

R.C. Reddy IAS Study Circle

CURRENT AFFAIRS TEST SERIES- CSE PRELIMS 2024

CURRENT AFFAIRS TEST-10 - (February 2024)

Key & Explanation

Q1 ANSWER (b)

Explanation:

Context:

Recently, the union Environment Minister said that five more Indian wetlands have been added to the global list of wetlands of international importance under the Ramsar Convention.

About New Ramsar site

- Of the five wetlands added to the Ramsar list, **Magadi Kere Conservation Reserve, Ankasamudra Bird Conservation Reserve, and Aghanashini Estuary are in Karnataka** and **Karaivetti Bird Sanctuary and Longwood Shola Reserve Forest are in Tamil Nadu.**



Q2 ANSWER (a)

Explanation:

Context:

According to recent research, green roofs treated with mycorrhizal fungi foster a more diverse soil community that is more likely to support long-term green roof sustainability. Statement 2 is incorrect.

About Green Roofs:

- **Green roofs, also known as ‘vegetated roofs’ or ‘living roofs’ — are ballasted roofs consisting of a waterproofing membrane, growing medium (soil), and vegetation (plants) overlying a traditional roof. Statement 1 is correct.**
- The layers of green roof systems must, like any roof, accommodate drainage, stormwater management, and protect the building from the elements with a waterproof membrane.
- But they also must create a growing area and potentially provide support, irrigation, and root protection barriers while staying as light as possible.

Two types of green roofs exist: intensive and extensive.

1. Intensive green roofs are essentially elevated parks. They can sustain shrubs, trees, walkways and benches with their complex structural support, irrigation, drainage, and root protection layers.
2. Extensive green roofs are relatively light. They support hearty native ground cover that requires little maintenance. Extensive green roofs usually exist solely for their environmental benefits and don't function as accessible rooftop gardens.

Benefits:

- Green roofs last longer than conventional roofs, reduce energy costs with natural insulation, create peaceful retreats for people and animals, and absorb storm water, potentially lessening the need for complex and expensive drainage systems.
- On a wider scale, green roofs improve air quality and help reduce the Urban Heat Island Effect, a condition in which city and suburban developments absorb and trap heat.

Q3 ANSWER (b)

Explanation:

About Martand Sun Temple

- **It is a Hindu temple located near the city of Anantnag in the Kashmir Valley of Jammu and Kashmir.**
- **It is dedicated to the Sun God.** Martand is another Sanskrit synonym for Surya. **Statement 1 is correct.**
- **It was built by King Lalitaditya Muktapida around the 8th Century CE.** Lalitaditya Muktapida was the third ruler of the Karkota Dynasty. **Statement 2 is incorrect.**

Features:

- **It has a unique architecture where local Kashmiri style is blended with the architectural styles of Gupta, Chinese, Gandhara, Roman, and Greek. Statement 3 is correct.**
- The temple is located on top of a plateau and has been constructed entirely out of stone.
- It covers an area of 32,000 square feet.

- It stands in the middle of a large courtyard with 86 fluted columns. The courtyard is connected to the main shrine, where Sun God's idol was installed.
- The construction of the main shrine was such that during most of the days' time, especially during sunrise and sunset, the rays would directly fall on the idol.
- The central shrine, or vimana, stands tall at around 60 feet. It features intricate carvings and sculptures that depict various Hindu gods and goddesses.
- There are 84 smaller shrines around the main Sun Temple. They are lined along the perimeter of the complex.

The temple is believed to have been demolished by Sultan Sikandar Shah Miri, who ruled Kashmir from 1389 to 1413.

Q4 ANSWER (b)

Explanation:

About Payments Bank

- **A payments bank is like any other bank but operates on a smaller scale without involving any credit risk.**
- **It was set up based on the recommendations of the Nachiket Mor Committee.**
- **Objective:** To advance financial inclusion by offering banking and financial services to the unbanked and underbanked areas, helping the migrant labour force, low-income households, small entrepreneurs, etc.
- **It is registered as a public limited company under the Companies Act 2013 and licensed under Section 22 of the Banking Regulation Act 1949.**
- **It is governed by a host of legislation, such as the Banking Regulation Act, 1949; RBI Act, 1934; Foreign Exchange Management Act, 1999, etc.**

Features:

- They are differentiated, and not universal banks.
- These operate on a smaller scale.
- The minimum paid-up equity capital for payments banks shall be Rs. 100 crores.
- The minimum initial contribution of the promoter to the Payment Bank to the paid-up equity capital shall be at least 40% for the first five years from the commencement of its business.

