

ANSWERS & EXPLANATIONS

GENERAL STUDIES (P) TEST – 3208 (2021)

Q 1.A

- **Recent Context:** The United States formally rejoined the Paris climate agreement in February 2021, nearly four years after former President Donald Trump announced the withdrawal.
- **Paris Agreement was adopted on December 12, 2015 at COP21 in Paris, France by the Conference of the Parties (COP) to the UN Framework Convention on Climate Change (UNFCCC).**
 - Since, the Paris Agreement is considered to be “under” the UNFCCC, only parties to the UNFCCC can join the Paris Agreement. Hence, statement 1 is correct.
 - By adopting the Paris Agreement, each of the Parties agreed to the text of the Paris Agreement. This does not mean that Parties to the UNFCCC automatically become Parties to the Paris Agreement.
 - The next step is for the Parties to sign the Paris Agreement. Signing is important because it indicates a commitment by that country to refrain from acts that would defeat the object and purpose of the Agreement.
 - After signing, Parties then formally join the Paris Agreement. **This can be done by depositing one of several types of instruments with the Secretary-General to the UN – instruments of “ratification, acceptance or approval.” Hence, statement 2 is not correct.**
 - **There is no time limit for when countries submit these instruments.** A country might deposit its instrument of ratification, acceptance or approval on the same day it signs, or submit it separately much later. **If a country hasn’t signed in the one-year timeframe, it can join the Paris Agreement later by submitting an instrument of “accession.”**
 - UNFCCC sets out the broad parameters of a regime, including the objectives, core principles, broad commitments from its parties and a general system of governance, and leave the detailed rules and processes of meeting the objectives to subsequent agreements. This ensures that all Parties to the Paris Agreement are also operating within the parameters set by the UNFCCC.

Q 2.D

- **What Makes a Grid “Smart?”:** The digital technology that allows for two-way communication between the utility and its customers, and the sensing along the transmission lines is what makes the grid smart.
 - Like the Internet, the Smart Grid will consist of controls, computers, automation, and new technologies and equipment working together, but in this case, these technologies will work with the electrical grid to respond digitally to our quickly changing electric demand.
- **Advantages of Smart Grid:**
 - More efficient transmission of electricity
 - **Quicker restoration of electricity after power disturbances**
 - Reduced operations and management costs for utilities, and ultimately lower power costs for consumers
 - **Reduced peak demand, which will also help lower electricity rates. It allows the customers to shift the use of appliances away from higher-cost on-peak demand hours, to lower-cost off-peak hours.**
 - Increased integration of large-scale renewable energy systems.
 - Better integration of customer-owner power generation systems. The Smart Grid will take greater advantage of customer-owned power generators to produce power when it is not available from utilities. By combining these "distributed generation" resources, a community could keep its health center, police department, traffic lights, phone System, and grocery store operating during emergencies.
 - A smarter grid will add resiliency to our electric power system and make it better prepared to address emergencies such as severe storms, earthquakes, large solar flares, and terrorist attacks. **Because of its two-way interactive capacity, the Smart Grid will allow for automatic rerouting when equipment fails or outages occur. This will minimize outages and minimize the effects when they do happen.**

- When a power outage occurs, Smart Grid technologies will detect and isolate the outages, containing them before they become large-scale blackouts. The new technologies will also help ensure that electricity recovery resumes quickly and strategically after an emergency—routing electricity to emergency services first.
- In addition, the Smart Grid is a way to address an aging energy infrastructure that needs to be upgraded or replaced.
- It helps to address energy efficiency, to bring increased awareness to consumers about the connection between electricity use and the environment.
- It brings increased national security to our energy System—drawing on greater amounts of home-grown electricity that is more resistant to natural disasters and attack.
- **Hence all the options are correct.**

Q 3.D

- **Earth Overshoot Day is hosted and calculated by Global Footprint Network, an international research organization** that provides decision-makers with a menu of tools to help the human economy operate within Earth's ecological limits. **Hence, statement 2 is not correct.**
- The concept of Earth Overshoot Day was first conceived by Andrew Simms of the UK think tank New Economics Foundation, which partnered with Global Footprint Network in 2006 to launch the first global Earth Overshoot Day campaign. WWF, the world's largest conservation organization, has participated in Earth Overshoot Day since 2007.
- **Earth Overshoot Day marks the date when humanity's demand for ecological resources and services in a given year exceeds what Earth can regenerate in that year.** It means after the overshoot day in a particular year we are consuming more resources and generating waste than the earth can cope up with and regenerate in that particular year.
- To determine the date of Earth Overshoot Day for each year, Global Footprint Network calculates the number of days of that year that Earth's biocapacity suffices to provide for humanity's Ecological Footprint. The remainder of the year corresponds to global overshoot.
- Earth Overshoot Day is computed by dividing the planet's biocapacity (the amount of ecological resources Earth is able to generate that year), by humanity's Ecological Footprint (humanity's demand for that year), and multiplying by 365, the number of days in a year:
 - $\text{Earth's Biocapacity} / \text{Humanity's Ecological Footprint} \times 365 = \text{Earth Overshoot Day}$
 - **Hence the Earth Overshoot Day changes every year and is dependent on human ecological footprint and the earth's biocapacity of that year. Earth Overshoot Day 2020 fell on August 22. Hence, statement 1 is not correct.**

Q 4.D

- The origins of Bharatnatyam can be traced back to solo performances of the temple dancers of 'devdasis' in Tamil Nadu, thus the dance is also referred as 'dashiattam'. **Hence statement 1 is correct.**
- In the early 19th century for dance teachers of Thanjavur known as the 'Tanjore quartet' defined the elements of Bharatnatyam. The four teachers are Chiniah, Ponniah, Vadivelu and Shivanandam. Under them the dance form also came to be known as Tanjore Natyam. **The dance is referred to as 'fire dance', as it is the manifestation of fire in the Human body. The form pays emphasis to both the Tandava and Lasya aspects of the dance. Hence statement 2 is correct.**
- **Several texts beginning with Bharata Muni's Natya Shastra (200 B.C.E. to 200 C.E.) provide information on this dance form. The Abhinaya Darpana by Nandikesvara is one of the main sources of textual material, for the study of the technique and grammar of body movement in Bharatnatyam Dance.**
- The dance is famous for a feature where one dancer plays many different roles in a single performance (ekharya). **Hence statement 3 is correct.**
- **The music associated with Bharatanatyam is in South India's Carnatic style and instruments played comprise of cymbals, the flute, a long pipe horn called nagaswaram, a drum called mridangam and veena. The verses recited during performance are in Sanskrit, Tamil, Kannada and Telugu.**
- The person who conducts the dance recitation is the **Nattuvanar**.
- The first dance item is the **alarippu**, literally meaning - to adorn with flowers. It is an abstract piece combining pure dance with the recitation of sound syllables. While the performance ends with a **tillana** which is a vibrant dance performed to the accompaniment of musical syllables with a few lines of sahitya. The finale of the piece is a series of well-designed rhythmic lines reaching a climax.

Q 5.A

- The Committee of privileges is Parliamentary Standing Committees that is semi-judicial in nature. It examines the cases of breach of privileges of the House and its members and recommends appropriate action. Hence statement 1 is correct.
- Both the house of Parliament have a separate committee of privilege. The Lok Sabha committee has 15 members, while the Rajya Sabha committee has 10 members whose members are nominated by the Speaker and Chairman of the house respectively. Usually, the Committee is reconstituted every year along with other parliamentary committees of the houses. Hence statement 2 is not correct.
- Power of committee to take evidence or call for papers records or documents
 - It has the power to require the attendance of persons or the production of papers or records if such a course is considered necessary for the discharge of its duties:
 - Provided that if any question arises whether the evidence of a person or the production of a document is relevant for the purposes of the Committee, the question shall be referred to the Chairman, whose decision shall be final.
 - Provided further that Government may decline to produce a document on the ground that its disclosure would be prejudicial to the safety or interest of the State.
 - A witness may be summoned by an order signed by the Secretary-General and shall produce such documents as are required for the use of the Committee.
 - It shall be in the discretion of the Committee to treat any evidence tendered before it as secret or confidential
- Additional Information :
 - a member may raise a question involving a breach of privilege either of a member or of the houses or of a Committee thereof which can require the prior consent of the presiding officer of the house before inquiry by the committee of privilege.
 - The right to raise a question of privilege shall be governed by the following conditions, namely:-
 - the question shall be restricted to a specific matter of recent occurrence;
 - the matter requires the intervention of the house.

Q 6.C

- An exchange-traded fund (ETF) is a basket of securities that trade on an exchange. It is a type of investment fund and similar in many ways to mutual funds.
- Exchange-traded funds pool the financial resources of several people and use it to purchase various tradable monetary assets such as shares, debt securities such as bonds and derivatives. Most ETFs are registered with the Securities and Exchange Board of India (SEBI).
- ETFs share characteristic features of both shares and mutual funds. They are generally traded in the stock market in the form of shares produced via creation blocks.
- BHARAT Bond ETF - a tradable debt ETF investment in India comprises of debt given to CPSE and PSE companies. It is India's first bond exchange-traded fund. The ETF will invest in a portfolio of AAA-rated bonds of public sector entities.
- Hence, statements 1 and 2 are correct.

Q 7.C

- Brass is an alloy of copper and zinc, in proportions that can be varied to achieve varying mechanical and electrical properties. It is a substitutional alloy: atoms of the two constituents may replace each other within the same crystal structure. Due to its unique properties, which include corrosion resistance, common uses for Brass include applications that require low friction. These applications can include fittings (fasteners and connectors), tools, appliance parts, and ammunition components. Hence pair 1 is correctly matched.
- Bronze is an alloy consisting primarily of copper, commonly with about 12–12.5% tin and often with the addition of other metals (such as aluminium, manganese, nickel or zinc) and sometimes non-metals or metalloids such as arsenic, phosphorus or silicon. Bronze is used in architecture for structural and design elements, for bearings because of its friction properties, and as phosphor bronze in musical instruments, electrical contacts, and ship propellers. Bronze also has nautical applications because of its resistance to corrosion. Hence pair 2 is correctly matched.
- Solder is a fusible metal alloy used to create a permanent bond between metal workpieces. Solder is melted in order to adhere to and connect the pieces after cooling, which requires that an alloy suitable for use as solder has a lower melting point than the pieces being joined. Solder is a metal alloy usually made of tin and lead which is melted using a hot iron. Solder is used to bond metal workpieces together and its applications are extensive. Solder is commonly used in, electronics, heating, air conditioning, mechanical,

fire sprinkler and other similar systems as well as radiator manufacturing, repair and sheet metal work. It is also used in jewellery and stained glass work. **Hence pair 3 is correctly matched.**

- **German silver: German silver is an alloy of copper, zinc, and nickel, sometimes also containing lead and tin.** German silver varies in composition, the percentage of the three elements ranging approximately as follows: copper, from 50% to 61.6%; zinc, from 19% to 17.2%; nickel, from 30% to 21.1%. The proportions are always specified in commercial alloys. German silver is extensively used because of its hardness, toughness, and resistance to corrosion for articles such as tableware (commonly silver plated), marine fittings, and plumbing fixtures. Because of its high electrical resistance, it is used also in heating coils. **Hence pair 4 is not correctly matched.**

Q 8.C

- Most of the **Princely States** were autocratically ruled. The economic burden on the people was heavy with high taxation, education and social services were backward and civil rights were restricted. The British Government expected the States to support them thereby acting against the development of nationalist sentiments. The onset of the nationalist movement in British India also had an impact on the people of the Princely States. In the **1920s**, however, popular movements began to appear in all these states in the form of **Praja Mandals**.
- The subjects of the Princely States established people's organizations in States like **Mysore, Hyderabad, Baroda, Kathiawar** etc. The people's organizations started by the people of Princely States for the national movement were called **Praja Mandals**. These mandals were eventually affiliated to a national body called the **All India States People's Conference**, founded in 1927 with its **headquarters at Bombay**.
- **The people of Praja Mandal movement fought against their feudal princes and the British administration simultaneously for their rights.** The main demand of the Praja Mandal movements was democratic rights such as responsible government and citizenship rights. The people of the Praja Mandal Movements implemented the constructive programmes of the Indian National Movement in their princely states. They established schools, used khadi, encouraged cottage industries and started agitation against the Untouchability.
- **Hence option (c) is the correct answer.**

Q 9.C

- **Wildlife Crime Control Bureau** is a **statutory multi-disciplinary body** established by the Government of India under the Ministry of Environment and Forests, to combat organized wildlife crime in the country. **Hence, statement 1 is correct.**
- It was constituted on 6th June 2007, by amending the **Wildlife Protection Act, 1972**.
- The Bureau has its headquarter in **New Delhi** and five regional offices at Delhi, Kolkata, Mumbai, Chennai and Jabalpur; three sub-regional offices at Guwahati, Amritsar and Cochin; and five border units at Ramanathapuram, Gorakhpur, Motihari, Nathula and Moreh.
- Under **Section 38 (Z) of the Wild Life (Protection) Act, 1972**, it is mandated
 - to collect and collate intelligence related to organized wildlife crime activities and to disseminate the same to State and other enforcement agencies for immediate action so as to apprehend the criminals;
 - to establish a **centralized wildlife crime data bank**; **Hence, statement 2 is correct.**
 - co-ordinate actions by various agencies in connection with the enforcement of the provisions of the Act;
 - assist foreign authorities and international organization concerned to facilitate co-ordination and universal action for wildlife crime control;
 - capacity building of the wildlife crime enforcement agencies for scientific and professional investigation into wildlife crimes and assist State Governments to ensure success in prosecutions related to wildlife crimes;
 - advise the Government of India on issues relating to wildlife crimes having national and international ramifications, relevant policy and laws.
 - to implement the obligations under various International Conventions and Protocols.

Q 10.C

- **Recent Context: The Marine Union of India** urged the government to take cognizance of the "Neptune Declaration on Seafarer Wellbeing and Crew Change" in order to formulate the Maritime India Vision 2030.
- **The Neptune Declaration, signed by more than 750 organizations, outlines the main actions that need to be taken for the wellbeing of seafarers in the face of COVID-19 crisis. Hence, option (c) is the correct answer.**
- The daily lives and wellbeing of seafarers were highly impacted due to the COVID-19 pandemic. It led to a humanitarian crisis at sea. This declaration has mentioned four main actions that are needful to address the crew change crisis:
 - To recognize the seafarers as the key workers and provide them priority access to Covid-19 vaccines.

- To establish and implement the gold standard health protocols which are based on the existing best practice.
- To increase the collaboration between the ship operators and charterers so as to facilitate the crew changes.
- To ensure the air connectivity between the key maritime hubs for seafarers.
- The **Marine Union of India is the oldest marine office**. It represents the Merchant Navy Officers who are its members. The office is affiliated to the International Transport Workers' Federation (ITF).
- It works with the primary objective of working for and ensuring the fairness of work and wage conditions for the members. It also looks after the implementation of international regulations such as the Maritime Labour Convention (MLC), 2006

Q 11.A

- **Recent Context** - Union Minister for Health and Family Welfare has said that Safe Motherhood Assurance (SUMAN) initiative will lead to a fully responsive and accountable health system.
- **About SUMAN initiative** - It stands for Surakshit Matritva Aashwasan or Safe Motherhood Assurance. It has been launched in 2019 by Ministry of health and family welfare to achieve zero preventable maternal and newborn deaths in the country and providing service assurance for maternal and newborn care services. It aims to end all preventable Maternal and Neonatal deaths. **Hence option (a) is the correct answer.**
- SUMAN promotes safe pregnancy, childbirth and immediate postpartum care with respect and dignity by translating the entitlements into a service guarantee which is more meaningful to the beneficiaries. It is a commitment of the government for providing quality maternal and infant care services without any out of pocket expenditure for the beneficiaries.
- **Objectives of the SUMAN are** - Assured, dignified, respectful and quality healthcare at no cost and zero tolerance for denial of services for every woman and newborn visiting the public health facility to end all preventable maternal and newborn deaths and morbidities and provide a positive birthing experience.
- Beneficiaries of the initiative are – a) All pregnant women, b) All mothers upto 6 months post delivery, and c) All sick infants

Q 12.D

- **The RBI took over the powers to regulate HFCs from the National Housing Bank (NHB) in 2019.** The Reserve Bank of India (RBI) has proposed modifications in the existing regulations pertaining to the housing finance companies through a master directive.
- As per RBI's Non-Banking Financial Company-Housing Finance Company (Reserve Bank) Directions, 2021 a **Housing Finance Company (HFC) is an NBFC whose financial assets, in the business of providing finance for housing, constitute at least 60% of its total assets.**
- RBI's directive also states that HFCs shall maintain a liquidity buffer in terms of liquidity coverage ratio (LCR), which will promote their resilience to potential liquidity disruptions by ensuring that they have sufficient high-quality liquid asset (HQLA) to survive any acute liquidity stress scenario lasting for 30 days.
- **Hence, statements 1 and 2 are not correct.**

Q 13.B

- **Recent Context:** India recently refused to become a signatory to the Osaka declaration on the digital economy which proposes the concept of Data Free Flow with Trust (DFFT). **Hence, statement 2 is correct.**
- **About Data Free Flow with Trust (DFFT):**
 - Conceptualized under the Osaka declaration, it aims to eliminate restrictions on cross-border transfer of information by electronic means, including personal information, and storing data in foreign servers, for productivity, innovation and sustainable development. .
 - It stresses the importance of addressing challenges such as security, data protection and intellectual property that otherwise mar public trust in digital technologies.
- **Need for DFFT**
 - Lack of international framework to resolve cross-border data conflicts
 - Improving ease of doing business
 - Address anticompetitive and trade-distorting actions by digital giants
- **Osaka Declaration on Digital Economy**
 - The declaration was **signed at the sidelines of the G20 summit in 2019, by some G20 leaders and other countries** who are currently participating in the informal plurilateral negotiations on e-commerce at the World Trade Organization. **Hence, statement 1 is not correct**
 - It announced the launch of the 'Osaka Track', a process that aims to intensify efforts on international rule-making on digital economy, especially on data flows and e-commerce while promoting enhanced protections for intellectual property, personal information, and cybersecurity.

- **Why India refused to accept the concept?**

- The concept of DFFT is neither well-understood nor is comprehensive enough in the legislation of many countries.
- India, like many other developing countries, is still in the phase of preparing a legal and regulatory framework for its data protection and e-commerce laws. India needs a policy space to finalize laws around digital trade and data as it is a potent tool for development.
- The existing regulations on which DFFT is sought to be premised, such as the uninhibited cross-border flow of data, may be inadequate to address India's concerns on data access and could further aggravate the digital divide between countries.
- The Osaka Track could undermine multilateral and consensus-based talks on e-commerce taking place under the WTO Work Program on Electronic Commerce.
 - The WTO Work Programme on Electronic Commerce covers issues related to trade arising from global e-commerce.

