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## ANSWERS & EXPLANATIONS

### GENERAL STUDIES (P) TEST – 4153 (2024)

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#### Q 1.B

- **ADMM Plus stands for "ASEAN Defence Ministers' Meeting Plus."** It is **highest defence consultative and cooperative mechanism in ASEAN**. **Hence statement 2 is correct.**
  - **It serves as a platform for dialogue and cooperation on security issues among the 10 ASEAN (Association of Southeast Asian Nations) member states and eight other countries:** Australia, China, India, Japan, New Zealand, South Korea, Russia, and the United States. **Hence statement 1 is not correct.**
  - It covers a wide range of non-traditional security challenges such as terrorism, maritime security, humanitarian assistance, and disaster relief.
  - **ADMM Plus holds regular meetings** and conducts activities such as joint military exercises, workshops, and seminars to enhance cooperation and build capacity among its member states.

#### Q 2.C

- Global Survey on Digital and Sustainable Trade Facilitation is carried out every 2 years since 2015 jointly by the 5 United Nations Regional Commissions (UNRECs) - Economic Commission for Africa (ECA), Economic Commission for Europe (ECE), Economic Commission for Latin America and the Caribbean (ECLAC), Economic and Social Commission for Asia and the Pacific (ESCAP) and Economic and Social Commission for Western Asia (ESCWA). **Hence statement 1 is not correct.**
- The 2023 survey, covering more than 140 economies and evaluating 60 trade facilitation measures. India's score has improved its score to 93.55% in 2023 vis a vis 90.32% in 2021.
- India has witnessed a substantial improvement in the score for "Women in Trade Facilitation" component from 66.7% in 2021 to 77.8% in 2023 thereby indicating commitment to gender inclusivity and the empowerment of women in the trade sector. **Hence statement 3 is correct.**
- India is now the best performing country amongst all the countries of South Asia region. The overall score of India has been greater than many developed countries including Canada, France, UK, Germany etc. **Hence statement 2 is correct.**

#### Q 3.B

- The Quit India Movement has rightly been described as the most massive antiimperialist struggle on the eve of Partition and Independence. 1942, the year that the movement was launched and the next five years witnessed unparalleled and tumultuous events in the political history of India.
- The government was keen to denounce Gandhi on charges of planning subversion and prepared a ground for the implementation of the Revolutionary Movement Ordinance.
- Intelligence reports warned of a series of acts planned by the Congress and the Congress Socialist Party to disrupt the smooth functioning of the war machinery. In fact, **official sources had reported that the Congress Socialist Party workers had worked out modalities in a meeting in Allahabad in July 1941 for a radical course of action in Feb 1942.**
  - **The plan of action came to be known as the Deoli Plan of Jai Prakash Narayan because the latter had reasoned from his Deoli Jail cell that nationalist unity could be revived if Gandhi were to plan a radical course of action rather than a Satyagraha.**
- These papers were seized and used as evidence of the revolutionary plot planned by the Congress Socialist Party. **Hence option (b) is the correct answer.**

#### Q 4.A

- **Minimum Support Price (MSP)** is the lowest rate at which government procurement agencies buy crops from farmers. It shields farmers from market fluctuations, offering stability and income security. However, **as of now, it isn't a part of any legal statute and thus, it doesn't confer any legal guarantee.**
- MSP is determined by the Commission for Agricultural Costs and Prices (CACP), considering factors like production costs, market trends, and demand-supply dynamics. **After the CACP submits its recommendations, the Cabinet Committee on Economic Affairs (CCEA), chaired by the Prime Minister of India, makes the final decision on MSP levels.**
- **MSP is considered as trade distorting and thus, it is placed under the Amber box category under WTO. Hence, option (a) is the correct answer.**
- **Amber Box:** Nearly all domestic support measures considered to distort production and trade (with some exceptions) fall into the amber box, which is defined in Article 6 of the Agriculture Agreement as all domestic supports except those in the blue and green boxes. These include measures to support prices, or subsidies directly related to production quantities.
  - These supports are subject to limits. "De minimis" minimal supports for both product-specific and non-product-specific support are allowed, defined as a share of the value of agricultural production.
- **Green box:** They tend to be programmes that are not targeted at particular products, and include direct income supports for farmers that are not related to (are "decoupled" from) current production levels or prices. They also include environmental protection and regional development programmes.
- **Blue Box Subsidy:** Blue Box refers to a category of domestic support or subsidies under the WTO's Agreement on Agriculture. The Blue box subsidies aim to limit production by imposing production quotas or requiring farmers to set aside part of their land. It covers payments directly linked to acreage or animal numbers (reduction).

#### Q 5.C

- **Types of Port:**
  - **Entrepot Ports:** These are collection centers where the goods are brought from different countries for export. Singapore is an entrepot for Asia. For e.g. Rotterdam for Europe, and Copenhagen for the Baltic region.
  - **Ports of Call:** These are the ports that originally developed as calling points on main sea routes where ships used to anchor for refueling, watering, and taking food items. Later on, they developed into commercial ports. Aden, Honolulu and Singapore are good examples. **Hence pair 1 is correctly matched.**
  - **Out Ports:** These are deep water ports built away from the actual ports. These serve the parent ports by receiving those ships that are unable to approach them due to their large size. A classic combination, for example, is Athens and its outport Piraeus in Greece. **Hence pair 2 is not correctly matched**
  - **Inland Ports:** These ports are located away from the sea coast. They are linked to the sea through a river or a canal. Such ports are accessible to flat-bottom ships or barges. For example, Manchester is linked with a canal; Memphis is located on the river Mississippi; Rhine has several ports like Mannheim and Duisburg; and Kolkata is located on the river Hooghly, a branch of the river Ganga. **Hence pair 3 is correctly matched.**
  - **Naval Ports:** These are ports which have only strategic importance. These ports serve warships and have repair workshops for them. Kochi and Karwar are examples of such ports in India. **Hence pair 4 is correctly matched.**

#### Q 6.A

- **Employment elasticity is a measure of the percentage change in employment associated with a 1 percentage point change in economic growth.** It indicates the ability of an economy to generate employment opportunities for its population as a per cent of its growth or development process.
- An employment elasticity of 1 denotes that employment grows at the same rate as economic growth. Elasticity of 0 denotes that employment does not grow at all, regardless of economic growth. Negative employment elasticity denotes that employment shrinks as the economy grows.
- **Hence option (a) is the correct answer.**

### Q 7.A

- India ranked 42nd on **International Intellectual Property Index** released by US Chambers of Commerce. U.S topped the index. Annual Index evaluates protection of Intellectual Property (IP) rights in 55 of world's leading economies, together representing around 90% of global GDP. **Hence pair 1 is not correctly matched.**
- **World Intellectual Property Indicators 2023** was released by World Intellectual Property Organization. It highlights the trend in global intellectual property filings. **Hence pair 2 is not correctly matched.**
  - Despite economic uncertainty, a record-high of nearly 3.5 million patent applications were submitted worldwide. Patent applications filed worldwide grew by 1.7% in 2022.
  - In 2022, Countries like South Africa, India, Indonesia reported double-digit growth in patent filing.
- The **Global Peace Index** is released by The Institute for Economics & Peace (IEP). **Hence pair 3 is correctly matched.**
  - It measures the state of peace across three domains: Societal safety and security; Ongoing domestic and international conflict and Militarization.
  - In the 2023 Global Peace Index (GPI), India ranked 126th position. The country witnessed a significant improvement of 3.5% in overall peacefulness over the past year.

### Q 8.A

- **Jal Jeevan Mission:**
  - Launched in 2019, it envisages supply of 55 litres of water per person per day to **every rural household** through Functional Household Tap Connections (FHTC) **by 2024. Hence statements 1 and 3 are not correct.**
  - JJM looks to create a jan andolan for water, thereby making it everyone's priority.
  - It is implemented by the Ministry of Jal Shakti.
  - The mission ensures functionality of existing water supply systems and water connections, water quality monitoring and testing as well as sustainable agriculture.
  - **It also ensures conjunctive use of conserved water; drinking water source augmentation, drinking water supply system, grey water treatment and its reuse. Hence statement 2 is correct.**
  - The Mission is based on a community approach to water and includes extensive Information, Education and Communication as a key component of the mission.
  - Currently about 12.3 crore (62%) rural households have piped water connections up from 3.2 crore (16.6%) from 2019.
    - ✓ Five states viz; Gujarat, Telangana, Goa, Haryana, and Punjab and 3 Union Territories — Andaman & Nicobar Islands, Daman Diu & Dadra Nagar Haveli and Puducherry have reported 100% coverage.
    - ✓ Himachal Pradesh at 98.87%, followed by Bihar at 96.30%, are also poised to achieve saturation in near future.

### Q 9.D

- **In the human body, most of the DNA in a genome is neatly packed inside cells with the help of specific proteins, protecting it from being degraded. However, in a variety of scenarios, some fragments of DNA are 'released' from their containers and are present outside the cell, in body fluids such as saliva, urine, blood, etc. These small fragments of nucleic acids are widely known as cell-free DNA (cfDNA). Hence, statement 1 is correct.**
- Scientists have been aware of such degraded fragments of nucleic acids in body fluids since 1948. But only in the last two decades or so, since genome sequencing technologies started to become more accessible, have they really figured out what to do with that knowledge.
- cfDNA can be generated and released from a cell in a number of possible situations, including when a cell is dying and the nucleic acids become degraded. Since an array of processes modulates the degradation, the amount, size, and source of the cfDNA can vary across a range as well.
- In addition, **the release of cfDNA could occur together with a variety of processes, including those required for normal development, those related to the development of certain cancers, and those associated with several other diseases.** One of the initial reports of the levels of cfDNA in diseases came from studies that were taking a closer look at an autoimmune disease: systemic lupus erythematosus — where the body's own immune system attacks specific cells. **Hence, statement 2 is correct.**
- By far, one of the **most widely used applications of cfDNA has been in screening foetuses for specific chromosomal abnormalities, an application known as non-invasive prenatal testing.** The application stems from one of the first reports of cfDNA in pregnancies, published in The Lancet in August 1997. The

availability of affordable genome-sequencing approaches will allow clinicians to sequence cfDNA fragments that correspond to foetal DNA. They can then use it to understand specific chromosomal abnormalities that involve changes in the chromosomal copy number. Such changes can lead to conditions like Down's syndrome, which is due to a change in chromosome 21 (there are three copies of chromosome 21 in place of two, so it is also called trisomy 21). **Hence, statement 3 is correct.**

- **There are a number of emerging applications of cfDNA, including in understanding why a body is rejecting a transplanted organ.** Here, some cfDNA obtained from the donor who is donating the organ – called donor-derived cfDNA, dd-cfDNA – could provide an early yet accurate estimate of how well the organ is being taken up. This is an attractive proposition because changes in the levels of cfDNA in the blood would precede any biochemical or molecular markers that researchers currently use as a proxy for organ acceptance. That is, the cfDNA could send a signal earlier than other markers if something is going to go wrong. **Hence, statement 4 is correct.**
- Indeed, cfDNA seems to have an almost infinite number of applications, especially as nucleic-acid sequencing becomes rapidly democratised and finds more applications of its own in clinical settings. There have already been some reports suggesting that cfDNA could be used as a biomarker for neurological disorders like Alzheimer's disease, neuronal tumours, stroke, traumatic brain injury, and even metabolic disorders like type-2 diabetes and non-alcoholic fatty liver disease.

#### Q 10.B

- Coral Reef Breakthrough launches to prevent extinction of one of the world's most threatened, yet most valuable and most biodiverse ecosystems.
- The International Coral Reef Initiative (ICRI), a network including 45 countries who represent over 75% of the world's coral reefs, has launched the Coral Reef Breakthrough in partnership with the Global Fund for Coral Reefs (GFCR) and the High-Level Climate Champions (HLCC). **Hence statement 1 is not correct.**
- The Coral Reef Breakthrough aims to secure the future of at least 125,000 km<sup>2</sup> of shallow-water tropical coral reefs with investments of at least US\$12 billion to support the resilience of more than half a billion people globally by 2030. **Hence statement 2 is correct.**
- It is grounded on science-based, measurable, and achievable goals for state and non-state actors to collectively conserve, protect, and restore coral reefs at the scale that is needed to secure the future of these vital ecosystems and their critical contributions to humanity.
- In addition to broad-based climate action, the Coral Reef Breakthrough will be achieved through:
  - **Action point 1:** Stop drivers of loss: Mitigate local drivers of loss including land-based sources of pollution, destructive coastal development, and overfishing.
  - **Action point 2:** Double the area of coral reefs under effective protection: Bolster resilience-based coral reef conservation efforts by aligning with and transcending global coastal protection targets including 30by30.
  - **Action point 3:** Accelerate Restoration: Assist the development and implementation of innovative solutions at scale and climate smart designs that support coral adaptation to impact 30% of degraded reefs by 2030.
  - **Action point 4:** Secure investments of at least USD 12 billion by 2030 from public and private sources to conserve and restore these crucial ecosystems.

#### Q 11.D

- On June 1, 2015, Taiwan and the United States signed a memorandum of understanding to establish the Global Cooperation and Training Framework (GCTF)—a platform to utilize Taiwan's strengths and expertise to address global issues of mutual concern. The initiative assists countries in the Indo-Pacific for their capacity-building efforts through training programs for officials and experts, while also enhancing Taiwan's multilateral cooperation throughout the region. The GCTF has allowed Taiwan to build up its partnerships with regional countries and further expand its international presence. **Hence statement 1 is not correct.**
- Over the past eight years, the GCTF has held 70 international workshops on such topics as public health, law enforcement cooperation, women's empowerment, energy efficiency, e-commerce, cybersecurity, humanitarian assistance, disaster relief (HA/DR), and media literacy. Over 7,800 government officials, experts, and civil society representatives from 127 countries have participated in these events. **Hence statement 2 is not correct.**
- The full members of the Global Cooperation and Training Framework are Taiwan, the United States, Japan, and Australia. These countries actively participate in the framework, collaborating on various issues of mutual concern. Australia announced its full partnership in 2021. **Hence statement 3 is correct.**



#### Q 12.D

- Man-made fibers (MMF) are mainly of two types viz., synthetic and cellulosic. **Synthetic fibers are produced from crude oil and hence are non biodegradable and cellulosic fibers are made from wood pulp and hence they are biodegradable.** The main varieties of synthetic staple fibers are polyester, acrylic and polypropylene. Cellulosic fiber is viscose fiber, modal, etc. **Hence statement 1 is not correct.**
- Polyester and viscose comprise around 94% of the local Man-Made Fiber (MMF) market, (in volume terms). In this, **polyester makes up around 77.5% of the total, with viscose making up the remainder** **Hence statement 2 is not correct.**

#### Q 13.C

- **The Punchhi Commission was constituted by the Union Government in April 2007 under the chairmanship of former Chief Justice of India (CJI) Madan Mohan Punchhi.** The Commission examined and reviewed how the existing arrangements between the Union and States were functioning, legislative relations, administrative relations, the role of governors, emergency provisions and others.
- **The important recommendations of the Punchhi Commission regarding the office of governor are as follows:**
  - Giving a fixed term of five years to the governors and their removal by the process of impeachment.
  - He should be eminent in some walk of life.
  - **He should not have been connected with politics in the recent past (even at a local level) for at least two years before his appointment.**
  - A committee should be formed that is entrusted with the task of appointment of governors. This committee may comprise the Prime Minister, the Home Minister, the Lok Sabha's speaker and the concerned Chief Minister of the State.
  - **Governors should avoid assuming beyond the constitutional mandate to prevent controversies or public criticism, such as serving as Chancellors of universities.**
  - The governor should have the right to sanction the prosecution of a minister against the advice of the council of ministers.
  - The governor should insist on the Chief Minister proving his majority on the floor of the house for which he should prescribe a time limit.
  - **Hence, option (c) is the correct answer.**

#### Q 14.A

- **Ketti Valley in Tamil Nadu** is one of the largest valleys in the world, the 7,000-ft-deep Ketti Valley extends from the plains of Coimbatore to the Mysore Plateau.
  - Ketti Valley is known as the 'Switzerland of Nilgiris', The valley is also home to several tribes like the Todas. **Hence pair 2 is not correctly matched.**
- **The Dzukou Valley in Nagaland and Manipur** is a beautiful and tranquil place that is popular among tourists. The valley is located at an altitude of 2452m above sea level and is surrounded by dense forests. **Hence pair 3 is not correctly matched.**
  - A trekker's delight, Dzukou is an ideal offbeat adventure destination.
- **Araku Valley is a hill station in Alluri Sitharama Raju district in the Indian state of Andhra Pradesh**, lying 111 km west of Visakhapatnam city. It is a valley in the Eastern Ghats inhabited by different tribes, mainly Araku Tribes. **Hence pair 1 is correctly matched.**
  - Araku is also known for its coffee plantations and boasts of manufacturing India's first tribal growers' organic coffee brand.

