 is a Turkish medium altitude long endurance (MALE) unmanned aerial vehicle (UAV) developed by Baykar defence company. It is capable of conducting Intelligence, Surveillance and Reconnaissance (ISR) and armed attack missions.
- The Bayraktar drone has a maximum airtime of 27 hours and can fly as high as 7,620 metres (25,000 feet), carrying a maximum payload of up to 150 kg.
- The Bayraktar TB2 can and has proved to be an extremely effective UAV and had significant achievements during military conflicts. By 2022, it had been used during military conflicts in Syria, Libya, Nagorno Karabakh and Ukraine.
- Ukraine's capital region was struck by Iranian-made 'suicide' drone Shahed-136 in October, 2022.
- The Shahed-136 is a modern "swarming" loitering drone built to attack ground targets. Swarm drones are a group of unmanned aerial vehicles that operate in coordination.
- Loitering munitions are slow, propeller-powered missiles.
- Iran has actively embraced loitering munitions over the past few years to attack oil facilities in Saudi Arabia.
- Defence Research and Development Organization's (DRDO) TAPAS 201 (Tactical Advanced Platform for Aerial Surveillance-Beyond Horizon-201) is an indigenous medium altitude long endurance (MALE) unmanned aerial vehicle (UAV).
- TAPAS 201 has been designed and developed by the Aeronautical Development Establishment (ADE), Bengaluru, with the production partners being Hindustan Aeronautics Ltd. (HAL) and Bharat Electronics Ltd. for the three wings of the armed forces.
- It is being developed to carry out Intelligence, Surveillance and Reconnaissance (ISR) roles and is capable of carrying different combinations of advanced payload and auto landing, among others, with endurance in the range of 24 to 30 hours.
- Hence option (c) is the correct answer.

24. D

- Any hydrocarbon fuel that is produced from an organic matter (living or once living material) in a short period of time is considered a Biofuel.

- Biofuels may be solid, liquid or gaseous in nature.
 - Ø Solid: Wood, dried plant material, and manure
 - Ø Liquid: Bioethanol and Biodiesel
 - Ø Gaseous: Biogas
- These can be used to replace or can be used in addition to diesel, petrol or other fossil fuels for transport, stationary, portable and other applications. Also, they can be used to generate heat and electricity.
- Major types of Biofuels
- Bioethanol:
 - Ø It is derived from corn and sugarcane using fermentation process.
 - Ø A litre of ethanol contains approximately two thirds of the energy provided by a litre of petrol.
 - Ø When mixed with petrol, it improves combustion performance and lowers the emissions of carbon monoxide and sulphur oxide.
- Biodiesel:
 - Ø It is derived from vegetable oils like soybean oil or palm oil, vegetable waste oils, and animal fats by a biochemical process called "Transesterification." Hence pair 1 is correctly matched.
 - Ø It produces very less or no amount of harmful gases as compared to diesel.
 - Ø It can be used as an alternative for to conventional diesel fuel.
- Biogas:
 - Ø It is produced by anaerobic decomposition of organic matter like sewage from animals and humans.
 - Ø Major proportions of biogas are methane and carbon dioxide, though it also has small proportions of hydrogen sulfide, hydrogen, carbon monoxide and siloxanes.
 - Ø It is commonly used for heating, electricity and for automobiles.
- Biobutanol:
 - Ø It is produced in the same way as bioethanol, i.e., through the fermentation of starch. Hence pair 2 is incorrectly matched.
 - Ø The energy content in butanol is the highest among the other gasoline alternatives. It can be added to diesel to reduce emissions.
 - Ø It serves as a solvent in textile industry and is also used as a base in perfumes.
- Biohydrogen:
 - Ø Biohydrogen, like biogas, can be produced using a number of processes such as pyrolysis, gasification or biological fermentation. Hence pair 3 is correctly matched.
 - Ø It can be the perfect alternative for fossil fuel.

25. A

- MISHTI scheme: Building on India's success in afforestation, The Union Budget for 2023-24 announced an initiative for mangrove plantation along the coastline and on salt pan lands, under MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes) through convergence between MGNREGS, CAMPA Fund, and other sources. Hence statement 2 is correct.
- Why The Government is Focussing On Mangroves? The survival rate of mangrove seed plantation is 50% and of saplings is about 60%. It takes 3 years for a new plant to stabilize so we need various schemes to increase mangrove plantations with local community support. However, a contract-based one-time plantation under MGNREGS and CAMPA may not work unless the local communities take ownership of the forests.
- What are mangroves? Mangroves – They are a group of trees and shrubs that live in the coastal intertidal zone. They only grow at tropical and subtropical latitudes near the equator because they cannot withstand freezing temperatures. Hence statement 1 is correct. True mangroves - The tree species that form a mangrove forest or ecosystem are broadly classified as true mangroves and mangrove associates. Distribution - Mangroves in India are distributed across 9 States with 4975 sq km and three Union Territories with West Bengal having the highest mangrove cover.
- Mangrove Alliance for Climate (MAC): Launched at the 27th session of the Conference of Parties (COP27) UN climate summit, with India as a partner. It is an initiative led by the United Arab Emirates (UAE) and Indonesia, the Mangrove Alliance for Climate (MAC) includes India, Sri Lanka, Australia, Japan, and Spain. It seeks to educate and spread awareness worldwide on the role of mangroves in curbing global warming and its potential as a solution for climate change. Hence statement 3 is not correct.
- South Asia houses some of the most extensive areas of mangroves globally, while Indonesia hosts one-fifth of the overall amount. India holds around 3 percent of South Asia's mangrove population. Besides the Sundarbans in West Bengal, the Andaman region, the Kachchh and Jamnagar areas in Gujarat to have substantial mangrove cover.

26. B

- The State of the World's Forests" (SOFO) which presents data and analysis on the interaction between forests and people every two years, with a focus on a specific pertinent topic is a Flagship project of Food and Agriculture Organisation of United Nations (FAO). Hence statement 1 is not correct and statement 3 is correct.
- The 2022 edition of SOFO explores the potential of three forest pathways for achieving green recovery and tackling multidimensional planetary crises, including climate change and biodiversity loss.
 - Ø Halting deforestation and maintaining forests.
 - Ø Restoring degraded lands and expanding agroforestry.
 - Ø Sustainably using forests and building green value chains.
- Highlights of the Report:
 - Ø The 420 million hectares (mha) of forests have been lost between 1990 and 2020, due to deforestation, though forests cover 4.06 billion ha of the earth's geographical area.

- Ø Although the rate of deforestation was declining, 10 mha of forests were lost every year between 2015 and 2020.
- Ø 15% of 250 emerging infectious diseases have been linked to forests. Example: Covid-19, Drug-resistant infections (Antimicrobials), Zika Virus, etc.
- Ø 30% of new diseases, reported since 1960, can be attributed to deforestation and land-use-change. Hence statement 2 is correct.
- Ø The cost of global strategies to prevent pandemics based on reducing the illegal wildlife trade, avoiding land-use change and increasing surveillance was estimated to be USD 22 billion to USD 31 billion.
- Ø Approximately 124 million more people fell into extreme poverty after Covid-19 and this may have longer-term impacts on wood-based fuel (such as firewood, charcoal) due to increase in wood-based fuel use in some countries during the pandemic.
- About FAO:
 - Ø FAO is a specialized agency of the United Nations that leads international efforts to defeat hunger.
 - Ø It is one of the UN food aid organisations based in Rome (Italy). Its sister bodies are the World Food Programme and the International Fund for Agricultural Development (IFAD).
 - Ø It's Flagship Publications includes:
 - ü The State of World Fisheries and Aquaculture (SOFA)
 - ü The State of the World's Forests (SOFO)
 - ü The State of Food Security and Nutrition in the World (SOFI)
 - ü The State of Food and Agriculture (SOFA)
 - ü The State of Agricultural Commodity Markets (SOCO)
 - ü World Food Price Index

27. C

- Recently, the Ministry of Social Justice and Empowerment has launched the scheme 'SHRESHTA.' This scheme is known as Scheme for residential education for students in High school in Targeted Areas.
- 'SHRESHTA' scheme :
 - Its basic motive is to uplift the socio-economic status of the Scheduled Castes peoples by providing high quality education to their children in best private residential schools in the country.
 - Admission will be provided in Class 9 and Class 11 of CBSE affiliated private schools. Hence statement 2 is not correct.
 - To enable bright Scheduled Caste (SC) students with high-quality education so that they can pursue future opportunities. Hence statement 1 is not correct.
 - Eligibility:
 - The students, belonging to Scheduled Castes, studying in class 8th and 10th are eligible for availing the benefits of the scheme.
 - Students from the SC community who come from a marginalized income group with an annual income of up to Rs. 2.5 lakh are eligible.
 - The selection will be done through a transparent mechanism which is known as National Entrance Test for SHRESHTA (NETS). It will be conducted by the National Testing Agency (NTA) for admission in class 9th and 11th.
 - Beneficiaries: Government has targeted that every year around 3000 students belonging to SC category will be admitted to Class 9 and Class 11 under this system.
 - The Ministry of Social Justice and Empowerment will cover the whole cost of their school fees and accommodation fees till they have completed their academics in class 12th. Hence statement 3 is correct.

28. B

- Dark patterns are unethical user interface designs that deliberately make users' Internet experiences harder or even exploit them.
- By using dark patterns, digital platforms take away a user's right to full information about the services they are using and reduce their control over their browsing experience.
- Social media companies and big tech firms use dark or deceptive patterns to downgrade the user experience to their advantage.
- Dark patterns endanger the experience of Internet users and make them more vulnerable to financial and data exploitation by big tech firms.
- Dark patterns confuse users, introduce online obstacles, make simple tasks time-consuming, have users sign up for unwanted services or products, and force them to pay more money or share more personal information than they intended.
- Hence option (b) is the correct answer.

29. A

- At the 27th Session of Conference of Parties (COP27), this year's UN climate summit, the Mangrove Alliance for Climate (MAC) was launched.
- This initiative was led by the United Arab Emirates (UAE) and Indonesia and includes India, Sri Lanka, Australia, Japan, and Spain. It seeks to educate and spread awareness worldwide on the role of mangroves in curbing global warming and its potential as a solution for climate change. Hence statement 1 is correct.
- This intergovernmental alliance works on a voluntary basis which means that there are no real checks and balances to hold members accountable. Instead, the parties will decide their own commitments and deadlines regarding planting and restoring mangroves. The members will also share expertise and support each other in researching, managing and protecting coastal areas.
 - Ø There is no such target to increase mangrove cover by 50% of the current area by 2030. Hence statement 2 is not correct.
- Mangroves act as effective carbon stores, holding up to four times the amount of carbon as other forested ecosystems. Mangrove forests capture vast amounts of carbon dioxide from the atmosphere and their preservation can both aid in removal of carbon from the atmosphere and prevent the release of the same upon their destruction.