Activities that can be performed:

- It can take deposits up to Rs. 2,00,000. It can accept demand deposits in the form of savings and current accounts.
- **The money received as deposits can be invested in secure government securities only in the form of Statutory Liquidity Ratio (SLR). This must amount to 75% of the demand deposit balance. Statement 2 is correct.**
- The remaining 25% is to be placed as time deposits with other scheduled commercial banks.
- It can offer remittance services, mobile payments/transfers/purchases, and other banking services like ATM/debit cards, net banking, and third-party fund transfers.

- **It can become a banking correspondent (BC) of another bank for credit and other services which it cannot offer. Statement 1 is correct.**

Activities that cannot be performed:

- It cannot issue loans and credit cards.
- **It cannot accept time deposits or NRI deposits. Statement 4 is incorrect.**
- **It cannot set up subsidiaries to undertake non-banking financial activities. Statement 3 is incorrect.**

Q5 ANSWER (c)

Explanation:

About Volt Typhoon:

- **It is a state-sponsored hacking group based in China that has been active since at least 2021.**
- **The group typically focuses on espionage and information gathering.**
- It has targeted critical infrastructure organizations in the US, including Guam.
- To achieve their objective, the threat actor puts strong emphasis on stealth, relying almost exclusively on living-off-the-land techniques and hands-on-keyboard activity.
- The recurring attack pattern of Volt Typhoon begins with initial access via exploitation of public-facing devices or services.
- Volt Typhoon employs the comparatively uncommon practice of leveraging preinstalled utilities for most of their victim interactions.
- **Compromised small office/home office (SOHO) devices are used by the attackers to proxy communications to and from the affected networks.**
- They issue commands via the command line to **(1) collect data, including credentials from local and network systems: (2) put the data into an archive file to stage it for exfiltration: and then (3) use the stolen valid credentials to maintain persistence.**
- Volt Typhoon was a particularly quiet operator that hid its traffic by routing it through hacked network equipment, like home routers, and carefully expunging evidence of intrusions from the victim's logs.
- This combination of behaviours makes detection especially difficult, as defenders must be able to differentiate between attacker activities and those of power users or administrative staff.

Q6 ANSWER (a)

Explanation:

- **The eROSITA (extended ROentgen Survey with an Imaging Telescope Array) is a wide-field X-ray telescope on-board the Russian-German "Spectrum-Roentgen-Gamma" (SRG) observatory.**
- It was developed under the leadership of the Max-Planck Institute for extraterrestrial Physics in Germany (DE).

- **It is a sensitive X-ray telescope capable of delivering deep, sharp images over very large areas of the sky.**
- The eROSITA telescope consists of seven identical Wolter-1 mirror modules.
- SRG was successfully launched from Baikonur on July 13 2019, and placed in a halo orbit around the L2 point.

Functions:

- **It has been performing an all-sky survey**, in which the whole celestial sphere is mapped once every six months. Eight such all-sky charts are planned until December 2023.
- It is also expected to yield a sample of several million Active Galactic Nuclei, **providing a unique view of the evolution of supermassive black holes within the emerging cosmic structure.**
- The survey will also provide new insights into a wide range of astrophysical phenomena, including accreting binaries, active stars and diffuse emission within the Galaxy, as well as solar system bodies that emit X-rays via the charge exchange process.

Q7 ANSWER (c)

Explanation:

Context

The Supreme Court questioned the Union Territory of Jammu and Kashmir about the non-publication of orders for the suspension of Internet services in the UT.

Legal Provisions

Till the year 2017, shutdowns were imposed largely under Section 144 of the Code of Criminal Procedure (CrPC).