#### Q 15.C

- In a flowering plant, the substances that would need to be transported are water, mineral nutrients, organic nutrients and plant growth, regulators. Over small distances, substances move by diffusion and by cytoplasmic streaming supplemented by active transport. Transport over longer distances proceeds through the vascular system (the xylem and the phloem) and is called translocation.
- **In rooted plants, transport in xylem (of water and minerals) is essentially unidirectional, from roots to the stems.**
- **Organic and mineral nutrients, however, undergo multidirectional transport in the phloem.** Organic compounds synthesized in the photosynthetic leaves are exported to all other parts of the plant including storage organs. From the storage organs, they are later re-exported. The mineral nutrients are taken up by the roots and transported upwards into the stem, leaves and the growing regions.

#### Q 16.D

- **Recent context:** The “Maratha Military Landscapes of India” will be India’s nomination for recognition as UNESCO World Heritage List for the year 2024-25.
- **About Maratha Military Landscapes of India:**
  - The twelve components of this nomination are— Salher Fort, Shivneri Fort, Lohgad, Khanderi Fort, Raigad, Rajgad, Pratapgad, Suvarnadurg, Panhala Fort, Vijay Durg, and Sindhudurg in Maharashtra, and Gingee fort in Tamil Nadu. **Hence, statement 1 is not correct.**
  - This extraordinary network of forts, varying in hierarchies, scales, and typological features, is a result of integrating the landscape, terrain, and physiographic characteristics distinctive to the Sahyadri mountain ranges, the Konkan Coast, Deccan Plateau and the Eastern Ghats in the Indian Peninsula.
  - **The roots of Maratha military ideology trace back to the 17th century, emerging during the reign of the Maratha King Chhatrapati Shivaji Maharaj around 1670 CE. This ideology persisted through successive rules, including the Peshwa regime until 1818 CE. However, many of these forts predated the Maratha Empire, yet were fortified under Maratha rulership.** For example, The Gingee Fort, dubbed the “Troy of the East” by the English, has witnessed the sovereignty of numerous significant political powers. These include the Vijayanagar Nayaks, the Bijapur Sultans, the Mughals, the Marathas, the French, and the English. **Hence, statement 2 is not correct.**

#### Q 17.B

- **The "Iron Beam" is a high-energy laser weapon system developed by Israeli defense contractor Rafael Advanced Defense Systems.** This directed-energy weapon is designed for air defense and is capable of intercepting a wide range of threats, including rockets, artillery munitions (RAM), and unmanned aerial vehicles (UAVs), from various distances. It employs advanced laser technology to destroy incoming threats in flight.
- Iron Beam, a 100kW class High Energy Laser Weapon System (HELWS), is expected to become the first operational system in its class. It is designed to intercept a wide range of threats such as RAM and UAVs from a distance of a few hundred meters to up to several kilometers. The system can be integrated on multiple platforms and may be a complementary HEL interceptor to any multilayer defense array.
- **Hence option (b) is the correct answer.**

#### Q 18.B

- The Union government is looking at offering sops along the lines of a production-linked incentive (PLI) scheme for manufacturing small modular reactors (SMR), aiming to increase the share of nuclear power in India’s energy basket. Small modular reactors (SMRs) are **advanced nuclear reactors that have a power capacity of up to 300 MW(e) per unit, which is about one-third of the generating capacity of traditional nuclear power reactors. Hence, statement 1 is not correct.**
- SMRs are designed with a smaller core damage frequency (the likelihood that an accident will damage the nuclear fuel) and source term (a measure of radioactive contamination) compared to conventional NPPs. They also include enhanced seismic isolation for more safety. **SMR designs are also simpler than those of conventional Nuclear Power Plants (NPPs) and include several passive safety features, resulting in a lower potential for the uncontrolled release of radioactive materials into the environment. Hence, statement 2 is correct.**
- Studies have found that SMRs can be safely installed and operated at several brownfield sites that may not meet the more stringent zoning requirements for conventional NPPs. SMRs are designed to operate for 40-60 years with capacity factors exceeding 90%.
- Many of the benefits of SMRs are inherently linked to the nature of their design – small and modular. **Given their smaller footprint, SMRs can be sited in locations not suitable for larger nuclear power plants. Prefabricated units of SMRs can be manufactured and then shipped and installed on-site, making them more affordable to build than large power reactors, which are often custom-designed for a particular location, sometimes leading to construction delays.**
- In areas lacking sufficient lines of transmission and grid capacity, SMRs can be installed into an existing grid or remotely off-grid, as a function of its smaller electrical output, providing low-carbon power for industry and the population. This is particularly relevant for microreactors, which are a subset of SMRs designed to generate electrical power typically up to 10 MW(e).
- **Microreactors have smaller footprints than other SMRs and will be better suited for regions inaccessible to clean, reliable and affordable energy. Furthermore, microreactors could serve as a**

**backup power supply in emergency situations or replace power generators that are often fuelled by diesel, for example, in rural communities or remote businesses.**

- In comparison to existing reactors, proposed SMR designs are generally simpler, and the safety concept for SMRs often relies more on passive systems and inherent safety characteristics of the reactor, such as low power and operating pressure. This means that in such cases no human intervention or external power or force is required to shut down systems, because passive systems rely on physical phenomena, such as natural circulation, convection, gravity, and self-pressurization.
- **SMRs have reduced fuel requirements. Power plants based on SMRs may require less frequent refuelling, every 3 to 7 years, in comparison to between 1 and 2 years for conventional plants. Some SMRs are designed to operate for up to 30 years without refueling. Hence, statement 3 is correct.**

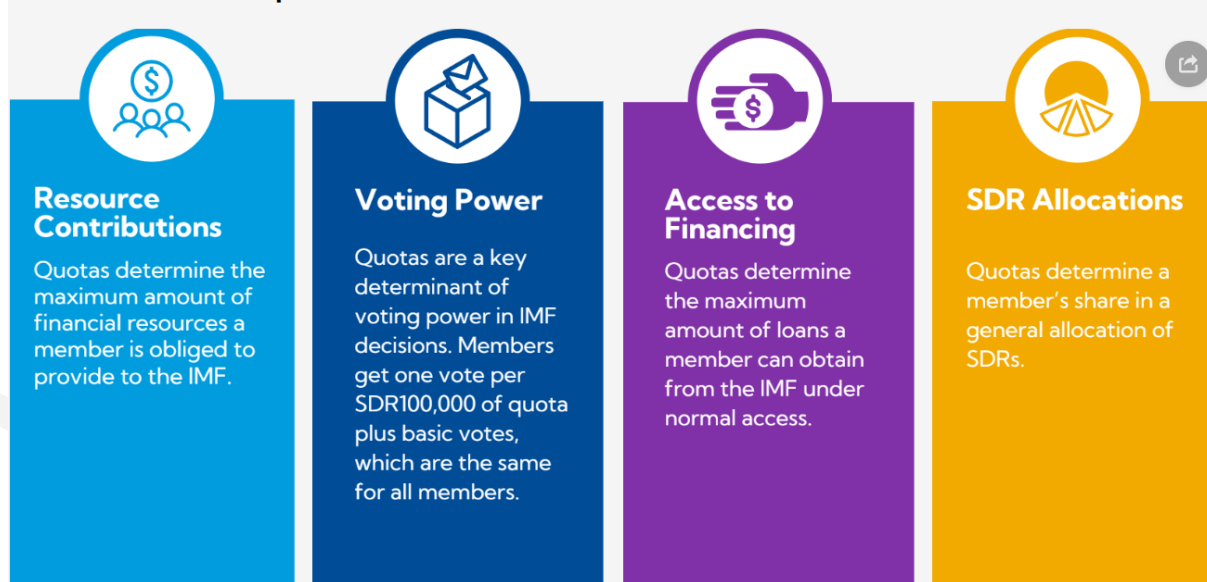
#### Q 19.D

- **The 2+2 Ministerial Dialogue is a diplomatic summit that has been held every year since 2018 initially between the Minister of External Affairs or Foreign Minister, and Defence Minister of India with the Secretary of State and Secretary of Defence of the United States to discuss and work on common issues of concern to improve and strengthen India–United States relations. Hence statement 1 is not correct.**
- The US is India's oldest and most important 2+2 talks partner. Additionally, India has held 2+2 meetings with ministers from Australia, Japan, the United Kingdom and Russia. **Hence statement 2 is not correct.**
- The dialogue came into existence from an agreement between Prime Minister Narendra Modi and President Donald Trump. The dialogue was created to replace the Strategic and Commercial Dialogue which started under the Obama administration. Both nations agreed to the summit during Modi's visit to the United States in June 2017 which was officially announced the following month in August after a phone call between Modi and Trump.
- The 2+2 Ministerial Dialogue is a diplomatic meeting held annually between India and the United States since 2018. The most recent 2+2 Ministerial Dialogue occurred in November 2023 in New Delhi.

#### Q 20.A

- Quotas are the building blocks of the IMF's financial and governance structure. An individual member country's quota broadly reflects its relative position in the world economy. **Quotas are denominated in Special Drawing Rights (SDRs), the IMF's unit of account. Hence, statement 1 is not correct.**

**How does the IMF use quotas?**



- **The IMF's Board of Governors conducts general quota review quotas at least every five years. The two main issues addressed in a general review of quotas are the size of an overall quota increase and the distribution of the increase among the members.**
- **Any changes in quotas require approval by 85% of the total voting power and a member's own quota cannot be changed without its consent. The executive board of the International Monetary Fund (IMF) recently approved a proposal to make a 50 percent increase in the quota allocated to members in proportion to their current quotas. The proposal will now be considered and made effective by the board of governors as part of concluding the 16th general review of quotas.**

- A quota formula is used to help assess members' relative position in the world economy and it can play a role in guiding the distribution of quota increases. The current formula was agreed to in 2008.

IMF quota formula
$(0.50 * GDP + 0.30 * Openness + 0.15 * Variability + 0.05 * Reserves) \times \text{COMPRESSION FACTOR}$

- Thus, it can be observed that the **highest weightage is given to GDP while determining the quotas of individual countries. Hence, statement 2 is correct.**
- **Currently, India** has a quota of special drawing rights (SDR) 13,114.4 million which denotes a share of 2.75 percent, making it the **eighth-largest quota-holding country in the IMF**. Based on the quota, India has 132,063 votes, which denotes a share of 2.63 percent. **Hence, statement 3 is not correct.**

#### Q 21.C

- **The total solar eclipse in April 2024 offers a rare opportunity for scientific exploration, as researchers embark on three NASA-funded projects to observe and analyze the effects of the celestial event. Among these initiatives is the Super Dual Auroral Radar Network (SuperDARN), a global network of radars that bounce radio waves off the ionosphere. It is led by Professor Bharat Kunduri of Virginia Polytechnic Institute and State University. Hence, option (c) is the correct answer.**
- The SuperDARN team is gearing up to study the ionosphere's response to the eclipse. With the eclipse passing over three SuperDARN radars in the United States, the team aims to monitor changes in density, temperature, and movement with heightened precision.
- Special modes of operation will be employed during the eclipse to capture these fluctuations at finer spatiotemporal scales, providing valuable insights into the ionosphere's behavior during such events.

#### Q 22.C

- **The Central Asian Flyway (CAF) initiative proposed by India aims to address the conservation of migratory birds along the Central Asian Flyway route.** This flyway spans across numerous countries in Asia and serves as a critical migratory route for various bird species traveling between their breeding and wintering grounds.
- The CAF initiative focuses on promoting collaboration and cooperation among the countries along the flyway to conserve and sustainably manage habitats essential for migratory birds. **It covers at least 279 populations of 182 migratory waterbird species, including 29 globally threatened and near-threatened species, which breed, migrate and winter within the region.**
- **The Central Asian Flyway consists of the following countries:** Afghanistan, Armenia, Azerbaijan, Bahrain, Bangladesh, Bhutan, China, Georgia, **India**, Iran, Iraq, Kazakhstan, Kuwait, Kyrgyzstan, the Maldives, Mongolia, Myanmar, Nepal, Oman, Pakistan, Qatar, **Russian Federation**, Saudi Arabia, Sri Lanka, Tajikistan, Turkmenistan, United Arab Emirates, **United Kingdom (British Indian Ocean Territory)**, Uzbekistan and Yemen. **Indonesia is not a participant in the CAF initiative.**

Countries





### Q 23.B

- **The key provisions of the Lokpal and Lokayukta Act 2013 are:**
  - **Selection Committee:** which includes the Prime Minister as Chairperson, Speaker of Lok Sabha, Leader of Opposition in Lok Sabha, Chief Justice of India or a Judge nominated by him/her and one eminent jurist appointed by the President.
  - **Jurisdiction:** Jurisdiction includes the Prime Minister, Ministers, Members of Parliament, and groups A, B, C, and D of government employees.
  - **Composition:** It is composed of a chairperson and a maximum of eight members, with half of them being judicial members. 50% of members belong to Scheduled Castes, Scheduled Tribes, Other Backward Classes, minorities, and women.
  - **Superintendence:** It has the power of superintendence and directs any investigative agency, including the Central Bureau of Investigation, for cases referred to it by the Lokpal.
  - **Foreign Contribution (Regulation) Act, 2010 (FCRA):** Jurisdiction includes foreign donations over Rs 10 Lakhs per year under the Foreign Contribution Regulation Act. Hence statement 2 is not correct.
- **Powers concerning CBI:**
  - **The Lokpal and Lokayuktas Act (2013) amended the Delhi Special Police Establishment Act (1946) and made the following changes:**
    - ✓ The Central Government shall appoint the Director of CBI on the recommendation of a three-member committee consisting of the Prime Minister as Chairperson, the Leader of Opposition in the Lok Sabha and the Chief Justice of India or Judge of the Supreme Court nominated by him. Hence statement 1 is correct.
    - ✓ Power of superintendence and direction over any investigation agency including CBI for cases referred to them by Lokpal.
    - ✓ Transfer of officers of CBI investigating cases referred by Lokpal would need the approval of Lokpal.
  - **Confiscation of property: Acquired by corrupt means, even while prosecution is pending. Hence statement 3 is correct.**
- **Limitations of the Lokpal and Lokayukta Act 2013:**
  - Anonymous complaints not allowed: The act does not permit anonymous complaints, which may deter potential whistleblowers from coming forward.
  - Limitation of 7 years: The act sets a 7-year limitation period to file a complaint, which may not be sufficient for some cases.
  - Heavy punishment for false complaints: The act provides severe punishment for false or frivolous complaints, which may deter people from coming forward with valid complaints.
  - Lack of transparency: The act provides for a non-transparent process for dealing with complaints against the Prime Minister.
  - **The Lokpal cannot initiate an investigation on its own against any public servant. Hence statement 4 is not correct.**

### Q 24.B

- The new rules issued by the Indian Computer Emergency Response Team (CERT-In) for Virtual Private Network(VPN) providers could spell doom for the privacy of Indian internet users. Amidst strong pushback from various corners, the Central government tells the companies to either comply with rules or exit from India.
- On April 28, India's cybersecurity agency CERT-In passed a rule mandating :
- **VPN providers to record and keep their customers' logs for 180 days.**
- **It also asked these firms to collect and store customer data for up to five years.**
- **It further mandated that any cybercrime recorded must be reported to the CERT within 6 hours of the crime.**
- Computer Emergency Response Team (CERT-In) directions apply to data centers, virtual private server (VPS) providers, cloud service providers, virtual asset service providers, virtual asset exchange providers, custodian wallet providers, and Government organizations.
- Firms that provide Internet proxy-like services through VPN technologies also come under the ambit of the new rule.
- Corporate entities are not under the scanner.
- **A virtual server is a simulated server environment built on an actual physical server.**
- **It recreates the functionality of a dedicated physical server.**

- The virtual twin functions like a physical server that runs software.
- **It uses the resources of the physical server. Therefore, it can not operate without the presence of any physical server. Hence statement 1 is not correct.**
- Multiple virtual servers can run on a single physical server.
- Virtualising servers helps reallocate resources for changing workloads.
- **Converting one physical server into multiple virtual servers allows organizations to use processing power and resources more efficiently by running multiple operating systems and applications on one partitioned server.**
- Running multiple operating systems and applications on a single physical machine reduces the cost as it consumes less space and hardware.
- **Virtualisation also reduces cost as maintaining a virtual server infrastructure is low compared to physical server infrastructure.**
- **Virtual servers are also said to offer higher security than a physical server infrastructure as the operating system and applications are enclosed in a virtual machine. This helps contain security attacks and malicious behaviors inside the virtual machine. Hence statement 2 is correct.**
- **Virtual servers are also useful in testing and debugging applications in different operating systems and versions without having to manually install and run them on several physical machines. Hence statement 3 is correct.**
- Software developers can create, run, and test new software applications on a virtual server without taking processing power away from other users.