- South Asia houses some of the most extensive areas of mangroves globally, while Indonesia hosts one-fifth of the overall amount.
 - Ø India accounts for over 50 percent of the total mangrove cover in South Asia.
30. D
- Dark Web is the virtual equivalent of a black market.
 - Like Silk Road which marketed illegal drugs through the Dark Web, entities which want to operate out of the arms of the law seek refuge in the Dark Web. Hence statement 1 is correct.
 - Dark Web can be simply explained as a specialized form of browsing in incognito mode.
 - While incognito mode disables browsing history and web cache, the Dark Web is shielded by specialized software such as Tor. Hence statement 2 is correct.
 - As is evident by the name, the USP of a Dark Web site is the anonymity it offers and the near-impossibility of tracking it down.
 - Since the real world money trail carries the danger of exposure, Dark Web operators transact in virtual currencies, the most popular being Bitcoins.
 - Bitcoin and many other cryptocurrencies are built on blockchain technology, which provides complete decentralization.
 - These digital assets can function without any oversight or control from a central governing body and are widely believed to be anonymous, untraceable, and tamper-proof digital assets. Hence statement 3 is correct.
31. D
- Recently, the State of Finance for Nature (SFN) 2022 report was released by the UN Environment Programme (UNEP) and the BMZ-financed Economics of Land Degradation (ELD) Initiative with support from Vivid Economics by McKinsey.
 - The Economics of Land Degradation (ELD) Initiative is a global science-policy initiative that works to integrate the true value of land and its ecosystem services in decision-making and to capitalize on this value through policy reforms, economic instruments, institutional design and financing strategies with the aim of boosting action and investments for sustainable land management and ecosystem restoration.
 - It was launched in 2011 by the German Federal Ministry for Economic Cooperation and Development (BMZ), the United Nations Convention to Combat Desertification (UNCCD) and the European Commission. Hence option (d) is the correct answer.
32. A
- Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI) is a new programme that will facilitate mangrove plantation along India's coastline and on salt pan lands. The programme will operate through "convergence between MGNREGS, Campa Fund and other sources," said the Finance Minister. This new programme will aim at intensive afforestation of coastal mangrove forests. India has such forests on both its Eastern and Western coasts with the Sundarbans in Bengal being one of the largest mangrove forests on the planet. Hence, statement 1 is correct.
 - PM PRANAM (Prime Minister Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth): This programme will seek to incentivise states and union territories promoting alternative fertilisers and the balanced use of chemical fertilisers. Hence, statement 2 is not correct.
 - Amrit Dharohar: This is a scheme that will be implemented over the next three years to encourage optimal use of wetlands, and enhance bio-diversity, carbon stock, eco-tourism opportunities and income generation for local communities. It will emphasise on the importance of wetlands and their preservation, with an outlook that is inclusive of local communities as caretakers of the ecosystem. Hence, statement 3 is not correct.
33. C
- Recent context: The envoys to India of nine Eastern European countries jointly wrote an article in The Indian Express to "acquaint the Indian public with the basic facts on the ground" about the "premeditated, unprovoked and unjustified Russian aggression in Ukraine".
 - Bucharest Nine (B9) is a group of 9 NATO countries in Eastern Europe that became part of the US-led military alliance after end of Cold War. Hence option (c) is the correct answer.
 - It was founded in 2015, and takes its name from Bucharest, the capital of Romania.
 - All members of B9 are part of European Union (EU) and North Atlantic Treaty Organisation (NATO).
 - B9 members are Romania, Poland, Hungary, Bulgaria, Czech Republic, Slovakia, and three Baltic republics of Estonia, Latvia, and Lithuania.
 - Ø All nine countries were once closely associated with the now dissolved Soviet Union, but later chose the path of democracy. Romania, Poland, Hungary, and Bulgaria are former signatories of the now dissolved Warsaw Pact military alliance led by the Soviet Union. (The other Warsaw Pact countries were the erstwhile Czechoslovakia and East Germany, and Albania.) Estonia, Latvia, and Lithuania were part of the former Union of Soviet Socialist Republics (USSR).
34. C
- The National Pension System (NPS) is a defined contribution pension scheme regulated by the Insurance Regulatory and Development Authority (IRDA). With systematic savings and investments, NPS facilitates the accumulation of a pension corpus during their working lives. NPS is designed to deliver a sustainable solution to having adequate retirement income at old age or upon superannuation. It should be noted that NPS generates market-linked returns without any assurance of returns. Hence statement 1 is correct.
 - NPS is mandatory for Central Government employees (except Armed Forces) joining services on or after 1st January 2004. Subsequently, all State governments, excluding West Bengal, have also adopted the NPS for their employees. Government employees make a monthly contribution at the rate of 10% of their salary, and a matching contribution is paid by the government. For central government employees, the employer's contribution rate has been enhanced to 14% w.e.f. April 1, 2019. Hence statement 2 is not correct.
 - NPS can be voluntarily subscribed to by any Indian citizen (resident/non-resident/overseas) between 18-70 years. The pension

fund has revised the guidelines on entry and exit following an increase in the maximum age for joining the NPS from 65 to 70 years of age. Hence statement 3 is correct.

35. B

- Khijadia wildlife sanctuary falls within Jamnagar District of Gujarat State, India. This freshwater wetland near the coast of the Gulf of Kutch in Gujarat State was formed following the creation of a bund (dike) in 1920 to protect farmland from saltwater ingress. As one of the important waterbird habitats in North-West India, the Site provides breeding, feeding and roosting grounds for a wide range of resident aquatic and also land-based birds. It provides habitat for over 310 bird species, including 125 waterbirds; over 165,000 individual waterbirds have been counted.
- Kanjirankulam Bird Sanctuary is a Protected area near Mudukulathur Ramanathapuram District, Tamil Nadu, India, declared in 1989. It is notable as a nesting site for several migratory heron species that roost in the prominent growth of babul trees there. The breeding population of migratory waterbirds arrive here between October and February and include: painted stork, white ibis, black ibis, little egret, great egret. The site qualifies as an IBA as the threatened Spot-billed Pelican *Pelecanus philippensis* breeds here.
- Tampara Lake is among the most prominent freshwater lakes in the State of Odisha situated in the Ganjam district. The wetland supports at least 60 species of birds, 46 species of fishes, at least 48 species of phytoplanktons, and more than seven species of terrestrial plants and macrophytes. The wetland is an important habitat for vulnerable species such as *Cyprinus carpio*, common pochard (*Aythya ferina*), and river tern (*Sterna aurantia*). Hirakud Reservoir, the largest earthen dam in Odisha started operating in 1957. The reservoir to support a range of floral and faunal species, including several of high conservation significance. Out of the known 54 species of fish from the reservoir, one has been classed as being endangered, six near threatened and 21 fish species of economic importance. The wetland also provides important hydrological services by moderating floods in the Mahanadi delta, the ecological and socio-economic hub of the east coast of India.
- Rudrasagar lake is a lowland sedimentation reservoir in the northeast hills, fed by three perennial streams discharging to the River Gomti in Tripura. The lake is abundant in commercially important freshwater fishes like *Botia* spp, *Notopterus Chitala*, *Mystus* spp., *Ompok pabda*, *Labeo bata*, and freshwater scampi, with annual production of 26 metric-tons, and an ideal habitat for IUCN Redlisted Three-striped Roof Turtle *Kachuga dhongk*.
- Hence, option (b) is the correct answer.

36. C

- Recently, the World Bank Group has announced a Global Shield Financing Facility to help developing countries access more financing for recovery from natural disasters and climate shocks. Hence statement 1 is correct.
- This facility will support the Global Shield Against Climate Risks, a joint initiative launched at COP27 by the G7 and V20 to better protect poor and vulnerable people from disasters by pre-arranging more financing before disasters strike. Hence statement 2 is correct.
 - The Vulnerable Twenty (V20) Group of Ministers of Finance of the Climate Vulnerable Forum is a dedicated cooperation initiative of economies systemically vulnerable to climate change. The V20 works through dialogue and action to tackle global climate change. The call to create the V20 originated from the Climate Vulnerable Forum's Costa Rica Action Plan (2013-2015) in a major effort to strengthen economic and financial responses to climate change.
- The Global Shield Financing Facility will channel grants to developing countries through World Bank projects or through projects prepared by other participating partners, including UN agencies and multilateral development banks. It will also work closely with key stakeholders, such as civil society organizations, risk pools, private sector and humanitarian partners.
- The World Bank has been a longstanding partner to Germany and the U.K. in risk finance and has brought strong experience to the development of the Global Shield Against Climate Risks.
 - The Global Shield Financing Facility builds on the earlier Global Risk Financing Facility, established in 2018, which has supported country operations in Africa, Asia, and Small Island Developing States.

37. A

- Short selling is one of many investment strategies in which an investor bets on a stock or assets in the expectation that its price will fall in the future. The investor borrows (rather than purchasing) shares of stock/asset from lender and sells them in the market. If the price falls, the investor can repurchase it at the lower price, return them to the original lender, and pocket the difference as profit.
- Simply, short selling is the selling of a stock that you do not own, in order to profit from a fall in its price. You short sell when you think that the price of a stock will go down. This is accomplished by borrowing the stock in question and returning it along with some interest at the end of your trade.
- This type of selling is referred to as "short" because the trader is selling the security in the hopes of profiting from a price decrease, as opposed to a standard long position, in which the trader purchases the security in the hope that its price will rise.
- For example, consider the case of an investor who believes that the stock of company XYZ priced at 100 per share is overvalued and will fall in value. The investor borrows 100 shares of XYZ stock from a broker (at certain interest) and sells it in the market for ₹100 per share. The following day, if the price of XYZ share falls to ₹90 per share. The investor buybacks 100 shares from the market and returns them to the original lender. In this process, he gets profit of ₹1,000 (₹100 x 100 - ₹90 x 100).
- Securities and Exchange Board of India (SEBI), defines short selling as selling a stock which the seller does not own at the time of trade. In India, all retail and institutional investors are permitted to short sell, however, with heavy regulatory norms.
- Hence option (a) is the correct answer.

38. C

- The Ministry of Education has announced a new National Educational Alliance for Technology (NEAT 3.0) to use technology for better learning outcomes in Higher Education. It is based on a Public-Private Partnership model between the Government and the Education Technology (Ed-Tech) companies of India. Hence, option (c) is the correct answer.
- The objectives of NEAT are to bring the best technological solutions in education pedagogy on a single platform for the convenience of Economically and Socially weaker sections of society. For this, the All India Council for Technical Education (AICTE) is the implementing agency and the scheme would be administered under the guidance of an Apex Committee

constituted by the Ministry of Education.

- Until yet, 12 Lakh NEAT ed-tech free course coupons worth Rs 253.72 crore were also provided to socially and economically disadvantaged students. This will help in bridging the digital divide, especially among economically disadvantaged learners, and help in making India a knowledge-economy.
39. B
- The World Nature Organization (WNO) is the first intergovernmental organization on a global scale dedicated to international environmental protection. It is dedicated to the protection of the environment at the international level. It is not an initiative of the United Nations Environment Programme. Hence statement 1 is not correct.
 - The organization is focused on promoting activities, technologies, economies, and renewable energies which are regarded to be environment friendly; and reducing the impact of climate change. Hence statement 2 is correct.
 - As a permanent platform, the WNO tries to build bridges between business interests as well as development and environmental protection while, at the same time, making the economic value of nature apparent
 - The organization was established by the intergovernmental WNO-Treaty, which entered into force on May 1, 2014, and India is not a member. Hence statement 3 is correct.
40. C
- In a bid to boost the Retail Payment System ('RPS'), the Reserve Bank of India ('RBI') had come up with the proposal of "New Umbrella Entities" ('NUE'), similar to a Unified Payments Interface (UPI). NUE is seen as an alternative mechanism to India's flagship processor, the National Payments Corporation of India (NPCI).
 - New umbrella entities will manage payments in the retail space. According to the RBI guidelines, these private entities can offer a host of retail payment services, including setting up ATMs, offering white-label, point-of-sale terminals, Aadhaar-based payments, remittance services, and developing newer payment methods. Hence statement 1 is correct.
 - The NUE license shall be granted by RBI according to the power of authorization of payment operations conferred under Section 4 of the Payment & Settlement Systems Act ('PSSA'), 2007. Hence statement 2 is correct.
 - It mandates a minimum of INR 300 Cr. be maintained as reserves at all times. These NUEs shall be duly registered under the Companies Act, 2013. Further, only entities owned and controlled by Indian residents staying in India in the preceding financial year for more than 182 days, shall be eligible to apply as promoter/promoter group. This indicates the intention to limit the role of foreign entities while allowing foreign investment under diktat. It is also subject to corporate governance norms and RBI retains the right to approve/appoint Directors to the Board.
41. D
- Full depth reclamation (FDR), an innovative road development technology, is being used to upgrade many roads in the country. FDR is a pavement rehabilitation technique in which the full flexible pavement section and a predetermined portion of the underlying materials are uniformly pulverized and blended together to produce a homogenous stabilized base course. Hence option (d) is the correct answer.
 - It is an in-place recycling method for reconstruction of existing flexible pavements using the existing pavement section material as the base for the new roadway-wearing surface. This process can include adding chemicals to the base layer in order to increase its strength capacity. The treatment of the base layer and recycled asphalt provides a stronger foundation for present and future traffic. This process effectively produces a cost-effective solution that maximizes limited budgets.
 - The advantages of FDR are considerable compared to remove and replace reconstruction. It provides the benefit of being equal or better in performance while also minimizing the consumption of fuel and natural resources. FDR treats all types of failures to the highest severity. It eliminates ruts, rough areas, and pot holes. It also eliminates alligator, transverse, longitudinal, and reflection cracking. In addition, FDR restores the grade contours to allow for better surface drainage.
 - FDR can be performed in place of traditional remove and replace reconstruction. FDR takes cold in-place recycling to the next level by grinding up the old pavement and using it as a stronger foundation for the new roadway. This is beneficial in cases where reconstruction is necessary in order to increase the structural capacity of the roadway due to increased vehicle traffic.
42. C
- The Organization of the Petroleum Exporting Countries (OPEC) was founded in Baghdad, Iraq, with the signing of an agreement in September 1960 by five countries namely the Islamic Republic of Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. They were to become the Founder Members of the Organization.
 - These countries were later joined by Qatar, Indonesia, Libya, the United Arab Emirates, Algeria, Nigeria, Ecuador, Gabon, Angola, Equatorial Guinea and Congo.
 - Ecuador suspended and withdrew its membership in OPEC effective 1 January 2020. Indonesia suspended its membership in 2016. Gabon terminated its membership in January 1995. However, it rejoined the Organization in July 2016.
 - Qatar terminated its membership on 1 January 2019. Thus, Qatar is no longer a member of OPEC. So, currently, the Organization has a total of 13 member countries. Hence option (c) is the correct answer.
 - The mission of the Organization of the Petroleum Exporting Countries (OPEC) is to coordinate and unify the petroleum policies of its Member Countries and ensure the stabilization of oil markets in order to secure an efficient, economic and regular supply of petroleum to consumers, a steady income to producers and a fair return on capital for those investing in the petroleum industry.
43. B
- Recently the Government decided to appoint Lt General Anil Chauhan (Retired) PVSM, UYSM, AVSM, SM, VSM as the next Chief of Defence Staff (CDS) who shall also function as Secretary to the Government of India, Department of Military Affairs. Hence statement 2 is correct.
 - His core function will be to foster greater operational synergy between the three service branches of the Indian military and keep inter-service frictions to a minimum. He also heads the newly created Department of Military Affairs (DMA) in the Ministry

of Defence. The CDS will be the single-point military adviser to the Defence Minister on matters involving all three services and the service chiefs will be obliged to confine their counsel to issues pertaining to their respective services. As the head of DMA, CDS is vested with the authority in prioritising inter-service procurement decisions as Permanent Chairman-Chiefs of Staff Committee. The CDS is also vested with the authority to provide directives to the three chiefs. However, he does not enjoy any command authority over any of the forces. Hence statement 1 is not correct. He is first among equals, he enjoys the rank of Secretary within the DoD (Department of Defence) and his powers will be confined to only the revenue budget. He will also perform an advisory role in the Nuclear Command Authority (NCA).