Q 14.A

- Recently an agreement with Bangladesh to improve water connectivity has been made and work is underway on the Indo-Bangladesh protocol route across the Hooghly River to connect the Brahmaputra and the Barak River.
- **Barak River:**
 - The Barak basin is the second largest basin in North-East India and constitutes part of the Ganga-Brahmaputra river system.
 - It originates from Manipur hills, Liyai Khullen, border of Nagaland and Manipur, and enters the plains near Lakhimpur. **Hence statement 1 is correct.**
 - The river enters Bangladesh as Surma and Kushiya. Later, the river is called the Meghna and receives the combined flow of the Ganga and Brahmaputra. It is not a tributary of the Brahmaputra river. **Hence statement 2 is not correct.**
 - The principal tributaries of Barak are the Jiri, the Dhaleswari, the Singla, the Longai, the Sonai and the Katakhal.
 - The river flowing through the states of Manipur, Nagaland, Mizoram and Assam in India and into the Bay of Bengal via Bangladesh.
 - The sixth national waterway stretch is on this river.
 - Tipaimukh Dam is a proposed embankment dam on the Barak River.
- **Keibul Lamjao National Park:**
 - Keibul Lamjao National park is drained by the Manipur river. **Hence statement 3 is not correct.**
 - It is the only floating park in the world and an integral part of Loktak Lake.
 - The national park is characterized by many floating decomposed plant materials locally called phumdis.
 - Fauna: Eld's deer or brow-antlered deer or sangai also called the dancing deer.
 - **Manipur river:**
 - ✓ Tuitha and Imphal river are important tributaries.
 - ✓ The trellis and de-trellis drainage patterns.
 - ✓ It flows into Myanmar where it merges with the Myittha river.
 - ✓ It is not a tributary of the Barak river.



Q 15.B

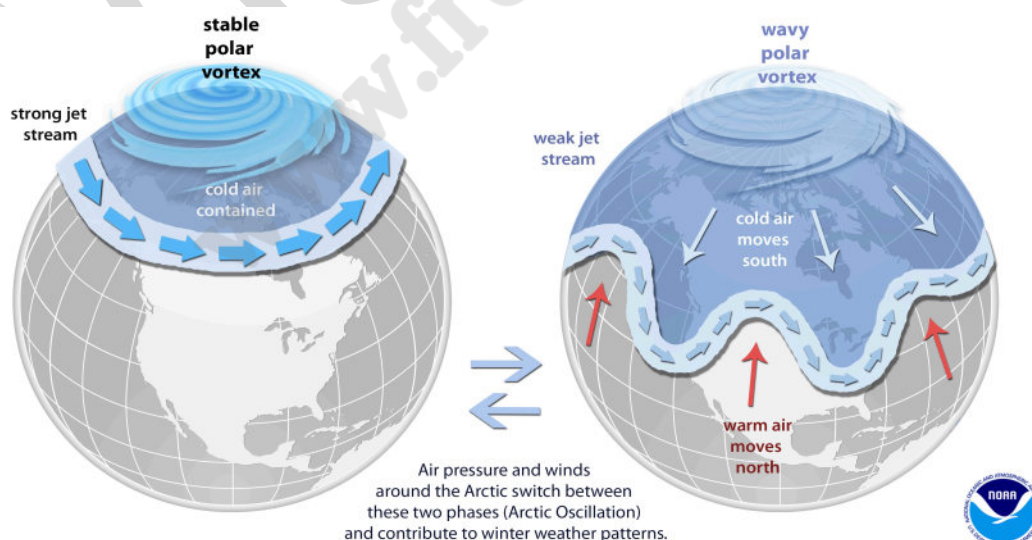
- Right to Information Act was enacted in 2005 to empower the citizens, promote transparency and accountability in the working of the Government in order to make our democracy work for the people in a real sense. However, there are certain existing laws that are inconsistent with certain provisions of the RTI Act and also some of the clauses within the act which check the disclosure of information under the act.
- **The Official secret act (OSA) keeps certain kinds of information confidential involving the affairs of state, diplomacy, national security, espionage, and other state secrets. However, Section 22 of the RTI Act provides for its primacy vis-a-vis provisions in the OSA. This gives the RTI Act an overriding**

effect, notwithstanding anything inconsistent with the provisions of OSA. So generally if there is any inconsistency in OSA with regard to the furnishing of information, it will be superseded by the RTI Act. Hence statement 1 is not correct.

- However, under Sections 8 and 9 of the RTI Act, the government can refuse information. Effectively, if the government classifies a document as “secret” under OSA Clause 6, that document can be kept outside the ambit of the RTI Act. However, The Official Secrets Act does not define the terms “secret” or “official secrets” or any parameters that have been identified. Public servants could deny any information terming it a “secret”.
- Section 8 in The Right To Information Act, 200 provided the Exemption from disclosure of information on certain grounds such as
 - information, disclosure of which would prejudicially affect the sovereignty and integrity of India, the security, strategic, scientific or economic interests of the State
 - the information which has been expressly forbidden to be published by any court of law or tribunal or the disclosure of which may constitute contempt of court. Hence statement 2 is correct.
 - information, the disclosure of which would cause a breach of privilege of Parliament or the State Legislature;
 - information, the disclosure of which would endanger the life or physical safety of any person or identify the source of information
 - cabinet papers including records of deliberations of the Council of Ministers, Secretaries and other officers
 - the information available to a person in his fiduciary relationship, unless the competent authority is satisfied that the larger public interest warrants the disclosure of such information
 - the information which would impede the process of investigation or apprehension or prosecution of offenders.

Q 16.B

- The term "vortex" refers to the counter-clockwise flow of air that helps keep the colder air near the Poles.
- **Polar Vortex:**
 - The polar vortex is a large area of low pressure and cold air surrounding both of the Earth's poles. Hence, statement 1 is not correct.
 - It always exists near the poles, but weakens in summer and strengthens in winter. Hence, statement 2 is correct.
 - It is closely associated with jet stream, many times during winter, disturbances in the jet-stream and the intrusion of warmer air can disturb this polar vortex in the northern hemisphere, the polar vortex will expand, sending cold air southward with the jet stream. Masses of extremely cold air have plunged towards the interior of North America.
- The polar vortex is a
 - Cold
 - Circumpolar
 - Upper tropospheric low pressure
 - Large cyclonic parcel of air (counter clockwise in the Northern Hemisphere)
 - It can last from a day to several weeks.



Q 17.C

- **Nuakhai Juhar** is one of the most ancient festivals celebrated in Odisha **to welcome the new crop of the season**. The agricultural festival is mainly observed by the people of western Odisha.
- Nuakhai Juhar is also called Nuakhai Parab or Nuakahi Bhetghat and is a greeting exchanged on a special day. Nuakhai is a combination of two words, 'nua' meaning new and 'khai' means eat, it thus signifies "eating of new rice". People worship food grain on this auspicious day. Special meals are prepared and everyone eats them together. The farmers offer the first produce from their lands to Goddess Samaleswari, the famous mother goddess of the Sambalpur district of the state.

Q 18.A

- **Recent Context: Areas of Srivilliputhur Grizzled Giant Squirrel Sanctuary and Megamalai Wildlife Sanctuary** in Tamil Nadu have been combined to create the tiger reserve. Grizzled Squirrel Wildlife Sanctuary is contiguous to Periyar Tiger Reserve on the Southwestern side and the Megamalai Reserve Forest on the northwestern side and Its southern limit is contiguous with the Sivagiri Reserved Forest of Tirunelveli Forest Division. **Hence, option (a) is the correct answer.**
- **Tiger Reserves are declared by National Tiger Conservation Authority via Wild Life (Protection) Amendment Act, 2006 under the centrally sponsored scheme called Project Tiger. To declare an area as Tiger Reserve, the state governments can forward their proposals in this regard to NTCA.**
- Central Government via NTCA may also advise the state governments to forward a proposal for the creation of Tiger Reserves. Tiger Reserves are managed by National Tiger Conservation Authority (NTCA).
- No alternation of the boundary can be done without the recommendation of the National Board for Wild Life and without the advice of the Tiger Conservation Authority.

Q 19.D

- Tribunals (Part XIVA) were not part of the original constitution, it was incorporated in the Indian Constitution by 42nd Amendment Act, 1976. It comprises two provisions, Articles 323A and 323B.
- Art 323A deals with Administrative Tribunals for service matters.
- Art 323B deals with Tribunals for other matter. For example - the establishment of tribunals for the adjudication of disputes relating to Taxation, Land reforms etc.
- The distinction between Articles 323A and 323B:
 - **While Article 323A contemplates the establishment of tribunals for public service matters only, Article 323 B contemplates the establishment of tribunals for certain other matters.**
 - Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution or control of the waters of, or in, any inter-State river or river valley, according to Article 262 of the Indian constitution. **Hence statement 1 is not correct.**
 - **While tribunals under Article 323 A can be established only by Parliament, tribunals under Article 323 B can be established both by Parliament and state legislatures** with respect to matters falling within their legislative competence. **Hence statement 2 is not correct.**
 - **Under Article 323 A, only one tribunal for the Centre and one for each state or two or more states may be established. There is no question of the hierarchy of tribunals, whereas under Article 323 B, a hierarchy of tribunals may be created.**

Q 20.A

- **The Indian Slavery Act, 1843**, also known as **Act V of 1843**, was an act passed in British India under East India Company rule, which **outlawed many economic transactions associated with slavery**. The act states how the sale of any person as a slave was banned, and anyone buying or selling slaves would be booked under the Indian Penal Code with an offence carrying strict punishment. **Hence option (a) is the correct answer.**
- Some East India Company officials opposed the act, citing Hindu and Muslim customs and maintaining the fact that the act would be seen as interference in traditional social structures. **Evangelical politicians** who had led successful slavery abolition campaigns in the West Indies prevailed and the Act was implemented in India.

Q 21.C

- Guruvayur Satyagraha took place in (1931–32) and was a Satyagraha in the present Thrissur, then part of Ponnani Taluk of Malabar district, now part of Kerala, seeking entry for untouchables into the Guruvayur Temple. It was led by K. Kelappan who undertook a fast unto death for 12 days however it was given up on a request from Mahatma Gandhi.
- Vaikom is a small town located in the current Kottayam district in Kerala. The famous agitation took place there in 1924, known as Vaikom Satyagraha is the first organized movement against untouchability in India.

- It occupies a major position in the renaissance movement in Kerala. It was triggered in the Kakinada Congress meeting in 1923, TK Madhavan presented a report on the discrimination in Kerala and the plights of backward Hindus.
- The meeting decided to promote movements against untouchability.
- Flag Satyagraha was a peaceful civil disobedience movement of the freedom struggle of India in which people were hoisting flags everywhere under the right to hoist the national flag. The movement mainly took place in Nagpur in 1923. But in other places of India, there were movements at different times.
- **Hence option (c) is the correct answer.**

Q 22.D

- When the temperature of an air mass containing a large quantity of water vapour falls all of a sudden (mostly due to temperature inversion), condensation takes place within itself on fine dust particles.
- Fogs are a mini cloud in which condensation takes place around nuclei provided by the dust, smoke and salt particles, with their base at or very near to the ground.
- Fogs formed by condensation of warm air when it moves horizontally over a cold surface, are known as advection fog. These fogs are thick and persistent.
- Fog areas are positively related to cool ocean currents. The eastern portions of the oceans and western continental margins are characterised by most fogs because these areas are frequented by cool ocean currents. **For example**, California current, Peru current, Benguela current, Canary current, Western Australia current etc. **Hence statement 1 is correct.**
- Frontal fogs are formed in the high latitudes due to the convergence of cold polar air mass and warm westerlies.
- Radiation fogs are formed in low latitudes on continental areas during the winter season when warm and moist air lies over the cold ground surface.
- Dense fogs are formed at the places where cold and warm ocean currents converge. **For example**, the Japanese coast due to the convergence of cold Kurile current and warm Kuroshio current.
- In urban and industrial centres smoke provides plenty of nuclei which help the formation of fog and mist. Such a condition when fog is mixed with smoke is described as smog.
- Mist:
 - The difference between mist and fog is that mist contains more moisture than fog. In the mist, each nucleus contains a thicker layer of moisture. **Hence statement 2 is not correct.**
 - Mists are frequent over mountains as the rising warm air up the slopes meet a cold surface. **Hence statement 3 is correct.**
 - Water droplets also form mist, but with less merging or coalescing.
 - In the mist, visibility is more than one kilometre but less than two kilometres.

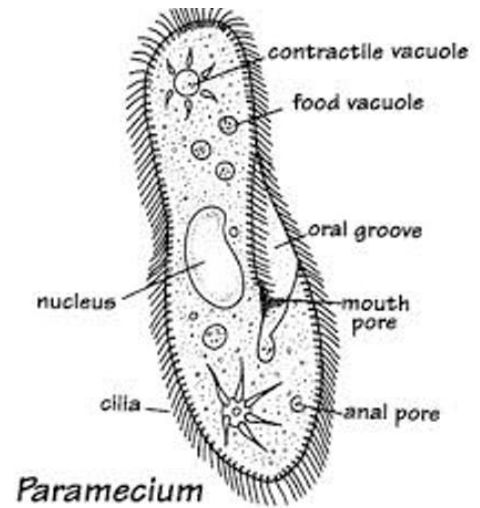
Q 23.D

- Oil and gas sector is among the eight core industries in India and plays a major role in influencing decision making for all the other important sections of the economy.
- India is expected to be one of the largest contributors to non-OECD petroleum consumption growth globally. **Crude Oil import rose sharply to US\$ 101.4 billion in 2019-20 from US\$ 63.9 billion in 2015-16. Hence, statement 2 is not correct.**
- India retained its spot as the third-largest consumer of oil in the world in 2019 with consumption of 5.16 million barrels per day (mbpd) of oil in 2019.
- **In FY20, crude oil production in India stood at 30.5 MMT. This is lower than the production of 35.5 MMT production during 2015-16.** This is because most of India's crude oil production comes from ageing wells that have become less productive over time. A lack of new oil discoveries in India coupled with a long lead time to begin production from discovered wells has led to a steady decline in India's crude oil production making India increasingly dependent on imports. **Hence, statement 1 is not correct.**
- The Government has adopted several policies to fulfil the increasing demand. It has allowed 100% Foreign Direct Investment (FDI) in many segments of the sector, including natural gas, petroleum products and refineries among others

Q 24.B

- Paramecium is a **unicellular organism** with a shape resembling the sole of a shoe. It ranges from 50 to 300um in size which varies from species to species. It is **mostly found in a freshwater** environment.
- It is a **single-celled eukaryote** belonging to the kingdom Protista and is a well-known genus of ciliate protozoa. As well, it belongs to the phylum Ciliophora.

- Its whole body is covered with small hair-like filaments called the cilia which help in locomotion. There is also a deep oral groove containing not so clear oral cilia. The main function of this cilia is to help both in locomotion as well as dragging the food to its oral cavity.
- Paramecia feed on microorganisms like bacteria, algae, and yeasts. To gather food, the Paramecium makes movements with cilia to sweep prey organisms, along with some water, through the oral groove, and into the cell. The food passes from the cilia-lined oral groove into a narrower structure known as the buccal cavity. Hence option (b) is the correct answer.



Q 25.D

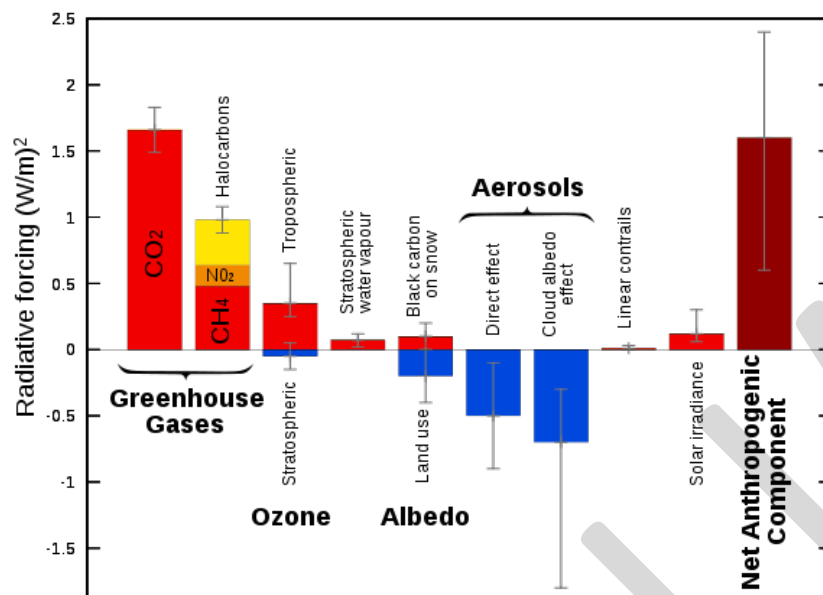
- Assets are considered to be high-quality liquid assets if they can be easily and immediately converted into cash at little or no loss of value. The liquidity of an asset depends on the underlying stress scenario, the volume to be monetized and the timeframe considered.
- There are two categories of assets that can be included in the stock of HQLAs, viz. Level 1 and Level 2 assets. Level 2 assets are sub-divided into Level 2A and Level 2B assets on the basis of their price-volatility
- Level 1 assets of banks would comprise of the following and these assets can be included in the stock of liquid assets without any limit as also without applying any haircut:
 - **Cash including cash reserves in excess of required CRR. Hence option 1 is correct.**
 - **Government securities in excess of the minimum SLR requirement. Hence option 3 is correct.**
 - **Within the mandatory SLR requirement, Government securities to the extent allowed by RBI, under the Marginal Standing Facility (MSF). Hence option 4 is correct.**
 - Marketable securities issued or guaranteed by foreign sovereigns not issued by a bank/financial institution/NBFC
- Level 2A and Level 2B assets would comprise of the following:
 - **Level 2 A**
 - **Marketable securities representing claims on or claims guaranteed by sovereigns, Public Sector Entities (PSEs) or multilateral development banks. Hence option 2 is correct.**
 - Corporate bonds, not issued by a bank/financial institution/NBFC or any of its affiliated entities, which have been rated AA
 - Commercial Papers not issued by a bank/PD/financial institution or any of its affiliated entities which have a short-term rating equivalent to the long-term rating of AA or above.
 - **Level 2B**
 - Marketable securities representing claims on or claims guaranteed by sovereigns having risk weights higher than 20% but not higher than 50%
 - Common Equity Shares not issued by a bank/financial institution/NBFC or any of its affiliated entities.

Q 26.A

- **Climate forcing is the physical process of affecting the climate on the Earth through a number of forcing factors.** These factors are specifically known as forcings because they drive the climate to change, and it is important to note that these forcings exist outside of the existing climate system. The climate system includes the hydrosphere, land surface, the cryosphere, the biosphere, and the atmosphere.
- **Examples of some of the most important types of forcings include variations in solar radiation levels, volcanic eruptions, changing albedo, and changing levels of greenhouse gases in the atmosphere.** Each of these is considered external forcings because these events change independently of the climate, perhaps as a result of changes in solar activity or human-caused fossil fuel combustion.
- Forcings can be monitored by looking at time series data for factors that are used to model climates. Generally speaking, **the size of these forcings is represented in terms of watts per square meter of the Earth's surface.** This represents the extra energy entering the Earth near the top of the atmosphere. Therefore the larger W/m² value the forcing has, the greater effect the change will have on the climate overall.