#### Q 25.A

- **Western Equine Encephalitis is a mosquito-borne infection caused by the Western Equine Encephalitis Virus (WEEV), which belongs to the Togaviridae family of viruses. The virus has an approximately 11.5 kilobases long single-stranded RNA genome and is a recombinant of the eastern equine encephalitis virus (EEEV) and a Sindbis-like virus. Passerine birds are thought to be the reservoir and equine species as intermediate hosts. Hence statement 1 is correct.**
- **WEEV is primarily found in the western regions of the United States and sporadically in some parts of Canada and Latin America. It tends to be more active during the warm summer months when mosquito populations are highest. Despite the availability of veterinary vaccines for related viruses like Eastern Equine Encephalitis Virus (EEEV) and Venezuelan Equine Encephalitis Virus (VEEV), there are no vaccines licensed for WEEV in humans at the moment. Hence statement 2 is not correct.**
- **Western Equine Encephalitis Virus causes severe neurological disease in humans and equids. WEE infection can result in mild to severe neurologic sequelae in human survivors, which means it can affect the nervous system of those who recover from the infection. This can include symptoms such as confusion, irritability, seizures, coma, and neck stiffness. Hence statement 3 is not correct.**

#### Q 26.B

- **Kairouan: Recently, a section of the ancient walls around the Old City of Kairouan collapsed killing three masons carrying out repairs on the UNESCO World Heritage site. Kairouan is in Tunisia. Hence pair 1 is correctly matched.**
  - Founded in AD670, Kairouan is one of north Africa's holiest cities and a leading tourist attraction. It has been listed as a UNESCO world heritage site since 1988.
  - It was the capital of the Muslim world in North Africa for four centuries, before Tunis was chosen as Tunisia's political capital in the 12th century.
- **Salton Sea: United States Department of Energy, has found promising prospects for lithium extraction from California's Salton Sea. Hence pair 2 is correctly matched.**
  - An estimated 18 million metric tonnes of lithium reserves is expected to be in the depths of the Salton Sea.
  - Salton Sea has Lithium to create enough batteries for 382 million EVs.
- **Port of Duqm: Destroyer Visakhapatnam along with tanker INS Deepak are deployed off the Duqm port in Oman to prevent hijacking in the Gulf of Oman and Red Sea areas. It is located in Oman. Hence pair 3 is not correctly matched.**
  - Oman has given strategic access of the Port of Duqm to India.
  - Port of Duqm overlooks the Gulf of Oman, the Indian Ocean, and the Arabian Sea.
  - The geostrategic location of the Port of Duqm allows it to serve both the Eastern and Western corridors as it is situated away from the Strait of Hormuz, in the middle of the Indian Ocean and opens directly into international waters and lies in the immediate vicinity of the international trade route between Asia and Europe.

### Q 27.A

- **About Vanadium:**
  - It is a **transition metal**.
  - **Listed as one of the 30 critical minerals identified in India. Hence statement 1 is not correct**
  - Occurrence: It rarely exists as a free element in nature (found in the form of organic complexes).
  - It is primarily derived from mined iron ore, carbonaceous shale, or phyllites.
  - It is also found in small percentages in meteorites etc.
  - It can be detected spectroscopically in the Sun's rays and occasionally in the light of other stars. It is hard silvery-grey metal.
  - It is **very ductile (can be drawn into wires), and malleable** (can be hammered into thin sheets).
  - It does not react with water or oxygen at room temperature, thus resisting corrosion.
  - **Brazil is its largest exporter.**
  - **China has the highest vanadium reserves (also it is the largest consumer). Hence statement 2 is not correct.**
  - In India, Karnataka, Maharashtra, and Odisha are major states with vanadium reserves.
  - Vanadium was discovered in the Gulf of Khambhat in Gujrat by GSI.
  - It has major applications in energy storage, steel manufacturing, nuclear reactors, and in the automotive, aerospace, and aviation industries. **Hence statement 3 is correct**

### Q 28.B

- With the landing of the Portuguese at Calicut in A.D. 1498 after the rounding of the Cape of Good Hope, a new dimension was added to the Indian seaborne trade, that is, the 'element of force'.
- On account of better ships armed with cannons, the Portuguese soon imposed their commercial hegemony over the trading world of Asia, including the Indian seas, especially in Western part.
- This curtailed the Arabs' share of the Indian trade, though they survived in the Eastern part, especially at Malacca along with the Indian merchants.
- **The Portuguese took Goa in 1510 which became their headquarters, Malacca fell in their hands in 1511. Hormuz in 1515; and Bassein and Diu in 1534 and 1537. respectively.**
- Goa, under their patronage, soon developed as a major centre for import and export. The Portuguese well understood the strategic importance of Goa, which in their opinion, was essential to the maintenance of their position in India.
- But the Portuguese possession of Goa was unfavourable to other Western Indian ports. Portuguese followed aggressive policies like
  - they controlled the sea-routes
  - controlled the type and volume of cargo carried by other merchants
  - **they introduced the system of issuing cartaz (from Persian qirta = paper sheet) which was a kind of permit to ply ships in the Asian waters without which the ships were liable to be confiscated and the cargo plundered.**
    - ✓ A fee was charged for issuing a cartaz. No wonder, then, all these policies adversely affected the seaborne carrying trade of the Indians as well as of the Arabs.
- **Hence option (b) is the correct answer.**

### Q 29.A

- **Revenue Deficit:** It is the difference between the government's revenue expenditure and revenue receipt. Revenue Deficit implies that government's current expenses are more than its current revenues and will have to use up the savings of other sectors of the economy to finance its consumption expenditure.
- **Fiscal Deficit:** It is the difference between the government's total expenditure (Revenue and Capital) and its total receipts (Revenue and Capital) except the borrowings. Fiscal deficit indicates the total borrowing of the government from all sources. So, Fiscal Deficit exclude debt creating capital receipt i.e. borrowings of the government. **Hence statement 1 is correct.**
- **Primary Deficit:** It is the government's deficit excluding the interest payment on the previous debt. The goal of measuring the primary deficit is to focus on present fiscal imbalances. Primary Deficit = Fiscal Deficit- Net interest liabilities. So, it exclude interest payment obligations of the union government. **Hence statement 2 is not correct.**
- **Effective Revenue Deficit:** There are several grants given by the central government to the States / UTs which comes under revenue expenditure for the central government but some of these grants create assets. The basic idea behind calculation of effective revenue deficit is exclusion of grants given to States/UTs for the creation of capital assets. Effective Revenue Deficit = Revenue Deficit - Grants given to states for creation of capital assets. **Hence statement 3 is not correct.**

### Q 30.D

- **Unicorns** are privately held startup companies having a **valuation of USD 1 Billion and above. Hence statement 1 is not correct.**
- As of January 2024, **India** has the **third largest startup ecosystem** and **also ranks third in the number of unicorns** after USA and China. **Hence statement 2 is not correct.**
- **Indian Government's has taken many initiatives for Startups:**
  - Startup India Seed Fund Scheme (SISFS): It aims to provide financial assistance to startups for proof of concept, prototype development, product trials, market entry and commercialization.
  - Prarambh: The 'Prarambh' Summit aims to provide a platform to startups and young minds from around the world to come up with new ideas, innovation and invention.

### Q 31.B

- The second phase of early medieval India brought the mercantile community back into prominence, and we notice a large number of merchants carrying luxury and essential goods from one place to another.
- They accumulated fabulous wealth through commercial exchanges and acquired fame in society by making gifts to temples and priests. Many of them took an active part at various levels of administration and even occupied ministerial positions in royal courts.
- The literature and inscriptions of the period refer to the large number of merchants who were known by the specialized trade they followed. Thus, we come across dealers in gold, perfumes, wine, grains, horses, textiles, curds, betels. etc.
- Moneylending also became one of the major activities of merchants. Though people deposited money in the temple treasury for the religious purpose of endowing flowers, oil, and lamps, there are very few references to guilds accepting deposits and paying interest thereon.
  - **There emerged a separate group of merchants, called nikshepa-vanika in western India, who specialized in banking or moneylending. Hence pair 1 is not correctly matched.**
- **Sresthi was a rich wholesale dealer** who lived in a town and carried on his business with the help of retailers and agents. At times he lent out goods or money to small merchants, and thus acted as a banker too, though, as we have already pointed out, moneylending was becoming a separate and specialized activity.
- The sarthavaha was the caravan leader under whose guidance the merchants went to distant places to sell and purchase their goods. He was supposed to be a highly capable person knowing not only the routes but also the languages as well as the rules of exchange in different regions.
- The post-Mauryan centuries saw a great spurt in the minting of coins. The kings of the north-west imitated Greek, Roman and Iranian coin-types, while others issued local coins that were superior to the punch-marked coins of the Mauryan period.
  - Currencies minted elsewhere, such as the denarii of the Roman Empire, circulated freely. Coinage also allowed the possibility of forward speculation in goods and capital.
  - However, the increasing use of money did not drive out the barter systems, particularly in rural areas where agricultural products, such as paddy, provided the unit of exchange.
  - The diverse use of coins, even along the west coast from Barygaza to Muziris, indicates the variant trading economies, such variations being amply described in the Periplus.
  - A large variety of coins were used in towns; these were of gold (nishka, suvarna and pala), silver (shatamana), copper (kakini) and lead.
  - **The most commonly used coin was the karshapana or pana. With the expansion of commercial enterprise, weights and measures became increasingly detailed and complex. Hence pair 2 is correctly matched.**
- **Skandhavaras are called military camps. The practice of maintaining such camps was widespread in ancient India.**
  - This is supported by inscriptions from Assam, Bengal, Bihar, Orissa, Madhya Pradesh and Uttar Pradesh.
  - Epigraphs from Maharashtra and Gujarat also mention skandhavaras. It appears that many important dynasties did not set up and maintain stable capitals.
  - **The Maitrakas had sixteen skandhavaras, the Palas had nine and the Candellas had twenty-one. Although the Rastrakutas had their capital at Manyakheta or Malkhed, they had several skandhavaras.**
  - The institution of skandhavaras seems to have first appeared in Gujarat in A.D. 535, as known from a Maitraka inscription. Between A.D.535 and A.D.766 out of nearly 100 Maitraka inscriptions 29 refer to skandhavaras. **Hence pair 3 is correctly matched.**



### Q 32.A

- During the reign of Jalaluddin Khalji (1290-96), his nephew Alauddin undertook the first Muslim expedition to Deogir (Devagiri), the capital of the Yadava kingdom. The Yadava ruler was defeated and large booty was collected by Alauddin. The Yadava king, Ram Chandra, promised to pay an annual tribute also.
  - Thereafter, for almost a decade, no invasion took place. After the accession of Alauddin Khalji, a definite policy to subjugate the South was planned. From 1306 to 1312, in a series of campaigns, all four kingdoms of the south were subjugated.
- **Devagiri**
  - **Alauddin deputed his trusted commander Malik Kafur to invade the South in 1306-07 since the Yadava king had ceased to pay tribute. Malik Kafur defeated Raja Ram Chandra.**
  - After collecting a large booty, he returned to Delhi with the Raja as a captive. The Raja was later reinstated as king on the promise of paying regular tribute to the Sultan.
- **Dwarsamudra**
  - **The next target of the attack was Dwarsamudra, the Hoysala kingdom (1310-11). The ruler Ballala Deva submitted without much resistance and arrangements were made on the lines of the two other southern kingdoms. Hence statement 1 is correct.**
- **Warangal**
  - **In 1309, Malik Kafur invaded the Kakatiya kingdom. The purpose of the campaign was just to subjugate the king. In the Siege of Warangal, Malik Kafur defeated Prataprudra of the Kakatiya dynasty. Hence statement 2 is not correct.**
- **Madurai**
  - A conflict between two brothers – Vir Pandya and Sundar Pandya – who were claimants to the Pandya kingdom provided an opportunity to Malik Kafur to invade it.
  - Vir Pandya after capturing the throne had expelled Sunder Pandya. The latter sought the help of Alauddin Khalji. After devastating the Hoysala kingdom, Malik Kafur marched to Madurai inflicted a defeat on Vir Pandya, and collected heavy booty.
- **Characteristic features of Alauddin's Deccan policy**
  - Almost the whole of the South was conquered without much resistance.
  - **Alauddin was not in favor of annexing the Southern kingdoms because it was difficult to administer it from distant Delhi. After their defeat, the Southern kingdoms were asked to accept the suzerainty of the Delhi Sultan and to pay regular tribute. The ruling dynasties were not displaced.**
    - ✓ Hence statement 3 is not correct.
  - **Financially, the Delhi Sultanate gained immensely from the southern invasion.**

### Q 33.B

- **Vitamin B12, also known as cobalamin**, plays a crucial role in numerous body functions, including red blood cell formation, DNA synthesis, and neurological health. Its deficiency can result in a spectrum of symptoms and health complications, ranging from mild fatigue and weakness to severe neurological disorders and anemia. **Hence statement 1 is correct.**
- A shift towards more plant-based diets and a decrease in animal product consumption can lead to lower B12 intake. **Vitamin B12 is primarily found in animal-derived foods like meat, fish, eggs, and dairy products. Vegan or vegetarian diets without sufficient supplementation or fortified foods may lack an adequate B12 supply, increasing the risk of deficiency. Hence statement 2 is correct.**
- **Vitamin B12 is a water-soluble vitamin.** Older adults often experience decreased stomach acid production, which is essential for releasing B12 from food. This can lead to poor absorption of the vitamin, contributing to deficiency among the elderly population. **Hence statement 3 is not correct.**

### Q 34.C

- **LeadIT is a global initiative that aims to accelerate the transition of challenging sectors such as steel, cement, chemicals, aviation, and shipping to low-carbon pathways.** The LeadIT gathers countries and companies that are committed to action to achieve the Paris Agreement.
- It was launched by the governments of Sweden and India at the United Nations Climate Action Summit in 2019 and is supported by the World Economic Forum. The LeadIT Secretariat is responsible for managing the work of the Leadership Group.
- LeadIT 2.0 was inaugurated on December 1, 2023, by Narendra Modi, Prime Minister of India, and Ulf Kristersson, Prime Minister of Sweden.

- The Joint Mission Statement for the Leadership Group for Industry Transition (2024-26) was adopted at the summit, outlining the strategic direction for the next phase of LeadIT. The mission statement emphasizes driving policy frameworks, fostering public-private partnerships, and supporting knowledge-sharing to achieve a just and equitable industry transition by 2030.
- **Hence option (c) is the correct answer.**

#### Q 35.C

- The Hartog Committee was set up in 1929 to report on the development of education. **Hence option (c) is the correct answer.**
  - The main findings of the Hartog Committee were as follows:
    - ✓ **It emphasized the national importance of primary education but condemned the policy of hasty expansion or attempt to introduce compulsion in education. Hence pair 3 is correctly matched.**
    - ✓ For secondary education, it recommended a selective system for admission. After the Middle Stage students should be diverted to diversified courses leading to industrial and commercial careers.
    - ✓ The Commission pointed out the weaknesses of university education and criticized the policy of indiscriminate admission which led to lowering of standards.

#### Q 36.B

- **The Heraka movement was initiated by Haipou Jadonang, a cousin of Gaidinliu, during the 1920s in Taemnglong district of Manipur.** It began as a protest against British interference in the religious and cultural practices of the local inhabitants and their strategies of conversion.
  - Moreover, he also fought against the forced labour and high revenue that the British imposed on the people. Once he had enough supporters to wage a full fledged rebellion, the colonial administration became fearful and imprisoned him and eventually executed him 1933.
  - **Gaidinliu took the movement forward after Jadonang's demise. She motivated her supporters with Gandhi's example and his vision of the Indian nation.**
  - In order to involve more people into the fold of non-payment of taxes, Gaidinliu began her own version of a Non-Cooperation movement among the tribes. Thus, the Heraka movement which was began by her cousin was given final shape and leadership by Rani Gaidinliu.
- **Devi movement was initially a social movement which took place in South Gujarat in 1922-23.** It was a movement in which it was assumed that Devi Salabai was giving command to the tribals to abstain from eating flesh, drinking liquor, or toddy.
  - By December 1922, the movement engulfed the entire area inhabited by the tribals along with Surat city. This movement made those classes its target which exploited the tribals and which were dealing with the liquor trade.
  - These classes included Parsi money-lenders and landlords, who were also liquor sellers. The tribals decided to boycott the Parsis and the Muslims, not to work with anyone linked with the trade of liquor and to take bath wlfen crossed by the shadow of a Parsi.
  - This movement was a religious movement in the beginning but towards the end of December 1922, it became the part of a non-cooperation movement. The tribals started to advocate the burning of foreign clothes and the boycott of government schools.
  - **Congress suggested to the tribals that Devi's command could be reinforced by wearing Khadi. The Congress organised Kaliparaj Conference which was presided over by Vallabhabhai Patel on 21 January 1923.**
    - ✓ This conference was attended by about 20,000 adivasis. The conference resolved to advocate the cutting of toddy trees, closure of liquor shops and propagation of Khadi.
- **Bokta rising took place in various parts of Chotanagpur. It aimed at regaining the tribals' ancient right on land by expelling the hated landlords.**
  - **This movement evolved through three phases: (i) The Agrarian phase, (ii) the Revivalistic phase and (iii) the Political phase.**
  - The first two phases were marked by the clashes between the landlords and tribal tenants. The tribal tenants revolted against the rise in rent eviction from land and harassment of the tenants by the landlords.
  - During thie period, recurrent clashes took place between the landlords and the tenants. From 1890, the Sardar movement turned against all Europeans, both missionaries and officials, who were suspected to be collaborating with the landlords.