44. B

- The Moskva is a river running through western Russia. It rises about 140 km west of Moscow and flows roughly east through the Smolensk and Moscow Oblasts, passing through central Moscow, it flows into the Oka, itself a tributary of the Volga, which ultimately flows into the Caspian Sea. The name BrahMos is a portmanteau formed from the names of two rivers, the Brahmaputra of India and the Moskva of Russia. Hence option 3 is correctly paired.
- The Dnipro is one of the major transboundary rivers of Europe, rising in the Valdai Hills near Smolensk, Russia, before flowing through Belarus and Ukraine to the Black Sea. It is the longest river of Ukraine and Belarus and the fourth-longest river in Europe, after the Volga, Danube, and Ural rivers. Hence option 1 is not correctly paired.
- The Don is the fifth-longest river in Europe. Flowing from Central Russia to the Sea of Azov in Southern Russia, it is one of Russia's largest rivers and played an important role for traders from the Byzantine Empire. The Don rises in the town of Novomoskovsk (south of Moscow), and flows 1,870 kilometres to the Sea of Azov. Hence option 2 is correctly matched
- The Danube is a river that was once a long-standing frontier of the Roman Empire and today connects 10 European countries, running through their territories or being a border. Originating in Germany, the Danube flows southeast for 2,850 km passing through or bordering Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria, Moldova, and Ukraine before draining into the Black Sea.

45. C

- Recent context: The Center has decided to nominate Assam's Charaideo Maidams from 52 sites across the country for UNESCO World Heritage Site status.
- Charaideo is a Tai-Ahom word that means "a prominent city on the hilltop." The Charaideo Maidams enshrine the mortal remains of the members of the Ahom royalty, who used to be buried with their paraphernalia. Hence statement 1 is correct.
- Located more than 400 km east of Guwahati, it was the first capital of the Ahom dynasty, founded by Chao Lung Siu-Ka-Pha in 1253. Though the capital of the Ahom kingdom moved many times, Charaideo remained the symbolic center. Along with the sacred burial grounds of Ahom kings and queens, it is also the place of the ancestral Gods of the Ahoms. Out of 386 Maidams or Moidams explored so far, 90 royal burials at Charaideo are the best preserved, representative of, and most complete examples of the mound burial tradition of the Ahoms.
- Charaideo Maidams comprises a massive underground vault with one or more chambers having a dome-shaped superstructure, covered by a heap of earthen mounds, and externally appearing as a hemispherical mound. Hence statement 2 is correct.
 - Ø At the top of the mound a small open pavilion chow-chali is provided. An octagonal dwarf wall encloses the whole maidam.
 - Ø The Ahoms preferred to place the departed family members at Charaideo, where the first king Sukaphaw laid to rest. The historical chronicles inform us that wives, attendants, pet animals, and huge quantities of valuables were buried with the departed kings.
- 42 tombs (Maidams) of Ahom kings and queens at Charaideo hillocks are comparable to the Pyramids of Egypt and are objects of wonder revealing the excellent architecture and skill of the sculptors and masons of Assam of the medieval days.

46. C

- The Science Based Targets initiative (SBTi) mobilizes companies (Corporate sector) to set science-based greenhouse gas emissions reduction targets and boost their competitive advantage in the transition to the low-carbon economy. Hence statement 2 is correct.
- The initiative is a collaboration between CDP, the United Nations Global Compact, the World Resources Institute (WRI), and the World Wide Fund for Nature (WWF), and one of the We Mean Business Coalition commitments. Hence statement 1 is correct.
- The initiative defines and promotes the best practices in science-based target setting, offers resources and guidance to reduce barriers to adoption, and independently assesses and approves companies' targets.
- Targets adopted by companies to reduce greenhouse gas (GHG) emissions are considered "science-based" if they are in line with the latest climate science, which is necessary to meet the goals of the Paris Agreement – to limit global warming to well below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C. SBTs provide companies a clearly defined pathway to future-proof growth by specifying how much and how quickly they need to reduce their GHG emissions.

47. C

- Scientists have discovered a new type of quasicrystal, one with 12-fold symmetry, in the Sand Hills of north central Nebraska, USA, according to a recent study. It said that this quasicrystal was formed during an accidental electrical discharge, possibly by a lightning strike or a downed power line in a dune.
- Quasicrystal is essentially a crystal-like substance. However, unlike a crystal, in which atoms are arranged in a repeating pattern, a quasicrystal consists of atoms that are arranged in a pattern that doesn't repeat itself regularly. Hence statement 1 is correct.
- For the longest time, physicists believed every crystalline arrangement of atoms must have a pattern that repeats itself perfectly over and over again. However, this changed in 1982, when material scientist Dan Shechtman discovered crystal structures that are mathematically regular, but that do not repeat themselves. He was awarded a Nobel Prize in 2011 for discovery of quasicrystals by using diffraction patterns.

- Since their discovery, quasicrystals have been widely created in labs and known to possess novel electrical, photonic, and mechanical properties that aren't found in other materials, making them an attractive prospect for materials scientists. They are used in manufacturing non-stick frying pans, needles for acupuncture and surgery, dental instruments and razor blades. Hence statement 3 is correct.
 - Although quasicrystals can be easily produced, they are rarely found outside of the laboratory. The first one was identified in a meteorite, found in 2009 near the Khatyrka River in Chukotka, Russia. The second one was discovered in 2021 during the study of debris from the site of the world's first nuclear explosion, which took place in 1945 in New Mexico. Scientists suggest that in both instances, for the formations of quasicrystals, materials were subjected to extremely high-pressure and high-temperature shock events. The latest discovery is only the third time that scientists have come across a quasicrystalline nature. Hence statement 2 is not correct.
48. C
- "Steadfast Noon" and "Grom" recently are annual nuclear drills conducted by the North Atlantic Treaty Organization (NATO) and Russia respectively. Steadfast Noon is hosted by a different NATO Ally each year. The exercise involves 14 countries and up to 60 aircraft of various types, including fourth and fifth-generation fighter jets, as well as surveillance and tanker aircraft.
 - The Russian "Grom," or Thunder nuclear exercise, typically involves large-scale maneuvers of strategic nuclear forces, including live missile launches, a senior military official said earlier this month.
 - Hence option (c) is the correct answer.
49. D
- The 'Three Percent Club', a coalition of countries, businesses and institutions works to put in place ambitious policies to help drive a 3% annual global increase in energy efficiency. The coalition reports that this target, which was announced at the UN Secretary-General's Climate Action Summit, is necessary to meet global climate goals while enhancing economic prosperity in all countries. Hence, statement 2 is not correct.
 - Started in 2019, the 'Three Percent Club' brings together 15 governments (Argentina, Colombia, Denmark, Estonia, Ethiopia, Ghana, Honduras, Hungary, India, Ireland, Italy, Kenya, Portugal, Senegal, and the UK) and 13 businesses and international organizations to help put the world on a path to achieve the necessary annual energy efficiency improvements to meet the Paris Agreement on climate change. Hence, statement 1 is not correct.
 - Coalition participants will share and provide technical and financial support, including by leveraging the combined global resources of the Global Environment Facility (GEF), the International Energy Agency (IEA), Sustainable Energy for All (SEforALL) Energy Efficiency Accelerators and Hub, the UN Environment Programme (UNEP), the European Bank for Reconstruction and Development (EBRD) and the Energy Efficiency Global Alliance.
50. C
- A gig economy is a free market system in which organizations hire or contract workers for a short span of time. Simply put, the positions are temporary to meet the company's requirements by having short-term engagements.
 - According to the Code on Social Security, 2020 (India), "A gig worker is a person who performs work or participates in work arrangements and earns from such activities, outside of the traditional employer-employee relationship."
 - The gig economy has various driving factors including work flexibility and the choice to work remotely from anywhere in the world. Further, gig workers work on the fixed-fee (while doing a contract) model, time & effort model, etc. and start-up culture has also promoted the idea of freelancing and contractual work.
 - Gig workers are mainly paid on the outcome-based model, meaning they are remunerated for the number of tasks they do i.e., on a task basis or monthly basis like every other full-time employee.
 - While the gig economy is prevalent among blue-collar jobs in India the demand for gig workers in white-collar jobs such as project-specific consultants, salespeople, web designers, content writers, and software developers is also emerging.
 - According to the Code on Wages, 2019, a universal minimum wage and floor wage should be provided to all organized and unorganized sectors, including gig workers.
 - Whereas under the Code on Social Security, 2020, gig workers are provided with recognition as a new occupational category. But, a few problems are associated with the code as even though gig workers are now eligible for benefits like maternity benefits, life, and disability cover, old age protection, provident fund, employment injury benefits, etc. However, eligibility does not ensure the guarantee of mentioned benefits to workers.
 - The following are the findings of a NITI Aayog report.
 - Ø The study estimates that in 2020-21, 77 lakhs (7.7 million) workers were engaged in the gig economy.
 - Ø The gig workforce is expected to expand to 2.35 crore (23.5 million) workers by 2029-30. Hence option (c) is the correct answer.
 - Ø At present, about 47% of the gig work is in medium-skilled jobs, about 22% in high skilled, and about 31% in low-skilled jobs.
51. B
- Statement 1 is correct- Right to be Forgotten : The right to erasure is also known as 'the right to be forgotten'. The RTBF gained importance after the 2014 decision of the Court of Justice of the European Union ("CJEU") in the Google Spain case. In the Indian context, the Supreme Court in Puttaswamy v. Union of India, 2017 noted that the RTBF was a part of the broader right of privacy. The RTBF emerges from the right to privacy under Article 21 and partly from the right to dignity under Article 21.
 - Statement 2 is not correct: It is the right to have publicly available personal information removed from the internet, search, databases, websites or any other public platforms, once the personal information in question is no longer necessary, or relevant.
 - Statement 3 is correct- This right allows for the lawful removal of personal information of an individual if such request is made.

Hence if a person acquitted of a crime wants the removal of his/her case details to avoid social stigma, it can be done.

52. C

- Biofuel is a fuel that is produced over a short time span from biomass, rather than by the very slow natural processes involved in the formation of fossil fuels, such as oil. Since biomass can be used as a fuel directly, some people use the words biomass and biofuel interchangeably.
- The two most common types of biofuels in use today are ethanol and biodiesel, both of which represent the first generation of biofuel technology.
- Second-generation biofuels are produced from non-food crops including the waste from food crops, agricultural residue, wood chips, and waste cooking oil. Second-generation biofuel feedstock is the non-edible byproduct of food crops. Hence, statement 1 is correct.
- On World Biofuel Day August 10, Asia's first 2G ethanol biorefinery, built by a central public sector undertaking Indian Oil Corporation Ltd, was unveiled in Panipat, Haryana. Hence, statement 2 is correct.

53. C

- As per section 27 of The Juvenile Justice (Care and Protection of Children) Act, 2015 – The State Government shall by notification in the Official Gazette constitute for every district, one or more Child Welfare Committees for exercising the powers and discharge the duties conferred on such committees and ensure that induction training and sensitization of all members of the Committee is provided within two months from the date of notification. Hence statement 1 is not correct.
- The act also states that the Committee shall consist of a Chairperson, and four other members as the state may think fit to appoint, of whom at least one shall be a woman and another, an expert on the matters concerning children. Hence statement 2 is correct.
- The Committee shall have the final authority to dispose of cases for the care, protection, treatment, development and rehabilitation of children in need of care and protection, as well as to provide for their basic needs and protection. Hence statement 3 is correct.
- Section 30 of the act deals with the functions and responsibilities of the Committee. It includes
 - Ø conducting an inquiry on all issues relating to and affecting the safety and well-being of the children under the Act,
 - Ø directing the placement of a child in foster care, ensuring care, protection, rehabilitation, and restoration of children in need of care and protection based upon the child's individual care plan.
 - Ø The Committee also ensures that all efforts are made for the restoration of abandoned or lost children to their families following due process.
 - Ø It also takes action for the rehabilitation of sexually abused children who are reported as children in need of care and protection.
 - Ø Further, the Committee also coordinates with the police, labor department, and other agencies involved in the care and protection of children.