- There are two main types of forcings that exist - positive forcing and negative forcing. Positive forcing warms the Earth, while negative forcing cools it.
- Figure below shows a number of the major climate forcings, showing the relative amounts with which they contribute and whether they are positive or negative forcings.

Radiative Forcing Components



- From this, it is clear that
 - greenhouse gases are a major contribution to the forcing effect - most notably carbon dioxide, methane, and NO₂.
 - changes in ozone levels can act as either a positive or negative forcing, depending on whether the change is in the troposphere or stratosphere.
 - changes in albedo as a result of building and development, as well as reduced levels of ice worldwide, acts as a forcing.
 - **The addition of aerosols to the atmosphere also acts as a negative forcing**, either from their direct impact on the atmosphere or by changing how clouds form.
 - Other small effects are included, such as changes in water vapour levels in the stratosphere and effects from linear contrails - the thin "clouds" left behind by aircraft.
 - However, the most important part of this diagram is understanding that the majority of these forcings are anthropogenic - or human-caused. **The only forcing included which is completely natural is solar irradiance.** The fact that mainly human-caused positive forcings are what is pushing the climate to change is the major concern with global warming. **Hence option (a) is the correct answer.**

Q 27.A

- Fahien, a Chinese pilgrim, visited India during Chandragupta's reign and described what he saw in his travelogue 'fo – gu – oji'. He described **Velabhata** as a magician by profession. He was famous for his epic Mantrashastra. He was amongst the Nine jewels of Chandragupta Vikramaditya. **Hence statement 1 is correct.**
- **Bharavi**, 6th century AD, a Sanskrit poet who was the author of Kiratarjuniya ("Arjuna and the Mountain Man"), one of the classical Sanskrit epics classified as a maha kavya ("great poem"). He flourished during the reigns of King Durvinita of the Western Ganga dynasty and King Simhavishnu of the Pallava dynasty. **Hence statement 2 is correct.**
- **Vararuchi** is the name of another gem of **Chandragupta Vikramaditya** who was a grammarian and Sanskrit scholar. Some historians have identified him with Katyayana. Vararuchi is said to be the author of Prakrit Prakasha, which is first Grammar of Prakrit Language. **Hence statement 3 is not correct.**

Q 28.C

- **Devasthal Telescope:** It is a world-class 3.6 m optical telescope. It is Asia's largest fully steerable optical telescope. **It is set up by the Aryabhata Research Institute of Observational Sciences (ARIES), an autonomous research institute of DST, with support from the Belgian government in 2016. It will also be helpful for future optical facilities such as the Thirty Meter Telescope. Hence pair 1 is correctly matched.**

- Recently, Indian scientists have indigenously designed and developed a low-cost optical spectrograph that can locate sources of faint light from distant quasars and galaxies in a very young universe. The spectrograph, the largest of its kind among the existing astronomical spectrographs in the country, has been successfully commissioned on the 3.6-m Devasthal Optical Telescope (DOT).
- **Himalayan Chandra Telescope:** The 2-m Himalayan Chandra Telescope (HCT) at the Indian Astronomical Observatory (IAO), Mt. Saraswati, Digpa-ratsa Ri, Hanle (Ladakh) at an altitude of 4500 m (15000 ft) above msl is remotely **operated by the Indian Institute of Astrophysics (IIA), Bangalore**. It is mounted with 3 science instruments called Himalaya Faint Object Spectrograph (HFOSC), the near-IR imager and the optical CCD imager. It has helped in analysis of elements in the atmosphere of evolved stars, star formation in external galaxies, Active Galactic Nuclei, stellar explosions like novae, supernovae, gamma-ray bursts etc. The telescope completed twenty years of operation recently. **Hence pair 2 is not correctly matched.**
- **Giant Metrewave Radio Telescope:** GMRT is an array of thirty fully steerable parabolic radio telescopes of 45-metre diameter. It is operated **by the National Centre for Radio Astrophysics** of the Tata Institute of Fundamental Research. GMRT is an indigenous project. It is located near Pune, Junnar, near Narayangaon at khodad in India. It recently received the prestigious **"IEEE Milestone" status** that honours significant technical achievements and excellence in unique products, services, seminal papers and patents for the benefit of humanity. The Institute of Electrical and Electronics Engineers is the world's largest technical professional organization dedicated to advancing technology in all areas related to electrical and electronics engineering. **The previous two Indian IEEE milestones (recognized in 2012) were for pioneering work by Sir JC Bose in 1895 to demonstrate the generation and reception of radio waves, and for the Nobel prize-winning discovery by Sir CV Raman in 1928. Hence pair 3 is correctly matched.**

Q 29.D

- Jim Corbett National Park, which is a part of the larger Corbett Tiger Reserve, a Project Tiger Reserve lies in the **Nainital district of Uttarakhand. Hence statement 1 is not correct.**
- It was established in the year 1936 as **Hailey National Park** and has the glory of being India's oldest and most prestigious National Park.
- It is also being honoured as the place where **Project Tiger** was first launched in 1973. This unique tiger territory is best known as the father who gave birth of the Project Tiger in India to protect the most endangered species and the Royal of India called Tigers.
- However, it is **not the largest tiger reserve. Nagarjunsagar-Srisailem Tiger Reserve** is the largest tiger reserve in India. **Hence statement 2 is not correct**
- It Spans over an extent of **520 square kilometres** and comprises hills, marshy depressions, riverine belts, grasslands and a large lake.
- It is sheltering a healthy population of tigers and rare species like Otters and the endemic fish-eating crocodile; the national park is one of the most sought-after destinations.
- The Ramganga River (West) along with its significant tributaries Sonanadi, Palain and Mandal forms the prominent hydrological resource for the Corbett. **Hence statement 3 is not correct.**

Q 30.C

- **"Shadow pad":** A Chinese Group named as **"Red Echo"** was behind a malware attack known as **"Shadow pad"** on India's critical information infrastructure such as Ports, power systems etc. **Hence option (c) is the correct answer.**
- Cyber intelligence firm, **Recorded Future** in latest report said, China-linked Group RedEcho targeted the Indian power sector amid heightened border tensions. The union ministry of power in a statement said, an alarm was raised on threat to RLDCs and National Load Despatch Centre (NLDC), operated by Power Systems Operations Company (POSOCO), but it was resolved. The power ministry further said, **National Critical Information Infrastructure Protection Centre** informed through a mail about the threat by Red Echo through a malware called Shadow Pad. It stated that: "Chinese state-sponsored threat Actor group known as Red Echo is targeting Indian Power sector's Regional Load Dispatch Centres (RLDCs) along with State Load Dispatch Centres (SLDCs)."

Q 31.C

- The Karachi session became memorable for its resolution on Fundamental Rights and the National Economic Programme. Even though the Congress had from its inception fought for the economic interests, civil liberties, and political rights of the people, this was the first time that the Congress defined what Swaraj would mean for the masses. It also declared that 'in order to end the exploitation of the masses, political

freedom must include real economic freedom of the starving millions.’ The resolution promised substantial reduction in rent and revenue, exemption from rent in case of uneconomic holdings, and relief of agricultural indebtedness and control of usury; better conditions for workers including a living wage, limited hours of work, and protection of women workers; the right to organize and form unions to workers and peasants; and state ownership or control of key industries, mines and means of transport. **Hence statement 1 is correct.**

- Gandhi Ji attended the Congress session of Calcutta in 1901 under the President-ship of Dinshaw Wacha, This was the first time he was in contact with the Congress and had an opportunity to meet great leaders like Pherozeshah Mehta, Lokmanya B.G Tilak, and many others. **Hence statement 2 is correct.**
- Mohammad Ali Jinnah decried the colonial government's decision to introduce separate electorates for Hindus and Muslims in municipalities and local bodies at the Allahabad Session, 1910. He stated that this would disturb the amicable relations between the two communities. It is ironic that Jinnah became the main champion of a separate Muslim state two and a half decades later. **Hence statement 3 is correct.**

Q 32.A

- Udayagiri in Madhya Pradesh where one cave bears a date mark of 401 CE. Here in one shrine is one of the finest examples of Gupta architecture, the celebrated relief showing Vishnu in his incarnation as the boar-headed Varaha.
- The panel measures 7 x 4 meters and the central figure, carved almost in the round, is emerging from the cosmic waters, having defeated a snake-like monster and rescued the goddess Bhudevi (Earth). **Hence option 1 is correct.**
- Dhauli Elephant: An elephant is carved out on a hill face, with only his foreparts, shown emerging out of the hill face. Elephant is one of the most sacred animal in the Buddhist pantheon. As per a legend, Queen Maya, the mother of child Siddhartha (later known as Buddha), had a dream where she saw a white elephant entering into her womb. This was the sign that she conceived Siddhartha and thus the importance of elephants in the Buddhist religion. This stone elephant is one of the oldest surviving specimen of Indian art, dating to the Maurya period. The posture of the animal, emerging out of a hill face, may be taken as the establishment and expansion of the Buddhist faith into the newly conquered territory of Kalinga. **Hence statement 2 is not correct.**
- The temple at Bhitargaon in Uttar Pradesh is one of the most complete surviving Gupta temples. It is a rare early example of a Hindu temple constructed entirely of brick, dating to the late 5th century CE. **Hence option 3 is correct.**

Q 33.A

- **Recent Context:** ‘Maritime India Summit 2021’ was recently organized by the Ministry of Ports, Shipping and Waterways. **Hence, statement 2 is not correct.**
- The inaugural Maritime India Summit was held in 2016 in Mumbai.
- Maritime India Summit focuses on furthering the port-led development along the 7,516-km long coastline. It will help in the growth of the maritime sector and promote India as a leading Blue Economy of the world.
- It brought to fore the investment opportunities in various maritime States and Union Territories of India. It highlights the investment opportunities in shipbuilding and ship repair, skill development through maritime education, inland waterways development, cruise shipping and lighthouse tourism, fisheries development and **maritime security**. **Hence, statement 1 is correct.**
- **Highlights of Maritime India Summit 2021**
 - India will invest USD 82 billion in port projects by 2035 (under Sagarmala Programme)
 - India will raise the share of clean renewable energy sources in the maritime sector, develop waterways and boost tourism around lighthouses.
 - Operationalize 23 waterways by 2030.
- **Sagarmala Programme**
 - It aims at holistic port infrastructure development along the 7,516-km long coastline through modernization, mechanization and computerization.
 - It includes the establishment of rail/road linkages with the port terminals, thus providing last-mile connectivity to ports; development of linkages with new regions, enhanced multi-modal connectivity including rail, inland water, coastal and road services.

Q 34.D

- The pricing of sugarcane is governed by the statutory provisions of the Sugarcane (Control) Order, 1966 issued under the Essential Commodities Act (ECA), 1955.
- With the amendment of the Sugarcane (Control) Order, 1966 the concept of Statutory Minimum Price (SMP) of sugarcane was replaced with the ‘Fair and Remunerative Price (FRP)’ of sugarcane for 2009-10

and subsequent sugar seasons. **The cane price announced by the Cabinet Committee on Economic Affairs (CCEA) is decided on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP) in consultation with the State Governments and after taking feedback from associations of the sugar industry. Hence, statement 2 is not correct.**

- The 'Fair and Remunerative price' of sugarcane determined under Sugarcane (Control) Order, 1966 will be uniformly applicable all over the country.
- Under the FRP system, the farmers are not required to wait till the end of the season or for any announcement of the profits by sugar mills or the Government. The new system also assures margins on account of profit and risk to farmers, irrespective of the fact whether sugar mills generate profit or not and is not dependent on the performance of any individual sugar mill.
- If the support price announced by the Centre is not agreeable to the farmers, generally, **State governments announce State Advisory Price (SAP), which will be over and above the support price announced by the Centre. It varies from State to State and year to year. Hence, statement 1 is not correct**

Q 35.B

- The Drugs Prices Control Order, 1955 is an order issued by the Government of India under Sec. 3 of the Essential Commodities Act, 1955 to regulate the prices of drugs. The Order inter alia provides the list of price-controlled drugs, procedures for fixation of prices of drugs, method of implementation of prices fixed by Govt., penalties for contravention of provisions etc. For the purpose of implementing provisions of DPCO, powers of Govt. have been vested in the National Pharmaceutical Pricing Authority (NPPA).
- The National List of Essential Medicines (NLEM) 2011 is adopted as the primary basis for determining essentiality, which constitutes the list of scheduled medicines for the purpose of price control. The DPCO 2013 contains 680 scheduled drug formulations spread across 27 therapeutic groups. **Only prices of scheduled drugs is regulated by NPPA. Hence, statement 1 is not correct.**
- **As per the provisions of DPCO, NPPA fixes/revises the Ceiling price for medicines in the controlled category. Revision in existing ceiling prices of scheduled formulations is based on the Wholesale Price Index (WPI). Hence, statement 2 is correct.**

Q 36.A

Salient features of India-Mauritius Comprehensive Economic Cooperation and Partnership Agreement (CECPA):

- **CECPA is the first trade agreement signed by India with a country in Africa.** It provides for an institutional mechanism to encourage and improve trade between the two countries. **Hence, statement 1 is correct.**
- The Agreement is a limited agreement covering 310 export items for India, including foodstuff and beverages (80 lines), agricultural products (25 lines), textile and textile articles (27 lines), base metals and articles thereof (32 lines), electricals and electronic item (13 lines), plastics and chemicals (20 lines), wood and articles thereof (15 lines), and others.
- Although the agreement is limited, it covers **Trade in Goods, Rules of Origin, Trade in Services, Technical Barriers to Trade (TBT), Sanitary and Phytosanitary (SPS) measures, Dispute Settlement, Movement of Natural Persons, Telecom, Financial services, Customs Procedures and Cooperation in other Areas. Hence, statement 2 is not correct.**
- As regards trade in services, Indian service providers will have access to around 115 sub-sectors from the 11 broad service sectors such as professional services, computer related services, research & development, other business services, telecommunication, construction, distribution, education, environmental, financial, tourism & travel related, recreational, yoga, audio-visual services, and transport services.
- Both sides have also agreed to negotiate an Automatic Trigger Safeguard Mechanism (ATSM) for a limited number of highly sensitive products within two years of the Signing of the Agreement.

Q 37.A

- **Recent Context:** A substantial number of Bar-Headed Geese, which descends on Pong Dam Lake every winter have perished under mysterious circumstances.
- The Pong Dam is also called the Beas dam. It is an **artificial embankment Dam constructed across the Beas river** in Himachal Pradesh. The Reservoir created by the dam is called Maharana Pratap Sagar and is a renowned Bird Sanctuary. The dam was constructed for hydroelectric power generation and irrigation.
- The Maharana Pratap Sagar is located in the **wetland zone of Shivalik Hills**. It is one of the **International wetland sites of the Ramsar Convention**.

- Around 1.15 to 1.2 lakh birds migrate to Pong Dam Bird Sanctuary during winters every year. They nest up to four months in the sanctuary.
- Around **95% of birds that were found dead in the Pong Dam Sanctuary were the Bar Headed Geese** that migrate from Siberia and Mongolia
- Scientists believe that the birds' casualty has likely caused by bird flu or viral or bacterial infections.

Q 38.B

- **A Pigovian/Pigouvian tax is a tax on activities that create socially harmful externalities. An externality is an activity that creates a negative effect on others in a society but not necessarily the person who does that activity. Hence option (b) is the correct answer.**
- A popular example of a Pigovian-style tax is a tax on pollution. Pollution from a factory creates a negative externality because nearby or impacted third parties bear part of the cost of pollution.
- Pigouvian taxes discourage behaviours that create negative externalities. In situations where it doesn't, it raises revenues to help those affected by the externality. For example, the gasoline tax reduces driving while funding highway maintenance.
- Pigouvian taxes can also create more efficiency in an economy, especially when the tax covers the cost of the external damage. It creates the true cost of producing the good or service. The business then decides whether it is worth the extra cost.
- Indian examples of Pigovian tax include Carbon tax (Clean environment cess) levied at a rate of Rs 400/tonne on coal, SC mandated "Environment Compensation Charge" on commercial vehicles entering Delhi etc.
- **Securities Transaction Tax** is a direct tax levied on every purchase and sale of securities that are listed on the recognized stock exchanges in India.
- **A Tobin tax** is a tax on all spot conversions of one currency into another. It was suggested by James Tobin. It was originally intended to penalize short-term financial round-trip excursions into another currency.

Q 39.D

- Kitab ul Hind was the book written in the 11th century by Al biruni in Arabic. It has 80 chapters. It contains information about the contemporary social and cultural life of the Indian subcontinent. The "siddhimatrika" script was one of the forms of writing Sanskrit in ancient India. It has its genesis at Kannauj and used extensively in Varanasi and Kashmir. **Hence statement 1 is correct.**
- Kitab ul Hind contains vivid descriptions of the paired form of the Chaturvarna system in the Indian subcontinent. Brahmins and Rajput form one pair and Vaishyas and Shudras from other pair. **Hence statement 2 is correct.**
- Al-Biruni's account tells us that time idol worship was prevalent in the country and there was lots of wealth in the temples. Common people believed in many gods(polytheism) but the scholars and educated people believed in the unity of God. **Hence statement 3 is correct.**

Q 40.D

- The global warming potential (GWP) of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.
- The GWP values of various greenhouse gases are generally calculated over a 100-year time horizon.
- GWP of major greenhouse gases is as follows
- | Greenhouse Gas | Global Warming Potential (Time Horizon: 100 years) |
|---------------------|--|
| Carbon dioxide | 1 |
| Methane | 21 |
| Nitrous Oxide | 310 |
| Sulfur Hexafluoride | 23900 |
| Perfluoromethane | 6500 |
| Perfluoropropane | 7000 |
| Perfluorobutane | 7000 |
- For various Hydrofluorocarbons GWP value ranges from 140 to 11700
- **Hence, option (d) is the correct answer.**

Q 41.D

- **Recent Context:** With the awake of Covid-19 pandemic, government suspended the Member of Parliament Local Area Development (MPLAD) Scheme for two years so that these funds would be available for its COVID-19 management efforts.