- People thought that British rule was the main cause of the maladies and they could be happy only when it ended. When the constitutional means did not yield, the tribals became violent.
- They used their traditional weapons such as bows and arrows. In September 1892, the Sardars hatched a conspiracy to kill the contractors and German missionaries. But their plan misfired because they had no organisation to rally behind.
- **Hence option (b) is the correct answer.**

#### Q 37.A

- **Chadar Badar or Chadar Bandhani is a very rare form of indigenous Santhal puppetry and a hallmark of Santhali tribal culture. Puppetry has always been associated with folk culture and has played an important role in folk education. Hence statement 1 is correct.**
- This dying art form was once prevalent in the Santhal communities living in Jharkhand, West Bengal, Odisha, Bihar, and Assam. Today, a handful of Chadar Badar puppeteers are seen scattered in the Birbhum, Bardhaman, North Dinajpur, and Bankura districts of West Bengal and Dumka region of Jharkhand.
- **Making the puppets in the main aspect of Chadar Badar and requires technical skills. Created with intricate workmanship, the puppets are made of bamboo or wood and are about 8 to 9 inches in height. Hence statement 2 is not correct.**
- Carving is done on light wood available in the area and once the puppet takes shape it is painted and clothed. The puppets have movable limbs with intricate lever-controlled mechanisms, which are manipulated by the puppeteer.
- For the performance, the puppets are placed on a small platform with a canopy or hung inside a wooden box, open on three or all four sides. The curtains of the make-shift stage are removed just before the performance so that the audience does not get a chance to see the puppets earlier.
  - The string, lever and sticks used to move the puppets are covered with a chadar or a wrap. When the puppeteer tugs the string, it turns the lever, which causes the sticks to move up and down, thereby making the puppets' limbs move.
- The puppeteer narrates stories from ancient Santhal culture using words and verse and making the puppets provide the correct gestures to bring out the essence of the story.
- A combination of traditional musical instruments, which include the Baje Banam, Lagara, Tirennya or flute, and the Tunda or Madal accompanies the performance. When the figures dance, the synchronization is so perfect, that the puppets appear automated.

#### Q 38.A

- **A national party in India is a political party that has been recognized by the Election Commission of India (ECI) as having a nationwide presence.** A political party can be recognized as a national party if it fulfills any of the following three conditions:
  - It wins at least 2% of the total Lok Sabha seats and has representatives in at least three different states.
  - It secures at least 6% of the total valid votes polled in any four or more states in a Lok Sabha or Assembly election and wins at least four Lok Sabha seats.
  - **It is recognized as a state party in at least four states. Hence, statement 1 is not correct.**
- National political parties enjoy **several benefits** compared to state parties and unregistered parties.
  - **Reserved party symbol:** National parties have a unique, reserved symbol that they can use across the country for all elections. This increases their visibility and brand recognition among voters.
  - **Broadcast slots:** National parties get dedicated broadcast slots on Doordarshan and All India Radio during general elections. This allows them to reach a wider audience and convey their message directly.
  - **Free electoral rolls:** National parties receive electoral rolls free of cost, facilitating efficient candidate selection and campaign planning.
  - **Star campaigners:** National parties can designate up to 40 "star campaigners" whose travel and campaign expenses are not counted in the candidate's individual election expenditure limit. **Hence, statement 2 is correct.**
  - **Subsidized land:** National parties are eligible for subsidized land or buildings from the government to establish their party offices.
  - **Number of proposers:** National party candidates only require one proposer for nominations, simplifying the electoral process.
- **Currently, India has less than 10 national political parties. There are 6 national parties currently. Hence, statement 3 is not correct.**

- Bharatiya Janata Party,
- Indian National Congress,
- Communist Party of India (Marxist),
- Bahujan Samaj Party,
- National People's Party and
- Aam Aadmi Party

#### Q 39.B

- Godavari River is a sacred river of central and southeastern India. One of the longest rivers in India, its total length is about 910 miles (1,465 km), and it has a drainage basin of some 121,000 square miles.
- The Godavari originates in the Western Ghats of central India near Nashik in Maharashtra, 80 km from the Arabian Sea.
- The major left bank tributaries include the Purna, Pranhita, Indravati, and Sabari River.
- The Pravara, Manjira, and Maner are right-bank tributaries .
- **Important cities on the banks of Godavari**
  - Maharashtra
    - ✓ Nashik
    - ✓ Trimbakeshwar
    - ✓ **Nanded**
    - ✓ Puntamba
  - Telangana
    - ✓ Basara
    - ✓ Nirmal
    - ✓ Kaleshwaram
    - ✓ **Bhadrachalam**
  - Andhra Pradesh
    - ✓ Rajamahendravaram
    - ✓ Antarvedi
    - ✓ Kovvur
- **Vijayawada is a city in Andhra Pradesh on the banks of river Krishna.** It's known for the ornate Kanaka Durga Temple, which sits atop a hill overlooking the city. The massive Prakasam Barrage stretches across the Krishna River is also in Vijayawada.
- **Hence option (b) is the correct answer.**

#### Q 40.A

- **Porattukali is a fascinating form of folk theatre that emanates from the resolute will of the downtrodden. An intrinsic folk theatre of Palakkad, Kerala, Porattukali is an interfusion of dance, music and satire. It is mainly developed by the Panar community who are Dalits. Hence statement 1 is correct.**
- Humour is the hallmark of these productions and caste was the basis on which they were written and designed. Perfect in its conception and presentation, these performance were easily accepted by the people.
- Though there are specificities to every individual performance which shifts according to the talent of the artistes, the general structure of the play remains unchanged. Kelikottu, a special orchestra with chenda and ilathalam, is conducted prior to the performance.
  - **It is not performed exclusively by females. Both genders take part in it. Hence statement 2 is not correct.**
- There will be a questioner, common to all performances, who can be compared to the fool of the Shakespearian theatre or the Vidhooshaka of the Sanskrit theatre. One group consists of fifteen members, including the singers and musicians. Usually the performance will last for one hour.
- Porattukali is an art form rich in aesthetics and content, yet it has been pushed so far into the periphery that it is disappearing altogether.

#### Q 41.B

- **The Coastal Aquaculture Authority (CAA) is a statutory body established under the Coastal Aquaculture Authority Act, 2005. Hence, statement 1 is correct.**
- The CAA is responsible for regulating the aquaculture industry in India.
- **The Coastal Aquaculture Authority (CAA) operates under the Ministry of Fisheries, Animal Husbandry and Dairying (MoFADH) of the Government of India. Hence, statement 2 is not correct.**



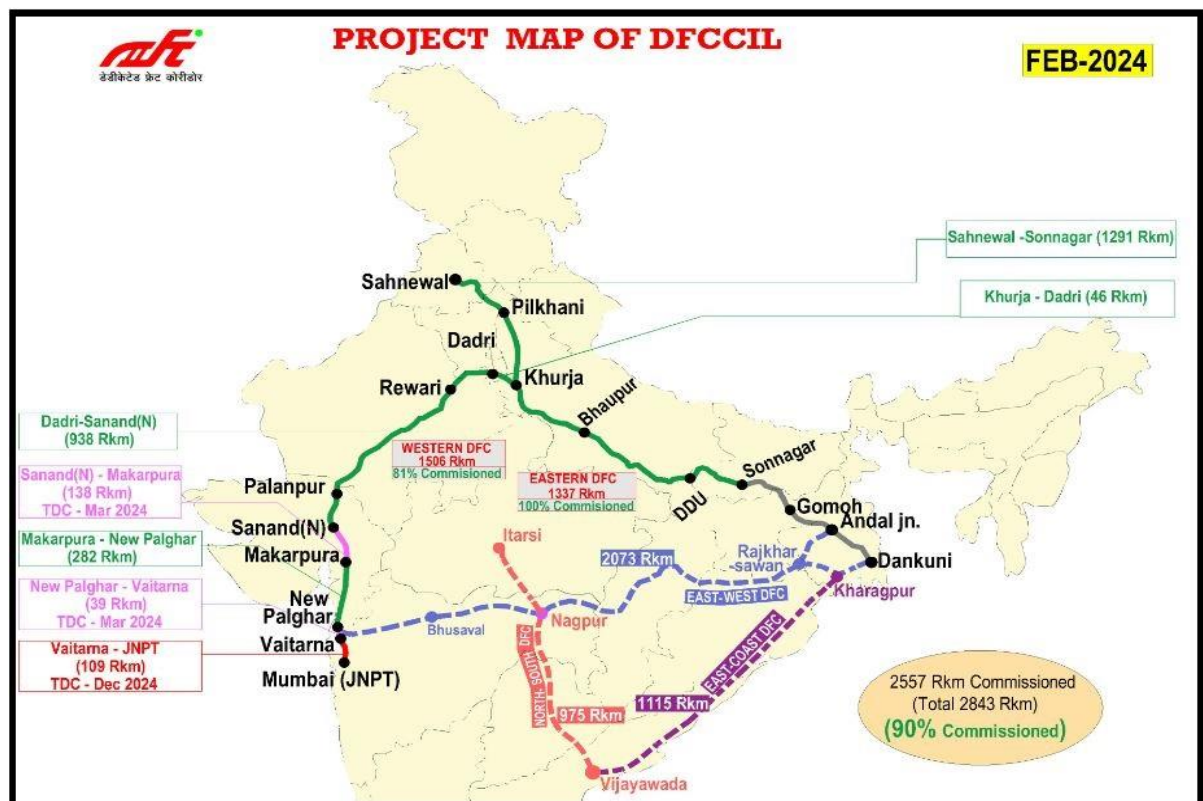
- The CAA is responsible for regulating aquaculture activities in the coastal areas, providing technical assistance to aquaculture farmers, and promoting research and development in the field of aquaculture.
- Objectives of the CAA are:
  - To ensure sustainable development of coastal aquaculture in India
  - To protect the coastal environment and biodiversity
  - To promote the livelihoods of coastal communities
  - To regulate the import and export of aquatic animals and plants used in coastal aquaculture.
 Hence, statement 3 is correct.

#### Q 42.C

- In 2019, The Reserve Bank of India announced the external benchmark linked lending rates over the existing marginal cost of funds-based lending rate (MCLR) system. According to it, it is mandatory for banks to link all new floating rate loans to an external benchmark like repo rate, 3-month or 6-month treasury bill yield, or any other benchmark published by the Financial Benchmarks India Pvt. Ltd. **Hence statement 1 is correct.**
- The repo (or repurchase) rate is the rate at which the Reserve Bank of India (RBI) lends money to other banks. Hence, cuts in the repo rate are meant to lead to cuts in the home loan and other lending rates as banks get to borrow money cheaply from the RBI. The pegging of rate to an external benchmark will enable in the faster monetary transmission of rate cuts than has happened so far under the MCLR system. **Hence statement 2 is correct.**
- The primary advantage of an external benchmark over an internal rate is transparency. While certain costs such as business strategy and operating costs were part of the anchor rate under the MCLR regime, the external benchmark ensures all those are part of the spread and not built into the anchor.

#### Q 43.B

- The Ministry of Railway has embarked upon a long-term strategic plan to construct high-capacity, high-speed, Dedicated Freight Corridors along the Golden Quadrilateral and its diagonals.
- In the first phase of this plan, DFCCIL has been entrusted with the responsibility of construction, maintenance and operation of two corridors – **Eastern Corridor from Ludhiana to Dankuni with Dadri-Khurja link and Western Corridor from Dadri to Jawaharlal Nehru Port** - along with all attached infrastructure, to enable Indian Railways & other qualified operators to run their freight trains.
  - Eastern Dedicated Freight Corridor (EDFC) stretches from Ludhiana in Punjab to Sonnagar in West Bengal, covering a length of 1337 km. It will also include a public-private partnership (PPP) section of the Sonnagar-Dankuni route. The EDFC will have 21 stations along its route. The construction work on this corridor started in 2014 and was completed in 2023. **Hence pair 1 is correctly matched.**
  - **The Western Dedicated Freight Corridor (WDFC) which stretches from Dadri in Uttar Pradesh to Jawaharlal Nehru Port Trust (JNPT) in Mumbai**, covering a length of 1506 km has been completed up to 78 per cent. It will connect Dadri, Ghaziabad, Agra East, Mathura East, Meerut East and Ghaziabad. It will also include a PPP section of the Sonnagar-Dankuni route. The WDFC will have 25 stations along its route. **Hence pair 2 is correctly matched.**
  - **East Coast Corridor:** The proposed corridor stretching 1080 km traverses through three states of India, namely West Bengal, Orissa, and Andhra Pradesh. **The East Coast Dedicated Freight Corridor (ECDFC) connects Kharagpur in West Bengal to Vijayawada in Andhra Pradesh.** Mostly runs parallel to the existing Kharagpur-Vijayawada coastal railway line. **Hence pair 3 is not correctly matched.**



Q 44.B

- The Competition Commission of India (CCI) published a study examining competition in the iron ore market. Iron ore in India is predominantly composed of iron oxides called magnetite and hematite and yields metallic iron (Fe) when heated with a reductant. **Hence statement 1 is correct.**
- CCI study shows India's self-sufficiency in iron ore production, contributing 7% globally and ranking as the 4th largest producer in the world. The export value of iron ore has surpassed the import value in recent years. **Hence statement 2 is not correct.**
- Allocation of captive mines (owned by companies for self-use) to some players creates entry barriers. **Mines and Minerals (Development and Regulation) Amendment Act, 2021 allows the captive mines to sell up to 50% of surplus iron ore in the open market. Hence statement 3 is correct.**
- **The allocation of captive mines to some players creates entry barriers in the iron ore and steel sector as entry and successful operation become costly for new firms.**

Q 45.C

- **A river delta** is a landform that forms at the mouth of a river where it flows into a larger body of water, such as an ocean, lake, or sea. As the river water slows down, it drops its sediment, which builds up over time, creating new land.
- **Arcuate deltas:** These are fan-shaped deltas. These are curved and shaped with the convex margin facing the water bodies. Examples- are the **Nile River** and the Ganges delta. **Hence pair 1 is not correctly matched.**
- **Estuarine Deltas:** These deltas form in estuaries, which are partially enclosed bodies of water where freshwater from rivers mixes with saltwater from the ocean. Examples- Thames delta in England, the **Seine river** in France, etc. **Hence pair 2 is correctly matched.**
- **Cuspate deltas:** These deltas are formed when sediment is deposited along a straight shoreline with strong waves. These deltas have a pointed shape. Examples- **Tiber River** of Italy. **Hence pair 3 is not correctly matched.**
- **Bird's foot deltas:** These deltas resemble with bird's foot. They are formed when the waves are weak and the river flow is strong. Examples - **Mississippi River** delta of USA. **Hence pair 4 is correctly matched.**

Q 46.C

- **Phytoplankton, also known as microalgae, are similar to terrestrial plants in that they contain chlorophyll and require sunlight in order to live and grow.** Most phytoplankton are buoyant and float in the upper part of the ocean, where sunlight penetrates the water. Phytoplankton also require inorganic

nutrients such as nitrates, phosphates, and sulfur which they convert into proteins, fats, and carbohydrates. **Hence statement 1 is correct.**

- **The two main classes of phytoplankton are dinoflagellates and diatoms.** Dinoflagellates use a whip-like tail, or flagella, to move through the water and their bodies are covered with complex shells. Diatoms also have shells, but they are made of a different substance and their structure is rigid and made of interlocking parts. Diatoms do not rely on flagella to move through the water and instead rely on ocean currents to travel through the water. **Hence statement 2 is correct.**
- In a balanced ecosystem, phytoplankton provide food for a wide range of sea creatures including shrimp, snails, and jellyfish. **When too many nutrients are available, phytoplankton may grow out of control and form harmful algal blooms (HABs).** These blooms can produce extremely toxic compounds that have harmful effects on fish, shellfish, mammals, birds, and even people. **Hence statement 3 is correct.**

#### Q 47.B

- **In 1932 Gandhi established the Harijan Sevak Sangh to initiate Constructive Programme for the social and material development of the Depressed Classes.**
  - The Harijan Sevak Sangh started a journal titled 'Harijan' to create awareness in society for the welfare of the Depressed Classes.
  - Instead of adopting a confrontationist line, Harijan Sevak Sangh believed in pursuing caste Hindus for a change of heart and strongly advocated for the removal of untouchability and wanted legislation for temple entry
- **India's first labour union was started when workers of Buckingham and Carnatic Mills formed the Madras Labour Union on April 27, 1918.**
  - The two prominent traders involved in forming the union were Selvapathi Chettiyar and Ramanujulu Naidu.
  - BP Wadia was the founding member of the MLU. Selvapathi and Ramanujulu became the general secretaries of the union.
- **Dakshineswar bomb case :** Rajendra Nath Lahiri was born in 1892 at village Mohanpur in District Pabna, Bengal. He was a resident of Varanasi, Uttar Pradesh, who was the son of Shri Kshitish Mohan Lahiri.
  - Lahiri, an absconder in the Kakori conspiracy case, was arrested on November 10, 1925 from Calcutta, where he was expanding the HRA network. **In what came to be known as the 'Dakshineswar bomb case' (1925-26),** Lahiri along with eight other revolutionaries were arrested from a bomb factory in Dakshineswar.
- **Jatindra Nath Das** was born in Calcutta on October 27, 1904, to Bankim Bihari Das and Suhasini Devi. In 1920, he completed his matriculation at Bhabanipur Mitra Institution and joined the Congress as part of the non-cooperation movement.
  - Jatindra Nath Das became associated with the revolutionary groups and was subsequently arrested and sent to Dhaka Jail.
  - On June 14, 1929, Jatindra Nath Das was arrested at his Calcutta residence by the Lahore police. His arrest was linked to the ongoing Lahore conspiracy case. During his time in prison, he initiated a significant response demanding the humane treatment of political prisoners and improved conditions.
  - **Beginning on July 13, 1929 he began a hunger strike with the support of Bhagat Singh and Batukeshwar Dutta in protest against the mistreatment of prisoners by jail authorities.**
  - Despite numerous attempts to force-feed him, Jatindra Nath Das persevered with his hunger strike, emphasizing that it was a more formidable challenge than wielding a firearm. He discouraged others from joining the hunger strike, stating that they should not act hastily.
  - Tragically, Jatindra Nath Das passed away on September 13, 1929, at the age of 24, after fasting for 63 days
- **Hence option (b) is the correct answer.**

#### Q 48.B

- The concept of "Office of Profit" in India relates to positions held by Members of Parliament or Members of the Legislative Assembly (MPs or MLAs) that may provide financial gain or benefit.
- **The Constitution does not clearly define what constitutes an office of profit, but the definition has been developed through various court judgments. Hence statement 1 is correct.**
- **Constitutional Provisions:**
  - Under Article 102 (1) and Article 191 (1) of the Constitution, an MP or an MLA (or an MLC) is barred from holding any office of profit under the central or state government.