54. C

- Living Planet Index:
 - Ø The Living Planet Index (LPI) data tells us how species are faring, by measuring trends in monitored populations of vertebrate species. It is not a census of all wildlife but reports the average percentage change in the size of these populations monitored throughout the world i.e The LPI shows the average rate of change in animal population sizes but it doesn't show numbers of species lost or extinctions, although some populations do decline to local extinction. Hence statement 1 is correct.
 - Ø The results of the global LPI are published biennially in WWF's Living Planet Report (LPR), a leading science-based publication on the state of the planet and associated challenges and solutions. Hence statement 2 is correct.
- Key findings in the Living Planet Report 2022 show that:
 - Ø From 1970 to 2018, there was an average 69 per cent decline in the global Living Planet Index, which was based on almost 32,000 populations of over 5,200 species.
 - Ø In other words, the relative population abundance of monitored mammals, birds, reptiles, amphibians and fish has, on average, dropped by more than two-thirds in 48 years.
 - Ø The main threats to species populations are habitat loss and degradation, and overexploitation.
 - Ø The major direct driving forces for the degradation of terrestrial, freshwater and marine systems are changes in land and sea use, the overexploitation of plants and animals, climate change, pollution and invasive alien species. These direct drivers of biodiversity loss, and the degradation of ecosystems and their services, stem from increasing demands for energy, food and other materials because of rapid economic growth, increases in population, international trade, and choices of technology, especially over the last 50 years.

55. C

- Recently the Indian government invoked its emergency powers to direct YouTube and Twitter to remove links of the BBC documentary. It has exercised those powers under the Information Technology Rules, 2021, which have been widely opposed by media organisations, digital rights activists and social media platforms on the grounds that they enable censorship.
- The Information and Broadcasting ministry invoked emergency powers under the Information Technology Rules, 2021, to issue directives for the removal of the documentary's links from YouTube and Twitter.
- The Information Technology Rules that were notified in February 2021 are formally called the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021.
- Rule 16 lays down the Union government's power of "blocking of information in case of emergency". It allows the government to order the immediate removal of content in the interest of India's sovereignty, security, friendly relations with countries

and to maintain law and order. Hence statement 1 is correct.

- The rules also have made it explicit for the intermediary to respect the rights accorded to the citizens of India under the Articles 14, 19 and 21 of the Indian Constitution. Hence statement 2 is correct.

56. D

- COP 26

- Ø Glasgow Leaders' Declaration on Forests and Land Use, was signed by over 100 Heads of State at the UN Climate Change Conference (COP26), Glasgow. Hence pair 1 is correctly matched.
- Ø The Declaration commits to halt and reverse forest loss and land degradation by 2030 and pledges \$12 billion in public funds to protect and restore forests, alongside \$7.2 billion of private investment.
- Ø The Declaration is well aligned with the pledge by several of these governments to reverse biodiversity loss by 2030 for sustainable development by endorsing the Leaders' Pledge for Nature.

- COP 25:

- Ø The 2019 United Nations Climate Change Conference, also known as COP25, was the 25th United Nations Climate Change conference. It was held in Madrid, Spain, from 2 to 13 December 2019 under the presidency of the Chilean government.
- Ø At COP 25 Parties agreed a 5-year enhanced Lima work programme on gender and its gender action plan. Hence pair 2 is correctly matched.
- Ø The enhanced gender action plan sets out objectives and activities under five priority areas that aim to advance knowledge and understanding of gender-responsive climate action and its coherent mainstreaming in the implementation of the UNFCCC and the work of Parties, the secretariat, United Nations entities and all stakeholders at all levels, as well as women's full, equal and meaningful participation in the UNFCCC process.

- COP 24:

- Ø The COP-24 finalized a "rulebook" to operationalize the 2015 Paris Agreement. Hence pair 3 is correctly matched.
 - ü The rulebook sets out how countries will provide information about their Nationally Determined Contributions describing their domestic climate actions, mitigation and adaptation measures.
 - ü The rulebook covers areas such as how countries should report their greenhouse gas emissions, contributions to climate finance, what rules should apply to voluntary market mechanisms, such as carbon trading etc.

- COP 23:

- Ø The Talanoa Dialogue is a process that would help countries implement their Intended National Determined Contributions by the end of 2020. Hence pair 4 is correctly matched.
- Ø Intended Nationally Determined Contributions (INDC), in turn, are reductions in greenhouse gas emissions under the United Nations Framework Convention on Climate Change (UNFCCC).
- Ø The Talanoa Dialogue was launched at COP 23 under the Presidency of the Republic of Fiji.

57. C

- Odessa Port (The Port of Odesa or Odesa Sea Port) located near Odesa, is the largest Ukrainian seaport and one of the largest ports in the Black Sea basin, with a total annual traffic capacity of 40 million tonnes. Hence, pair 1 is correctly matched.
- Haifa Port is Israel's principal/main and largest seaport, both by cargo and passenger/cruise shipping volumes. The Port is located on the Mediterranean Sea and along the north side of Mt Carmel/Mount Mar Elias. Hence, pair 2 is correctly matched.
- Hambantota Port is a deep water port in Hambantota, Sri Lanka. The Hambantota port, with its strategic location near busy Indian Ocean shipping routes, was touted as good for Sri Lankan commerce. Hence, pair 3 is correctly matched.
- Chabahar Port is a seaport in Chabahar located in southeastern Iran, on the Gulf of Oman. It serves as Iran's only oceanic port and consists of two separate ports named Shahid Kalantari and Shahid Beheshti, each of which has five berths. It is only about 170 kilometres west of the Pakistani port of Gwadar. Hence, pair 4 is not correctly matched.

58. B

- What is an Election Symbol?

- Ø An electoral or election symbol is a standardized symbol allocated to a political party. They are used by the parties during their campaigning and are shown on Electronic Voting Machines (EVMs), where the voter chooses the symbol and votes for the associated party.

- What are the EC's powers in such Disputes?

- Ø The Election Symbols (Reservation and Allotment) Order, 1968 empowers the EC to recognize political parties and allot symbols. Hence statement 1 is not correct. Under Paragraph 15 of the Order, it can decide disputes among rival groups or sections of a recognised political party staking claim to its name and symbol.
- Ø On disputes among rival groups, the Symbols Order, states that the EC is empowered to take decision after considering all the available facts and circumstances of the case that one rival section or group or none of such rival sections or groups is that recognized political party. The decision of the Commission shall be binding on all such rival sections/groups. This applies to disputes between recognized national and state parties. For splits in registered but unrecognized parties, the EC usually advises the warring factions to resolve their differences internally or to approach the court. Hence statement 2 is correct.

59. A

- The Group of Twenty, or G20, is the premier forum for international cooperation on the most important aspects of the international economic and financial agenda. It brings together the world's major advanced and emerging economies.
- The G20 comprises Argentina, Australia, Brazil, Canada, China, EU, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, UK, and USA. The G20 Countries together represent around 90% of

global GDP, 80% of global trade, and two-thirds of the world's population.

- The G-20 operates without a permanent secretariat or staff. At the G20, the member holding the rotatory presidency every year, works together with its predecessor and successor, together known as Troika, to ensure the continuity of the agenda. Hence, statement 1 is not correct.
- Currently, Indonesia, India, and Brazil are the Troika countries. India assumed the G20 presidency on 1st December 2022 from Indonesia and will convene the G20 Leaders' Summit for the first time in India in 2023. This is for the first time that the troika is consisting of three developing and emerging economies. Hence, statement 2 is correct.

60. C

- The Chinese Caterpillar Fungus (*Ophiocordyceps sinensis*) is a terrestrial fungus parasitizing larvae of ghost moths and produces a fruiting body that long has been used as one of the most valued Traditional Chinese Medicines. Keeda jadi is basically a fungus, with *Ophiocordyceps Sinensis* as its scientific name; it is also one of the world's most expensive fungi. Hence, statement 1 is correct.
- *Ophiocordyceps sinensis*, a fungus endemic to the Himalayas and Tibetan Plateau, is found largely in isolated patches of alpine grasslands at 3,000-5,000 m elevation. Hence, statement 2 is not correct.
- The fungus is so rare that it has entered the International Union for Conservation of Nature's (IUCN) RedList of Threatened Species, few years back (before the pandemic), the state government had given passes to nearly 1000 villagers to collect the fungus by their respective district administrations. According to the IUCN, the fungus is endemic and its spread has gone down by at least 30% over the past 15 years because of overharvesting. It is classified as Vulnerable under the IUCN Red List of Threatened Species. Hence, statement 3 is correct.

61. D

- The National Museum of Natural History (NMNH), under the Ministry of Environment Forest and Climate Change and the United Nations Development Programme (UNDP), jointly launched the "In Our LiFEtime" campaign to encourage youth between the ages of 18 to 23 years to become message bearers of sustainable lifestyles. This campaign envisions recognizing youth from around the world taking climate action initiatives that resonate with the concept of LiFE. This was launched in a side event at the India Pavilion at COP 27, Sharm El-Sheikh. Hence, option (d) is the correct answer.
- The campaign gives a global call for ideas from youth across the world who are passionate about living environmentally conscious lives. The youth will be encouraged to submit their climate actions that contribute to lifestyles for the environment within their capacity, which are sustainable and scalable, and serve as good practices that can be shared globally.
- The acronym LiFE stands for Lifestyle for Environment. The Prime Minister presented the concept of LiFE on November 1, 2021, at COP26 in Glasgow. It aims to encourage individuals and communities to live in harmony with nature without causing harm. India launched the LiFE Global Movement on World Environment Day on June 5, 2022, inviting academics, researchers, and start-ups from around the world to consider specific and scientific ways in which the full potential of collective action can be tapped to address the environmental crisis.

62. C

- After three consecutive years of rise, India's foreign exchange reserves declined by around \$ 70 billion in 2022. From \$632.74 billion as of January 7, 2022, the reserves declined to \$562.851 billion as of December 30, 2022, even as the Reserve Bank of India used its forex arsenal to stabilize the rupee and cushion the capital outflows.
- Reasons for the decline in forex reserves:
 - Ø Valuation loss: One of the primary reasons was valuation loss, after the US dollar appreciated against major currencies in 2022. The rise in the US currency was due to risk aversion among investors amid the aggressive monetary tightening of the US Federal Reserve and uncertainty surrounding the Russia-Ukraine war last year. Close to 55-60 per cent of the decline (in reserves) was because of the valuation impact.
 - ü Foreign exchange reserves are maintained as a multi-currency portfolio comprising major currencies such as the US dollar, Euro, Pound sterling, and Japanese yen, among others, but are valued in terms of US dollars. When the dollar strengthens, the valuation of other currencies vis-à-vis the US currency declines, leading to a notional fall in the overall reserves position. Hence option 1 is correct.
 - Ø Besides valuation loss, the forex reserves also declined as the Reserve Bank sold dollars in the spot market to smoothen the sudden fluctuations in the rupee's movement caused by outflows from foreign investors.
 - Ø FPIs started pulling out after inflation spiked in the US and Federal Reserve started hiking interest rates. The Russian invasion of Ukraine accentuated the FPI withdrawals with the global economic slowdown making inflows tougher, analysts said. Hence option 3 is correct.
- India is expected to receive a record \$100 billion in remittance in 2022, the top recipient this year, the World Bank has said. In its Migration and Development Brief, the World Bank has said India's remittance will grow 12 percent from 7.5 percent last year. Hence option 2 is not correct.

63. D

- Four main classes of SSNs (sequence-specific nucleases; SSNs) are used in plant genome editing: meganucleases, zinc finger nucleases (ZFNs), transcription activator-like effector nucleases (TALENs), and the clustered regularly interspaced palindromic repeats (CRISPR)/Cas9 nuclease system.
- Zinc finger-domain-containing proteins bind to DNA and are widespread in nature, often functioning as transcription factors (proteins that regulate gene expression by binding directly or indirectly to regulatory DNA sequences usually found in the promoter regions of genes). The zinc finger domains can be manipulated to bind specific sequences of DNA; when fused to the DNA-cutting nuclease domain of the FokI protein, a ZFN is the resulting hybrid molecule. A pair of ZFNs functions in tandem to cut DNA at the desired target site.