- **Salient features of MPLADS:**

- The MPLADS is central sector scheme and fully funded by Government of India. The annual MPLADS non-lapsable fund entitlement per MP constituency is Rs. 5 crore. **Hence statement 1 is correct.**
- The funds (non-lapsable) are released in the form of grants in-aid directly to the district authorities on receipt of requisite documents.
- **Lok Sabha Members can recommend works within their Constituencies** and Elected Members of Rajya Sabha can recommend works within the State of Election (with select exceptions) while nominated Members of both the Rajya Sabha and Lok Sabha can recommend works anywhere in the country. **Hence statement 2 is correct.**
- MPs are to recommend every year, works costing at least 15 per cent of the MPLADS entitlement for the year for areas inhabited by Scheduled Caste population and 7.5 per cent for areas inhabited by S.T. population. In case there is insufficient tribal population in the area of Lok Sabha Member, they may recommend this amount for the creation of community assets in tribal areas outside of their constituency but within their State of election. In case a State does not have ST inhabited areas, this amount may be utilized in SC inhabited areas and vice-versa.
- **MPLADS works can also be implemented in the areas prone to or affected by the calamities** like floods, cyclone, Tsunami, earthquake, hailstorm, avalanche, cloud burst, pest attack, landslides, tornado, drought, fire, chemical, biological and radiological hazards
- **In the event of "Calamity of severe nature" in any part of the country, an MP can recommend works up to a maximum of Rs.1 crore for the affected district. Whether a calamity is of severe nature or not, will be decided by the Government of India.**
- If an elected Member of Parliament finds the need to contribute MPLADS funds to a place outside that State/UT, or outside the constituency within the State, or both, the MP can recommend eligible works up to a maximum of Rs. 25 lakh.
- **District Collector/District Magistrate/Deputy Commissioner will generally be the District Authority to implement MPLADS in the district.** If the District Planning Committee is empowered by the State Government, the Chief Executive Officer of the District Planning Committee can function as the District Authority. In case of Municipal Corporations, the Commissioner/Chief Executive Officer may function as the District Authority.
- **The Implementing Agencies shall furnish physical and financial progress of each work to the District Authority every month** with a copy to the concerned State Department. Implementing Agency must inspect 100% of the works.
- **Compulsory 100 % audit of all the works executed under the MPLADS of all the Trusts/Societies receiving MPLADS funds during the year will be undertaken by the auditors who audit the MPLADS funds annually. Hence statement 3 is correct.**
- As per the provisions of the Right to Information Act, 2005 and the Rules framed there under, all citizens have the right to information on any aspect of the MPLADS and the works recommended/sanctioned/executed under it.
- MPLADS can be converged with Khelo India: National Programme for Development of Sports with the objective of creating more durable assets.
- MPLADS can be converged in individual/stand-alone projects of other Central and State Government schemes provided such works of Central/State Governments Schemes are eligible under MPLADS. Funds from local bodies can similarly also be pooled with MPLADS works.

Q 42.B

- World Wild Fund for Nature (WWF), a leading organization in wildlife conservation and endangered species, releases the Living Planet Report **every two years (and not every year)** along with the Living Planet Index (LPI). **Hence, statement 1 is not correct.**
- Living Planet Report is a comprehensive study of trends in global biodiversity and the health of the planet.
- Living Planet Index measures the state of global biological diversity based on population trends of vertebrate species from around the world.
- **The Living Planet Index (LPI) has been adopted by the Convention of Biological Diversity (CBD) as an indicator of progress towards its 2011-2020 target (Aichi Biodiversity targets) to 'take effective and urgent action to halt the loss of biodiversity. Hence, statement 2 is correct.**
- The LPI tracks the abundance of almost 21,000 populations of mammals, birds, fish, reptiles, and amphibians around the world.
- The LPI includes data for threatened and non-threatened species.
- The LPI doesn't show numbers of species lost or extinctions.

- World Wildlife Fund (WWF) recently released Living Planet Report 2020 (LPR). The key findings of the report are:
 - It shows an average 68% decrease in population sizes of mammals, birds, amphibians, reptiles, and fish between 1970 and 2016.
 - 75% of Earth's ice-free land surface has been significantly altered.
 - More than 85% of global wetlands have been lost. India has lost nearly one-third of its natural wetlands.
 - The 3,741 monitored populations – representing 944 species of mammals, birds, amphibians, reptiles, and fishes – in the Freshwater Living Planet Index have declined by an average of 84%.

Q 43.C

- **Recent Context:** Valedictory function of the second National Youth Parliament Festival was recently conducted.
- The objective of National Youth Parliament Festival is to hear the voice of youth between 18 and less than 25 years of age, who will join various careers in coming years, including public services. National Youth Parliament Festival (NYPF) is based on the idea given by Prime Minister in his Mann Ki Baat Address in 2017. It is organized by the Ministry of Youth Affairs and Sports.
- **National Youth Parliament Scheme (NYPS)**
- NYPS seeks to strengthen the roots of democracy, inculcate healthy habits of discipline, tolerance of the view of others and to enable the student community to know about the parliamentary system of Government functioning.
- **It is organized under the aegis of the Ministry of Parliamentary Affairs. Hence, statement 3 is not correct.**
- It envisages organizing Youth Parliament sittings in schools/ Universities/ Colleges across the country as follows:
 - **Kishore Sabha for the students of Class IX to Class XII in schools. Hence, statement 1 is not correct.**
 - Tarun Sabha for the students of Under Graduate/ Post Graduate level in Universities/ Colleges
- Youth Parliament program shall be held every year in a single phase during a period considered to be convenient to the institution & One School shall organize Youth Parliament programme under this scheme only once in a year.
- Each Youth Parliament sitting may consist of about 50-55 students.
- **The duration of the sitting of the 'Youth Parliament' should not exceed one hour. The participants may speak in any Scheduled language preferably in Hindi and English. Hence, statement 2 is correct.**
- The subjects to be selected for discussion in Youth Parliament should be as far as possible non-controversial. Matters raised in the Youth Parliament may relate to the subjects of welfare activities, Defence of the country, social justice, social reforms, economic development, communal harmony, education, govt. welfare schemes, health, student discipline etc.
- **NYPS is a different program than National Youth Parliament Festival.*

Q 44.A

- The Supreme Court has recently ruled that the states are not bound to provide reservation in appointments and promotions and that there is no fundamental right to reservation in promotions.
- **Reservation was introduced in the Constitution of India, through Article 16(4), to give protection to deprived sections of society, who have been facing discrimination for ages. Constitutional provisions with respect to reservation**
 - **Article 15(4) allows the State to make special provision for the advancement of any socially and educationally backward classes of citizens or for Scheduled Castes (SCs) and Scheduled Tribes (STs)**
 - **Article 16 (4A) enables the state to make any law regarding reservation in promotion for SCs and STs which, in the opinion of the State, are not adequately represented in the services under the State. Hence statement 1 is correct.**
 - **Article 16(4B)- provides that reserved promotion posts for SCs and STs that remain unfilled can be carried forward to the subsequent year. It ensures that the ceiling on the reservation quota – capped at 50% by Indra Sawhney Case – for these carried forward unfilled posts does not apply to subsequent years. Hence statement 2 is correct.**
- Recently, A five-judge Constitution bench allowed for a grant of quota for **promotions in the government jobs to SCs and STs without the need to "collect quantifiable data" reflecting the backwardness among these communities as mandated by the Nagaraj judgement of 2006.**
- The further court highlighted that

- Provisions under articles 16(4), 16 (4A) and 16 (4B) of the Constitution are only enabling provisions and not a fundamental right.
- Neither was it ever envisaged by the constitutional makers, as can be made out from the debates and statements during the drafting of the constitution.
- Gaining employment and position does not ensure the end of social discrimination and, hence, should not be used as a single yardstick for calculating backwardness. **Hence statement 3 is not correct.**

Q 45.A

- **Sri Aurobindo (Aurobindo Ghosh)** was born in Calcutta on 15 August 1872. In 1879, at the age of seven, he was taken with his two elder brothers to England for education and lived there for fourteen years.
- In 1890 he passed also the open competition for the Indian Civil Service, but at the end of two years of probation failed to present himself at the riding examination and was disqualified for the Service. At this time the Gaekwar of Baroda was in London. Sri Aurobindo saw him, obtained an appointment in the Baroda Service and left England for India, arriving there in February 1893.
- Sri Aurobindo passed thirteen years, from 1893 to 1906, in the Baroda Service, first in the Revenue Department and in secretariate work for the Maharaja, afterward as Professor of English and, finally, Vice-Principal in the Baroda College. He left Baroda in 1906 and went to Calcutta as Principal of the newly-founded Bengal National College. He became one of the leaders of the Nationalist Movements.
- In 1910 he withdrew from politics and went to Pondicherry in order to devote himself entirely to his inner spiritual life and work. During his forty years in Pondicherry, he evolved a new method of spiritual practice, which he called the Integral Yoga. **Hence option (a) is the correct answer.**

Q 46.D

- **Recent Context:** Prime Minister recently lauded a 'pattachitra' artist from Odisha for her work during the lockdown in his Mann ki Baat radio program.
- **Pattachitra**
 - It is one of the oldest and most popular **cloth-based scroll painting art forms of Odisha**.
 - The name Pattachitra has evolved from the Sanskrit words patta, meaning canvas, and chitra, meaning picture. Pattachitra is thus a painting done on canvas and is manifested by rich colorful application, creative motifs and designs, and portrayal of simple themes, mostly **Hindu mythological in depiction**.
 - Some of the popular themes represented through this art form are **Thia Badhia** - depiction of the temple of Jagannath; **Krishna Lila** - enactment of Jagannath as Lord Krishna displaying his powers as a child; **Dasabatar Patti** - the ten incarnations of Lord Vishnu; Panchamukhi - depiction of Lord Ganesh as a five-headed deity.
 - One of the important steps involved is the preparation of canvas with the use of tamarind paste and powder of soft claystone.
 - The gum of the kaitha tree is the chief ingredient and is used as a base for making different pigments, on which diverse raw materials are mixed for diverse colors.
 - With the passage of time, artists have also started using tussar silk and palm leaves.
- **Chitrapothi**
 - It is an art tradition native to Odisha involving etching on palm leaves.
 - In this art form, the artist uses an iron pen and creates a design on the palm leaves. A herbal paste is then smothered on this etching and allowed to dry. When all the leftover residue is cleaned out, the design or the text stands out distinctly. The artist then uses organic colors to add more life to these designs. Typically animal motifs, nature-oriented themes, characters from the famous epics such as Ramayan and Mahabharat etc can be found on these palm leaves.
- **Kalighat painting**
 - It originated in the 19th century in West Bengal, India, in the vicinity of Kalighat Kali Temple.
 - From the depiction of Hindu gods, god, and other mythological characters, the Kalighat paintings developed to reflect a variety of subjects, including many depictions of everyday life.
- **Kalamkari**
 - It is a type of hand-painted or block-printed cotton textile produced in Isfahan, Iran, and in the Indian state of Andhra Pradesh.
 - Mostly natural dyes are used in Kalamkari, which involves twenty-three steps.
 - There are two distinctive styles of Kalamkari art in India:
 - **Srikalahasti style:** "kalam" or pen is used for freehand drawing of the subject and filling in the colors, is entirely hand worked. This style flourished in temples centered around creating unique religious identities, appearing on scrolls, temple hangings, chariot banners as well as depictions of deities and scenes taken from the Hindu epics (e.g. Ramayana, Mahabharata and Purana).

- **Machilipatnam style:** Pedana Kalamkari also known as Machilipatnam style involves vegetable dyed block-painting of a fabric. It is produced at Pedana a nearby town of Machilipatnam in Krishna district of Andhra Pradesh. It was registered as one of the geographical indication from Andhra Pradesh.
- Hence option (d) is the correct answer.

Q 47.A

- **Orchids are a group of flowering plants that can be found on every continent except Antarctica.** The highest numbers of orchids grow in the rainforests, nurtured by the humidity and shade provided by these environments.
- Orchids come in a host of colours and sizes. The exact appearance of an orchid flower depends on the specific species.
- Orchids can be broadly categorized into three life forms:
 - **Epiphytic** (plants growing on another plant including those growing on rock boulders and often termed lithophyte)
 - Terrestrial (plants growing on land and climbers)
 - Mycoheterotrophic (plants that derive nutrients from mycorrhizal fungi that are attached to the roots of a vascular plant). About 60% of all orchids found in the country, which is 757 species, are epiphytic, 447 are terrestrial and 43 are mycoheterotrophic.
- As per the Botanical Survey of India is home to 1,256 species of orchids.
- **Sessa Orchid Sanctuary, India's only Orchid sanctuary Notified in 1989 under the Wildlife (Protection) Act, 1972, is a natural home to more than 236 species of orchids. It is located in the Bhalukpong Forest Division of West Kameng District, Arunachal Pradesh.**
- **Sessa is the "Orchid Paradise" of our country. Many of the species of Orchids found here are rare, endangered, and ornamental. Because of their curious shape, brilliant colour and ever-lasting quality of flowers, orchids here are regarded as "gems" in the field of floriculture. Hence option (a) is the correct answer.**
- In India the highest number of orchid species is recorded from Arunachal Pradesh with 612 species, followed by Sikkim 560 species.
- The entire orchid family is listed under appendix II of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) and hence any trade of wild orchid is banned globally.

Q 48.D

- Saving rate has steadily increased over time, from an extremely low base of 9.0 percent in 1950-51 to a peak of 37.7 percent in 2007-08. The savings rate measures the share of gross disposable income that is not used by households in final consumption expenditure.
- Economic conditions, social institutions, and individual or population characteristics can all play a role in influencing Saving rate.
- Economic conditions such as economic stability and total income are important in determining savings rates. Periods of high economic uncertainty, such as recessions and economic shocks, tend to induce an increase in the savings rate as people defer current spending to prepare for an uncertain economic future.
- **Interest rates:** the amount of interest the market generates can have an effect on the savings rate. **Higher interest rates can lead to lower overall consumption and higher savings because the substitution effect of being able to consume more in the future outweighs the income effect of maintaining current income received from interest payments for most people. Hence option 2 is correct.**
- **Income and Wealth distribution:** There is a positive relationship between per capita gross domestic product (GDP) and savings, with low income-earners spending the majority of their money on basic necessities and wealthier individuals buying luxury items while saving more. **If the rich save more than the poor, an increase in income inequality raises aggregate saving. Hence option 3 is correct.**
- **Inflation** – high inflation may discourage cash saving and encourage the purchase of fixed assets. Inflation can reduce the value of ones savings, because prices typically go up in the future. **Hence option 1 is correct.**
- **Demographic distribution:** The savings rate is also influenced by informal institutions. Individual and population characteristics make a difference in savings rates. Savings rates tend to fall lower as populations age and spend their savings rather than adding to them. Whereas people in their 40s and 50s tend to save for retirement. **Hence option 4 is correct.**

Q 49.B

- **TraceBioMe is a flagship project of the National Institute of Oceanography, Goa, for mapping the genetic diversity of organisms and the effect of micronutrients and trace metals on them in the Indian Ocean, supported by the CSIR. Hence option (b) is the correct answer.**

- The project envisages extensive sampling of water, sediments, planktons, and various organisms in different parts of the Indian Ocean to study the presence of different kinds of organisms and the trace metals and micronutrients found therein.
- In the first phase of the project, microscopic organisms will be investigated.
- Scientists from the CSIR-NIO under this project have set out on a mission to identify and characterize the genes and proteins in the ocean to understand the cellular-level operations of organisms in the ocean by utilizing emerging biomedical techniques, such as proteomics and genomics.
- This project will enable scientists to identify the factors controlling the changes in RNA and DNA in the oceans and various stressors impacting them. Further, they will be used as tracers to track the causative factors and suggest possible solutions for their mitigation impacting society.
- In addition, this large pool of RNA and DNA libraries of the oceans would be utilized for future bioprospecting in the Indian Ocean for human benefit.
- The data generated through this project would help in achieving the SDG 14 goals. The SDG 14 aims to conserve and sustainably use the resources of oceans.
- **Centre for Marine Living Resources and Ecology (CMLRE)**, at Cochin under the Ministry of Earth Sciences, Govt. of India has been organizing, coordinating, and promoting ocean development activities in the country which inter-alia include mapping of the living resources, preparing an inventory of commercially exploitable living marine resources, their optimum utilization through ecosystem management and R&D in basic sciences on Marine Living Resources and Ecology.
- **National Institute of Animal Biotechnology (NIAB) at Hyderabad** aims to harness novel and emerging biotechnologies and take up research in the cutting edge areas for improving animal health and productivity. The Institute's focus of research will be on Animal Genetics and Genomics, Transgenic Technology, Reproductive Biotechnology, Infectious Diseases, Bioinformatics, and Nutrition Enrichment. It is an autonomous institute of the Department of Biotechnology.
- The **Centre for Cellular & Molecular Biology (CCMB)** at Hyderabad is a premier research organization in frontier areas of modern biology. The objectives of the Centre are to conduct high-quality basic research and training in frontier areas of modern biology and promote centralized national facilities for new and modern techniques in the inter-disciplinary areas of biology. During 1981-82, CCMB was accorded the status of a full-fledged national laboratory with its own Executive Committee and Scientific Advisory Council.

Q 50.A

- The Amara-Nayaks were military officials who exercised authority and power in the form of military chiefs commonly known as 'nayaks' in the Vijayanagar Empire. They possess the armed contingent and usually control the forts of the Empire. This makes them very powerful and authoritative.
- They have also been assigned the territories for the purpose of collection of taxes by the 'rayas' or kings. **Hence statement 1 is correct.**
- These Nayaks were expected to maintain the stipulated contingent of horses and elephants from the taxes they collect.
- These contingents were also used by the Vijayanagar kings during their military expeditions. **Hence statement 2 is correct.**
- The Amara-Nayakas sent tribute to the king annually and personally, appeared in the royal court with gifts to express their loyalty. Kings occasionally asserted their control over them by transferring them from one place to another. However, during the course of the seventeenth century, many of these nayakas established independent kingdoms. This hastened the collapse of the central imperial structure. **Hence statement 3 is not correct.**

Q 51.B

- **A supercomputer's recent analysis of data on the contents collected from the lungs of patients with the COVID-19 infection has showed that a phenomenon called a 'bradykinin storm' might explain how the virus works in the body. Hence option (b) is the correct answer.**
- Bradykinin is a compound that is related to pain sensation and lowering blood pressure in the human body.
- **The bradykinin hypothesis:** SARS-CoV-2 uses a human enzyme called ACE2 to enter into the cells of its host. ACE2 lowers blood pressure in the human body and works against another enzyme known as ACE (which has the opposite effect). The virus causes the levels of ACE to fall in the lungs, and consequently pushes up the levels of ACE2. This happens as a chain reaction and increases the levels of the molecule bradykinin in the cells, causing a bradykinin storm. Bradykinin storm causes the blood vessels to expand and become leaky, leading to swelling of the surrounding tissue.

- The levels of a substance called hyaluronic acid also increases. Hyaluronic acid is a sugar molecule that occurs naturally in the skin, and it helps to bind water to collagen (a protein). It can absorb more than 1,000 times its own weight in water to form a hydrogel.
- **Impact:** The bradykinin storm-induced leakage of fluid into the lungs combined with the excess hyaluronic acid would likely result in a Jello-like substance that prevents oxygen uptake and carbon dioxide in the lungs of severely affected Covid-19 patients. This rapid accumulation of fluid in the lungs of patients sometimes makes even the most sophisticated intensive care, including ventilators, futile. Knowing the mechanism, doctors can target the bradykinin pathway to evolve more therapeutic interventions to offset the severe effects of Covid-19.
- **Also, Bradykinesia** means slowness of movement and is one of the cardinal manifestations of Parkinson's disease. Weakness, tremor and rigidity may contribute to but do not fully explain bradykinesia.