- Provisions of **Articles 102 and 191** also protect a legislator occupying a government position if the office in question has been made immune to disqualification by law.
- **Parliament has also enacted the Parliament (Prevention of Disqualification) Act, 1959, which has been amended several times to expand the exempted list. Hence statement 2 is correct.**
- **According to articles 103 and 192 of the constitution, the final decision on the question of disqualification of members rests with the President and Governor and they shall obtain the opinion of the Election Commission and shall act according to such opinion. Hence statement 3 is not correct.**
- **Furthermore, Section 9A of the Representation of the People Act, 1951, addresses disqualification based on holding an office of profit.** It stipulates that an individual will be disqualified from holding office if they engage in a contractual relationship with the government for the supply of goods or the execution of any works undertaken by that government. **Notably, while this section pertains to disqualification related to an office of profit, it does not explicitly employ the term "office of profit" nor provide a precise definition for it. Hence statement 4 is not correct.**

#### Q 49.C

- **Sowa Rigpa originated in India 2500 years ago and was introduced in the TransHimalayan region around the 8th Century AD. Since then it has been propagated and transmitted through teacher-student lineage, including family lineage; prevalent among secular and monastic contexts in the Trans Himalayan regions of India.**
- Sowa-Rigpa is the traditional medical system in Ladakh and Paddar-Pangey region of Jammu and Kashmir State, Sikkim, Darjeeling and Kalimpong (West Bengal); Lahoul-Spiti, Kinnour, Dharamsala regions of Himachal Pradesh; Mon-Tawang and west Kameng regions of Arunachal Pradesh and Tibetan settlements in various parts of India.
- **Sowa-Rigpa is traditionally practiced in Bhutan, Mongolia, Tibet, China, Nepal, and some parts of Central Asia.**
- **The majority of the theory and practice of Sowa-Rigpa is similar to "Ayurveda".** The first Ayurvedic influence came to Tibet during the 3rd century AD but it became popular only after the 7th century with the approach of Buddhism to Tibet. **Hence statement 1 is correct.**
  - There this trend of exportation of Indian medical literature, along with Buddhism and other Indian art and sciences continued till the early 19th century.
- The principle medical text Chatush Tantra-a textbook of fundamental principles of Sowa-Rigpa in the Sanskrit language was pioneered by Lord Buddha and translated into Bhoti language around the 8th -12th Century and amended by Yuthok Yontan Gombo and other scholars of Trans Himalayan region according to the socio-climatic conditions.
- The fundamental principles of Sowa Rigpa is based on Jung-wa-nga (Panchmahabutha), Nespa-sum (Tridosha), Luszung-dun(Saptadhatu), etc.
- According to Sowa- Rigpa health is an equation of balance of tridosha (English translation) and five cosmo-physical energies (Panchmahabuta), balance within the body, balance with the environment, and with the Universe.
- **Pulse examination and astrological evaluation/analysis of an individual are the unique diagnostic tools in Sowa-Rigpa.** The natural resources which are safe, effective, and time-tested are used as the sources of medication. Sowa Rigpa education, healthcare delivery and research is formally recognized and promoted by the Government of India. **Hence statement 2 is correct.**

#### Q 50.D

- **Basic price :** The basic price is the **amount receivable by the producer exclusive of taxes payable on products and inclusive of subsidies receivable on products.** The equivalent for imported products is the c.i.f. (cost, insurance and freight) value, that is, the value at the border of the importing country. **Hence pair 1 is not correct.**
- **Producer price :** The producer price is the **amount receivable by the producer inclusive of taxes on products except deductible value added tax and exclusive of subsidies on products.** The equivalent for imported products is the c.i.f value plus any import duties or other taxes on imports (minus any subsidies on imports). **Hence pair 2 is not correct.**

Producer prices = Basic prices + taxes on products (excluding VAT) - subsidies on products

- **Purchaser price :** The purchaser price is the **amount payable by the purchaser. This includes trade margins realized by wholesalers and retailers (by definition, their output) as well as transport margins (that is, any transport charges paid separately by the purchaser) and non-deductible VAT.**



Purchaser prices = Producer prices + trade and transport margins + non-deductible VAT. **Hence pair 3 is not correct.**

- For countries that collect value added data at purchaser prices, GDP at purchaser prices = agriculture value added + industry value added + services value added at producer prices - financial intermediary services indirectly measured (FISIM) (where available).
- For countries that collect value added data at basic prices, GDP at purchaser prices = agriculture value added + industry value added + services value added at basic prices – FISIM (where available) + net taxes on products.
- **Hence option (d) is the correct answer.**

#### Q 51.C

- **Pradhan Mantri Poshan Shakti Nirman (PM Poshan) Scheme:**
  - It was launched in September 2021 for providing one hot cooked meal in Government and Government-aided schools with the financial outlay of Rs 1.31 trillion.
  - The scheme replaced the national programme for mid-day meal in schools or Mid-day Meal Scheme.
  - It has been launched for an initial period of five years (2021-22 to 2025-26).
  - It is based on an individual's right under Article 21 of the Indian Constitution, which discusses the right to live with dignity with at least two decent meals daily. The centrally sponsored scheme under the National Food Security Act, 2013 (NFSA) aims to enhance the nutritional status of children studying in classes I-VIII in eligible schools. **Hence statement 1 is correct.**
  - **The scheme also aims to provide nutritional support to elementary-stage children in drought-affected and disaster-affected areas during the summer holidays. Hence statement 2 is correct.**
  - **Coverage:**
    - ✓ Implemented by the Ministry of Education, the scheme provides hot-cooked meals to children of pre-schools or Bal Vatika (before class I) in primary schools. The provision also applies to the 11.80 crore children of classes I to VIII studying in 11.20 lakh schools.
    - ✓ The scheme does not require any special application process. **All children who are studying in government and government-aided schools are equally eligible for the PM POSHAN.** Notably, the scheme applies to children across the nation without any discrimination of gender and social class. **Hence statement 3 is correct.**
    - ✓ Primary (1-5) and upper primary (6-8) schoolchildren are currently entitled to 100 grams and 150 grams of food grains per working day each, to ensure a minimum of 700 calories.
  - **Nutritional Gardens:** Use of locally-grown nutritional food items will be encouraged from "school nutrition gardens" for boosting the local economic growth, and will also include involvement of Farmers Producer Organizations (FPO) and Women Self Help Groups in the implementation of the scheme.
  - **Supplementary Nutrition:** The scheme has a provision for supplementary nutrition for children in aspirational districts and those with high prevalence of anaemia.
  - **Tithi Bhojan Concept:** TithiBhojan is a community participation programme in which people provide special food to children on special occasions/festivals.
  - **Direct Benefit Transfer (DBT):** The Centre has directed the states and the UTs to switch to Direct Benefit Transfer (DBT) system for providing compensation to the cooks and helpers working under the scheme. This is to ensure no leakages at the level of district administration and other authorities.
  - **Nutrition Expert:** A nutrition expert is to be appointed in each school whose responsibility is to ensure that health aspects such as Body Mass Index (BMI), weight and haemoglobin levels are addressed.
  - **Social Audit of the Scheme:** A social audit of the scheme has also been mandated for each school in each state to study the implementation of the scheme, which was so far not being done by all states.

#### Q 52.C

- Autonomous Items also known as **'above the line items'** – are those international transactions which happen due to profit earning motive. All profit oriented international transactions – like export and import are autonomous transactions.
- Autonomous transactions are called 'autonomous' because they happen on their own accord and not because of a country's BOP scenario. **'Autonomous transactions will include imports and exports (current account transactions) and also lending or borrowing of loans (cross border) or payment or receipt of interests thereon.'**
- **Accommodating Items or 'below the line items'** are those which originate to **'accommodate' the BOP scenario.** If there is BOP surplus or deficit then accommodating transactions are carried out in a

deliberate manner to balance out the surplus/ deficit BOP. Accommodating transactions compensate the surplus or deficit brought about by autonomous transactions. It seeks to bring equality between the payments and receipts of foreign exchange.

- So, Autonomous transactions fall on both the current account and the capital account while Accommodating transactions fall in the capital account only. **Hence statement 1 is correct.**
- Autonomous transactions involve the movement of goods and services across borders. Accommodating transactions do not involve the movement of goods and services across borders. **Hence statement 2 is correct.**
- Autonomous items are also known as Above-the-line items and Accommodating transactions are known as Below-the-line items. **Hence statement 3 is correct.**

#### Q 53.C

- **Fuses are basic safety devices widely deployed in electrical circuits for excess current or overcurrent protection.** If a stronger-than-expected current surges through, the fuse will blow and break the circuit, minimizing heat damage and reducing the risk of electrocution or fire.
- A fuse is a piece of **wire of a material having a very low melting point** that melts and breaks the circuit as soon as its temperature gets higher than its melting point because of a surge in current. The properties of an ideal fuse are Low melting point, high resistance, low resistivity, and economical. Thus, fuse wires are commonly made up of tin, lead, and zinc. Thus, **statement-I is correct and statement-II is not correct. Hence, option (c) is the correct answer.**

#### Q 54.B

- **The Breakthrough Agenda Report 2023 is an annual collaboration between the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA), and the United Nations Climate Change High-Level Champions. Hence option (b) is the correct answer.**
  - Its focus is on strengthening international cooperation to accelerate the reduction of global greenhouse gas emissions.
- **Key Findings:**
  - The report evaluates progress made since 2022 in priority areas for global collaboration.
  - It offers recommendations for countries to work together in these sectors to reduce emissions over the next decade and mitigate the worst effects of climate change.
  - The report acknowledges the accelerating transition to clean energy and sustainable solutions in various sectors, particularly in technologies like electric vehicles and solar PV.
  - It notes that electric passenger cars are expected to represent 18% of total car sales in 2023, and clean energy technology investments are surpassing spending on fossil fuels.
  - However, some high-emission and challenging-to-decarbonize sectors, including steel, hydrogen, and agriculture, are not transitioning rapidly enough, despite progress in certain aspects.
- The report highlights modest progress in strengthening international collaboration over the past year, with expanded financial assistance to developing countries and increased joint research and development initiatives.

#### Q 55.B

- Aurobindo Ghosh, born on 15 August 1872 in Calcutta district (present-day Kolkata), West Bengal, was an Indian nationalist, poet, philosopher, and yogi. He played an active role in the Indian Freedom Movement till 1910, after which he became a spiritual reformer.
  - While Tagore painted him as the Messiah of Indian Culture and Civilization, C R Das hailed him as the 'poet of patriotism, the prophet of nationalism and the lover of humanity.'
- Aurobindo associated himself with journals and periodicals like the Jugantar, Bande Mataram, and the Karmayogi, through which he criticized British imperialism and preached a revolutionary concept of nationalism. In his publications, Aurobindo conveyed the message of Swaraj, or freedom from British rule.
  - **During 1893-94 he wrote nine articles comprising New Lamps for Old were published in the Indu Prakash of Bombay.**
- **He urged the citizens to boycott British institutions and goods and was one of the prominent protesters of the 1905 Partition of Bengal. In 1908, he was arrested on the charge of the Alipore Bomb Conspiracy Case and was acquitted in 1909 after a long trial.**
- The contribution of Aurobindo to modern Indian political thought can be summarized under four categories: Emphasis on the concept of spiritual nationalism; the ideal of complete freedom from foreign

rule; boycott and passive resistance; a vision of the valuable role that India was destined to play in world affairs and his ideal of human unity.

- He believed that without political freedom, no real development is possible in India. Some of his important writings are The Life Divine, Savitri, Essay on the Gita, Defense of Indian Culture, etc. Ghosh passed away on 5 December 1950.
- **Hence option (b) is the correct answer.**

#### Q 56.B

- With regard to transfusions of whole blood, individuals with type O-ve blood are often called universal donors, and those with type AB+ve blood are called universal recipients. Type O negative blood (red cells) can be transfused to patients of all blood types. It is always in great demand and often in short supply.
- Thus, in this case, the O-ve blood group can be used. **Hence option (b) is the correct answer.**

#### Q 57.D

- **Recent context:** The Prime Minister initiated the redevelopment of 553 railway stations.
- **Amrit Bharat Stations Scheme:**
  - **The Amrit Bharat Station Scheme aims to redevelop 1309 stations nationwide.**
  - The redevelopment will provide modern passenger amenities along with ensuring well-designed traffic circulation, inter-modal integration, and signage for the guidance of passengers.
  - The Scheme was launched in February 2023 by the Ministry of Railways.
- **This initiative adopts a long-term perspective, focusing on the continual enhancement of station facilities.**
  - The scheme entails the formulation and execution of Master Plans in stages to enhance various amenities at stations, including improving access, circulating areas, waiting halls, toilets, and installing lifts/ escalators as needed.
  - It also prioritizes cleanliness, provision of free Wi-Fi, promoting local products through initiatives like 'One Station One Product', enhancing passenger information systems, establishing executive lounges, designated spaces for business meetings, and landscaping, tailored to the requirements of each station.
  - Additionally, the scheme emphasizes the enhancement of station buildings, integrating stations with surrounding urban areas, promoting multimodal integration, providing facilities for 'Divyangjans' (persons with disabilities), implementing sustainable and environmentally friendly solutions, introducing ballastless tracks, and creating 'Roof Plazas' where necessary.
  - The scheme also considers phasing, feasibility, and the long-term establishment of city centers at stations.
  - In many of these stations, inspiration has been taken from airport infrastructure to create separate entry and exit points (departure and arrival) for the convenience of passengers.
  - The station buildings' designs will be inspired by local culture, heritage, and architecture. **Hence option (d) is the correct answer.**
    - ✓ For instance, the Jaipur Railway Station will feature elements resembling the Hawa Mahal and Amer Fort from Rajasthan.
- Currently, 1318 stations have been earmarked for development/redevelopment under this scheme, while 1251 stations have already undergone development under the 'Adarsh Stations Scheme' on the Indian Railways network.

#### Q 58.A

- Plateau is a flat-topped tableland. They are one of the four major landforms, along with mountains, plains, and hills.
  - **Anatolian plateau:** It is also known as Asia Minor and comprises most of the Asian portion of Turkey. **It is an intermontane plateau** located between the Pontiac and Taurus Mountains. This region is famous for **precious wool-producing Angora goats**. It is bounded by the Black Sea (North), Mediterranean Sea (South), Aegean Sea (west) and Asian mainland (east). **Hence statement 1 is correct.**
  - **Patagonian plateau:** It is a Piedmont plateau (lies at the foot of the Andes). It is located between the Colorado River in the north, the Atlantic Ocean in the east, the Strait of Magellan in the south, and the Andes Mountains in the west. It is a region of vast and virtually treeless plains, it has a variety of wildlife, including llamas, pumas, and eagles.

- **Mexican plateau:** It is an arid and semi-arid plateau and occupies the Northern and Central Mexico region. It is also known as a 'Mineral store' because of the presence of different types of metallic minerals like silver, copper, etc. It also has the world's biggest **silver mine Chihuahua. Hence statement 2 is not correct.**
- **The Angora or Ankara is a Turkish breed of domesticated goat.** It produces the lustrous fibre known as mohair. It is widespread in many countries of the world. Many breeds derive from it, among them the Indian Mohair, the Soviet Mohair, the Angora-Don of the Russian Federation and the Pygora in the United States. **Hence statement 3 is not correct.**

#### Q 59.D

- **The Fundamental Rights in India are enshrined in Part III (Article 12–35) of the Constitution of India.** They guarantee civil liberties such that all Indians can lead their lives in peace and harmony as citizens of India.
- **The right to receive the medical grant: This right is not explicitly mentioned as a Fundamental Right in the Constitution.** However, the Allahabad High Court has ruled in a specific case that the medical grant is a fundamental right under Article 21 of the Constitution. **Hence option 1 is not correct.**
- **Foreigners' right to reside and settle in India: Foreigners cannot claim this right under Article 19 (1) (e) of the Constitution of India.** Their fundamental rights are limited to the protection of life and liberty under Article 21. **Hence option 2 is not correct.**
- **Right To Prayer Room In Public Places: The Constitution protects religious freedom, but it does not require the government to establish dedicated prayer facilities in public places such as airports.** Praying in public is not a criminal offense, but there are limited grounds on which praying in public can be forbidden. **Hence option 3 is not correct.**

#### Q 60.D

- **Recent context:** Dieback disease hits neem trees in Telangana again. The dieback disease affects leaves, twigs and the inflorescence of neem trees of all ages.
- It is progressive death of shoots, branches, or roots generally starting at the tip. **Hence option (d) is the correct answer.**
- The disease posing a threat to the neem trees has been identified as twig blight and dieback disease in Telangana, and it has reappeared in the state this year on a massive scale.
- It affects leaves, twigs and the inflorescence of neem trees of all ages and it causes almost 100% loss of fruit production in severely infected trees.
- It was first reported in the country during the 1990s near Dehradun in Uttarakhand, while it was first noticed in Telangana in 2019.
- The dieback disease is mainly caused by the fungi *Phomopsis azadirachtae*.