- Transcription activator-like effectors (TALEs) were discovered in the bacterial plant pathogen *Xanthomonas* and could be engineered to bind to virtually any DNA sequence. Their ease of design for specific target DNA sequences revolutionized genome editing. In nature, *Xanthomonas* species secrete TALEs into plant cells to enable pathogenicity. TALEs bind to promoters in plant genes to suppress the plant's resistance to the pathogen. The bacteria encode TALEs through a simple code or cipher that has been exploited to engineer proteins with custom site-specificity in any target genome. TALENs have been used to edit genomes in several plants, including rice, maize, wheat, and soybean.
- CRISPR technology is a simple yet powerful tool for editing genomes. CRISPRs: "CRISPR" stands for "clusters of regularly interspaced short palindromic repeats." It is a specialized region of DNA with two distinct characteristics: the presence of nucleotide repeats and spacers. Repeated sequences of nucleotides — the building blocks of DNA — are distributed throughout a CRISPR region. Spacers are bits of DNA that are interspersed among these repeated sequences. In the case of bacteria, the spacers are taken from viruses that previously attacked the organism. They serve as a bank of memories, which enables bacteria to recognize viruses and fight off future attacks.
 - Ø CRISPR RNA (crRNA): Once a spacer is incorporated and the virus attacks again, a portion of the CRISPR is transcribed and processed into CRISPR RNA, or "crRNA." The nucleotide sequence of the CRISPR acts as a template to produce a complementary sequence of single-stranded RNA. Each crRNA consists of a nucleotide repeat and a spacer portion.
 - Ø Cas9: The Cas9 protein is an enzyme that cuts foreign DNA. The protein typically binds to two RNA molecules: crRNA and another called tracrRNA (or "trans-activating crRNA"). The two then guide Cas9 to the target site where it will make its cut. This expanse of DNA is complementary to a 20- nucleotide stretch of the crRNA.
 - Ø CRISPR-Cas9 as a genome-editing tool: The genomes of various organisms encode a series of messages and instructions within their DNA sequences. Genome editing involves changing those sequences, thereby changing the messages. This can be done by inserting a cut or break in the DNA and tricking a cell's natural DNA repair mechanisms into introducing the changes one wants. CRISPR-Cas9 provides a means to do so.
- Meganucleases naturally occur in bacteria, archaea, and eukaryotes and were the first SSNs examined for genome editing. Meganuclease-mediated genome editing has been demonstrated in maize and tobacco. It is difficult to change the target sequence specificity of meganucleases, so they are not widely used for genome editing.
- Hence option (d) is the correct answer.

64. A

- An Application Programming Interface (API) is a way for two or more computer programs to communicate with each other. It is a type of software interface, offering a service to other pieces of software. A document or standard that describes how to build or use such a connection or interface is called an API specification. A computer system that meets this standard is said to implement or expose an API. In contrast to a user interface, which connects a computer to a person, an application programming interface connects computers or pieces of software to each other. Hence statement 1 is correct.
- APIs allow a vast array of unrelated software products to integrate and interoperate with other software and data. APIs also allow developers to add features and functionality to software by utilizing a rich array of other developers' APIs. APIs are broadly accepted and used in web applications. There are four different types of APIs commonly used in web services:
 - Ø Public APIs: A public API is open and available for use by any outside developer or business. An enterprise that cultivates a business strategy that involves sharing its applications and data with other businesses will develop and offer a public API. These are also called open APIs or external APIs.
 - Ø Partner APIs: A partner API, only available to specifically selected and authorized outside developer or API consumers, is a means to facilitate business-to-business activities.
 - Ø Internal APIs: An internal or private API is intended only for use within the enterprise to connect systems and data within the business.
 - Ø Composite APIs: Composite APIs generally combine two or more APIs to craft a sequence of related or interdependent operations.
- Following are some of the ways APIs power our lives from behind the scenes:
 - Ø Financial institutions like banks use private APIs to track and manage checking accounts, credit cards, and more.
 - Ø Retail giants and travel apps use APIs to communicate with courier networks, ensuring packages are picked up as soon as possible and tracking them as they are moved.
 - Ø Web applications use APIs to connect user-facing front ends with all-important back end functionality and data. Streaming services like Spotify and Netflix use APIs to distribute content.
 - Ø Automotive companies like Tesla send software updates via APIs. Others use APIs to unlock car data for third-parties. Hence statement 2 is correct.
- Under the overarching vision of Digital India, Government of India (GoI) aims to make all Government services digitally accessible to citizens through multiple channels, such as web, mobile and common service delivery outlets. To meet this objective, there is a need for an interoperable ecosystem of data, applications and processes which will make the right information available to the right user at the right time. At the outset, the 'Policy on Open APIs for Government of India' encourages the formal use of Open APIs in Government organizations. The policy sets out the Government's approach on usage of 'Open APIs' to promote software interoperability for all e-Governance applications & systems and provide access to data and services for promoting the participation of all stakeholders including citizens. Hence statement 3 is not correct.

65. D

- Carbon sequestration is the process of capturing, securing and storing carbon dioxide from the atmosphere. The idea is to stabilize carbon in solid and dissolved forms so that it doesn't cause the atmosphere to warm. The process shows tremendous promise for reducing the human "carbon footprint." There are two main types of carbon sequestration: biological and geological. Types of Carbon sequestration are given below.
- Biological Sequestration:

- Ø Oceans: Oceans absorb roughly 25 percent of carbon dioxide emitted from human activities annually. Carbon goes in both directions in the ocean. When carbon dioxide releases into the atmosphere from the ocean, it creates what is called a positive atmospheric flux. A negative flux refers to the ocean absorbing carbon dioxide. Think of these fluxes as an inhale and an exhale, where the net effect of these opposing directions determines the overall effect.
- Ø Soil: Carbon is sequestered in soil by plants through photosynthesis and can be stored as soil organic carbon (SOC). Agroecosystems can degrade and deplete the SOC levels but this carbon deficit opens up the opportunity to store carbon through new land management practices. Soil can also store carbon as carbonates
- Ø Forests: About 25 percent of global carbon emissions are captured by plant-rich landscapes such as forests, grasslands and rangelands.
- Geological Carbon Sequestration: Geological carbon sequestration is the process of storing carbon dioxide in underground geologic formations or rocks. Typically, carbon dioxide is captured from an industrial source, such as steel or cement production, or an energy-related source, such as a power plant or natural gas processing facility and injected into porous rocks for long-term storage.
- Technological Carbon Sequestration:
 - Ø Graphene Production: The use of carbon dioxide as a raw material to produce graphene, a technological material. Graphene is used to create screens for smartphones and other tech devices. Graphene production is limited to specific industries but is an example of how carbon dioxide can be used as a resource and a solution in reducing emissions from the atmosphere.
 - Ø Direct Air Capture (DAC): A means by which to capture carbon directly from the air using advanced technology plants. However, this process is energy intensive and expensive, ranging from \$500-\$800 per ton of carbon removed. While techniques such as direct air capture can be effective, they are still too costly to implement on a mass scale. Hence, option (d) is the correct answer.

66. D

- The Government has recently approved 'Mission Shakti', an integrated women empowerment programme. The program is carefully designed to touch upon and address all concerns and issues of women, responsively, in a comprehensive manner, and during their entire lifecycle continuum.
 - Ø One of the components included in Mission Shakti is 'Nari Adalat'. Initially, it is being started on a pilot basis, for providing women with an alternate Grievance Redressal Mechanism for resolving cases of petty nature (harassment, subversion, curtailment of rights or entitlements) faced by them at the local level.
- Nari Adalats is a part of the Mission Shakti umbrella scheme, which is overseen by the Ministry of Women and Child Development and includes various sub-schemes aimed at enhancing the safety and empowerment of women.
- The Ministry of Women and Child Development will implement "nari adalats" (women's courts) led by women's collectives in the country in a phased manner as an alternate grievance redressal mechanism to resolve "petty" disputes at the gram panchayat level. Hence statement 2 is not correct.
- Initially, the program will be implemented in select states and union territories, preferably in aspirational districts where elected women representatives head gram panchayat. Hence statement 1 is not correct.
- The first year of the program will be dedicated to raising awareness about legal rights and constitutional entitlements among women, while the second year will focus on establishing formal collectives of seven to eleven women to address socio-economic and cultural issues.

67. D

- What is the Living Land Charter?
 - Ø The 'Living land' charter was announced at the conclusion of the 2022 Commonwealth Heads of Government Meeting (CHOGM) in Kigali (Rwanda). Hence statement 1 is not correct.
 - Ø The non-binding 'Living Lands Charter' mandates that member countries will safeguard global land resources and arrest land degradation while acting against climate change, and biodiversity loss, and towards sustainable management. Hence statement 2 is not correct.
 - Ø The Living Lands Charter helps to encapsulate the combined effort to hold the global average temperature increase to 1.5 degrees Celsius.
 - Ø The charter aims to achieve climate goals through a mixture of policy influence, financing, technical assistance, governance, and sharing knowledge across nations.
 - Ø Commonwealth governments have been asked to submit their emission reduction targets by 23rd September 2022.
 - Ø It is aimed to support member countries to effectively deliver their commitments under the three Rio conventions — UN Convention on Biological Diversity, UN Convention to Combat Desertification (UNCCD), and UN Framework Convention on Climate Change.
 - Ø Highlights of the CHOGM 2022:
 - ü The Commonwealth Heads of Government Meeting is a biennial summit meeting of the heads of government from all Commonwealth nations.
 - ü CHOGM 2022 was taken place in Rwanda, with the theme: 'Delivering a Common Future: Connecting, Innovating, Transforming.'
 - ü It has raised more than USD 4 billion in pledges for the battle against malaria and other tropical diseases.
 - ü There have been 24 CHOGMs since 1971, with the most recent one taking place in the United Kingdom (UK) in 2018.
 - Ø About the Commonwealth:
 - ü It is an international intergovernmental organization of countries that were mostly former territories of the British Empire and dependencies.

- ü It was established by the London Declaration in 1949.
- ü Many countries from Africa, Asia, the Americas, Europe, and the Pacific have joined the Commonwealth.
- ü The current membership includes 56 Countries. The membership is based on free and equal voluntary cooperation.
- ü The two African countries, Gabon and Togo, were admitted to the Commonwealth of Nations, as its 55th and 56th members, respectively, at the CHOGM 2022.

68. A

- BIMSTEC stands for the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation. BIMSTEC was established in 1997 with the aim of promoting economic and technical cooperation among the member states. Its focus is on a wide range of areas, including trade and investment, technology, energy, transport, agriculture, fisheries, tourism, and culture. BIMSTEC aims to create an enabling environment for sustainable economic growth and development in the region. Hence statement 1 is correct.
- It is a regional organization comprising seven member states: Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand. Hence statement 2 is not correct.
- The headquarters of BIMSTEC is located in Dhaka, the capital of Bangladesh.
- BIMSTEC members account for around 22 percent of the world's population and 4 percent of the world's GDP (USD 3.8 trillion). Hence statement 3 is not correct.

69. D

- Digital public goods are open-source software, open data, open AI models, open standards, and open content that adhere to privacy and other applicable laws and best practices, do no harm by design and help attain the Sustainable Development Goals (SDGs).
- The concept of digital public goods originally derives from the economic term “public good” which refers to something that is non-excludable and non-rivalrous. Non-excludability indicates that you cannot prevent someone from using or consuming the good. Non-rivalrousness indicates that one's consumption or usage does not limit or take away from someone else's. The concept of public goods has since evolved into the digital era. The digital environment is particularly conducive to public goods and has created new methodologies for delivering public goods.
- India Stack (a set of APIs that allows governments, businesses, start-ups, and developers to utilize a unique digital infrastructure to solve India's problems and to attain a presence-less, paperless, and cashless service delivery model), Aadhar, UPI, and DigiLocker, eBooks, podcast and other tech-driven citizen-centric services come under digital public good.
 - Ø DigiLocker- DigiLocker has 128 million registered users, 400 e-document types, and up to 5 billion e-documents for consent-based sharing. The digital documents that can be stored on and retrieved from DigiLocker include a PAN card, driving license, Aadhaar card, school mark sheets, and insurance papers, among others. No other country provides a free service similar to DigiLocker to their citizens.
 - Ø Account aggregator is a gold standard in terms of giving user ownership of their data and the control to use their data to access any digital services especially access to credit. This is a scaled and secure implementation of the future of putting the customer in charge of their own data.
 - Ø Central KYC registry hosts more than 35 crores KYC records, with inter-usability across all financial regulators — RBI, SEBI, IRDA, and the Pension Fund Regulatory and Development Authority (PFRDA). This enables customers to interact with various financial entities nationwide without the need to complete KYC formalities repeatedly.
- Hence option (d) is the correct answer.

70. D

- Open Radio Access Network, or Open RAN, is a key part of a mobile network system that uses cellular radio connections to link individual devices to other parts of a network. It is frequently seen in the news in the context of 5G technology.
- It comprises antennae, which transmits and receives signals to and from our smartphones or other compatible devices. The signal is then digitised in the RAN-base station and connected to the network. Hence statement 1 is correct.
- In the traditional set-up, Radio Access Network is provided as an integrated platform of both hardware and software. Therefore, it is difficult to mix vendors for the radio and baseband unit, and in most cases, they come from the same supplier.
- The idea of Open RAN is to change this, and enable operators to mix and match components.
- The Open RAN architecture allows for the separation - or disaggregation - between hardware and software with open interfaces. Hence statement 2 is correct.
- RAN has been based on proprietary technologies of original equipment makers such as Ericsson, Nokia, etc. With Open RAN, telecom players would have the flexibility to use in-house solutions or solutions from multiple vendors for RAN services.
- This would allow telecom operators to look beyond traditional vendors, thus creating opportunities for lesser-known vendors from abroad as well as from home to be part of the growing 5G ecosystem, based on their innovation competence.
- Network flexibility is another advantage of the Open RAN architecture. Being software-centric, it is scalable, agile and best of networks with improved network performance using artificial intelligence and machine learning.
- Open RAN would reduce a telecom operator's network deployment cost as it is interoperable with other networks such as 4G. Hence statement 3 is correct.
- Open RAN is a new architecture, and not something that has been extensively tested. Therefore, there are several challenges in the path to implement Open RAN such as latency issues, operations and maintenance.