Q 52.D

- A series of invasions took place from about 200 B.C. The successors of Asoka were too weak to stem the tide of foreign invasions. The first to invade were called Indo-Greeks or **Bactrian Greeks**. The most famous Indo-Greek ruler was **Menander, also known as Milinda**. He was converted to Buddhism by Nagasena, also known as Nagarjuna. Menander asked Nagasena many questions relating to Buddhism. These questions and Nagasena's answers were recorded in the form of a book known as **Milinda Panho**. **Hence statement 1 is not correct.**
- The Greeks were followed by the Sakas. The most famous Saka ruler in India was **Rudraman I**. Repairs to improve Sudarsan Lake in Kathiawar was taken during his reign. Rudraman was a great lover of Sanskrit. **He issued the first ever long inscription of chaste Sanskrit**. All the earlier longer inscriptions were composed in Pali. **Hence statement 2 is not correct.**
- The Parthians were followed by the Kushanas, who are also called Yeuchis. The best known of the Kushana kings was Kanishka, who is thought to have ruled from 78 CE till 101 or 102 CE. **Kanishka** was an ardent follower of Buddhism and hosted the fourth Buddhist mahasangha or council. Kushanas and Sakas **strengthened the idea of the divine origin of Kingship**. The Kushana kings were called sons of God. **Hence statement 3 is not correct.**

Q 53.C

- **The Ministry of Culture recently set up a 7-member panel of the Archaeological Survey of India (ASI) to locate the grave of the Mughal prince Dara Shikoh (1615-59), who is believed to be buried somewhere in the Humayun's Tomb complex in Delhi.**

About Dara Shikoh

- Dara Shikoh was the eldest son of Mughal emperor Shahjahan, who in 1642, formally confirmed Dara Shikoh as his heir, granting him the title of Shahzada-e-Buland Iqbal.
- He was killed after losing the war of succession against his brother Aurangzeb. Battle of Samugarh was a decisive struggle in a contest for the throne between the sons (Aurangzeb and Murād Bakhsh, on the one side, and, Dara Shikoh) of the Mughal emperor Shah Jahān after the emperor's serious illness in 1657.
- **He was liberal in outlook and tried to find commonalities between Hindu and Islamic traditions. Contributions to Art and culture translated the Bhagavad Gita as well as Upanishads from their original Sanskrit into Persian in 1657 so that they could be studied by Muslim scholars.**
- **His translation is often called Sirr-e-Akbar ("The Greatest Mystery"), where he states that the work referred to in the Quran is none other than the Upanishads.**
- Majma-ul-Bahrain, a short treatise written in Persian, was also devoted to a revelation of the mystical and pluralistic affinities between Sufic and Vedantic speculation.
- **Hence statements 1 and 2 are correct.**

Q 54.D

- According to Researchers from Planetary Sciences Division of Physical Research Laboratory, Ahmedabad the Blueberries in Kutch, India and "Martian Blueberries" share similar characteristics.
- **What are Martian Blueberries?** Martian blueberries are small spherical haematites. The Mars rover "Opportunity" discovered them in 2004 on the planet Mars. **As per the study of the mineralogy of the Martian Blueberries they were made of iron oxide compounds called haematites. These haematites are known to form in oxidising environments through precipitation from aqueous fluids (water like fluid). Hence, the presence of haematites suggests that water was present on Mars.**
- Further, the Haematites on Mars not just show the presence of water. It also indicates that the planet had an atmosphere with oxygen as haematites need oxygen to stabilise. However, the **age of the 'blueberries' on**

Mars is not known yet. Therefore, studies from the newly landed Perseverance rover of NASA may help find new clues and signs of life to get a detailed picture of the history of Mars. **Hence option (d) is the correct answer.**

- Researchers from India have been studying the **Jhuran formation in Kutch, Gujarat**. The formation is between 145 and 201 million years old. The detailed investigations of the haematite concretions in this area revealed that they resemble the Martian Blueberries. They have similar morphology – spherical and similar mineralogy – a mixture of haematite and goethite. Further, it has been also argued that the transformation of Mars from the wet and humid to dry and arid environment is mimicked by the history of Kutch in Gujarat. Hence, the Kutch area could also be a potential testing site for carrying out future Mars exploration studies on Earth.

Q 55.A

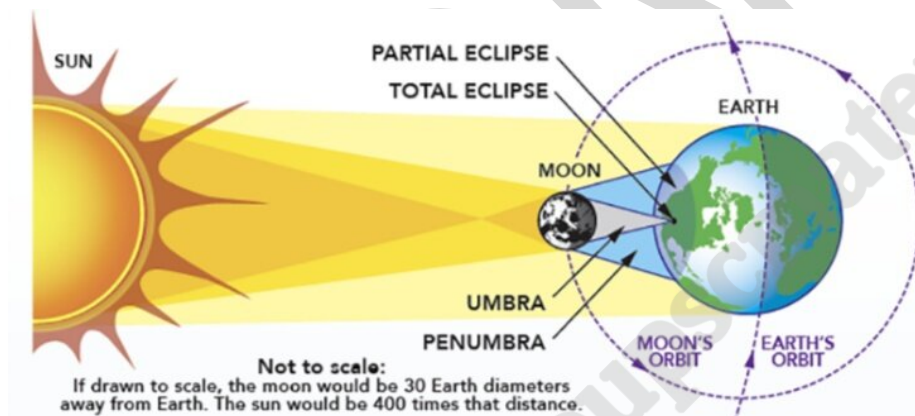
- Indian Constitution has its own unique brand of federalism, one which balances the distribution of powers between the Union and the States in a way as to allot them each separate spheres of governance, with the Union, empowered to intervene in the State sphere where it is felt warranted.
- Art. 355 of the Constitution in Part XVIII imposes a duty on the Union to
 - **protect the States from external aggression and internal disturbance, as well as**
 - **the duty to ensure that the Governments of the States are carried on in accordance with the provisions of the Constitution.**
- **Hence statement 1 and 2 are correct.**
- Art. 355 creates a duty of the Union towards the States. It is this duty in the performance of which the centre takes over the government of a state under Art 356 in case of failure of constitutional machinery in the state.
- **Provisions of the constitution do not provide that it is the duty of the Union to ensure that elections to the local governments in the states are held regularly in accordance with the provisions of the constitution. Hence statement 3 is not correct.**
- Provisions of the constitution do not provide that it is the duty of the Union to ensure that the government of states promote voluntary formation, autonomous functioning, democratic control and professional management of co-operatives societies.

Q 56.A

- The purpose of the Biodiversity Act, 2002 is to realize equitable sharing of benefits arising out of the use of biological resources and associated knowledge. It realizes the objectives of the **United Nation Convention on Biological Diversity, 1992. Hence, statement 1 is correct.**
- The main objectives of the Act are **conservation, sustainable use and equitable benefit sharing** out of the utilization of bioresources. The Act also covers the protection of traditional knowledge and equitable sharing of benefits arising out of the use of such knowledge.
- The Act and the Rules are implemented in the **whole of India** through a decentralized system. A three-tiered structure has been established under the Act at the national, state and local levels.
- At the local level, the **Biodiversity Management Committees (BMCs)** are to be established by institutions of local self-government for implementation of specific provisions of the Act and Rules.
- At the state level not in union territories, the **State Biodiversity Boards (SBBs)** are established to deal with all matters relating to the implementation of the Act and the Rules.
- At the national level, the **National Biodiversity Authority (NBA)** is established to deal with all matters relating to the implementation of the Act and the Rules.
- The Act says that **the Chairperson shall be an eminent person having adequate knowledge and experience** in the conservation and sustainable use of biological diversity and in matters relating to equitable sharing of benefits, to be appointed by the Central Government. **Hence statement 3 is not correct.**
- Each of this structure is required to be connected for decision-making processes on various issues, including issues of access and benefit-sharing (ABS).
- The offences under this Act shall be **cognizable and non-bailable.**
- The **Wildlife (Protection) Act, 1972** provides for the protection of a listed species of animals, birds, and plants, and also for the establishment of a network of ecologically-important protected areas in the country. The Act provides for licenses for the sale, transfer, and possession of some wildlife species. **Hence, statement 2 is not correct.**

Q 57.C

- **Solar eclipse:**
 - A solar eclipse happens when the moon gets in the way of the sun's light and casts its shadow on Earth.
 - The type of solar eclipse that happens during each season (whether total, annular or partial) depends on the apparent sizes of the Sun and Moon.
- **Total Solar Eclipse (Umbra):**
 - A total solar eclipse occurs when the sun and the moon are exactly in line with the Earth and the moon completely obscures the sun. **Hence, statement 1 is correct.**
 - During a total eclipse of the Sun, the Moon covers the entire disk of the Sun. In partial and annular solar eclipses, the Moon blocks only part of the Sun.
 - The moon's shadow on Earth isn't very big, so only a small portion of places on Earth will see it.
 - During a total solar eclipse, the sun's corona is visible to the naked eye as a bright ring around the obscured sun.
 - The sky becomes so dark that it appears to be night. Only a small area on the earth can witness it.
 - On average, the same spot on Earth only gets to see a solar eclipse for a few minutes about every 375 years.
 - A total solar eclipse happens about every year and a half somewhere on Earth. **Hence, statement 2 is correct.**
 - A phenomenon called "**Baily's Beads**" often appear during a total solar eclipse.
 - Baily's Beads are caused by the Moon's mountains, valleys, and craters. These surface features create an uneven edge of the Moon, where small "beads" of sunlight still shine through the lowest parts for a few moments after the rest of the Sun is covered.
- **Umbra :**
 - Umbra is the region of the shadow of the moon in which all light from the sun is completely excluded. Thus, in an eclipse of the Sun, the regions within the umbra experience a total solar eclipse.
 - During any one eclipse, totality (total solar eclipse or umbra) occurs at best only in a narrow track on the surface of Earth. This narrow track is called the path of totality.



Q 58.A

- **Rig-Vedic** economy in which the surplus was very small, the Rajan received only Bali, i.e. offering to a prince or to a god from the conquered people. However, these tributes were neither regular and nor stipulated and hence cannot be called a tax. In the Later Vedic times With the decreasing importance of pastoralism, raids became insignificant. The raja's function now was to protect the fields or crops of the agriculturists rather than cattle wealth. Bali (tribute) though voluntary in the Rig Vedic period, became compulsory.

- King collected taxes regularly from his subjects. The taxes were called Bali and consisted of 1/6 of the agricultural produce or cattle for a given person.
- Hence option a is the correct answer.

Q 59.C

- A sounding rocket or rocketsonde, sometimes called a research rocket, is an instrument-carrying rocket designed to take measurements and perform scientific experiments during its sub-orbital flight. Sounding rockets take their name from the nautical term "to sound," which means to take measurements.
- Sounding rockets are one or two stage solid propellant rockets used for probing the upper atmospheric regions and for space research. They are primarily intended for probing the upper atmospheric regions using rocket-borne instrumentation. They also serve as platforms for testing prototypes of new components or subsystems intended for use in launch vehicles and satellites. **Hence, option (c) is the correct answer.**
- In 1965, ISRO started launching a series of our own sounding rockets named Rohini. RH-75, with a diameter of 75mm was the first truly Indian sounding rocket, which was followed by RH-100 and RH-125 rockets. The sounding rocket programme was indeed the bedrock on which the edifice of launch vehicle technology was built. Currently, operational sounding rockets include three versions namely RH-200, RH-300-Mk-II and RH-560-Mk-III. These cover a payload range of 8 to 100 kg and an apogee range of 80 to 475 km.
- **NOTE:** Recently ISRO has launched RH-560, a sounding rocket to study altitudinal variations in the neutral winds and plasma dynamics.

Q 60.D

- **Recent Context:** Remission of Duties and Taxes on Exported Products (RoDTEP) scheme came to be implemented from the 1st January, 2021. It replaced Merchandise Exports from India Scheme (MEIS).
- Earlier, World Trade Organisation (WTO) ruled that India's export subsidy under Merchandise Exports from India Scheme violate global trade norms and has been asked to withdraw some export subsidy programmes, since subsidy schemes run by the Indian government were giving undue advantage to Indian businesses.
- RoDTEP is a new scheme to replace the existing MEIS scheme for exports of goods from India, which aims to reimburse the taxes and duties incurred by exporters such as local taxes, coal cess, mandi tax, electricity duties and fuel used for transportation, which are not getting exempted or refunded under any other existing scheme.
- **Under the scheme, a mechanism will be created for reimbursement of levies, taxes or duties at central, state and local levels and shall be allowed on all export goods. Prior to the scheme, the reimbursements were not done under any mechanism. Hence, statements 2 and 3 are correct.**
- The RoDTEP scheme would refund to exporters the embedded duties/taxes that were so far not being rebated/refunded. For example, VAT on fuel used in transportation, Mandi tax, Duty on electricity used during manufacturing etc. These would be covered for reimbursement under the RoDTEP Scheme. The rebate would be claimed as a percentage of the Freight on Board (FOB) value of exports.
- The RoDTEP Scheme will coordinate with the World Trade Organization to reduce the post-production transaction costs for the exporters. In order to achieve this, the RoDTEP Scheme implementation measures must provide production-oriented processes. This is in accordance to WTO rules. This will help to boost the production of MSMEs.
- **Also, under the scheme the indirect taxes are consumed in production process. This is also consistent with WTO. In simple words, according to WTO principles, indirect taxes on exports shall be reimbursed to boost the exports. Hence, statement 1 is correct.**
- Under the RoDTEP Scheme, the exporters of India will meet international standards for exports. This will boost the value of Indian products in the international market. It is being achieved through certification and affordable testing that will be provided under the scheme rather than relying on international organizations.
- By replacing MEIS, the RoDTEP Scheme created an automated route for the Input Tax Credit. The Input Tax Credit is provided to set off the taxes paid on purchase of consumables, raw materials that are used in the manufacturing goods and services. Therefore, it helps to avoid double taxation.

Q 61.C

- **Goldilocks zone: The Goldilocks Zone refers to the habitable zone around a star where the temperature is just right - not too hot and not too cold - for liquid water to exist on an planet. Recently NASA reported the discovery of an Earth-size planet, named TOI 700 d, orbiting its star in the "habitable zone". Hence pair 1 is correctly matched.**

- **Kuiper Belt** —It is a donut-shaped region of icy bodies beyond the orbit of Neptune. There may be millions of these icy objects, collectively referred to as Kuiper Belt objects (KBOs) or trans-Neptunian objects (TNOs), in this distant region of our solar system. Similar to the asteroid belt, the Kuiper Belt is a region of leftovers from the solar system's early history. Like asteroid belt, it has also been shaped by a giant planet, although it's more of a thick disk (like a donut) than a thin belt. **Hence pair 2 is not correctly matched.**
- **Oort Cloud:** The Oort Cloud is the most distant region of our solar system. Even the nearest objects in the Oort Cloud are thought to be many times farther from the Sun than the outer reaches of the Kuiper Belt. Unlike the orbits of the planets and the Kuiper Belt, which lie mostly in the same flat disk around the Sun, **the Oort Cloud is believed to be a giant spherical shell surrounding the rest of the solar system.** It is like a big, thick-walled bubble made of icy pieces of space debris the sizes of mountains and sometimes larger. The Oort Cloud is a theoretical cloud of predominantly icy planetesimals proposed to surround the Sun at distances ranging from 2,000 to 200,000 au. **Hence pair 3 is correctly matched.**
- **A Lagrange point is a location in space where the combined gravitational forces of two large bodies, such as Earth and the sun or Earth and the moon, equal the centrifugal force felt by a much smaller third body.** The interaction of the forces creates a point of equilibrium where a spacecraft may be "parked" to make observations. **Hence pair 4 is correctly matched.**

Q 62.C

- **The passage in the question describes the Pobitora Wildlife Sanctuary.** Pobitora Wildlife Sanctuary is **located on the southern bank of the Brahmaputra** in the Morigaon district in Assam, India. It is about 45 kilometres from Guwahati.
- In 1987, Pobitora was declared a wildlife sanctuary covering an area of 16 square kilometres. Presently the sanctuary is surrounded by 20 villages, the farmlands which are frequented by rhinos. In the Pobitora wildlife sanctuary, there are now around 100 rhinos.
- **Pobitora Wildlife Sanctuary harbours the highest density of Rhinoceros in the world.**
- Besides rhinoceros, the other mammals found are Leopard, Leopard cat, Fishing cat, Jungle cat, **Golden Jackal, Barking deer, Water buffalo**, Wild pigs, Chinese pangolins, etc., Pobitora Wildlife Sanctuary is an Important Bird Area altogether 375 species of both migratory and resident birds of 46 families have been recorded so far.
- Pobitora can be divided into three distinct categories: forest, grassland, and water bodies or beels. Only about 13% of the total area is under tree cover. The remaining area is covered by water bodies or beels.
- **The sanctuary is often referred to as 'Mini Kaziranga' because its landscape and fauna are similar to that of the national park.**
- **Hence option (c) is the correct answer.**
- **Orang National park** is located on the **northern bank of river Brahmaputra** in the Darrang and Sonitpur districts of Assam, India.
 - It was established as a sanctuary in 1985 and declared a National Park on 13 April 1999. **It is also known as the mini Kaziranga since the two parks have a similar landscape made up of marshes, streams, and grasslands and are inhabited by the Great Indian One-Horned Rhinoceros.** The park has rich flora and fauna, including Great Indian One-Horned Rhinoceros, pigmy hog, elephants, wild buffalo, and tigers. It is the only stronghold of rhinoceros on the north bank of the Brahmaputra river.
- **Manas National Park** is a UNESCO Natural World Heritage site, a Project Tiger reserve, an elephant reserve, and a biosphere reserve in Assam.
 - Manas is the only landscape in the world where pristine Terai Grasslands are seen merging with the Bhabar grasslands interspersed with diverse habitats ascending to Semi-Evergreen forests and then to Bhutan Himalayas. Biodiversity is very rich here. The last population of the Pygmy Hog survive in the wilds of Manas.
- **Dehing Patkai National Park** is located in the Dibrugarh and Tinsukia districts of Assam. It was declared a wildlife sanctuary in 2004. The
 - Dehing Patkai Wildlife Sanctuary is also known as the Jeypore Rainforest.
 - Dehing is the name of the river that flows through this forest and Patkai is the hill at the foot of which the sanctuary lies.
 - The oldest refinery of Asia in Digboi and 'open cast' coal mining at Lido are located near the sanctuary. It is famous for Assam Valley Tropical Wet Evergreen Forests bordering Arunachal Pradesh.
 - It has the highest concentration of the rare endangered White Winged Wood Duck.