#### Q 61.D

- **Recent context:** Researchers recently discovered a new species of frog named *Alcalus fontinalis* in the northeast Indian state of Arunachal Pradesh.
- *Alcalus fontinalis*:
  - It is a newly discovered species of frog.
  - It was discovered in the Namdapha Tiger Reserve, Arunachal Pradesh.
  - The frog appeared to be a mix of a bush frog and a water frog.
  - They are no ordinary frogs but members of a dwarf mountain frog of the genus *Alcalus*, hitherto unknown from India.
  - It was formally named *Alcalus fontinalis*, meaning “spring or fountain,” referencing the tiny streams or brooks where the frog was found.
  - The new species stands out from its congeners due to a unique combination of morphological features.
  - These include a snout-vent length of 27–28 mm in males and 29.9–36.2 mm in females, a disc on fingers and toes with a horizontal/transverse groove on the dorsal surface, wrinkled dorsal skin, and a pair of faint dorsolateral stripes on the back.
- **Hence option (d) is the correct answer.**



**Q 62.A**

- **Recent Context:** India adds five more wetlands to its list of Ramsar sites.
- With the addition of these five wetlands to List of Wetlands of International Importance, the total area covered under Ramsar sites is now 1.33 million hectares.
- **The newly declared sites include Karaivetti Bird Sanctuary and Longwood Shola Reserve Forest in Tamil Nadu, and Magadi Kere Conservation Reserve, Ankasamudra Bird Conservation Reserve and Aghanashini Estuary in Karnataka. Hence option (a) is the correct answer.**
- **The Karaivetti Birds Sanctuary in Tamil Nadu** spans over 453 hectares and “is one of the most important fresh water feeding grounds for migratory water birds in the state of Tamil Nadu,” hosting over 188 bird species, of which 82 are water birds. Apart from water birds, the sanctuary is also an important nesting site for threatened species like the spotted eagle and the tawny eagle.
- **The Longwood Shola** is a high-altitude wetland that acts as a water source for 18 villages downstream and is also considered an Important Bird Area (IBA), hosting several endemic bird species. The Longwood Shola is recognised and protected as a Reserve Forest.
- Of the newly declared sites in Karnataka, **Aghanashini Estuary** is the largest at 4801 hectares. The mangroves along the Aghanashini river act as a nursery for fishes and prawns and are considered as important fish breeding and spawning areas. Several species of fish visit nutrient rich mangrove area for laying eggs so that the juveniles grow amidst abundance of food before they leave for the sea.
- The other two sites, **Magadi Kere and Ankasamudra Reserve, are both artificial tanks.** The former is one of the largest wintering grounds for bar-headed goose in southern India and the latter is home to 210 species of plants, 8 species of mammals, 25 species of reptiles, 240 species of birds and 41 species of fishes, apart from frogs, butterflies and other insects.

**Q 63.B**

- **Foreign Portfolio Investments (FPIs)** are investments made by foreign investors in the stock markets of a country. These investments are made through mutual funds, exchange-traded funds, and other investment vehicles. **The limit of investment by FPIs in a company is capped at 10% of the capital of the company. Hence, statement 1 is correct.**
- **FPIs are part of a country's capital account**, which records all inflows and outflows of foreign capital. They are also shown on the country's Balance of Payments (BOP), which is a statement of all economic transactions between a country and the rest of the world. **Hence, statement 2 is not correct.**
- **The Reserve Bank of India has permitted FPIs to invest in debt securities issued by Infrastructure Investment Trusts (InvITs) and Real Estate Investment Trusts (REITs).** The RBI's decision to allow FPIs to invest in InvITs and REITs is a positive step, as it will help to increase the liquidity of these markets and make them more attractive to investors. **Hence, statement 3 is correct.**

**Q 64.D**

- Many lizard species have the ability to voluntarily detach their tails when threatened by predators. **The detached tail continues to wiggle, diverting the predator's attention away from the lizard, which then has the opportunity to escape.** The lizard can later regenerate its lost tail. **Hence option 1 is correct.**
- **Olive Ridley turtles exhibit synchronized hatching, where thousands of hatchlings emerge from their nests and escape in the ocean together.** This mass emergence overwhelms predators, increasing the chances of survival for individual hatchlings as they make their way to the water. **Hence option 2 is correct.**
- Species like **Pufferfish have the remarkable ability to inflate their bodies with water or air when threatened**, making them appear much larger and more difficult for predators to consume. Similarly, certain species of frogs can puff themselves up to appear larger and more intimidating to predators. **Hence option 3 is correct.**
- **Hence option (d) is the correct answer.**

**Q 65.D**

- **Federalism refers to a system of government where power is divided between a central authority and various constituent units, such as states or provinces.** This division of power allows for a sharing of authority between the central government and regional entities, often providing for greater autonomy and flexibility at the local level. **Federalism is commonly employed in large, diverse countries to accommodate different regional interests and cultures while maintaining national unity.**
- There are two primary types of federalism: vertical federalism and horizontal federalism.

- **Vertical Federalism:** Vertical federalism refers to the division of powers between the central government and subnational units, such as states or provinces.
  - ✓ In this system, the central government retains certain powers, while the regional entities also have their own set of powers, which may include legislative, executive, and judicial authority.
  - ✓ **Examples of vertical federalism can be found in countries like the United States, Canada, and India,** where the central government and states or provinces have distinct spheres of authority outlined in the constitution.
- **Horizontal federalism** focuses on the relationship between the constituent political units, such as states or provinces, within a federal system.
  - ✓ **It emphasizes the equality of these units and the limited authority of the central government in regulating interactions between them. Hence option (d) is the correct answer.**
  - ✓ Horizontal federalism ensures that states or provinces have a **degree of autonomy in managing their internal affairs and interactions with each other.**
  - ✓ This type of federalism is particularly **relevant in matters such as interstate commerce, resource sharing, and coordination of policies across regions.**
- Overall, federalism, whether vertical or horizontal, aims to strike a balance between centralization and decentralization, fostering cooperation between different levels of government while respecting the diversity and autonomy of regional entities.

#### Q 66.D

- The wildebeest migration is one of the most spectacular wildlife events on Earth, often considered the largest mammal migration. It involves vast numbers of wildebeest, along with other herbivores like zebras and gazelles, moving in a cyclical pattern across the **Serengeti ecosystem in East Africa. Hence statement 1 is not correct.**
- The Wildebeest migration is the largest migration journey by any mammal species on Earth. However the humpback whale, which migrates up to 8200 km each way when journeying back and forth between its warm breeding waters near the equator and the colder food-rich waters of the arctic and antarctic regions goes through the longest migration by any mammal species. **Hence statement 2 is not correct.**
- **Hence option (d) is the correct answer.**

#### Q 67.D

- **Unified Communications as a Service (UCaaS) is a type of software as a service (SaaS) that provides multiple channels for communication in one platform. It blends internet-based phone and messaging into a full-featured communications platform.**
- There are five major components of UCaaS: **voice, video, messaging, collaboration and the cloud.** The point of using UCaaS is to give employees more ways to collaborate and give managers access to their employees' workflows. Everyone can strategize to make operations more efficient.
- **Enterprise telephony is one of the foundational elements of UCaaS.** It is a business telephoning system that provides basic features like caller holds, three-way calling, call transfer, and call forwarding.
- UCaaS takes all of its services to the internet. This is especially helpful for companies that want to save money on hardware costs because they won't need landline phone systems. Since UCaaS functions online, employees can easily route calls throughout the system. It uses a voice-over-internet protocol (VoIP) to process calls.
- **Hence, option (d) is the correct answer.**

#### Q 68.B

- **The Assam Government recently revived the traditional buffalo fight (Moh-Juj), nine years after it was stopped following the Supreme Court's ban on Tamilnadu's Jallikattu and bullock cart races in Maharashtra.**
- Moh-Juj is part of Assam's timeless Bihu traditions.
- Moh-Juj was believed to be introduced to Assamese culture by 30th Ahom king Swargadeo Rudra Singha nearly 200 years ago.
- Apart from Moh-Juj, Swargadeo Rudra Singha also introduced elephant fights and bird fights during his time and these events used to bring society together.
- **Hence option (b) is the correct answer.**

#### Q 69.C

- A new iOS and Android trojan named '**GoldPickaxe**' employs a social engineering scheme to trick victims into scanning their faces and ID documents, which are believed to be used to generate deepfakes for unauthorized banking access. The new malware, spotted by Group-IB, is part of a malware suite developed by the Chinese threat group known as 'GoldFactory,' which is responsible for other malware strains such as 'GoldDigger', 'GoldDiggerPlus,' and 'GoldKefu.'
- Indian cyberspace is under attack from a new Trojan, called the '**Beebone**' virus, it reportedly works its way into the host computer by faking its identity to gain 'privileged access', and then deploying 'smart and corrupt' techniques against it.
- According to ThreatFabric, a cybersecurity company tracking the malware since its discovery earlier this year, **Cameleon Trojan** attaches itself to legitimate Android apps like Google Chrome to avoid detection and runs the code in the background.
- **Hence option (c) is the correct answer.**

#### Q 70.B

- A credit rating agency (CRA) is a company that rates debtors on the basis of their ability to pay back their interest and loan amount on time and the probability of them defaulting.
- **Currently, there are only seven credit rating agencies registered with the SEBI in the country viz, CRISIL, CARE, ICRA, SMREA, Brickwork Rating, India Rating and Research Pvt. Ltd and Infomerics Valuation and Rating Private Limited. Hence statement 1 is correct.**
- **In India, the Securities and Exchange Board of India (SEBI) primarily regulates credit rating agencies and their functioning.** However, certain other regulatory agencies, such as the Reserve Bank of India (RBI), Insurance Regulatory and Development Authority, and Pension Fund Regulatory and Development Authority also regulate certain aspects of credit rating agencies under their respective sectoral jurisdiction. **Hence statement 3 is not correct.**
- **Currently, the credit rating agencies follow the 'issuer pays model', under which the entity issuing the financial instrument pays the agency upfront to rate the underlying securities.** However, such a payment arrangement may lead to a 'conflict of interest' and could result in compromising the quality of analysis or the objectivity of the ratings assigned by the agencies. Therefore, it suggested that the Ministry of Finance or the regulators may consider other options as well, such as the 'investor pays model' or 'regulator pays model' after weighing the relevant pros and cons. **Hence statement 2 is correct.**

#### Q 71.D

- **The office of governor in India is a constitutional post, created by the Constitution of India.** The governor is the head of state of a state in India and is appointed by the President of India on the advice of the Union Cabinet.
- There is no restriction on the number of states for which a person can be appointed as governor. This has led to the appointment of the same person as governor for two or more states on several occasions.
  - **The possibility of governing multiple states arose with the 7th Constitutional Amendment Act of 1956. Before that, one person could only be governor for one state. Hence, statement 1 is not correct.**
- **The advice of the Council of ministers of a state in India is not binding on the governor as he can at times act independently. As the governor has certain discretionary powers, Hence, statement 2 is not correct.** The governor is free to accept or reject the advice of the council of ministers, and he/she is not required to give any reasons for his/her decision.
  - Indian governors do have certain constitutional discretionary powers, meaning they can act on their own judgment in specific situations without being bound by the advice of the Council of Ministers. These powers are enshrined in the Indian Constitution.
    - ✓ Reservation of Bills for Presidential Assent.
    - ✓ Recommendation for President's Rule.
    - ✓ Appointment of Chief Minister and Council of Ministers.
- **While the President acts mostly on the advice of the Council of Ministers, they also possess certain discretionary powers under specific circumstances, not mentioned explicitly in the constitution. Hence, statement 3 is not correct.**

### Q 72.C

- **The First Battle of Panipat was fought between the invading forces of Babur and the Lodi Empire, which took place on 21 April 1526** in North India. It marked the beginning of the Mughal Empire. Ibrahim Lodi died on the field of battle.
  - This was one of the earliest battles involving gunpowder firearms and field artillery.
  - It is generally held that Babur's guns proved decisive in battle, firstly because Ibrahim Lodi lacked any field artillery, but also because the sound of the cannon frightened Lodi's elephants, causing them to trample Lodi's own men.
  - The new war tactics introduced by Babur were the tulughma and the araba. Tulughma meant dividing the whole army into various units, viz. the Left, the Right and the Centre.
    - ✓ The Left and Right divisions were further subdivided into Forward and Rear divisions. Through this a small army could be used to surround the enemy from all the sides. the Centre Forward division was then provided with carts (araba) which were placed in rows facing the enemy and tied to each other with animal hide ropes.
    - ✓ Behind them were placed cannons protected and supported by mantelets which could be used to easily manoeuvre the canons.
- **The Battle of Khanwa, fought on March 16, 1527**, between Babur's Timurid forces and the Rajput Confederation led by Rana Sanga, was a pivotal event in Medieval Indian history.
  - This battle, significant for the extensive use of gunpowder in Northern India, ended in a decisive victory for Babur, further solidifying the Mughal Empire's control over northern India.
  - Unlike the earlier Battle of Panipat against the weakened Delhi Sultanate, Khanwa pitted Babur against the formidable Mewar kingdom, marking one of the most crucial confrontations in the Mughal conquest.
  - The Battle of Khanwa thus not only reaffirmed Mughal supremacy in northern India but also marked a significant shift in Indian warfare, emphasizing the effectiveness of gunpowder weapons and setting the stage for the Mughal Empire's expansion and consolidation.
- **After the battle of Khanua, Babur** summoned his officers to subjugate the rest of the country and sent them in various directions along with small contingents and he devoted himself to the task of conquering Chanderi.
  - **Medni Rai of Chanderi was a close associate of Rana Sanga.** He had escaped from the battle of Khanua and taken refuge in Chanderi (near Bhopal). He had a contingent of about 5000 Rajputs with him who could create problem for Babur at any time, so Babur did not want to spare him.
  - **Babur at once besieged the fort in A.D. January 1528. A fierce battle was fought in which ultimately Babur stood victorious. Medni Rai was killed in the battle and a great number of Rajputs were slain.**
- **Hence option (c) is the correct answer.**

### Q 73.B

- Born in 1868, Bhawanrao Shrinivasrao Pant Pratinidhi, also known as Balasaheb Pant Pratinidhi, was the **last ruler of Aundh princely State in Maharashtra.**
- **The 'Aundh Experiment' has gone down in Indian history as a test of village-level self-government, which literally placed power in the hands of the people.**
  - **Bhawanrao Shrinivasrao Pant Pratinidhi, met Mahatma Gandhi and told him of his decision to turn his state into a democracy. Gandhi, a staunch advocate of village self-governance, was very pleased with this decision and he himself wrote the draft of the Constitution for Aundh.**
- Balasaheb Pant Pratinidhi had given away his political powers via this Constitution and this became a problem for British paramountcy in the region as Aundh enjoyed sovereignty, albeit limited, under their treaty.
- It was only because of his good diplomatic relations with the British and friendship with the local British Resident that he saved himself from being deposed.
- The Constitution of Aundh took effect on 21st January 1939, and under this administration, Aundh became a debt-free state. Until the merger of the princely state with the Union of India in 1948, Aundh was administered according to this Constitution.
- **Hence option (b) is the correct answer.**



#### Q 74.B

- The **International Maritime Organization (IMO)** is a specialized agency of the United Nations that is responsible for measures to improve the safety and security of international shipping and prevent marine pollution from ships. The IMO sets standards for the safety and security of international shipping. It oversees every aspect of worldwide shipping regulations, including legal issues, shipbuilding, and cargo size. Hence statement 1 is correct.
- Membership in the Organization is open to all States, subject to the provisions contained in the Convention on the International Maritime Organization. In this regard, Members of the United Nations may become Members of the Organization by simply accepting the IMO Convention. An instrument to that effect would have to be deposited with the Secretary-General of the United Nations. Other rules may be applicable if a State is not a Member of the UN. Hence statement 2 is not correct.
- IMO was established in 1948 following a UN conference in Geneva and came into existence in 1958. India joined the IMO in 1959. In elections held at its assembly recently for the 2024–25 biennium, India was re-elected to the International Maritime Organisation (IMO) Council with the highest tally. India's re-election falls under the Category of 10 states with "the largest interest in international seaborne trade", alongside Australia, Brazil, Canada, France, Germany, the Netherlands, Spain, Sweden, and the United Arab Emirates (UAE). Hence statement 3 is not correct.
- The organization has no legal authority to enforce its regulations; compliance is voluntary. IMO was established to adopt legislation and Governments are responsible for implementing them. When a Government accepts an IMO Convention it agrees to make it part of its own national law and to enforce it just like any other law. Hence statement 4 is correct.