71. C

- Recently, the Union Cabinet, chaired by Honorable Prime Minister, approved the ratification of three Protocols relating to amendments in the convention on International Civil Aviation (Chicago Convention), 1944.

- The articles of the Chicago Convention establish the privileges and obligations of all contracting States and promote international ICAO Standards and Recommended Practices (SARPs) adoption that regulate international air transport.
 - The Convention on International Civil Aviation, also known as the Chicago Convention, established the International Civil Aviation Organization, a specialized agency of the United Nations charged with coordinating international air travel. Hence option (c) is the correct answer.
 - During the past 78 years, the Chicago Convention has undergone a few amendments and India has been ratifying such amendments from time to time.
72. D
- Technical textiles are defined as textile materials and products used primarily for their technical performance and functional properties rather than their aesthetic or decorative characteristics. They are manufactured using natural as well as man-made fibers.
 - India's strengths have already been defined in traditional textiles and natural fibers globally. It is the second largest producer of polyester in the world and is now emerging as a key player in the technical textiles industry contributing to a market size of \$ 19 Bn. Technical textile is a fast-growing sub-segment that finds its usage in an array of sectors. The end-use application of technical textiles is widespread and seen in industries such as agriculture, construction, sports apparel, healthcare, etc. India's leap towards modernization and its manufacturing competitiveness are some of the key contributors to the growth of this segment.
 - Technical textile products exhibit enhanced performance over traditional textiles. Technical textile products are manufactured using natural as well as man-made fibers such as Nomex, Kevlar, Spandex, Twaron, etc. These fibers exhibit enhanced functional properties like higher tenacity, excellent insulation, improved thermal resistance, etc. Hence, these fibers find application in varied industries and applications.
 - Hence option (d) is the correct answer.
73. D
- According to the National Oceanic and Atmospheric Administration (NOAA), subsidence is the “sinking of the ground because of underground material movement”. It can happen for a host of reasons, man-made or natural, such as the removal of water, oil, or natural resources, along with mining activities.
 - Earthquakes, soil erosion, and soil compaction are also some of the well-known causes of subsidence.
 - The exact reason behind Joshimath land subsidence is still unknown but experts suggest that the incident might have occurred because of unplanned construction, over-population, obstruction of the natural flow of water and hydel power activities. Not only this, the area is a seismic zone, which makes it prone to frequent earthquakes. Apart from the aforementioned possible reasons, reports have pointed out that subsidence in Joshimath might have been triggered by the reactivation of a geographic fault — defined as a fracture or zone of fractures between two blocks of rock — where the Indian Plate has pushed under the Eurasian Plate along the Himalayas.
 - Hence, option (d) is the correct answer.
74. B
- Recent Context: The Employees' Provident Fund Organisation (EPFO) has introduced new guidelines, under which subscribers and employers can jointly apply for higher pensions under the Employees' Pension Scheme.
 - The EPFO is a statutory body formed by the Employees' Provident Fund and Miscellaneous Provisions Act, 1952.
 - It is under the administrative control of the Ministry of Labour and Employment, Government of India. Hence statement 3 is not correct.
 - EPFO manages social security funds of workers in the organized/semi-organized sector in India. Hence statement 1 is correct.
 - For the portability of Provident Fund accounts, EPFO has a “Universal Account Number” Service for contributing members. Hence statement 2 is correct.
 - It operates three schemes: Employee's Provident Fund Scheme, 1952, Pension Scheme 1995 (EPS) and Insurance Scheme 1976.
75. B
- Recently, France—alongside several EU states and Canada—announced its withdrawal of troops and military resources from Mali. This development will primarily affect Operation Barkhane, a French-led counter-insurgency operation (and the largest external counterterrorism force) in the Sahel. Hence option (b) is the correct answer.
 - Operation Barkhane, a counter-terrorism operation in the Sahel region, was launched in August 2014 by France. The operation was authorized by the United Nations Security Council (UNSC).
 - France began its military operations in the Sahel in January 2013. Titled Operation Serval, it was limited to targeting Islamic extremists linked to al-Qaeda who took control of northern Mali. However, in 2014, the mission was scaled up, renamed Operation Barkhane and was aimed at counter-terrorism. The objective was to assist local armed forces to prevent the resurgence of a non-state armed group. Operation Barkhane aimed at counter-terrorism in Mali, Niger, Burkina Faso, Mauritania and Chad and not all the Sahel region.
 - The Sahel, meaning “the shore” in Arabic, is a vast area crossing 6,000 kilometers from East to West Africa. It covers many geographic and agroecological systems, 12 countries and is home to 400 million people.
 - The political region of the Sahel, as defined by the United Nations strategy (UNISS), covers 10 countries (Senegal, Gambia, Mauritania, Guinea, Mali, Burkina Faso, Niger, Chad, Cameroon and Nigeria). The region faces many challenges. Climate change threatens to further degrade land, vegetation, water resources and food systems through increased incidence of drought, desertification and floods and projected shortening of the rainy season. The Sahel ecological zone has shifted from

50 to 200 kilometers southward over the last three decades, resulting in biodiversity and arable land losses.

76. B

- Bor Thekera (*Garcinia pedunculata*) is a medicinal plant in Assamese found to have cardioprotective potential.
 - Ø It is an evergreen tree endemic to South Eastern Asia.
 - Ø Traditionally it is forbidden for raw consumption.
 - Ø Sun-dried slices of ripe fruit are used for culinary and medicinal purposes and are known to have therapeutic properties like anti-inflammatory, antibacterial, antidiabetic, hypolipidemic, nephroprotective, and even neuroprotective activity.
 - Ø It is also a rich source of antioxidants.
- Hence option (b) is the correct answer.

77. A

- Recent context: The United Nations Climate Change Conference COP27 closed today with a breakthrough agreement to provide “loss and damage” funding for vulnerable countries hit hard by climate disasters.
- The establishment of a Loss and Damage Fund was, for many, the highlight of the United Nations Climate Conference (COP 27) and the culmination of decades of pressure from climate-vulnerable developing countries. The fund aims to provide financial assistance to nations most vulnerable and impacted by the effects of climate change. Hence, statement 1 is correct.
- One of the big letdowns has been the lack of any progress on increasing the financial flows for addressing climate change. The agreement takes note of the fact that about USD 4 trillion are required every year as investments in the renewable energy sector till 2030 to reach net-zero targets. And yet, the developed countries have not yet delivered on their promise to deliver even the relatively small amount of USD 100 billion every year. There is nothing in the agreement that puts pressure on the developed countries to deliver these, and more, at the earliest. At COP15 in 2009, developed countries committed to a collective goal of mobilising USD 100 billion per year by 2020 to support climate action in developing countries. Hence, statement 2 is not correct.

78. B

- The Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India has launched the ‘Sagar Parikrama’ program on occasion of 75th Azadi Ka Amrit Mahotsav. Sagar Parikrama program is being organized through a pre-decided sea route covering coastal states/UTs. Hence, statement 1 is not correct.
- The fishermen, fisher communities and stakeholders in the coastal areas are likely to be benefitted with awareness of various beneficiary oriented schemes and programs being implemented by the Government and showcasing them the best practices that may be adopted.
- The interaction programs being organized during the ‘Sagar Parikrama’ aims to resolve the issues of the fishers and other stakeholders and to facilitate their economic upliftment through various fisheries schemes and programs being implemented by the Government of India.
- The main objectives of ‘Sagar Parikrama’ are
 - Ø to facilitate interaction with fishermen, coastal communities and stakeholders so as to disseminate information of various fisheries related schemes and programs being implemented by the Government; Hence, statement 2 is correct.
 - Ø demonstrating solidarity with all fisher folk, fish farmers and concerned stakeholder as a spirit of Aatmanirbhar Bharat;
 - Ø to promote responsible fisheries with focus on sustainable balance between the utilization of marine fisheries resources for food security of nation and livelihoods of coastal fisher communities and
 - Ø protection of marine ecosystems.

79. C

- The Great Blue Wall Initiative is a regionally important initiative that seeks to create a network of marine conservation across the Western Indian Ocean.
- What is the project?
 - Ø It is an international movement that seeks to protect and restore the Indian Ocean. Ten countries are coming together to commit towards a larger global pledge to protect 30 percent of the world's oceans from the effects of Climate change and Global warming. These countries are planning to create a connected network of marine conservation areas that protect some of the most threatened aquatic areas in the world. Hence statement 1 is correct.
 - Ø The initiative took inspiration from the Great Green Wall Project which seeks to reforest a length of 8,000 km across Africa and to prevent further desertification and deterioration of the sub-Saharan region.
 - Ø The initiative will protect not just ecologically-important marine areas like coral reefs but also environmentally-critical areas like marshlands, mangroves, seagrass meadows, and underwater ecosystems
- The initiative was formally launched during the COP26 summit in Glasgow by Seychelles, though it was announced a month prior during the IUCN World Congress. Hence statement 2 is correct.

80. C

- Mauna Loa, the world's largest active volcano, erupted in Hawaii marking its first eruption in nearly 40 years. The last eruption was in 1984. Hence, statements 1 and 3 are correct.
- Mauna Loa is what's known as a shield volcano, formed by repeated fluid lava flows that tend to give the volcano a gently sloping, rounded profile like that of a shield. That is where Mauna Loa gets its name — it means “long mountain” in Hawaiian. That is in contrast to composite volcanoes like Mount Hood in Oregon, Mount Rainier in Washington, or Mount Fuji in Japan which have what to many is a more classic volcano shape, with tall, steep sides created by repeating layers of lava flows, volcanic ash and cinders. Hence, statement 2 is not correct.
- Any volcano that has erupted within the Holocene period (in the last 11,650 years) is considered to be “active” by scientists. “Dormant” volcanoes are those active volcanoes which are not in the process of erupting currently but have the potential to do so in the future. Mauna Loa was a dormant volcano for the last 38 years. “Extinct” volcanoes are ones which scientists

predict will never face any further volcanic activity. Ben Nevis, the tallest mountain in the UK, is an extinct volcano.

• Other important volcanoes are:

- Ø Mount Vesuvius, Italy: In 79 CE, Mount Vesuvius erupted, in one of the deadliest eruptions in European history, killing as many as 16,000 and destroying the town of Pompeii. According to scientists, the explosion released 100,000 times the thermal energy that was released with the atomic bombings at Hiroshima and Nagasaki. It is said to have instantly boiled the blood of all those who were too close to it.
- Ø Mount Fuji, Japan: A defining image of Japan, Mount Fuji towers over the countryside with its snow-capped peaks and barren surface. It last erupted in 1707-1708 and had a devastating effect on the local population. The tephra release led to a significant agricultural decline, leading to widespread starvation in the Edo (now Tokyo) area. Although this eruption itself did not directly kill a lot of people, its subsequent impact proved deadly.
- Ø Eyjafjallajökull, Iceland: Sometimes referred to as E15, it is one of the many volcanic features of Iceland. In 2010, a relatively small eruption managed to bring air traffic in Europe to a complete standstill. 20 countries closed their airspace, impacting approximately 10 million travellers.
- Ø Kilauea, Hawaii: Adjacent to the Mauna Loa, this is one of the most active volcanoes on the planet. It has been erupting intermittently since recorded history, with its eruption lasting from 1983 to 2018 being the longest continuous eruption ever recorded. It is a major tourist attraction, with the earliest hotel built at the edge of the volcano in the 1840s.
- Ø Mount St Helens, USA: Located in Washington State, Mount St. Helens was a major eruption that occurred on May 18, 1980, and it remains the deadliest and most economically destructive volcanic event in U.S. history. It started after an earthquake hit the region, killing 57 and causing property damage of over \$1 billion. It remains an active volcano and one that is considered to be amongst the riskiest by scientists.

81. C

- The World Economic Forum, supported by more than 45 partners today launched the Giving to Amplify Earth Action (GAEA), a global initiative to fund and grow new and existing public, private, and philanthropic partnerships (PPPPs) to help unlock the \$3 trillion of financing needed each year to reach net zero, reverse nature loss and restore biodiversity by 2050. Hence, option (c) is the correct answer.
- With the energy and cost of living crises, the ambition of steering the planet towards a 1.5-degree Celsius warming pathway hangs in the balance. Meanwhile, the recent agreement at the UN Biodiversity Conference (CBD COP15) in Montreal to conserve 30% of all earth and sea looks bold but fragile in the face of a rising biodiversity crisis. Current funding is slow and inadequate, and a new approach is needed to get capital flowing. Philanthropic giving can address this, with unique qualities not found in other financings: it is nimble, more tolerant of risks, and is driven by values and long-term outcomes rather than quarterly returns.
- Philanthropic financing for climate mitigation has risen in recent years, but still represents less than 2 percent of total philanthropic giving, estimated at USD 810 billion in 2021, according to WEF. Greater philanthropic funding for climate and nature will support, not detract from, existing social priorities.