Q 63.C

- **Recent Context** – Recently, Union Cabinet approved the Pradhan Mantri Swasthya Suraksha Nidhi (PMSSN). The Union Cabinet has approved the Pradhan Mantri Swasthya Suraksha Nidhi (PMSSN) as a single non-lapsable reserve fund for share of Health from the proceeds of health and Education Cess.
- **Salient features of the PMSSN:**
 - **It is a single non-lapsable reserve fund for Health in the Public Account. Hence option (a) is correct.**
 - **It will be credited by proceeds of share of Health in the Health and Education Cess.** Budget 2018 replaced the then existing 3% Education Cess by 4% Health and Education Cess. **Hence option (b) is correct.**
 - The funds of PMSSN will be utilized for the flagship schemes of the Ministry of Health & Family Welfare namely,
 - Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)
 - Ayushman Bharat - Health and Wellness Centres (AB-HWCs)
 - National Health Mission
 - Pradhan Mantri Swasthya Suraksha Yojana (PMSSY)
 - Emergency & disaster preparedness and responses during health emergencies
 - Any future programme/scheme that targets to achieve progress towards SDGs and the targets set out in the National Health Policy (NHP) 2017. **Hence option (d) is correct.**
 - **Administration and maintenance of the PMSSN is entrusted to the Ministry of Health & Family Welfare. Hence option (c) is not correct.**
 - In any financial year, the expenditure on such schemes of the Ministry of Health and Family Welfare would be initially incurred from the PMSSN and thereafter, from Gross Budgetary Support (GBS).
- **Benefits:** The major benefit will be: enhanced access to universal & affordable health care through the availability of earmarked resources while ensuring that the amount does not lapse at the end of the financial year.

Q 64.A

- "Prorogation" means the termination of a Session of the House without dissolution of the house. The Prorogation of the House may take place any time, even while the House is sitting. It results in termination of the sitting and the session of the house. **Hence statement 1 is correct.**
- **Usually, prorogation follows adjournment sine die** which means terminating a sitting of Parliament for an indefinite period which is called by the presiding officer of the houses.
- **Article 85(2)** in The Constitution of India states that
 - The President may from time to time
 - prorogue the Houses or either House;
 - dissolve the House of the People. **Hence statement 2 is correct.**
- **It does not affect the bills or any other business pending before the House.** However, all **pending notices (other than those for introducing bills) lapse on prorogation** and fresh notices have to be given for the next session. **Hence statement 3 is not correct.**

Q 65.B

- When the **Montagu report of 1918** was made public, there was a divide in the Congress over it. The moderates welcomed it while the extremists opposed it. This led to a schism in the Congress.
- Banerjee was a critic of the proposed method of civil disobedience advocated by Mahatma Gandhi. Surendranath Banerjee, a moderate and veteran leader of Congress and some other moderates were in favour to accept the Montagu-Chelmsford Reforms. This culminated in forming the "**Indian National Liberal Federation**" in 1919. The party (INLF) was founded by **Surendra Nath Banarjee** and some of its prominent leaders were **Tej Bahadur Sapru**, V. S. Srinivasa Sastri and M. R. Jayakar. **Hence statement 1 is not correct and statement 2 is correct.**
- They were termed as **Liberals** and they lost their relevance in Indian National Movement thereafter. By September 1920, with Gandhi pressing hard for Council boycott and Non-Cooperation, Khilafat issue had acquired a commanding position over both Congress and overall national politics.

Q 66.B

- **National Centre for Sustainable Coastal Management (NCSCM)**, located in Chennai, functions under the **Ministry of Environment, Forest, and Climate Change** for better protection, conservation, rehabilitation, and sustainable management of the coastal and marine areas of India. Hence, **statement 1 is not correct.**

- The Aims and Objectives of the NCSCM are:
 - Strive for being a World Class Knowledge Institution related to coastal zones, environment, resources, and processes.
 - To promote integrated and sustainable management of the coastal and marine areas in India for the benefit and wellbeing of the traditional coastal and island communities.
 - Advise the Union and State Governments and other associated stakeholders on policy, and scientific matters related to Integrated Coastal Zone Management (ICZM). **Hence, statement 2 is correct**
- **The research divisions of the NCSCM are:**
 - **Integrated Island Management Unit.**
 - Geospatial Sciences, Remote Sensing
 - Coastal environmental impact assessment
 - Geographic Information Systems (GIS)
 - Integrated Social Sciences & Economics
 - Conservation of Coastal & Marine Resources
 - Knowledge, Governance and Policy
 - Futuristic Research
- Together with the Survey of India, NCSCM has mapped the Hazard Line for the entire coast of India, which includes vulnerability mapping of flood, erosion, and sea-level rise.

Q 67.C

- Rajkumari Amrit Kaur served as the secretary to Mahatma Gandhi for 16 years. She was one of the first Indian woman members of the Advisory Board of Education from where she resigned in the light of the Quit India Movement. She is also famous to be a member of the Indian delegation to UNESCO conferences in 1945 and 1946 to London and Paris respectively. **Hence, pair 1 is correctly matched.**
- Sarojini Naidu was one of the first women to participate in India's struggle for independence from the British. She was the first Indian female president of the Indian National Congress and after independence, she became the first woman Governor of Uttar Pradesh. She was a close associate of Mahatma Gandhi during his struggle for Independence, specially for the raid of Dharasana Salt Works. She accompanied Mahatma Gandhi in the 2nd Round Table Conference also. **Hence, pair 2 is not correctly matched.**
- Aruna Asaf Ali is famous as a woman freedom fighter who led the Quit India Movement, she used to edit the Congress monthly magazine "inqilab along with Ram Manohar Lohia. Usha Mehta (Ushaben) from Bombay was just 22 years old when she started an underground Radio Station after the leaders of the Quit India Movement were arrested by the British India Govt. The first broadcast was on August 14, 1942, with the help of others like Chandrakant Babulal Jhaveri. **Hence, pair 3 is not correctly matched.**

Q 68.C

- Sandalwood tree (*Santalum album*) is a small evergreen tree that grows wild mostly in the forests of southern states of India, particularly in Karnataka and Tamil Nadu. **Hence statement 1 is correct.**
- Sandalwood plays an important role in the religious life of Indians. The essential oil obtained from this wood has occupied a significant place in the perfumery industries/market. Although it is available in some other countries still the Indian Sandalwood has retained its dominance over other sources because of its quality.
- It is an evergreen tree that grows up to a **height of 15 - 20 metres** and can be grown in any type of soil except marshy lands. Sandalwood trees are **tolerant of high wind**, drought, salt spray, and intense heat. **Hence statement 2 is not correct.**
- **Sandalwood trees are semi-parasitic.** They send out specialized roots that attach to the roots of host plants, from which they suck xylem from the host plant. **Hence, statement 3 is correct.**
- Sandal trees show considerable variation with respect to the shape, size of their leaf and fruit, and the extent of heartwood (fragrant wood). The heartwood and the essential oil obtained from it are among the oldest known perfumery material and are valuable commercially. Heartwood formation in sandal trees generally starts around 10-13 years of age
- **Growing sandalwood by individuals was banned until 2002. Today private cultivation of sandalwood is allowed in India but there are restrictions in its harvest and trade, which require permission from state forest departments.**
- Recently Karnataka's forest department has set up a sandalwood museum in Mysuru.

Q 69.D

- To deal with child sexual abuse cases, the Government has brought in a special law, namely, The Protection of Children from Sexual Offences (POCSO) Act, 2012.
- The POCSO Act, 2012 is a comprehensive law to provide for the protection of children from the offences of **sexual assault, sexual harassment and pornography while safeguarding the interests of the child at every stage of the judicial process by incorporating child-friendly mechanisms for reporting, recording of evidence, investigation and speedy trial of offences through designated Special Courts. Hence statement 1 is correct**
- The POCSO Act is gender neutral. It recognises that boys can be victims of sexual violence as well. It defines a child as someone under the age of 18. The Indian Penal Code does not recognise that sexual assault can be committed on boys. Similar to the law of rape under the IPC. The pronoun used for the accused is “he”, thus, again, only a male can be booked for the offences under the relevant provisions of the POCSO Act. **A victim under the POCSO Act can be any child irrespective of gender. Hence statement 3 is correct.**
- Punishments under POCSO are more stringent than under IPC.
- **The POCSO Act has also changed consensual sex under the Indian Penal Code. The age of consent has been raised from 16 years of age to 18 years of age. Being gender-neutral legislation, the POCSO Act, 2012, set the age of consent as 18 years for both boys and girls.** This means that any person (including a child) can be prosecuted for engaging in a sexual act with a child irrespective of whether the latter consented. The Act also does not provide any clarity on what happens when two minors engage in any kind of sexual activity. **Hence statement 2 is correct.**

Q 70.D

- Recently, following the Election Commission’s recommendation to increase the poll expenditure, the Ministry of Law and Justice approved a 10% increase in the same for election campaigns. Therefore, **any change in total election expenditure rule requires prior approval of the Ministry of Law and Justice, not the Parliament. Hence statement 2 is not correct.**
- **Section 77(1) of the RP Act, 1951, mandates that ‘every candidate at an election shall, either by himself or his election agent, keep a separate and current account of all expenditure in connection with the election incurred or authorised by him or by his election agent. Hence statement 1 is correct.**
- Rule 90 of Conduct of Election Rules, 1961 prescribes that total election expenditure by a candidate shall not exceed the maximum limit.
 - **The current expenditure limit for state and Parliament elections differs from state to state. The ceiling on poll expenditure varies across States, with candidates in Assembly elections in bigger States like Bihar, Uttar Pradesh, and Tamil Nadu now allowed to spend up to ₹30.8 lakhs as against ₹28 lakhs earlier.** For a candidate contesting a Lok Sabha poll in these States, the revised ceiling on poll expenditure is now ₹77 lakhs instead of the earlier amount of ₹70 lakhs. **Goa, Arunachal Pradesh, Sikkim and a few Union Territories, based on the size of their constituencies and population, have a lower ceiling on poll expenditure.** Here while the enhanced ceiling for a Lok Sabha candidate is now ₹59.4 lakhs those contesting an Assembly can spend up to ₹22 lakhs. **Hence statement 3 is not correct.**
 - A limit has been fixed for all expenses such as prints and electronic advertisements including social media accounts, public meetings, etc.
 - **EC imposes limits on campaign expenditure incurred by a candidate, but not by a political party**
- Expenditure incurred on campaigning by such **notified star campaigners is exempt from being added to the election expenditure of a candidate.** However, this only applies when a star campaigner limits herself to a general campaign for the political party she represents.

Q 71.A

- The financial scams and corporate frauds saw a huge rise after the liberalisation of the economy and increasing rate of white-collar crimes required stiff penalties.
- The Indian Government under Mr. Naresh Chandra (former cabinet secretary) set up a Committee on Corporate Governance. The Committee inter-alia recommended setting up of the Corporate Serious Fraud Office. Thereafter, considering the recommendation of the committee in the backdrop of the failure of non-banking companies resulting in a huge financial loss to the public, the Cabinet decided to set up a Serious Fraud Investigation Office (SFIO).
- **Serious Fraud Investigation Office (SFIO), is set up as a multi-disciplinary organization under the Ministry of Corporate Affairs to investigate corporate frauds.** It consists of experts in the field of accountancy, forensic auditing, law, information technology, investigation, company law, capital market

and taxation for detecting and prosecuting or recommending for prosecution white-collar crimes/frauds. **Hence, statement 1 is correct and statement 2 is not correct.**

- SFIO also has powers to arrest people for violation of the Company law. An investigation into the affairs of a company can be initiated by the Central Government and entrusted to the Serious Fraud Investigation Office.

Q 72.B

- **Arbitrage is the simultaneous purchase and sale of the same asset in different markets in order to profit from tiny differences in the asset's listed price. Hence, option (b) is the correct answer.**
 - o Arbitrage can be used whenever any stock, commodity, or currency may be purchased in one market at a given price and simultaneously sold in another market at a higher price. The situation creates an opportunity for a risk-free profit for the trader.
- **Hedging is a risk management strategy employed to offset losses in investments by taking an opposite position in a related asset.** The reduction in risk provided by hedging also typically results in a reduction in potential profits. Hedging strategies typically involve derivatives, such as options and futures contracts. **Hence option (c) is not correct.**
- **A derivative is a contract between two or more parties whose value is based on an agreed-upon underlying financial asset** (like a security) or set of assets (like an index). Common underlying instruments include bonds, commodities, currencies, interest rates, market indexes, and stocks. **Hence option (a) is not correct.**

Q 73.C

- **Recent Context:** The Antarctic ozone hole closed recently due to naturally occurring meteorological conditions and the continued presence of ozone-depleting substances in the atmosphere.
- The ozone hole is a region of exceptionally depleted ozone in the stratosphere over the Antarctic that happens at the beginning of Southern Hemisphere spring (August–October).
- The ozone hole first appeared over Antarctica because atmospheric and chemical conditions unique to this region increase the effectiveness of ozone destruction by reactive halogen gases. Some of the factors are discussed below.
- **Distribution of halogen gases:** Halogen source gases emitted at Earth's surface are present in comparable abundances throughout the stratosphere in both hemispheres even though **most of the emissions occur in the Northern Hemisphere.** The abundances are comparable because most source gases have no significant natural removal processes in the lower atmosphere and because winds and convection redistribute and mix air efficiently throughout the troposphere on the time-scale of weeks to months. Halogen gases (in the form of source gases and some reactive products) enter the stratosphere primarily from the tropical upper troposphere. Stratospheric air motions then transport these gases upward and toward the pole in both hemispheres.
- **Low polar temperatures:** Stratospheric temperatures are lowest in both polar regions in winter. In the Antarctic winter, minimum daily temperatures are generally much lower and less variable than in the Arctic winter. Antarctic temperatures also remain below the PSC formation temperature for much longer periods during winter. These and other meteorological differences occur because of the unequal distribution among land, ocean, and mountains between the hemispheres at middle and high latitudes. The winter temperatures are low enough for PSCs to form somewhere in the Antarctic for nearly the entire winter (about 5 months) and in the Arctic for only limited periods (10–60 days) in most winters.
- **Isolated conditions:** Stratospheric air in the polar regions is relatively isolated from other stratospheric regions for long periods in the winter months. The isolation comes about because of strong winds that encircle the poles, forming a polar vortex, which prevents substantial motion of air into or out of the polar stratosphere. This circulation strengthens in winter as stratospheric temperatures decrease, with the result that the isolation of air in the vortex is much more effective in the Antarctic than the Arctic.
- **Polar stratospheric clouds (PSCs):** Reactions on the surfaces of liquid and solid PSCs can substantially increase the relative abundances of the most reactive chlorine gases. These reactions convert the reservoir forms of reactive chlorine gases, chlorine nitrate (ClONO_2) and hydrogen chloride (HCl), to the most reactive form, ClO . ClO increases from a small fraction of available reactive chlorine to comprise nearly all chlorine that is available. With increased ClO , additional catalytic cycles involving ClO and BrO become active in the chemical destruction of ozone whenever sunlight is available. Different types of liquid and solid PSC particles form when stratospheric temperatures fall below about -78°C in polar regions. As a result, PSCs are often found over large areas of the winter polar regions and over significant altitude ranges. With a temperature threshold of -78°C , **PSCs exist in larger regions and for longer time periods in the Antarctic than the Arctic.**

- **Nitric acid** Once formed, PSC particles fall to lower altitudes because of gravity. The largest particles can descend several kilometers or more in the stratosphere during the low-temperature winter/spring period that lasts several months in Antarctica. Because PSCs often contain a significant fraction of available HNO_3 , their descent removes HNO_3 from regions of the ozone layer. This process is called denitrification of the stratosphere. With less HNO_3 , the highly reactive chlorine gas ClO remains chemically active for a longer period, thereby increasing chemical ozone destruction. Significant denitrification occurs each winter in the Antarctic and in some, but not all, Arctic winters, because PSC formation temperatures must be sustained over an extensive altitude region and time period to effect denitrification.
- **Water removal:** Ice particles form when temperatures are a few degrees lower than PSC formation temperatures. If ice temperatures persist for weeks to months over extensive altitude regions, ice particles will also fall several kilometers due to gravity. As a result, a significant fraction of water vapor can also be removed from regions of the ozone layer. This process is called **dehydration of the stratosphere**. **With the low temperatures required to form ice, dehydration is common in the Antarctic and rare in the Arctic winters.** The removal of water vapor does not directly affect the catalytic reactions that destroy ozone. **Dehydration indirectly affects ozone destruction by suppressing PSC formation**, which reduces ClO production in PSC reactions.

Q 74.B

- Marginal Standing Facility (MSF) is a new scheme announced by the Reserve Bank of India (RBI) in its Monetary Policy (2011-12). Marginal Standing Facility (MSF) Rate is the rate at which RBI lends funds overnight to scheduled banks, against government securities. **RBI has introduced this borrowing scheme to regulate short-term (not long term) asset-liability mismatch in a more effective manner. Hence, statement 1 is not correct.**
- MSF is the penal rate at which banks can borrow money from the central bank over and above what is available to them through the LAF window. It is a window for banks to borrow from the Reserve Bank of India in an emergency situation when inter-bank liquidity dries up completely.
- The MSF would be a penal rate for banks and the banks can borrow funds by pledging government securities within the limits of the statutory liquidity ratio. **Banks were allowed to avail of funds under the marginal standing facility (MSF) by dipping into the Statutory Liquidity Ratio (SLR) by up to a certain per cent of net demand and time liabilities (NDTL). Hence, statement 2 is correct.**
- MSF, being a penal rate, is always fixed above the repo rate. The MSF rate is usually pegged 100 basis points or a percentage point above the repo rate.
- The scheme has been introduced by RBI with the main aim of reducing volatility in the overnight lending rates in the inter-bank market and to enable a smooth monetary transmission in the financial system.