#### Q 75.B

- Super pollutants, or short-lived climate pollutants (SLCPs), have a shorter atmospheric lifespan compared to Carbon Dioxide (CO<sub>2</sub>) but significantly impact climate change and air quality. Methane (CH<sub>4</sub>), black carbon (soot), hydrofluorocarbons (HFCs), and tropospheric ozone (O<sub>3</sub>) are some of the major super pollutants. Hence option (b) is the correct answer.
- As the most prevalent GHG, CO<sub>2</sub> is the baseline comparator for all other gases. Once it's out, CO<sub>2</sub> can stay for hundreds of years in the atmosphere as part of an unbalanced carbon cycle.
- Nitrous Oxide rarely gets the press of CO<sub>2</sub>, but it is a potent enemy when human intervention has unbalanced the nitrous oxide budget. Like CO<sub>2</sub>, it can come from burning fossil fuels. In addition, it's emitted through many agricultural processes, particularly involving fertilizer. Since it's so potent, N<sub>2</sub>O wreaks havoc when soil erodes, and nitrogen plays a massive role in water pollution. On average, it stays in the atmosphere for about 100 years and is almost 275 times as potent as CO<sub>2</sub> when it comes to Global Warming Potential (GWP).

#### Q 76.A

- The students and residents of Calcutta (present-day Kolkata) protested against the 1905 Partition of Bengal in large numbers. In order to suppress the movement forcefully, the then Chief Secretary of Bengal, R W Carlyle, issued a circular in October 1905, which came to be known as the Carlyle Circular.
- The arbitrary and repressive circular imposed a ban on the participation and collection of people, especially students, in large numbers. Any kind of gatherings, including meetings and demonstrations, were prohibited. Even the chanting of the slogan, Vande Mataram, which had become the rallying cry at the time, was banned.
- In response to these arbitrary measures and to protest against the Carlyle Circular, in November 1905, Sachindra Prasad Bose, a student leader of the then Ripon College (present-day Surendra Nath College), founded the Anti-Circular Society.
- He formed the society to unite the students and keep the momentum of the movement alive. The society also arranged for alternative education for the students who were expelled from their institutions owing to their participation in the movement.
- In 1906, Bose also designed a flag. Due to the activities of the society, the nationalistic spirit among the students of Bengal was strong and determined. To restrict the influence of the society Bose was arrested in 1906 and sent to the Rawalpindi prison.
- He was a follower of Sir Surendranath Banerjee. He was also the son-in-law of the moderate Brahmo leader, Krishna Kumar Mitra.
- Hence option (a) is the correct answer.

### Q 77.B

- **Krishisukti** is an enlightening book written by Kashyapa, which delves into the realm of agricultural wisdom and guidance based on the Kashyapiya principles. **Hence pair 1 is correctly matched.**
  - It provides practical insights and actionable advice to optimize agricultural practices.
  - Surapala's Vriskshayurveda is a book based on plant science.
- **Manasollasa**, is a Sanskrit text, authored by the Western Chalukya King, **Bhulokamalla Somesvara**, a powerful ruler and an illustrious musician-poet king, who ruled the region of Karnataka (1127-1138 C.E.). **Hence pair 2 is not correctly matched.**
  - It deals with a vast range of subjects from polity to administration to education to entertainment and fine arts to the most intricate nuances of music, dance, literature, and sports.
- **Nitisara by Kamandaki** is a post-Maurya treatise narrating the elements of polity divided into twenty sargas and thirty-six prakarans is dependent on the Arthashastra of Kautilya. **Hence pair 3 is correctly matched.**
  - It deals with social order, authority, and obligation of the temporal ruler theories of states structure and organs of government principles and policies of government interstate relations functions of envoys ambassadors and spies application of different political expedients varieties of battle arrays attitude towards morality, etc.
- **Hence option (b) is the correct answer.**

### Q 78.C

- Cultured meat, also known as cell-cultivated meat or lab-grown meat, is produced by growing animal cells in a laboratory setting. This process involves taking a small sample of animal cells, typically from a biopsy, and then proliferating them in a nutrient-rich medium to encourage cell growth and multiplication. The cells eventually form muscle tissue, which is the primary component of meat. This method allows for the creation of meat without the need to raise and slaughter animals, offering a more ethical and sustainable alternative to traditional animal agriculture.
- Statement 2, however, is incorrect. Cultured meat production does not rely on gene editing techniques. Instead, it primarily utilizes tissue engineering and cell culture methods to grow meat in vitro.
- **Hence option (c) is the correct answer.**

### Q 79.B

- **According to Article 323 B of the constitution, both parliament and state legislature can establish a tribunal for the adjudication of election disputes.** So far, no such tribunal has been established. **Hence, statement 1 is correct.**
- An election petition is a procedure for inquiring into the validity of the election results of Parliamentary or local government elections.
  - **Election petitions are filed in the High Court of the particular state in which the election was conducted. Therefore, only the High Courts have the original jurisdiction to decide on election petitions.** An appeal shall lie to the Supreme Court on any question (whether of law or fact) from every order made by a High Court. **Hence, statement 2 is correct.**
- **An election petition at the High court calling in question an election shall be filed within the period of forty-five days from the date of declaration of results. Hence, statement 3 is not correct.**
- **The grounds for filing an election petition or declaring an election void are mentioned in the section 100 of the Representation of People Act, 1951 and Section 123 of RPA 1951 deals with corrupt practices. Hence, statement 4 is not correct.**
- **Representation of the People Act (RPA), 1950 deals with**
  - Allocation of seats
  - Delimitation of constituencies
  - Preparation of electoral rolls
  - Qualification of voters
  - Election officers like the Chief Electoral Officer (CEO), Returning officer(RO) and others.

### Q 80.C

- As more frauds related to the Aadhaar-enabled Payment System (AePS) come to the fore, the Unique Identification Authority of India (UIDAI), has turned to artificial intelligence-based systems in a bid to limit the cases — this includes developing technologies around fingerprinting and facial recognition.
- **In the year 2023, Airtel Payments Bank collaborated with the National Payments Corporation of India (NPCI) to roll out a facial recognition-based authentication measure for such transactions.**

The technology has been developed in-house by the UIDAI. the AI-based technology is able to identify whether the fingerprint is from a real, or 'live' finger, or a cloned one.

- Apart from this, there are several applications of AI in biometric-based security architecture. Some of these are given below:
- Artificial Intelligence truly shows itself in the behavior recognition field, where traditionally more human touch is needed for identification.
- **In keystroke dynamics, AI keeps track of how a person strokes the keys, and the time gap between every stroke and creates a profile for identification.**
- **AI observes the walking pace, speed, and G-force of a person and creates a profile for identification. Hence, option (c) is the correct answer.**

#### Q 81.C

- The Cabinet Committee on Economic Affairs (CCEA) chaired by the Prime Minister, has approved the continuation of the Urea Subsidy Scheme to ensure constant availability of urea to the farmers at the same price of Rs 242/ 45 kg bag excluding taxes and neem coating charges.
- **Urea Subsidy Scheme:**
  - As far as Urea is concerned, Urea is sold at statutorily notified uniform MRP. **At present, the Urea is being provided to the farmers at a statutorily notified Maximum Retail Price (MRP) of Rs.242 per 45 kg bag of urea** (exclusive of charges towards neem coating and taxes as applicable). **Hence statement 1 is correct.**
  - The difference between the delivered cost of urea at farm gate and net market realization by the urea units is given as subsidy to the urea manufacturer/importer by the Government of India. Accordingly, all farmers are being supplied urea at the subsidized rates. **Hence statement 2 is correct.**
- **Nutrient Based Subsidy Scheme:**
  - In respect of P&K Fertilizers, the Government has implemented a Nutrient Based Subsidy Policy w.e.f. 1.4.2010 for Phosphatic and Potassic (P&K) Fertilizers.
  - Under the policy, a fixed amount of subsidy decided on an annual/semi-annual basis, is provided on subsidised P&K fertilizers depending on their nutrient content. Under this policy, MRP is fixed by fertilizer companies as per market dynamics at a reasonable level which is monitored by the Government.

#### Q 82.A

- **Contingency Fund of India:** Article 267 of the Constitution provides for the Contingency Fund of India to meet Unforeseen events /disasters. Accordingly, Parliament enacted the Contingency Fund of India Act 1950. The fund is held by the Finance Secretary (Department of Economic Affairs) on behalf of the President of India and it can be operated by executive action.
- **Approval of the Parliament of India for such expenditure and withdrawal of an equivalent amount from the Consolidated Fund is subsequently obtained to ensure that the corpus of the Contingency Fund remains intact. Hence statement 1 is not correct.**
- **Similarly, the Contingency Fund of each State Government is established under Article 267(2) of the Constitution** – this is like an imprest placed at the disposal of the Governor to enable him/her to make advances to meet urgent unforeseen expenditure, pending authorization by the State Legislature. **Hence statement 2 is correct.**
- Approval of the Legislature for such expenditure and for withdrawal of an equivalent amount from the Consolidated Fund is subsequently obtained, whereupon the advances from the Contingency Fund are recouped to the Fund. The corpus varies across states and the quantum is decided by the State legislatures.
- **PMNRF has not been constituted by the Parliament. The fund is recognized as a Trust under the Income Tax Act and the same is managed by the Prime Minister. PMNRF accepts voluntary contributions from Individuals, Organizations, Trusts, Companies etc and does not get any budgetary support.** The corpus of the fund is invested in various forms with scheduled commercial banks and other agencies. Disbursements are made with the approval of the Prime Minister. **Hence statement 3 is not correct.**

#### Q 83.D

- **Recent Context:** The Central government has embarked on a mission to promote tourism at ecologically-sensitive wetlands better known as Ramsar sites like Odisha's Chilika lake and Haryana's Sultanpur bird sanctuary. The focus would be to shift these fragile wetlands from high-value tourism to nature tourism by directly supporting conservation action and letting local communities and economies take the lead.

- The initiative to develop these sites has been taken by the Union Tourism Ministry and the Ministry of Environment, Forest and Climate Change under the 'Amrit Dharohar Capacity Building Scheme' 2023.
- The Amrit Dharohar initiative, part of the 2023-24 budget announcement, was launched during June 2023 to promote unique conservation values of the Ramsar Sites in the country while generating employment opportunities and supporting local livelihoods. The scheme is being implemented in convergence with various Central Government ministries and agencies, State wetland authorities, and a network of formal and informal institutions and individuals, working together for a common cause.
- The aim is to enhance livelihood opportunities for local communities through harnessing the nature-tourism potential of the Ramsar Sites across the country. **Hence option (d) is the correct answer.**
- Out of 16 identified Ramsar sites, five have been selected for pilot projects under the scheme.
  - These pilot sites include Sultanpur National Park (Haryana), Bhitarkanika Mangroves (Odisha), Chilika Lake (Odisha), Sirpur (Madhya Pradesh), and Yashwant Sagar (Madhya Pradesh).
  - Training programs for participants are carried under the Alternative Livelihood Programme (ALP) (a 30 hours/15 days training programme) and Paryatan Navik Certificate (boatman certification for tourism).

#### Q 84.C

- **Constitution (73rd Amendment) Act of 1992, has added a new Part-IX to the Constitution of India.** This part is entitled 'The Panchayats' and consists of provisions from Articles 243 to 243 O. In addition, the act has also added a new Eleventh Schedule to the Constitution. This schedule contains 29 functional items of the panchayats. It deals with Article 243-G. **The act has given a practical shape to Article 40 of the Constitution which says that "The State shall take steps to organise village panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-government."** This article forms a part of the Directive Principles of State Policy. **Hence statement 1 is correct.**
- All States now have a uniform three-tier Panchayati Raj structure. At the base is the 'Gram Panchayat'. A Gram Panchayat covers a village or group of villages. The intermediary level is the Mandal (also referred to as Block or Taluka). These bodies are called Mandal or Taluka Panchayats. The intermediary level body need not be constituted in smaller States. At the apex is the Zilla Panchayat covering the entire rural area of the District.
- **All three levels of Panchayati Raj institutions are elected directly by the people. Hence statement 2 is correct.**

#### Q 85.B

- **Rajya Sabha is a permanent body that cannot be dissolved like the Lok Sabha.** Unlike Lok Sabha members who are elected for five years directly by the public, Rajya Sabha members are elected for six years by the elected legislators of a state assembly. In the case of elections, the elected members, who are the voters, are given a ballot in which they have to indicate their preference in descending order. Voting is done based on a single transferable vote.
- **Open Ballot System: A voter belonging to a party has to compulsorily show his ballot to the authorised polling agent of his/her party, but it does not mean that he has to vote for the candidate of his party only.** Failure to show the marked ballot before casting the vote can lead to their votes being rejected. Showing the ballot to the polling agent of anyone other than his/her own party can also result in the cancellation of the vote. Independents, however, are not required to show their marked ballots to any and if they do so, their votes are also not counted. **Hence, Statement-II is correct.**
- However, an **Open ballot doesn't prevent the legislator from cross-voting** which is essentially a term used to describe when someone associated with one party votes for a candidate not belonging to his party.
- **Cross-voting doesn't lead to automatic disqualification the reason being cross-voting does not come under the ambit of the anti-defection law, which is applicable only when voting takes place on the floor of the House. Hence, Statement-I is correct.**
- **The Supreme Court in 2019 ruled that the anti-defection law does not apply to Rajya Sabha elections since a voter is free to vote according to his free will. The apex court also states that since a party knows who has voted against the party, it can take disciplinary action. Hence, cross-voting does not mean automatic disqualification from the parent party. Therefore, Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.**
- **Hence option (b) is the correct answer.**



#### Q 86.B

- On 28 December 1885, 72 social reformers, journalists and lawyers congregated for the first session of Indian National Congress at Gokuldas Tejpal Sanskrit College, Bombay. **Womesh Chandra Banerjee became the first president of Congress. Hence statement 1 is not correct.**
- The Presidential Speech of the first Congress President was aimed at stating explicitly the scope, character and objectives of the Congress.
- The aims and objects of the Congress were defined very clearly by the President. He described the objectives as:
  - Promotion of personal intimacy and friendship amongst the countrymen
  - eradication of all possible prejudices relating to race, creed or provinces
  - consolidation of sentiments of national unity
  - recording of the opinions of educated classes on pressing problems of the day
  - laying down lines for future course of action in public interest
- The resolutions were moved discussed and passed in accordance with strict parliamentary procedure. Each resolution was proposed by a member belonging to one province, then seconded by a member belonging to another province and was supported by members from other provinces.
- The speeches were marked by moderation, earnestness and expressions of loyalty to the Crown.
- **The first congress adopted nine resolutions**
  - **In one resolution demand was put forward for the appointment of a Royal Commission for enquiring into Indian affairs on which Indians would be adequately represented.**  
✓ **Hence statement 3 is correct.**
  - **The other resolution demanded the abolition of the Indian Council of the Secretary of State for India. The Congress wanted that the Secretary of State should be responsible directly to the British Parliament. This demand was based on the idea that the British people were just and fair and, if properly informed, they would never deviate from the right path.**  
✓ **Hence statement 2 is correct.**
  - There was also a resolution on foreign policy which condemned the annexation of Upper Burma.
  - Other resolutions covered subjects such as liberalising the Constitution and functions of the Central and Provincial Legislative Councils, holding of simultaneous examination for the Civil Service in Britain and India and the need to reduce expenditure on the army, etc.