82. C

- Light Pollution
 - Ø The inappropriate or excessive use of artificial light – known as light pollution – can have serious environmental consequences for humans, wildlife, and our climate.
- Components of light pollution include:
 - Ø Glare – excessive brightness that causes visual discomfort.
 - Ø Skyglow – brightening of the night sky over inhabited areas. Hence statement 1 is correct.
 - Ø Light trespass – light falling where it is not intended or needed.
 - Ø Clutter – bright, confusing, and excessive groupings of light sources.
- Affects of Light Pollution:
 - Ø Artificial light can wreak havoc on natural body rhythms in both humans and animals. Nocturnal light interrupts sleep and confuses the circadian rhythm—the internal, twenty-four-hour clock that guides day and night activities and affects physiological processes in nearly all living organisms.
 - Ø Studies show that light pollution is also impacting animal behaviors, such as migration patterns, wake-sleep habits, and habitat formation. Because of light pollution, sea turtles and birds guided by moonlight during migration get confused, lose their way, and often die. Large numbers of insects, a primary food source for birds and other animals, are drawn to artificial lights and are instantly killed upon contact with light sources (clutter). Birds are also affected by this, and many cities have adopted a “Lights Out” program to turn off building lights during bird migration. Hence statement 2 is correct.

83. A

- The Directorate of Enforcement is a multi-disciplinary organization mandated to investigate offenses of money laundering and violations of foreign exchange laws. The CBI is the premier investigating agency of India.
- It is composed of officers from the Indian Revenue Service, Indian Police Service, and the Indian Administrative Service as well as promoted officers from its cadre. In addition to directly hiring people, the Directorate also draws officers from different Investigating Agencies like Customs & Central Excise, Income Tax, Police, etc. on deputation.
- Unlike CBI, ED cannot register a case on its own. It is required by the agencies such as CBI or state police to register an offense based on which the Case Information Report is filed by Enforcement Directorate. Recently, the Supreme Court upheld the power of the Enforcement Directorate to arrest under PMLA. The SC bench held that the power given to ED for making arrests, conducting search and seizures, and attaching proceeds of crime are constitutionally valid and do not suffer from the vice of arbitrariness. Hence statement 1 is correct.
- The Fugitive Economic Offenders Act, 2018 (FEOA)
- This law was enacted to deter economic offenders from evading the process of Indian law by remaining outside the

jurisdiction of Indian courts. It is a law whereby the Directorate is mandated to attach the properties of the fugitive economic offenders who have escaped from India warranting arrest and provide for the confiscation of their properties to the Central Government. While the ED works under the administrative control of Department of Revenue, Ministry of Finance, CBI functions under the overall supervision of the Ministry of Personnel, Public Grievances and Pensions. Hence statement 2 is not correct.

84. B

- Marrakech Partnership for Global Climate Action is a partnership between States and non-state actors, launched during COP22 to the United Nations Framework Convention on Climate Change was held from 7 to 18 November 2016 in Marrakesh, Morocco. Hence, statement 1 is not correct.
- The Marrakech Partnership for Global Climate Action supports the implementation of the Paris Agreement by enabling collaboration between governments and the cities, regions, businesses and investors that must act on climate change. Its main objective is to strengthen collaboration between governments and key stakeholders to immediately lower emissions and increase resilience against climate impacts. Hence, statement 2 is correct.
- The Marrakech Partnership has three principal reporting and tracking vehicles for capturing the breadth of climate action globally: the Global Climate Action portal, the Yearbook of Global Climate Action and the Summary for Policymakers. In addition, a periodical report is published on the achievements of the High-Level Champions and the Marrakech Partnership.

85. C

- Recent Context: Financial Action Task Force (FATF) suspended Russia's membership over Ukraine war.
 - Ø Although suspended, Russia remains a FATF member. However, it will be barred from attending meetings and accessing documents. Also, FATF updated its list for Jurisdictions Under Increased Monitoring (i.e. Grey list) and High-Risk Jurisdictions (i.e. Black List). Hence option (c) is the correct answer.
- The Financial Action Task Force (on Money Laundering) (FATF), also known by its French name, Groupe d'action financière (GAFI), is an intergovernmental organisation founded in 1989 on the initiative of the G7 to develop policies to combat money laundering.
 - Ø In 2001, its mandate was expanded to include terrorism financing.
 - Ø The objectives of FATF are to set standards and promote effective implementation of legal, regulatory and operational measures for combating money laundering, terrorist financing and other related threats to the integrity of the international financial system. FATF is a "policy-making body" that works to generate the necessary political will to bring about national legislative and regulatory reforms in these areas.
 - Ø FATF monitors progress in implementing its Recommendations through "peer reviews" ("mutual evaluations") of member countries.
 - Ø FATF Blacklist: Officially known as High-Risk Jurisdictions subject to a Call for Action, the FATF blacklist sets out the countries that are considered deficient in their anti-money laundering and counter-financing of terrorism regulatory regimes.
 - ü The list is intended to serve not only as a way of negatively highlighting these countries on the world stage, but as a warning of the high money laundering and terror financing risk that they present.
 - ü It is extremely likely that blacklisted countries will be subject to economic sanctions and other prohibitive measures by FATF member states and other international organizations.
 - Ø FATF Greylist: In addition to its blacklist, the FATF also issues a grey list, officially referred to as Jurisdictions Under Increased Monitoring.
 - ü Like the blacklist, countries on the FATF grey list represent a much higher risk of money laundering and terrorism financing but have formally committed to working with the FATF to develop action plans that will address their AML/CFT deficiencies.
 - ü Countries on the list may face economic sanctions from institutions like the IMF and the World Bank and experience adverse effects on trade.

86. D

- Green bonds are bonds issued by any sovereign entity, inter-governmental groups, or alliances and corporates with the aim that the proceeds of the bonds are utilized for projects classified as environmentally sustainable. The framework for the sovereign green bond was issued by the government on November 9, 2022.
- As per SEBI's data on green debt securities, during the period of 2017 to September 2022, 15 Indian corporates have issued green bonds of value ₹4,539 crore. Most of these are related to renewable energy generation, while one is slated to be used for the tertiary treatment of wastewater. Hence statement 1 is not correct.
- The securities will be sold through Reserve Bank of India Mumbai Office. The Reserve Bank of India (RBI) has notified the indicative calendar for the issuance of Sovereign Green Bonds (SGrBs) for the fiscal year 2022-23. The security-wise allocation would include 5-year and 10-year SGrBs for ₹4,000 crore each for both auctions. Hence, statement 2 is not correct.
- Major countries that resorted to green bonds to raise funds include the UK, France, Germany, the USA, and China. IMF data indicates that green bonds of value around US\$ 620 billion were issued across the world in the year 2021, in which countries issued green bonds of value US\$ 587.7 billion and international organizations used bonds of value US\$ 32.3 billion.
- As far as the returns on these bonds are considered, Green bonds traditionally are issued globally at higher premiums leading to lower returns. Since they are being issued with a sovereign guarantee, returns could be even lower. Hence, statement 3 is correct.
- Green Bonds offer investors a platform to engage in good practices, influencing the business strategy of bond issuers. They provide a means to hedge against climate change risks while achieving at least similar, if not better, returns on their investment.

87. B

- Recent context: In a concerted push to upgrade infrastructure along the country's northern border amid the ongoing standoff with China, the Union Cabinet Wednesday approved the allocation of Rs 4,800 crore for the Centre's Vibrant Villages Programme even as the Cabinet Committee on Security approved the induction of over 9,000 troops in the Indo-Tibetan Border Police (ITBP).
- The Union Cabinet, chaired by the Hon'ble Prime Minister Shri Narendra Modi, has approved the Centrally Sponsored Scheme "Vibrant Villages Programme" (VVP) for the Financial Years 2022-23 to 2025-26 with a financial allocation of Rs. 4800 Crore. Comprehensive development of villages of blocks on the northern border thus improving the quality of life of people living in identified border villages. This will help in encouraging people to stay in their native locations in border areas and reversing the outmigration from these villages adding to improved security of the border. Hence, statement 1 is not correct.
- The scheme will provide funds for the development of essential infrastructure and the creation of livelihood opportunities in 19 Districts and 46 Border blocks in 4 states and 1 UT along the northern land border of the country which will help in achieving inclusive growth and retaining the population in the border areas. In the first phase, 663 Villages will be taken up in the program.
- The scheme aids to identify and develop the economic drivers based on local natural human and other resources of the border villages on the northern border and the development of growth centers on the "Hub and Spoke Model" through the promotion of social entrepreneurship, empowerment of youth and women through skill development and entrepreneurship, leveraging the tourism potential through the promotion of local cultural, traditional knowledge and heritage and development of sustainable eco-agribusinesses on the concept of "One village-One product" through community-based organizations, Cooperatives, SHGs, NGOs, etc.
- Vibrant Village Action Plans will be created by the district administration with the help of Gram Panchayats. 100% saturation of Central and state schemes will be ensured. Hence, statement 2 is correct.
- Key outcomes that have been attempted are, connectivity with all-weather roads, drinking water, 24x7 electricity – Solar and wind energy to be given focused attention, and mobile and internet connectivity. Tourist centers, multi-purpose centers, and health and wellness Centers.
- There will not be an overlap with Border Area Development Programme. Out of the financial allocation of Rs. 4800 Crore 2500 crore rupees will be used for roads.

88. C

- Employees Deposit Linked Insurance Scheme
 - ☐ The Employees Deposit Linked Insurance Scheme (EDLI) is an insurance scheme that was launched by the Government in 1976. Hence statement 2 is not correct.
 - ☐ This scheme was launched with the objective of providing social security benefits to the employees of the private sector for whom such benefits were not commonly provided by the employer.
 - ☐ Today, the EDLI scheme is managed and administered by the Employees Provident Fund Organisation (EPFO) and the scheme provides term life insurance cover on the life of the member employee.
- Features of Employees Deposit Linked Insurance Scheme:
 - ☐ EDLI applies to all employees with a basic salary under Rs. 15,000/- per month. If the basic salary goes above Rs. 15,000 per month, the maximum benefit is capped at Rs. 6,00,000/-. With effect from 28.04.2021, the EPFO has increased the maximum benefit to Rs. 7 lakh.
 - ☐ There is no need for the employees to contribute to EDLI. Their contribution is required only for EPF (rather Employer has to contribute on behalf of the employee). Hence statement 1 is not correct.
 - ☐ There is a bonus of Rs. 1,50,000/- available under the EDLI. With effect from 28.04.2021, the bonus is increased to Rs. 2.5 lakh.
 - ☐ The Ministry had increased the minimum amount of benefit to Rs. 2.5 lakh in Feb 2018, which was valid for two years. The EPFO has extended this minimum amount of Rs. 2.5 lakh with retrospective effect from 15th Feb 2020.
 - ☐ Any organisation that has more than 20 employees needs to register for EPF. Therefore, any employee who has an EPF account automatically becomes eligible for the EDLI scheme. Hence statement 3 is correct.
 - ☐ There are no exceptions to the insurance coverage provided by EDLI. It protects the insured person round the clock, all around the world.
 - ☐ An employer can opt for another group insurance scheme, but the benefits offered must be equal to or more than those offered under EDLI.

89. C

- Government launched the National Infrastructure Pipeline (NIP) with a forward-looking approach and with a projected infrastructure investment of around ₹111 lakh crore during FY20-25 to provide high quality infrastructure across the country.
- The NIP currently has 8,964 projects with a total investment of more than ₹108 lakh crore under different stages of implementation. Regarding sectoral composition, the transport sector constituted more than half of the projects.
- NIP is hosted on the Invest India Grid (IIG) platform and provides opportunities for States/UTs and Ministries to collate all major infrastructure projects at a single location. Hence statement 2 is correct.
- IIG thus acts as a centralised portal to track and review project progress across all economic and social infrastructure sub-sectors. The portal also enables project-sponsoring authorities to showcase investment opportunities to national and international investors. Hence statement 1 is correct.
- Project Monitoring Group (PMG) is an institutional mechanism put in place by the government for resolution of issues related to large-scale projects. PMG is also involved in the fast-tracking of approvals/clearances for projects with an

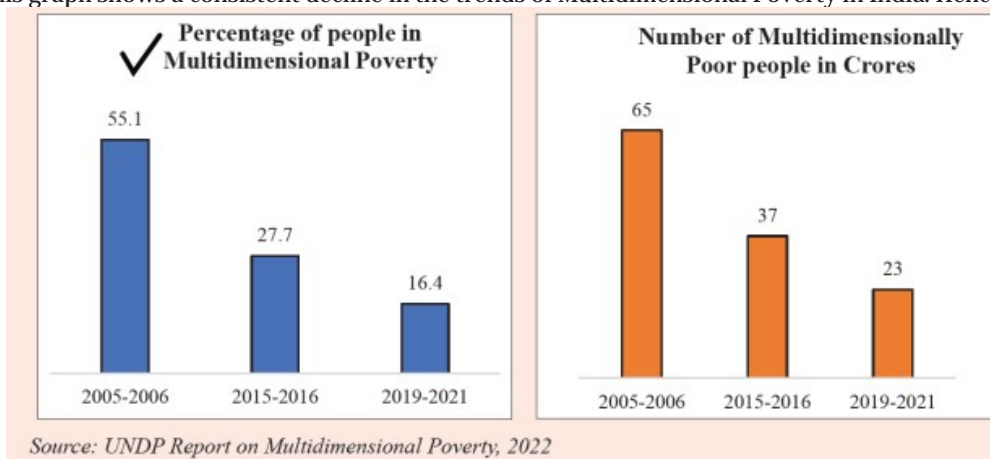
anticipated investment of ₹500 crore and above. Now, it has been proposed to integrate NIP and PMG portals.