Q 75.A

- **The tea plant is highly adaptable** and can grow in a broad range of conditions. The tea plant can handle a light frost and even snow, but not heavy freezes or prolonged cold winters, and, unlike some plants, it does not require a period of cold dormancy. **It can thus grow from subtropical climates to tropical climates, but generally requires a fair amount of humidity and rainfall during the growing season. Hence statement 1 is correct.**
- Although it can grow in hot tropical climates if they are sufficiently humid, the highest-quality teas mostly come from subtropical climates with some seasonality. **The seasonality of precipitation is important in influencing the quality of tea, and tea leaves harvested at different times will produce a finished product with vastly different characteristics.** Seasonality can include a simple wet-dry pattern like the Asian Monsoon, or a bimodal precipitation pattern, with two distinct wet seasons and two distinct dry seasons in each year, like occurs in parts of Sri Lanka and Kenya.
- **Tea, a water-loving plant, tends to be grown on the windward sides of mountain ranges.** The tea plant can often only be grown within a certain range of altitudes. The highest commercial tea operations are around 8000 feet (about 2400m) in elevation. **Hence statement 2 is correct.**
- Indian tea is among the finest in the world owing to strong geographical indications, heavy investment in tea processing units, continuous innovation, augmented product mix and strategic market expansion.
- **The main tea-growing regions are in the Northeast (including Assam) and in north Bengal (Darjeeling district and the Dooars region). Tea is also grown on a large scale in the Nilgiris in South India.**
- India is one of the world's largest consumers of tea, with about three-fourths of the country's total produce consumed locally. **India stands fourth in terms of tea export** after Kenya (including neighbouring African countries), China and Sri Lanka. As of 2019, **India is the second-largest tea producer** in the world with a production of 1,339.70 million kgs. **Hence statement 3 is not correct.**

Q 76.D

- **Corrosion** is a process through which metals in manufactured states return to their natural oxidation states. This process is a reduction-oxidation reaction in which the metal is being oxidized by its surroundings, often the oxygen in the air. This reaction is both spontaneous and electrochemically favoured. Corrosion is essentially the creation of voltaic, or galvanic, cells where the metal in question acts as an anode and generally deteriorates or loses functional stability.
- **Rancidity**, it is the natural process of decomposition (degradation) of fats or oils by either hydrolysis or oxidation, or both. It is the complete or incomplete oxidation or hydrolysis of fats and oils when exposed to air, light, or moisture or by bacterial action, resulting in unpleasant taste and odour.
- **Combustion** is an oxidation reaction. During combustion, burning of fuel takes place in the presence of oxygen. If oxygen is not present burning will not take place.
- **Hence option (d) is the correct answer.**

Q 77.B

- The High Ambition Coalition (HAC) for Nature and People is **an intergovernmental group** championing a global deal for nature and people that can halt the accelerating loss of species, and protect vital ecosystems that are the source of our economic security. **Hence, statement 1 is not correct.**
- Co-Chaired by Costa Rica, France, and the United Kingdom, the High Ambition Coalition for Nature and People was launched at the One Planet Summit in Paris in January 2021. It brings together over 50 governments from across six continents.
- **The central goal of the High Ambition Coalition (HAC) for Nature and People is to protect at least 30 per cent of the world's land and ocean by 2030. Also called the 30x30 target is a global target that aims to halt the accelerating loss of species and protect vital ecosystems that are the source of our economic security. Hence, statement 2 is correct.**
- Other main pillars or objectives of the High Ambition Coalition (HAC) for Nature and People are :
 - **Sustainable management.** The entire planet must be managed sustainably with no net loss of natural habitats, supported by a circular economy, and managed for the sustainable and equitable sharing of benefits from nature.
 - **Improved management of existing protected areas.** Management must be improved for the entire system of protected and conserved areas around the world. The best available science should be used and sufficient resources made available to deliver the desired conservation outcomes.
 - **Increased funding.** Additional public funding and private financing from corporations and philanthropists must be mobilized to support the long-term management and local governance of protected and conserved areas around the world.
- There are no financial commitments required in order to participate in the High Ambition Coalition for Nature and People.

Q 78.B

- Recently the Election Commission (EC) approached the Law Ministry to permit NRIs to cast their votes from overseas through postal ballots.
- A citizen of India, absent from the country owing to employment, education etc, has not acquired citizenship of any other country and are otherwise eligible to be registered as a voter in the address mentioned in his/her passport can be enrolled as an NRI voter.
- **Voting rights for NRIs were introduced only in 2011, through an amendment to the Representation of the People Act 1950. Hence, statement 1 is not correct.**
- An NRI can vote in the constituency in which her place of residence, as mentioned in the passport, is located. **She can only vote in person and will have to produce her passport in original at the polling station for establishing identity. Hence, statement 2 is correct.**
- Recently, the Election Commission (EC) approached the Law Ministry to permit NRIs to cast their votes from overseas through postal ballots.

Q 79.B

- **The liquidity coverage ratio (LCR) refers to the proportion of highly liquid assets held by financial institutions, to ensure their ongoing ability to meet short-term obligations.** The LCR is calculated by dividing a bank's high-quality liquid assets by its total net cash flows, over a 30-day stress period.
- **The Liquidity Coverage Ratio (LCR) is one of the Basel Committee's key reforms to develop a more resilient banking sector.** Under the Basel III framework banks are required to hold an amount of high-quality liquid assets that's enough to fund cash outflows for 30 days. **Hence, statement 2 is correct.**

- **The objective of the LCR is to promote the short-term (not long term) resilience of the liquidity risk profile of banks.** It does this by ensuring that banks have an adequate stock of unencumbered high-quality liquid assets (HQLA) that can be converted easily and immediately into cash to meet their liquidity needs for a 30 calendar day liquidity stress scenario. **Hence, statement 1 is not correct.**
- The LCR is expected to improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source, thus reducing the risk of spillover from the financial sector to the real economy.

Q 80.D

- The transfer of resources and wealth from India to England without providing 'any equivalent return' which began in the second half of the eighteenth century had been christened by Indians like **Dadabhai Naoroji, M. G. Ranade, R. C. Dutt** as the **"economic drain"**. The drain mainly consisted of the following:
- **Home Charges:** Home Charges refer to the expenditure incurred in England by the **Secretary of State** on behalf of India. During 1921-22, the Home charges increased to 40% of the total revenue of the Central Government. The main constituents of Home Charges were
 - **Dividend to the Shareholders of the East India Company:** The Charter Act of 1833 provided for an annual dividend to be paid to the shareholders of the Company out of Indian revenues till 1874.
 - **Interest on Public Debt raised abroad:** By 1900 the public debt has risen to 224 million Euros. Part of the debt was raised for productive purposes i.e., for construction of railways, irrigation facilities, and public works.
 - **Civil and Military Charges:** These included payments towards pensions of British officers in the civil and military departments in India, expenses on India Office establishment in London; payments to the British war office, etc.
 - **Store purchases in England:** The Secretary of State and the Government of India purchased stores for the Military, Civil, and Marine Departments in the English market.
- **Hence option (d) is the correct answer.**

Q 81.B

- Whale sharks are the largest shark (sharks are categorized as fish), and indeed **the largest of any fishes alive today (Whale sharks are not mammals)**. The whale shark is a 'filter feeder shark' which means it does not eat meat like other sharks. Whale sharks filter seawater and feed on tiny planktons.
- **Whale sharks are found in all the tropical oceans of the world** and travel large distances to find enough food to sustain their huge size and to reproduce. They grow up to 40 feet in length and can weigh up to 20 tonnes.
- **Whale Shark is included in Schedule I of the Wildlife (Protection) Act of India, 1972**, rendering the capture and killing of the fish a cognizable offense. Its IUCN status is Endangered.
- The Whale Shark is also included in Appendix II of the Convention in International Trade in Endangered Species of Fauna and Flora (CITES).
- Wildlife Trust of India (WTI) launched the widely-acclaimed Whale Shark Campaign in 2004 to spread awareness on the plight of the species and its protected status among coastal communities in Gujarat. The campaign helped convert the fishermen into protectors of the fish and brought about a change in the perception and attitude of local people.
- **Hence option (b) is the correct answer.**

Q 82.D

- A very significant aspect of the Indian Constitution is the Jurisdiction it confers on the Supreme Court and High Court to issue writs. Art 32 provides power to the Supreme Court and Art 226 provides power to the High Court to issue writs.
- **Under Article 226, a High Court is empowered to issue directions, orders or writs, including writs in nature of habeas corpus, mandamus, prohibition, quo warranto and certiorari, for the enforcement of a Fundamental Right and for "any other purpose"**. The High Court while exercising its power of judicial review does not act as an appellant body. It is concerned with illegality, irrationality and procedural impropriety of an order passed by the state or a statutory authority
- Article 226 of the Constitution allows the High Court to not only enforce Fundamental Rights but the use of words 'other purposes' also allows the High Court to enforce Legal Rights as well.
- **The Supreme Court has observed that Administrative decisions of government are subject to judicial review under Article 226 of the Constitution. However, it can be subject to judicial review only on grounds of perversity, patent illegality, irrationality, want of power to take the decision and procedural irregularity. Hence statement 1 is not correct.**

- A foreign company can only invoke the writ jurisdiction of the High Court under Article 226 for enforcement of its Legal Rights as well as for Fundamental Rights which are available to non-citizens as well such as in Article 14, 20, 21 etc. Hence statement 2 is not correct.
- The jurisdiction of the High Court to entertain a writ petition under Article 226 of the Constitution of India cannot be barred by an Act of Parliament during a national emergency.

Q 83.A

- The practice of decorating floor is known with different names as **Alpana or Alpona in Bengal**, Aripa in Bihar, Jhuni in Orissa, **Mandana in Rajasthan and Madhya Pradesh**, Salhiya in Gujarat, Rangoli in Maharashtra, Muggu in Andhra Pradesh and Kalamezhuthu, **Kolam in Karnataka**, Tamil Nadu and Kerala and in Uttar Pradesh it is known as Chowkputna or Aripa.
- **Alpana or alpona** refers to colourful motifs, sacred art or painting done with hands and paint which is mainly a paste of rice and flour on auspicious occasions in **Bengal**. Traditionally, it was drawn by the women of the house before sunset. It is also a folk art in Bengal. **Hence pair 1 is correctly matched.**
- **Mandana** paintings are wall and floor paintings of **Rajasthan and Madhya Pradesh**. Mandana are drawn to protect home and hearth, welcome gods into the house and as a mark of celebrations on festive occasions. Hence pair 3 is not correctly matched.
- **Kolam** is mainly done with the belief to bring wealth and prosperity into the household. A Kolam is a geometrical line drawing composed of curved loops, drawn around a grid pattern of dots. It is practiced in **Karnataka**. **Hence pair 2 is correctly matched.**
- **Hence option (a) is the correct answer.**

Q 84.D

The conservation of tigers is not just about increasing their numbers as more tigers require more habitat, which is becoming less and less available each day. It is important that tiger populations stop dwindling, and habitat stops being lost. Some important steps have in this direction are:

- **St. Petersburg Declaration:** In an historic effort to save tigers from extinction, **13 Government representatives** meeting at the **International Tiger Conservation Forum** endorsed the St. Petersburg Declaration and agreed to double tiger numbers by 2022. Russia, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Russia, Thailand and Viet Nam are the tiger range countries that committed to implementing the **Global Tiger Recovery Program**, the strategic plan envisaged by the St. Petersburg Declaration.
- **Tx2 Program:** TX2 stands for '**Tigers times two**', signalling the goal to double wild tigers. The TX2 goal is a global goal, and WWF is putting its full force behind this ambitious effort. Through the Global Tiger Initiative, Global Tiger Forum and other critical platforms, WWF continues to drive the TX2 goal forward, supporting the 13 tiger range governments to take action and fulfil their commitments with partnership, policy advice, and collaborative solutions.
- **CA|TS Framework:** CA|TS is a set of criteria that allows tiger sites to check if their management will lead to successful tiger conservation. It is organised under seven pillars and 17 elements of critical management activity. It was developed by tiger and protected area experts. Officially launched in 2013, CA|TS is an important part of Tx2, the global goal to double wild tiger numbers by the year 2022.
- **MSTrIPES (Monitoring System for Tigers: Intensive Protection and Ecological Status):** It is a platform where modern technology is used to assist effective patrolling, assess ecological status and mitigate human-wildlife conflict in and around tiger reserves. The MSTrIPES program uses Global Positioning System (GPS), General Packet Radio Services (GPRS), and remote sensing, to collect information from the field, create a database using modern Information Technology (IT) based tools, analyses the information using GIS and statistical tools to provide inferences that allow tiger reserve managers to better manage their wildlife resources.
- **Integrated Tiger Habitat Conservation Programme:** Initiated in 2014, the Integrated Tiger Habitat Conservation Programme (ITHCP) or 'Tiger Programme' is a **grant-making initiative** that contributes to the Global Tiger Recovery Programme (GTRP), a global effort to double tiger numbers in the wild by 2022. - The programme consists of a portfolio of 12 large-scale projects in key Tiger Conservation Landscapes across Bangladesh, Bhutan, India, Indonesia, Nepal and Myanmar.
- **Hence option (d) is the correct answer.**

Q 85.C

- The Constitution of India (Article 148) provides for an independent office of the Comptroller and Auditor General of India (CAG). The duties and functions of the CAG as laid down by the Parliament and the Constitution.

- The organisations subject to audit of the Comptroller and Auditor General of India are:
 - All the Union and State Government departments, including departmental commercial undertakings such as the Indian Railways, Posts and Telecommunications.
 - Public commercial enterprises controlled by the Union and the State Governments- i.e. government companies and corporations.
 - Non-commercial autonomous bodies and authorities owned or controlled by the Union or the States.
 - Authorities and bodies substantially financed from Union or State Revenues.
 - **Companies where equity participation by Government is 51 per cent or more**
 - **Any authority or body, not being a foreign state or international organisation, which get any grant or loan for any specific purpose from the Consolidated Fund of India or of any State or any Union territory having a Legislative Assembly.**
 - Audit of all receipts which are payable into the Consolidated Fund of India and each of State and each of Union territory having a Legislative Assembly.
 - **Audit of the Regulatory bodies such as Telecom Regulatory Authority of India (TRAI), Central Electricity Regulatory Commission (CERC), State Electricity Regulatory Commissions (SERCs) and Insurance Regulatory Authority.**
- **The Supreme Court ruled that being a public charitable trust, “there is no occasion for audit of Prime Minister’s Citizen Assistance and Relief in Emergency Situations Fund (PM-CARES Fund) by the Comptroller & Auditor General (CAG) of India”. Hence, option (c) is the correct answer.**

Q 86.D

- The Eighth Schedule of the constitution consists of 22 languages recognised by the constitution of India - (1) Assamese, (2) Bengali, (3) Gujarati, (4) **Hindi**, (5) Kannada, (6) Kashmiri, (7) Konkani, (8) Malayalam, (9) Manipuri, (10) Marathi, (11) Nepali, (12) Oriya, (13) Punjabi, (14) Sanskrit, (15) Sindhi, (16) Tamil, (17) Telugu, (18) Urdu (19) Bodo, (20) Santhali, (21) Maithili and (22) Dogri.
- Of these languages, 14 were initially included in the Constitution. The Sindhi language was added by the 21st Amendment Act of 1967. Konkani, Manipuri, and Nepali were included by the 71st Amendment Act of 1992. Bodo, Dogri, Maithili, and Santhali were added by the 92nd Amendment Act of 2003.
- The evolution of dialects and languages is dynamic, influenced by socio-economic-political developments, it is difficult to fix any criterion for languages for inclusion in the Eighth Schedule to the Constitution of India. **The Constitution does not mention a qualifying criterion for a language to be included in the Eighth Schedule. Hence statement 1 is not correct.**
- As per Art 342 of the constitution, The official language of the Union shall be Hindi in the Devnagari script. It is mentioned in the eighth schedule. **Hence statement 2 is not correct.**
- There has been demand from Tulu speaking population urging the government to list the Tulu language under the eight scheduled. However, it has still not been done. **Hence statement 3 is not correct.**

Q 87.A

- **Core Investment Company (CIC) is a non-banking financial company carrying on the business of acquisition of shares and securities** and which
 - (a) holds not less than 90 percent of its net assets in the form of investment in equity shares, preference shares, bonds, debentures, debt or loans in group companies and
 - (b) its investments in the equity shares in group companies constitutes not less than 60 percent of its net assets as on the date of the last audited balance sheet. **Hence statement 1 is correct.**
- **The Reserve Bank of India is entrusted with the responsibility of regulating and supervising the Non-Banking Financial Companies by virtue of powers vested by the Reserve Bank of India Act, 1934.** Over the last some years, RBI has carved out some specialized NBFCs like Core Investment Companies (CICs), NBFC- Infrastructure Finance Companies (IFCs) etc. **Hence statement 2 is not correct.**
- Core Investment Companies (CICs) are companies holding shares, bonds debentures and are categorized as NBFCs by the RBI. CICs having asset size of 100 crore or above are categorized as Systemically Important Core Investment Companies (CICs-ND-SI) and are required to obtain Certificate of Registration from the Reserve Bank.

Q 88.C

- One Health is a collaborative, multisectoral, and trans-disciplinary approach working at local, regional, national, and global levels to achieve optimal health and well-being outcomes recognizing the interconnections between people, animals, plants, and their shared environment.

- The areas of work in which a One Health approach is particularly relevant to include food safety. There is a remarkable spectrum of foods and pathogens involved in food-borne illnesses, and this is an ever-changing dynamic. There is a growing importance of produce as a vehicle for food-borne pathogens, yet animal reservoirs are often the origin of these infections. One Health gives us the proper lens to view and better understand this linkage and, more importantly, to develop new insights for changing our interventions and prevention strategies. Hence, statement 1 is correct.
- One Health also works to address environmental contamination, habitat use conflicts, biodiversity loss, emerging infectious diseases, antimicrobial resistance, and ecosystem function degradation etc.
- Many of the same microbes infect animals and humans, as they share the eco-systems they live in. Efforts by just one sector cannot prevent or eliminate the problem. For instance, rabies in humans is effectively prevented only by targeting the animal source of the virus (for example, by vaccinating dogs).
- One health approach believes that what affects our environment can have effects on animals and humans and vice versa. Hence, it believes that human-animal interaction can be beneficial to both humans and animals. Hence, statement 2 is correct.