#### Q 87.A

- **Article 118(1) of the Constitution empowers each House of Parliament to make rules for regulating its Procedure and the Conduct of its business.** Under this provision of the Constitution, the Rajya Sabha adopted rules for regulating its procedure and the conduct of its business in 1964.
- **As per Rajya Sabha rules,** the chairman shall, from time to time, nominate from amongst the members of the Council a panel of not more than six vice-chairmen, one of whom may preside over the Council in the absence of the chairman and the Deputy Chairman when so requested by the chairman, or in his absence, by the deputy chairman. **Hence statement 1 is not correct.**
- **A member of the panel of vice-chairpersons cannot preside over the House when the office of the Chairman or the Deputy Chairman is vacant.** During such time, the Chairman's duties are to be performed by such members of the House as the President may appoint for the purpose. **Hence statement 2 is not correct.**
- **The panel of vice-chairpersons has the same powers as the Chairman when so presiding. Hence statement 3 is correct.**

#### Q 88.A

- **Plant propagation**, in simple words, may be defined as the **multiplication or reproduction of plants.** Plants can be propagated by sexual and asexual means. **Sexual means include propagation by seeds, while asexual propagation is based on the utilization of vegetative parts of plants for raising new ones. Hence, statement 1 is not correct.**
- Vegetative parts of plants like shoots, leaves, roots, stems, buds, and underground parts are used in different ways for reproducing new plants. The most common asexual propagation methods include cutting, layering, grafting, and budding, which need specialized skill and are done differently in different plants. Most of the horticultural crops are commercially propagated by vegetative or asexual methods of propagation. Many fruit and ornamental plants that do not produce seeds are multiplied by this

method. **Plants propagated by asexual propagation are true-to-type genetically. Hence, statement 2 is correct.**

- By vegetative propagation, new varieties cannot be developed. **The life span of asexually propagated plants is short as compared to sexually propagated ones as these plants are more prone to larger degrees of biotic and abiotic stresses. Hence statement 3 is not correct.**

#### Q 89.B

- **Puga Geothermal Energy Project, Ladakh:** Owing to the geographical disposition of Ladakh, and the abundance of hot springs and rivers in the Puga Valley, this region is ideal for harnessing geothermal energy. Once completed, the project will be India's first geothermal power plant. **Hence pair 1 is correctly matched.**
- **Bhadla solar park, Rajasthan:** Bhadla solar park is a 2.25GW solar complex being developed in Bhadla village in Jodhpur district of Rajasthan. **Hence pair 2 is not correctly matched.**
- **Brahmanvel Wind Farm, Maharashtra:** The 528MW Brahmanvel wind farm, which is one of India's largest wind power production facilities, is located in Dhule district of Maharashtra. Hence pair 3 is correctly matched.
- **Gobar-Dhan Bio-CNG Plant, Madhya Pradesh:** The Gobar-Dhan Plant, Asia's largest Bio-CNG plant, is located in Indore. The plant has a capacity to treat 550 tonnes per day of segregated wet organic waste. It is expected to produce around 17,000 kg per day of CNG, and 100 tonnes per day of organic compost. **Hence pair 4 is correctly matched.**
- **Simhadri Floating Solar PV Plant, Telangana:** The Simhadri Floating Solar PV Plant is located in the Simhadri thermal station in Visakhapatnam. It is one of the largest floating solar photovoltaic (PV) power plants in the country. **Hence pair 5 is not correctly matched.**

#### Q 90.A

- Mahajanapadas were ancient kingdoms or republics that emerged in northern India during the 6th century BCE. The term "Mahajanapadas" literally means "great kingdoms" or "great states". There were 16 Mahajanapadas in total, which were said to have been located in the region roughly corresponding to primarily present-day Bihar and Uttar Pradesh.
- The most powerful states in the 6th century BCE were Magadha, Kosala, Vatsa, and Avanti.
- **The Passage refers to the kingdom of Kosala which was a formidable force.**
  - It was bordered by the Gandak River to the east, the Gomati River to the west, the Sarpika or Syandika (Sai) River to the south, and the Nepal hills to the north.
  - The Sarayu River divided it into northern and southern parts. Shravasti served as the capital of north Kosala, while Kushavati was the capital of south Kosala.
  - Saketa and Ayodhya were other important towns. Additionally, there were smaller towns like Setavya, Ukkattha, and Kitagiri. Kosala conquered Kashi and exerted influence over the Sakyas of Kapilavastu.
  - King Prasenajit of Kosala lived during the time of Budha. Kosala and Magadha were connected through marriage between Prasenajit and the Magadhan king Bimbisara, but conflict arose between the two kingdoms after Bimbisara's death. **Hence, option (a) is the correct answer.**

#### Q 91.A

- In 1927 in Bombay and the Punjab the Workers' and Peasants' parties were formed. These parties attempted to propagate their ideology and programme through the use of press. The Bombay Workers' and Peasants' Party brought out a Maratha weekly entitled Kranti (Revolution). The Punjab Workers' and Peasants' Party brought out an Urdu weekly, called Mihnatkash (Worker).
- **In December 1928, an all-India Conference of workers' and peasants' parties was held at Calcutta under the presidentship of Sohan Singh Josh. Here three major decisions were taken. Hence statement 1 is correct.**
  - This Conference formed a National Executive Committee, comprising leading Communists.
  - The Conference emphasized the international character of the Communist movement and the need for the affiliation of the Communist Party of India with international organizations like League against Imperialism and the Communist International.
  - **This Conference asked the Communists to carry on their movement independently instead of identifying themselves with "the so-called bourgeois leadership of the Congress".**
- **Hence statement 2 is not correct.**

### Q 92.C

- Recent context: Supreme Court has asked Commission for Air Quality Management (CAQM) to consider issues related to distribution of highly polluting pet coke.
- Pet coke is a carbon-rich solid material derived from final cracking process of crude-oil refining. **Hence statement 1 is correct.**
- Benefits of Fuel grade Petcoke over coal:**
  - Pet coke is a direct replacement of coal as a fuel but has higher calorific value ( $>7800\text{Kcal/Kg}$  as compared to  $3500\text{-}4500\text{ Kcal/Kg}$  for coal). **Hence statement 2 is correct.**
  - Pet coke is hydrophobic as compared to coal which is hydrophilic, thereby having edge during rainy season.
  - Being solid fuel, Petcoke has low volatile matter thus no evaporation losses. Helps saving in transportation cost due to higher density compared to liquid fuels.
  - Low ash content. **Hence statement 3 is correct.**
- It is used in Cement manufacturing, lime kilns, industrial boilers, Aluminum Anodes, carbon raisers, silicon carbide etc.

### Q 93.B

- The Reserve Bank of India decides on policy rate (repo rate) to control inflation. When RBI increases repo rate it has multiple effect on Indian economy.
- RBI's has taken various efforts in making effective Monetary Policy Transmission. Now banks linked their interest rate with repo rate. With rise in repo rate can increased interest rate by banks and depositors gets higher return for their investment in fixed deposits and savings. So, increased in repo rate expected to enhanced fixed deposits. **Hence statement 1 is correct.**
- The rise in repo rate results in rising interest rate and discourage borrowings. It will help in reducing money supply in the economy. So it can help in controlling demand side pull inflation, caused by higher demand in the economy. However, cost push inflation is due to rising cost of factor of production or supply side constraints. So change in repo rate has no effective role in controlling cost push inflation. **Hence statement 2 is not correct.**
- Increase in repo rate can attract foreign investors seeking good returns on their investment. With higher inflow of foreign currency like dollar in Indian market can rise higher demand for rupees in order to exchange for investment in Indian economy. It will leads to appreciation of rupees value. **Hence statement 3 is correct.**

### Q 94.D

- The ocean current is a general movement of a mass of water in a fairly defined direction over great distances. Ocean currents are influenced by two types of forces namely:
  - Primary forces that initiate the movement of water.
  - Secondary forces that influence the currents to flow.
- Rotation of Earth: The Coriolis effect is maximum at the equator because the speed of rotation of Earth is maximum at the equator. Coriolis force causes the water to move to the right in the northern hemisphere and to the left in the southern hemisphere. **Hence option 1 is correct.**
- Difference in salinity of ocean water: Waters of high salinity are denser than waters of low salinity. Hence on the surface, waters of low salinity flow towards waters of high salinity while at the bottom, waters of high salinity flow towards waters of low salinity. **Hence option 3 is correct.**
- Planetary wind: Friction between the planetary wind and the water surface affects the movement of the water body in its course. Most of the ocean currents of the world follow the direction of the prevailing winds. **Hence option 5 is correct**
- Other primary factors include Precipitation and temperature differences.
- Configuration of coastline: This is a secondary factor which means this can only influence the ocean current but not be the cause of the generation of ocean current. **Hence option 2 is not correct.**
- The revolution of earth is neither a primary nor a secondary force. **Hence option 4 is not correct.**

### Q 95.A

- Article 169 of the Constitution deals with the Abolition or creation of Legislative Councils in States. The Parliament can abolish a legislative council (where it already exists) or create it (where it does not exist) if the legislative assembly of the concerned state passes a resolution to that effect.
- Article 169 specifies the majority that is needed to pass such a resolution. Such a specific resolution must be passed by the state assembly by a special majority, that is, a majority of the total**



**membership of the assembly and a majority of not less than two-thirds of the members of the assembly present and voting. Hence, statement 1 is correct.**

- Under Article 171 of the Constitution, the Legislative Council of a state shall not have more than one-third of the total strength of the State Assembly, and not less than 40 members. The Constitution has prescribed the manner of election of the members of the legislative council:
  - 1/3rd of the MLCs are elected by the state's MLAs.
  - 1/3rd by a special electorate comprising sitting members of local governments such as municipalities and district boards.
  - 1/12th by an electorate of teachers.
  - 1/12th by registered graduates.
  - The remaining 1/6th of members are appointed by the Governor for distinguished services in various fields namely, literature, science, art, cooperative movement and social service.
- **Parliament retains the authority to amend or replace these provisions. As of now, Parliament has not enacted any such legislation. Hence, statement 2 is not correct.**
- **Article 332 deals with the Reservation of seats for Scheduled Castes and Scheduled Tribes in the Legislative Assemblies of the States not in the legislative councils.** The 104th Constitutional Amendment extended the deadline for the reservation of seats in the Lok Sabha and State Legislative Assemblies for members of Scheduled Castes and Scheduled Tribes by an additional 10 years. This extension was granted as the previous deadline was set to expire on January 26, 2020. **Hence, statement 3 is not correct.**

#### Q 96.C

- **Tyrrhenian Sea:** It is located on the western shores of Italy and embraces the islands of Corsica, Sardinia, and Sicily. It is named after the Tyrrhenians, an ancient people who inhabited the region around the sea. It is prone to earthquakes due to its location on the boundary of several tectonic plates.
- **Ionian Sea:** it is part of the Mediterranean Sea. It is located between Albania (northeast), Greece (east), Sicily (southwest), and Italy (west and northwest). The Ionian Sea is connected with the Tyrrhenian Sea by the Strait of Messina and with the Adriatic Sea by the Strait of Otranto.
- **Aegean Sea:** It is located in the Mediterranean Sea between the Greek peninsula on the west and Asia Minor on the east. The Aegean is connected through the straits of the Dardanelles, the Sea of Marmara, and the Bosphorus to the Black Sea.
- **Sea of Marmara:** It is located entirely within the borders of Turkey, separating the Asian and European parts of Turkey. It is connected with the Black Sea on the northeast through the straits of Bosphorus and with the Aegean Sea on the southwest through the straits of Dardanelles
- **Correct arrangement from east to west is- 4-1-2-3. Hence option (c) is the correct answer.**





### Q 97.B

- **India has witnessed spectacular growth in the refining sector over the years. From a deficit scenario in 2001, the country achieved self-sufficiency in Refining and today is a major exporter of Quality Petroleum Products. Hence statement 1 is correct.**
- As of April 2023, India's oil refining capacity was 253.9 million metric tonnes per annum (MMTPA). This is equivalent to about 5 million barrels per day (bpd). India's refining capacity is the fourth largest in the world, after the United States, China, and Russia.
- **There are a total of 23 refineries in the country, 18 in the Public Sector, 2 in the Joint Venture and 3 in the Private Sector well spread geographically and connected with cross-country pipelines. Hence statement 2 is not correct.**
- Refinery capacity utilization is about 96% for the year 2021-22. Indian Oil Corporation (IOC) is the largest domestic refiner with a capacity of 70.1 MMTPA. **India aims to increase its refining capacity to 450 MMTPA by 2030. Hence statement 3 is correct.**

### Q 98.C

- **Pygmies:**
  - Primarily found in the **equatorial rainforests of Central Africa**, known for their short stature (averaging under 150 cm for adult males).
  - Live in small, nomadic bands, **practicing hunting, gathering, and fishing.**
  - Possess **deep knowledge of their environment** and unique cultural traditions.
- **Hence option (c) is the correct answer.**
- **Bora:**
  - Indigenous people of Colombia and Peru, inhabiting the Amazon rainforest.
  - Traditionally lived in longhouses, practiced slash-and-burn agriculture, and hunted with blowguns.
  - Faced challenges due to deforestation and assimilation pressures.
- **Bushmen:**
  - Indigenous people of Southern Africa, known for their hunter-gatherer lifestyle and deep connection to the land.
  - Traditionally lived in small, mobile groups, using bows and arrows for hunting.
  - Face displacement due to development projects and conservation efforts.
- **Bedouin:**
  - Nomadic Arab tribes inhabiting the deserts of North Africa and the Middle East.
  - Traditionally herded camels, sheep, and goats, adapting to a harsh environment.
  - Face challenges due to modernization, sedentarization, and political conflicts.
- **Masai:**
  - Semi-nomadic pastoral people of East Africa, known for their distinctive culture and warrior tradition.
  - Traditionally herded cattle, sheep, and goats, valuing livestock wealth and communal living.
  - They face challenges due to climate change, land use conflicts, and cultural assimilation.
- **Eskimo:**
  - Indigenous people of the Arctic regions, inhabiting Alaska, Canada, Greenland, and Russia.
  - Traditionally adapted to a cold, harsh environment through hunting, fishing, and living in igloos.
  - They face challenges due to climate change, cultural assimilation, and resource exploitation.
- **Aborigines:**
  - Indigenous people of Australia, with diverse cultures and languages across the continent.
  - Traditionally lived in connection with the land, practicing hunting, gathering, and fishing.
  - Face ongoing challenges due to colonization, dispossession, and cultural marginalization.

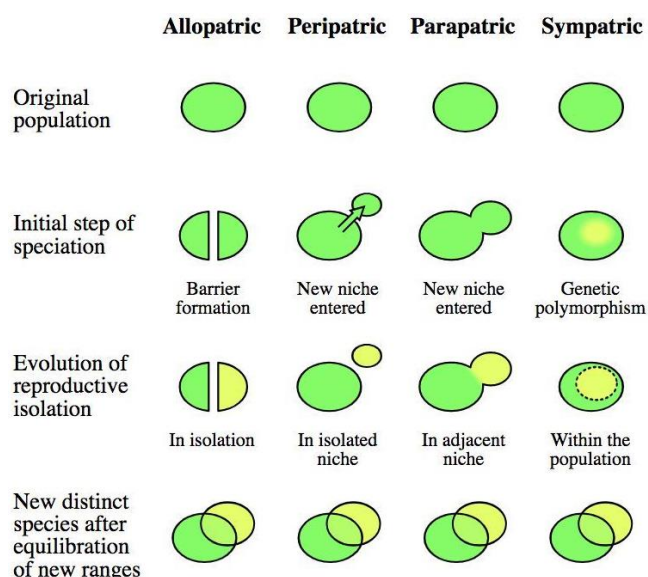
### Q 99.C

- The Indian Preamble serves as an introductory statement to the Constitution of India and encapsulates the guiding principles and objectives of the Indian state.
- **The protection of individual rights:** It emphasizes the ideals of justice, liberty, equality, and fraternity, which collectively underscore the importance of safeguarding the rights and freedoms of all citizens.
  - **However, while the protection of individual rights is an essential feature, it is not the most prominent aspect explicitly highlighted in the Indian Preamble.**
- **The supremacy of the constitution:** **The supremacy of the constitution is a fundamental principle highlighted in the Indian Preamble.** It establishes that the Constitution is the highest legal authority in the country, and all governmental actions must conform to its provisions.
  - This principle ensures that the Constitution serves as the ultimate framework for governance and provides a basis for adjudicating disputes and resolving conflicts of law. **Hence option (c) is the correct answer.**

- The emphasis on the supremacy of the constitution makes it a prominent feature of the Indian Preamble.
- **The separation of powers: While the Indian Constitution does provide for a separation of powers among the legislative, executive, and judicial branches, this principle is not explicitly highlighted in the Indian Preamble.**
  - The Indian Preamble focuses more on broader principles such as justice, liberty, equality, and fraternity, rather than specific structural features of governance.
- While all the options presented are important aspects of the Indian Constitution, the most prominent feature emphasized in the Indian Preamble is the supremacy of the Constitution. The Preamble underscores the foundational role of the Constitution as the highest legal authority in the country, guiding governance and ensuring adherence to its principles and ideals.

#### Q 100.D

- Speciation is how a new kind of plant or animal species is created.
- There are five types of speciation: allopatric, peripatric, parapatric, and sympatric and artificial.
  - **Allopatric speciation:**
    - It occurs when a species separates into two separate groups which are isolated from one another. A physical barrier, such as a mountain range or a waterway, makes it impossible for them to breed with one another. Each species develops differently based on the demands of their unique habitat or the genetic characteristics of the group that are passed on to offspring.
  - **Peripatric speciation:**
    - ✓ When small groups of individuals break off from the larger group and form a new species, this is called peripatric speciation.
    - ✓ The main difference between allopatric speciation and peripatric speciation is that in peripatric speciation, one group is much smaller than the other. Unique characteristics of the smaller groups are passed on to future generations of the group, making those traits more common among that group and distinguishing them from the others.
  - **Parapatric speciation:**
    - ✓ In parapatric speciation, a species is spread out over a large geographic area. Although it is possible for any member of the species to mate with another member, individuals only mate with those in their own geographic region. Like allopatric and peripatric speciation, different habitats influence the development of different species in parapatric speciation. Instead of being separated by a physical barrier, the species are separated by differences in the same environment.
  - **Sympatric Speciation:**
    - ✓ It occurs when there are no physical barriers preventing any members of a species from mating with another, and all members are in close proximity to one another. A new species, perhaps based on a different food source or characteristic, seems to develop spontaneously. The theory is that some individuals become dependent on certain aspects of an environment—such as shelter or food sources—while others do not. **Hence option (d) is the correct answer.**
  - **Artificial Speciation:**
    - ✓ Artificial speciation is the creation of new species by people. This is achieved through lab experiments, where scientists mostly research insects like fruit flies.



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