90. D

- The Emergency Credit Line Guarantee Scheme (ECLGS) was announced as part of the Aatma Nirbhar Bharat Package in May 2020 to support eligible MSMEs and other business enterprises to meet their operational liabilities and resume business in view of the distress caused by the COVID-19 crisis. This scheme covers all sectors of the economy. Under this, a 100% guarantee is provided to Member Lending Institutions (MLIs) in respect of the credit facility extended by them to eligible borrowers. Hence, statement 3 is correct.
- The Scheme provides 100% guarantee coverage by the National Credit Guarantee Trustee Company (NCGTC) to MLIs on GECL of up to Rs.5 lakh crore to eligible MSMEs. MSMEs for the purpose of this Scheme will include MSMEs/ Business Enterprises which are constituted as Proprietorships, Partnerships, Registered Companies, Trusts and Limited Liability Partnerships (LLPs), interested borrowers under Pradhan Mantri Mudra Yojana, and also loans to individuals for business purposes. Hence, statement 1 is correct.
- All Scheduled Commercial Banks (SCBs) are eligible as MLIs. NBFCs which have been in operation for at least 2 years as on 29.2.2020, and All India Financial Institutions will also be eligible as MLIs under the Scheme. Hence, statement 2 is correct.
- The Scheme would be applicable to all loans sanctioned under GECL during the period from May 23, 2020, to March 31, 2023, or till guarantees for an amount of Rs. 5 lakh crore are issued by NCGTC, whichever is earlier.
- No additional collateral shall be asked by MLIs for additional credit extended under GECL.

91. B

- United Nations Development Programme's (UNDP) global Multidimensional Poverty Index (MPI) measures acute multidimensional poverty across more than 100 developing countries.
- The methodology for MPI is developed by UNDP, Oxford Poverty Human Development Initiative. Hence, statement 1 is correct.
 - Ø The methodology involves measuring each person's overlapping deprivations across 10 indicators in three equally weighted dimensions: health, education, and standard of living. The health and education dimensions are based on two indicators each, while the standard of living is based on six indicators.
 - Ø All the indicators needed to construct the MPI for a country are taken from the same household survey.
 - Ø Each indicator is equally weighted within its dimension, so the health and education indicators are weighted 1/6 each, and the standard of living indicators are weighted 1/18 each.
 - Ø The MPI ranges from 0 to 1, and higher values imply higher multidimensional poverty. Hence statement 2 is not correct.
- The MPI complements the international US\$ 1.90-a-day poverty line by identifying who is multidimensionally poor and shows the composition of multi dimensional poverty.
- This graph shows a consistent decline in the trends of Multidimensional Poverty in India. Hence, statement 3 is correct.



92. B

- To ensure the liberalization of investment in various industries, the Government has permitted 100 percent foreign participation in telecommunication services, including all services and infrastructure providers, through the Automatic Route. Hence, statement 1 is correct.
- The FDI ceiling in insurance companies was also raised from 49 to 74 per cent, under automatic route. Further, the Government has allowed 20 per cent foreign investment in Life Insurance Corporation (LIC) under the automatic route. Hence, statement 2 is not correct.
- The World Investment Report 2022 of UNCTAD places India as the seventh largest recipient of FDI in the top 20 host countries in 2021. In FY22 India received the highest-ever FDI inflows of US\$ 84.8 billion including US\$ 7.1 billion FDI equity inflows in the services sector. Hence, statement 3 is correct.

93. A

- The National Hydrogen Mission and Green Hydrogen Policy have been introduced to enable India to be energy independent by 2047. Its pivotal role is also reflected in India's Long Term Low Emissions Development Strategy (LT-LEDS). Hence, statement 1 is correct.
- Green Hydrogen is pure hydrogen generated by using renewable energy such as solar power and wind energy. The by products are water and water vapour. Hence, statement 2 is correct.

- Hydrogen is an energy carrier. It is converted into electricity by fuel cells, which generate electricity by mixing hydrogen and oxygen atoms. It will be crucial for achieving decarbonisation of harder-to-abate sectors such as fertilizers, refining, methanol, maritime shipping, iron & steel and long-haul transport. Green hydrogen is also an important element of India's Long Term Low Emissions Development Strategy (LT-LEDS).
 - Oil India Limited (OIL) has taken the first significant step towards Green Hydrogen Economy in India with the commissioning of India's first 99.999% pure Green Hydrogen pilot plant, with an installed capacity of 10 kg per day at its Jorhat Pump Station in Assam. The plant was commissioned in a record time of 3 months. Hence, statement 3 is not correct.
94. B
- According to the Economic Survey of India 2022-23, the contribution of the MSME sector to overall GVA rose from 29.3 percent in FY18 to 30.5 percent in FY20, the economic impact of the pandemic caused the sector's share to fall to 26.8 percent in FY21.
 - Various steps taken by the government for the promotion of Micro, Small, and Medium Enterprises (MSMEs) in India are:
 - Ø CHAMPIONS Portal is a single-window grievance redressal portal for MSMEs launched by the Ministry of MSME in June 2020. Hence pair 1 is not correctly matched.
 - Ø Samadhaan Portal is set up under the Micro, Small, and Medium Enterprises Development (MSMED) Act to monitor the outstanding dues to the MSME sector and is helping MSMEs in resolving their cashflow difficulties. Hence pair 2 is not correctly matched.
 - Ø Udyam Portal is a paperless, zero-cost registration portal that is based on self-declaration and only requires Aadhaar. Hence pair 3 is correctly matched.
95. C
- India continues to open up its sectors to global investors by raising FDI limits and removing regulatory barriers to attract increased investments, in addition to developing infrastructure and improving the business environment.
 - Ø 100 percent FDI under automatic route was permitted for the sale of coal, and coal mining activities.
 - Ø 100 percent FDI has been permitted in intermediaries or insurance Intermediaries, including insurance brokers, reinsurance brokers, insurance consultants, corporate agents, third-party administrators, Surveyors and Loss Assessors, and such other entities as may be notified by the Insurance Regulatory and Development Authority from time to time.
 - Ø 26 percent FDI under the government route has been permitted for uploading/ streaming of news & current affairs through Digital Media.
 - Hence, option (c) is the correct answer.
96. B
- Jointly developed by the National Aeronautics and Space Administration (NASA) and the Indian Space Research Organisation (ISRO), an Earth-observation satellite, called NISAR (NASA-ISRO Synthetic Aperture Radar), got a send-off ceremony at the American space agency's Jet Propulsion Laboratory (JPL) in Southern California. The SUV-size satellite will be shipped to India in a special cargo container flight later this month for a possible launch in 2024 from Satish Dhawan Space Centre in Andhra Pradesh.
 - NISAR has been built by space agencies of the US and India under a partnership agreement signed in 2014. The 2,800 kilograms satellite consists of both L-band and S-band synthetic aperture radar (SAR) instruments, which makes it a dual-frequency imaging radar satellite. While NASA has provided the L-band radar, GPS, a high-capacity solid-state recorder to store data, and a payload data subsystem, ISRO has provided the S-band radar, the GSLV launch system and spacecraft. Hence, statement 1 is correct.
 - NISAR is expected to be launched in January 2024 from Satish Dhawan Space Centre into a near-polar orbit. The satellite will operate for a minimum of three years. NASA requires the L-band radar for its global science operations for at least three years. Meanwhile, ISRO will utilize the S-band radar for a minimum of five years. Hence, statement 2 is not correct.
 - Once launched into space, NISAR will observe subtle changes in Earth's surfaces, helping researchers better understand the causes and consequences of such phenomena. It will spot warning signs of natural disasters, such as volcanic eruptions, earthquakes and landslides. The satellite will also measure groundwater levels, track flow rates of glaciers and ice sheets, and monitor the planet's forest and agricultural regions, which can improve our understanding of carbon exchange. Hence, statement 3 is correct.
 - ISRO will use NISAR for a variety of purposes including agricultural mapping, and monitoring of glaciers in the Himalayas, landslide-prone areas, and changes in the coastline. By using synthetic aperture radar (SAR), NISAR will produce high-resolution images. SAR is capable of penetrating clouds and can collect data day and night regardless of the weather conditions.
97. D
- The fastest land animal in the world, Cheetah, declared extinct in India in 1952, will find a new home in the Kuno-Palpur National Park (KNP). African cheetahs are being brought under an intercontinental translocation project between India and Africa (mainly from South Africa and Namibia). The introduction of Cheetahs in India is being done under Project Cheetah, the world's first intercontinental large wild carnivore translocation project. Hence, statement 1 is correct.
 - Cheetah can be a charismatic flagship and umbrella species to garner resources for restoring open forest ecosystems and bringing back the balance in the food web. Bringing the Cheetah back will make India the only country with five species of big cats: tiger, lion, leopard, snow leopard and cheetah. Hence, statement 2 is correct.
 - What Caused the Extinction of Cheetahs in India? Reduced levels of genetic heterogeneity due to a historical genetic bottleneck resulting in high infant mortality in the wild and its reduced ability to breed in captivity were some of the major factors for extinction. Sport hunting: The consistent and widespread capture of cheetahs from the wild (both male and female) over centuries. Bounty killings: The British added to the woes of the species by declaring a bounty for killing it in 1871. The

final phase of its extinction coincided with British colonial rule. It is recorded that the last cheetahs were shot in India in 1947, and officially declared extinct in 1952. Hence, statement 3 is correct.

98. C

- Recent context: The Union Ministry of Mines notified the draft Geo-heritage Sites and Geo-relics (Preservation and Maintenance) Bill, 2022, for public comments.
- The Geological Survey of India (GSI) declares geo-heritage sites/ national geological monuments for protection and maintenance. The State-wise details are given in Annexure. GSI or the respective State governments take necessary measures to protect these sites. There are 32 geo-heritage sites spread across 13 states.
- Volcanogenic bedded Barytes, Mangampeta, Cuddapah district- Andhra Pradesh. One of the largest baryte deposits in the world is considered to have formed through precipitation from volcanic vapors under submarine conditions and sub-aerial showering of ash and molten baryte lapilli. Hence, pair 1 is correctly matched.
- Akal Wood Fossil Park is a National Geological Monument of India located in Jaisalmer district, Rajasthan. It is also a Biodiversity Heritage Site. The terrain is barren and rocky. The park lies in Jaisalmer's fossil belt, a region noted to have the potential for geological parks. Fossils and footprints of pterosaurs have been found in the nearby Thaiyat area. Hence, pair 2 is correctly matched.
- Lonar Lake, also known as Lonar crater, is a notified National Geo-heritage Monument, saline, soda lake, located at Lonar in Buldhana district, Maharashtra, India. Lonar Lake is an astrobleme created by a meteorite impact during the Pleistocene Epoch. It is one of only four known hyper-velocity impact craters in basaltic rock anywhere on Earth. Hence, pair 3 is correctly matched.
- Mawmluh Cave is a maze cave in the state of Meghalaya in northeast India. At 7.2 km in length, it is the fourth longest cave in the Indian subcontinent. The cave, which has several entrances, has formed at the junction between an early Eocene dolomite and a sandstone formation. It contains numerous stalactites, stalagmites, columns, and drapes, collectively termed speleothems. Hence, pair 4 is not correctly matched.

99. D

- Account Aggregator (AA) is a Non-Banking Financial Company (NBFC) engaged in the business of providing the service of retrieving or collecting financial information pertaining to the customer. Hence, statement 1 is correct.
- They are registered as Non Banking Financial Companies (NBFC) with RBI. Hence, statement 2 is correct.
- No financial information of the customer is retrieved, shared or transferred by AA without the explicit consent of the customer. AA transfers data from one financial institution to another based on an individual's instruction and consent. Registering with an AA is fully voluntary for consumers.
- Entities may enroll themselves on AA framework as Financial Information Provider (FIP) viz. banking company, non-banking financial company, asset management company, depository, depository participant, insurance company, insurance repository, pension fund etc. and as Financial Information User (FIU) which is an entity registered with and regulated by any financial sector regulator. Hence, statement 3 is correct.

100. C

- Over the last few years, the number of neobanking platforms and global investments in the neo-banking segment has also risen consistently.
- Neobanks (E.g. Razorpay) are fintech firms, with only a digital presence. They leverage technology and artificial intelligence to offer personalized services to customers while minimizing operating costs. Hence, statement 1 is correct.
 - Ø In India, these firms don't have a bank license of their own but rely on bank partners to offer licensed services. That's because the Reserve Bank of India (RBI) doesn't allow banks to be 100% digital yet (though some foreign banks offer digital-only products through their local units.).
 - Ø Neobanks operate entirely online, with no physical presence apart from office space in the offline world. Hence, statement 2 is correct
- Traditional banks follow an omnichannel approach i.e. having both physical (through branches and ATMs) and digital banking presence.
- FinTech is broadly used to describe emerging technological innovations in the financial services sector. Neobanks cater to retail customers, and small and medium businesses, which are generally underserved by traditional banks.