Q 89.C

- **Article 371 to 371-J in Part XXI of Indian constitution deals with the special provision for 11 states of India** to meet aspirations of the people of backward regions of the states or to protect the cultural and economic interests of the tribal people of the states or to deal with the disturbed law and order condition in some parts of the states or to protect the interests of the local people of the states.
- **Article 371, Maharashtra and Gujarat:** Governor has “special responsibility” to establish “separate development boards” for “Vidarbha, Marathwada, and the rest of Maharashtra”, and Saurashtra and Kutch in Gujarat.
 - To ensure “equitable allocation of funds for developmental expenditure over the said areas”, and “equitable arrangement providing adequate facilities for technical education and vocational training, and adequate opportunities for employment” under the state government.
- **Article 371A (13th Amendment Act, 1962), Nagaland:** This provision was inserted after a 16-point agreement between the Centre and the Naga People’s Convention in 1960, which led to the creation of Nagaland in 1963. Parliament cannot legislate in matters of Naga religion or social practices, Naga customary law and procedure, administration of civil and criminal justice involving decisions according to Naga customary law, and ownership and transfer of land without the concurrence of the state Assembly. **Hence pair 1 is correctly matched.**
- **Article 371B (22nd Amendment Act, 1969), Assam:** The President may provide for the constitution and functions of a committee of the Assembly consisting of members elected from the state’s tribal areas.
- **Article 371C (27th Amendment Act, 1971), Manipur:** The President may provide for the constitution of a committee of elected members from the Hill areas in the Assembly, and entrust “special responsibility” to the Governor to ensure its proper functioning. **Hence pair 2 is correctly matched.**
- **Article 371D (32nd Amendment Act, 1973; substituted by The Andhra Pradesh Reorganisation Act, 2014), Andhra Pradesh and Telangana:** President must ensure “equitable opportunities and facilities” in “public employment and education to people from different parts of the state”. He may require the state government to organise “any class or classes of posts in the civil service of, or any class or classes of civil posts under the State into different local cadres for different parts of the State”. He has similar powers vis-à-vis admissions in educational institutions.
- **Article 371E:** Allows for the establishment of a university in Andhra Pradesh by a law of Parliament. But this is not a “special provision” in the sense of the others in this part.
- **Article 371F (36th Amendment Act, 1975), Sikkim:** The members of the Legislative Assembly of Sikkim shall elect the representative of Sikkim in the House of the People. To protect the rights and interests of various sections of the population of Sikkim, Parliament may provide for the number of seats in the Assembly, which may be filled only by candidates from those sections.
- **Article 371G (53rd Amendment Act, 1986), Mizoram:** Parliament cannot make laws on “religious or social practices of the Mizos, Mizo customary law and procedure, administration of civil and criminal justice involving decisions according to Mizo customary law, ownership and transfer of land unless the Assembly so decides”. **Hence pair 3 is not correctly matched.**
- **Arunachal Pradesh (Article 371H, 55th Amendment Act, 1986).** The Governor has a special responsibility with regard to law and order, and he shall, after consulting the Council of Ministers, exercise his individual judgment as to the action to be taken. **Hence Pair 4 is not correctly matched.**

Q 90.C

- The British Govt. of India announced the constitutional reforms in July 1918 known as the Montford Reforms. Based on these reforms, the Govt of India Act, 1919 was enacted. The reforms proposed that the ministers in the Provincial legislature had to resign if a no-confidence motion was passed against them by the legislature, while there was no such provision of No-confidence for the executive councilors. **Hence, statement 1 is correct.**
- The central legislature would have a council of states with a tenure of 5 years, this council had only male members in the house. **Hence, statement 2 is correct.**
- One of the biggest criticism of the reforms was that the allocation of the seats for Central Legislature to provinces was based on the 'importance' of provinces, eg the military importance of Punjab and Bombay's commercial importance fetched them a greater number of seats. **Hence, statement 3 is not correct.**

Q 91.A

- **Hydrogenation** is a reduction reaction which results in an addition of hydrogen (usually as H_2). If an organic compound is hydrogenated, it becomes more "saturated" with hydrogen atoms. It converts the liquid oils into semisolid or plastic fats for special applications, such as in shortenings and margarine, and it improves the oxidative stability of the oil. Hydrogenation involves the reaction between unsaturated liquid oil and hydrogen adsorbed on a metal catalyst. **Hence, statement 1 is correct.**
- The process typically requires the use of a catalyst, since hydrogenation only occurs spontaneously at high temperatures. The most common **catalysts are nickel, platinum, or palladium.** **Hence, statement 2 is not correct.**
- Hydrogenation reduces the number of double and triple bonds in hydrocarbons, while dehydrogenation removes hydrogen atoms and increases the number of double and triple bonds. Examples of **hydrogenated products include margarine, mineral turpentine, and aniline.**
- A major health concern during the hydrogenation process is the production of trans fats. Trans fats are the result of a side reaction with the catalyst of the hydrogenation process. This is the result of an unsaturated fat which is normally found as cis isomer converts to a trans isomer of the unsaturated fat. **Hence statement 3 is not correct.**
- **Hydrogenation Uses:** Hydrogenation has many applications, but most people are familiar with the reaction as the one used to make liquid oils into semi-solid and solid fats. There may be some health concerns associated with hydrogenation of unsaturated dietary fats to produce saturated fats and trans fats.

Q 92.A

- **Volcanic landforms are divided into extrusive and intrusive landforms based on whether magma cools within the crust or above the crust.** Extrusive landforms are formed from material thrown out during volcanic activity. The materials thrown out during volcanic activity includes lava flows, pyroclastic debris, volcanic bombs, ash and dust and gases such as nitrogen compounds, sulphur compounds and minor amounts of chlorine, hydrogen and argon.
- Examples of Extrusive landforms are:
 - Conical Vent and Fissure Vent
 - Mid-Ocean Ridges
 - Composite Type Volcanic Landforms
 - Shield Type Volcanic Landforms
 - Fissure Type Flood Basalt Landforms
 - Caldera
 - Cinder cone
 - **Lava Mesa - Lava flows and sills, in particular, are very resistant to weathering and erosion, and often form the flat top, or caprock, of a mesa.**
- **Intrusive Forms**
 - The lava that is released during volcanic eruptions on cooling develops into igneous rocks. The cooling may take place either on reaching the surface or also while the lava is still in the crustal portion. Depending on the location of the cooling of the lava, igneous rocks are classified as volcanic rocks (cooling at the surface) and plutonic rocks (cooling in the crust). The lava that cools within the crustal portions assumes different forms. These forms are called intrusive forms: **Batholiths, Lacoliths, Lapolith, Phacolith and Sills, Dykes.**
- **Hence option (a) is the correct answer.**

Q 93.B

- Eco-Development Forces (EDF) Scheme: Eco-Development Forces Scheme was established in the 1980s as a scheme **implemented through Ministry of Defence for ecological restoration of terrains, rendered difficult either due to severe degradation or remote location or difficult law and order situation.**
- **The scheme of Eco-Development Forces is based on twin objectives of ecological regeneration in difficult areas, and promotion of meaningful employment to ex-servicemen.**
- Under this scheme, the establishment and operational expenditure on the Eco Task Force (ETF) Battalions raised by Ministry of Defence is reimbursed by Ministry of Environment and Forests while the inputs like sapling, fencing, etc. and also the professional and managerial guidance is provided by the State Forest Departments.
- In ETF battalions, the Ministry of Defence deploys its ex-servicemen, preferably from within the area of operation, whereas the core of the force is constituted of regular servicemen. Some of the ETF Battalions have undertaken successful eco-restoration of highly degraded sites, for example, the limestone mining areas in the Mussoorie Hills.
- **Hence, statement 1 is not correct and statement 2 is correct.**

Q 94.B

- **Lichens :** Lichens are symbiotic associations between algae and fungi. The algal component is known as phycobiont and fungal component as mycobiont, which are autotrophic and heterotrophic, respectively. Algae prepare food for fungi and fungi provide shelter and absorb mineral nutrients and water for its partner. So close is their association that if one saw a lichen in nature one would never imagine that they had two different organisms within them. Lichens are very good pollution indicators – they do not grow in polluted areas.
- **What Lichens Are Not:** Isn't lichen that mossy stuff on rocks and trees? When people think of lichens, many of them think of them as a kind of moss. That could not be farther from the truth.
 - Although moss and lichens are both called non-vascular plants, only mosses are plants. Mosses are included in a group of non-vascular plants called bryophytes. Mosses are believed to be the ancestors of the plants we see today, like trees, flowers, and ferns. Lichens, on the other hand, are not similar in anyway to mosses or other members of the plant kingdom.
 - Although mosses are very primitive, they still have plant-like structures that look like and function like leaves, stems and roots. They have chloroplasts throughout their entire bodies and can photosynthesize from all sides of their structures.
 - Lichens, on the other hand, are completely different. They do not have any roots, stems or leaves and their chloroplasts are contained only in the algae on the top surface of the lichen. **Hence, statement 1 is not correct.**
 - What lichens and mosses do have in common are size and habitats. In fact, mosses retain water, which is what lichens use to prolong their growth cycle. That's why most lichen pictures will have mosses in the photos.
- **Why are Lichens Important?**
 - They provide a mode of survival in harsh environments where algae cannot normally survive. Since the fungus can protect its algae, these normally water-requiring organisms can live in dry, sunny climates without dying, as long as there are occasional rain showers or flooding to let them recharge and store food for the next drought period. Because lichens enable algae to live all over the world in many different climates, they also provide a means to convert carbon dioxide in the atmosphere through photosynthesis into oxygen, which we all need to survive.
 - One of the ways lichens directly benefit humans is through their ability to absorb everything in their atmosphere, especially pollutants. Lichens can provide us with valuable information about the environment around us. Any heavy metals or carbon or sulfur or other pollutants in the atmosphere are absorbed into the lichen thallus. Scientists can extract these toxins and determine the levels that are present in our atmosphere.
 - Mosses are used as bioindicators of air pollution stress for plant communities because field studies of moss distribution around SO₂ sources show that they are more sensitive to gaseous pollution than vascular plants. Moss has perhaps the best air cleansing and oxygenating capabilities of any plant. This is due in part to the vast surface area of moss plants - essentially a "green lung," capturing all sorts of pollutants, allergens and harmful particles. **Hence, statement 2 is correct.**

Q 95.B

- **Recently, RBI floated a new idea of new umbrella entities (NUEs) for payment systems to create an alternate mechanism to the existing National Payments Corporation of India (NPCI). Hence, option (b) is the correct answer.**
- The objective is to set up new pan-India umbrella entity / entities focussing on retail payment systems. Such an entity shall be a Company incorporated in India under the Companies Act, 2013.
- As envisaged by the RBI, an NUE will set-up, manage and operate new payment systems, especially in the retail space such as ATMs, white-label PoS; Aadhaar-based payments and remittance services. In addition to this, they will develop new payment methods, standards and technologies as well as operate clearing and settlement systems.
- Only those entities that are owned and controlled by Indian citizens with at least three years of experience in the payments segment can become promoters of NUEs. Also, foreign investment is allowed in NUEs as long as they comply with the existing guidelines.
- Currently, the umbrella entity for providing retail payments system is NPCI, which is a non-profit entity, owned by banks. NPCI operates settlement systems such as UPI, AEPS, RuPay, Fastag, etc.

Q 96.B

- **Recent Context:** India recently pledged \$150,000 for UN peacebuilding as a token of engagement.
- UN Peacekeeping helps countries navigate the difficult path from conflict to peace. We have unique strengths, including legitimacy, burden sharing, and an ability to deploy troops and police from around the world, integrating them with civilian peacekeepers to address a range of mandates set by the UN Security Council and General Assembly.
- **Non-use of force except in self-defence and defence of the mandate is one of the underlying principles of UN Peacekeeping operations. In certain volatile situations, the Security Council has given UN peacekeeping operations “robust” mandates authorizing them to “use all necessary means” to deter forceful attempts to disrupt the political process, protect civilians under imminent threat of physical attack, and/or assist the national authorities in maintaining law and order. Hence, statement 1 is not correct.**
- If the Security Council determines that deploying a UN peace operation is the most appropriate step to take, it will formally authorize this by adopting a resolution. The resolution sets out the operation’s mandate and size, and details the tasks it will be responsible for performing. The budget and resources are then subject to General Assembly approval.
- **The Security Council monitors the work of UN peace operations on an ongoing basis, including through periodic reports from the Secretary-General and by holding dedicated Security Council sessions to discuss the work of specific operations. The Security Council can vote to extend, amend or end mission mandates as it deems appropriate. Hence, statement 2 is correct.**
- Under Article 25 of the Charter, all UN members agree to accept and carry out the decisions of the Security Council. While other organs of the UN make recommendations to Member States, the Council alone has the power to take decisions which Member States are obligated to implement.
- While decisions about establishing, maintaining or expanding a peacekeeping operation are taken by the Security Council, the financing of UN Peacekeeping operations is the collective responsibility of all UN Member States. Every Member State is legally obligated to pay their respective share towards peacekeeping.
- The General Assembly apportions peacekeeping expenses based on a special scale of assessments under a complex formula that Member States themselves have established. This formula takes into account, among other things, the relative economic wealth of Member States, with the five permanent members of the Security Council required to pay a larger share because of their special responsibility for the maintenance of international peace and security.
- **The top 5 providers of assessed contributions to United Nations Peacekeeping operations for 2020-2021 are United States (27.89%), China (15.21%), Japan (8.56%), Germany (6.09%) and United Kingdom (5.79%). Hence, statement 3 is correct.**

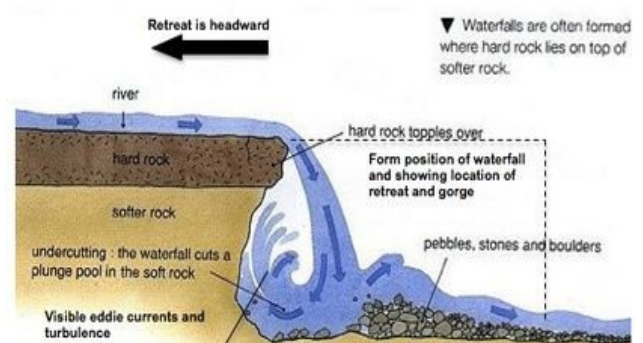
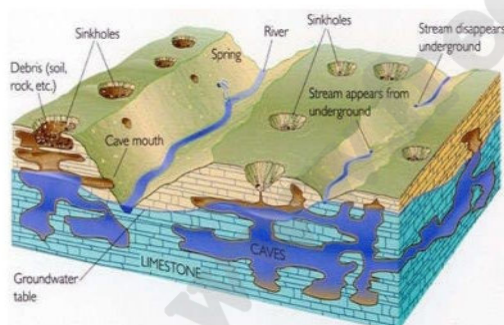
Q 97.B

- **Gopal Krishna Gokhale** had a great influence on the social works of Justice Mahadev Govind Ranade on his life. Gokhale became a **member of the Indian National Congress** in 1889. He was **moderate** in his views and attitudes and sought to petition the British authorities by cultivating a process of dialogue and discussion that would yield greater British respect for Indian rights.
- Gokhale and Tilak differed a lot in their ideologies. Gokhale believed that the right course for India to give self-government was to adopt constitutional means and cooperate with the British Government. On the contrary, Tilak's messages were protest, boycott, and agitation.

- Gokhale's one major difference with Tilak centered around the **Age of Consent Bill** introduced by the British Imperial Government, in 1891–92. Gokhale supported the Consent Bill to purge child marriage abuses. Tilak did not object to the idea of moving towards the elimination of child marriage, but rather to the idea of British interference with Hindu tradition. For Tilak, such reform movements were not to be sought under imperial rule when they would be enforced by the British, but rather after independence was achieved, when Indians would enforce it on themselves.
- The bill however became law in the Bombay Presidency. The two leaders also vied for the control of the **Poona Sarvajanic Sabha** and the **founding of the Deccan Sabha by Gokhale in 1896** was the consequence of Tilak coming out ahead.
- **Hence option (b) is the correct answer.**

Q 98.B

- Limestone is soluble in rainwater, which, with carbon dioxide from the air, forms a weak acid. Limestones are well jointed and it is through these joints and cracks that rain-water finds its way into the underlying rock.
- Any limestone or dolomitic region showing typical landforms produced by the **action of groundwater** through the processes of solution and deposition is called **Karst topography**. **Hence statement 1 is correct.**
- It is so named after a **province of Yugoslavia** on the Adriatic sea coast where such topography is particularly well developed.
- **Conditions Essential for Full Development of Karst Topography:**
 - Presence of soluble rocks, preferably limestone at the surface or sub-surface level.
 - These rocks should be dense, highly jointed and thinly bedded.
- **The drainage system of Karst Regions:**
 - It is characterized by **underground drainage systems** with sinkholes, caves etc.
 - There is a general absence of surface drainage as most of the surface water has gone underground. Streams rising on other rocks only flow over limestone for a short distance and then disappear underground. For the greater part of their course, they cut their way along the joints and fissures of the rock wearing out a system of underground channels. The surface valleys are therefore dry. When the water penetrates to the base of the limestone and meets non-porous rocks it re-emerges onto the surface as a spring or resurgence. **Hence statement 2 is correct.**
- **The karst topography is also characterised by erosional and depositional landforms:**
 - **Pools, sinkholes, uvalas, lapies and limestone pavements** are very frequent **erosional landforms** seen in the region.
 - Sinkholes are small depressions carved out by solution where rainwater sinks into the limestone at a point of weakness.
 - **Doline** is when a number of sinkholes coalesce and a large hollow is formed. **Hence statement 3 is correct.**
 - **Stalactites, stalagmites and pillars** are very frequent **depositional landforms** seen in the karst regions.



Q 99.C

- After introducing reforms such as ICEDASH (For improved monitoring of customs clearance of imported goods), the government has subsequently brought in Turant Customs initiative.
- **Turant Customs is launched by the Central Board of Indirect Taxes and Customs (CBIC) aimed at facilitating ease of doing business.**
- **It seeks to make the customs process Faceless, Paperless, Contactless and also to ensure speedy clearance of goods at ports. Hence, option (c) is the correct answer.**

- It will also do away with the present requirement to take a paper printout of these documents thereby promoting Green Customs.
- Under Turant Customs, importers will now get their goods cleared from Customs after a faceless assessment is done remotely by the Customs officers located outside the port of import.
- Under Turant customs a secure QR-coded shipping bill would be electronically sent to exporters. This will enable end to end paperless exports.

Q 100.A

- **Salinity:**
 - Salinity is the term used to define the total content of dissolved salts in seawater.
 - It is calculated as the amount of salt (in gm) dissolved in 1,000 gm (1 kg) of seawater. It is usually expressed as parts per thousand (‰).
- **Baltic Sea:**
 - It is located in Northern Europe.
 - The Baltic Sea is a brackish inland sea. It is the largest body of brackish water in the world.
 - The northern part of the Baltic Sea is known as the Gulf of Bothnia.
 - The Gulf of Finland connects the Baltic Sea with St Petersburg.
 - **Its salinity varies from 0.1 ‰ in the north to 0.6-0.8 ‰ in the centre.**
 - An important source of salty water is infrequent inflows of North Sea water into the Baltic through the Danish strait.
 - Rivers draining into Baltic sea- Oder, Vistula, Neman, Daugava and Neva.
 - **The Baltic Sea is surrounded by nine countries: Denmark, Germany, Poland, Lithuania, Latvia, Estonia, Russia, Finland and Sweden.**
- **Red sea:**
 - It is located between Asia and Africa continents.
 - It connects to the India Ocean via the Bab-el-Mandeb Strait and the Gulf of Aden to its south.
 - North of the Red Sea lies the Sinai Peninsula, the Gulf of Aqaba, and the Gulf of Suez, which then leads into the Suez Canal.
 - The Red Sea Rift lies underneath the Red Sea. This rift is part of the Great Rift Valley.
 - It is also referred to as the Erythraean Sea.
 - It is regarded as one of the most saline water bodies in the world that is governed by the effects of the water circulation pattern, resulting from evaporation and wind stress in the Red Sea.
 - **Salinity ranges between 38 and 41 ‰.**
 - The Red Sea is also home to more than 200 hard and soft corals.
 - **Bordering countries: Egypt, Sudan, Eritrea, Djibouti, Somalia, Israel, Jordan, Saudi Arabia, Yemen.**
- **Grate salt lake:**
 - It is in northern Utah of western United States of America. It lies in the Great Basin.
 - It is the largest lake west of the Mississippi River and the largest salt lake in the Western Hemisphere.
 - It is also referred to as America's Dead sea. **Its salinity is 220 ‰.**
 - It is an endorheic lake.
 - It has three feeders: the Bear, Weber and Jordan rivers.
- **Hence option (a) is the correct answer.**