- Section 144 of CrPC gave the police and the District Magistrate the powers in order to prevent unlawful gathering of people and also to direct any person to abstain from a certain activity.

However, in 2017 the law was amended and the Government promulgated the Temporary Suspension of Telecom Services (Public Emergency or Public Safety) Rule 2017. Statement I is correct.

Under the 2017 Rules, telecom/internet shutdowns may be ordered on grounds of public emergency and public safety.

Public emergency and public safety have not been defined in the 1885 Act or the 2017 Rules. Statement II is incorrect.

Q8 ANSWER (c)

Explanation:

About Animal Husbandry Infrastructure Development Fund

- **It is a Central Sector Scheme. Statement 1 is correct.**
- It has been approved for incentivizing investments by individual entrepreneurs, private companies, MSME, Farmers Producers Organizations (FPOs) and Section 8 companies to establish
 - the dairy processing and value addition infrastructure
 - meat processing and value addition infrastructure and
 - Animal Feed Plant.

Objectives

- To help increasing of milk and meat processing capacity and product diversification thereby providing greater access for unorganized rural milk and meat producers to organized milk and meat market.
- To make available increased price realization for the producer.
- To make available quality milk and meat products for the domestic consumer.
- To promote exports and increase the export contribution in the milk and meat sector.
- To make available quality concentrated animals feed to the cattle, buffalo, sheep, goat, pig and poultry to provide balanced ration at affordable prices.

Government of India will provide 3% interest subvention for 8 years including two years of moratorium for loan up to 90% from the scheduled bank and National Cooperative Development Corporation (NCDC), NABARD and NDDB.

Under this government entities and cooperatives are not eligible to get benefit of this scheme. Statement 2 is correct.

Q9 ANSWER (c)

Explanation:

About Tidal Disruption Event (TDE)

- **Tidal disruption events (TDEs) are astronomical phenomena that occur when a star passes close enough to a supermassive black hole and is pulled apart by the black hole's tidal forces, causing the process of disruption.**
- Such tidally disrupted stellar debris starts raining down on the black hole and radiation emerges from the innermost region of accreting debris, which is an indicator of the presence of a TDE.

How does a TDE typically unfold?

- **Close Approach:** A star in a galaxy approaches a black hole on a very close trajectory due to gravitational interactions within the galaxy.
- **Tidal Forces:** As the star gets closer to the black hole, the gravitational forces acting on it become increasingly uneven due to the difference in gravitational pull on the

near side and far side of the star. These tidal forces can be strong enough to disrupt the star.

- **Stellar Disruption:** When the tidal forces exceed the self-gravitational forces holding the star together, it undergoes a process called "tidal disruption." The star is stretched and eventually torn apart into a stream of gas and debris.
- **Accretion Disk Formation:** The debris from the disrupted star forms an accretion disk around the black hole. This disk is composed of hot gas and dust, and it spirals inwards towards the black hole.
- **Energy Release:** As the material in the accretion disk spirals inwards, it releases a tremendous amount of energy in the form of X-rays and ultraviolet radiation.
- **Flares and Observations:** TDEs are often observed as bright flares of radiation from the centre of a galaxy. These flares can last for several months to years, gradually fading as the disrupted star's material is consumed by the black hole.

Q10 ANSWER (d)

Explanation:

Context:

Finance Minister recently presented fiscal consolidation projections that surpass expectations for the current financial year and Budget Estimates (BE) for the next year, despite the conservative tax buoyancy in the estimates.

About Tax Buoyancy:

- **Tax buoyancy explains the relationship between the changes in the government's tax revenue growth and the changes in Gross domestic product (GDP). Statement 1 is correct.**
- There is a strong connection between the government's tax revenue earnings and economic growth.
- As the economy achieves faster growth, the tax revenue of the government also goes up. Tax buoyancy explains this relationship.
- It refers to the responsiveness of tax revenue growth to changes in GDP.
- **When a tax is buoyant, its revenue increases without increasing the tax rate. Statement 2 is correct.**

It depends upon:

- the size of the tax base;
- the friendliness of the tax administration;
- the rationality and simplicity of tax rates;

Tax buoyancy will be highest for direct taxes. Generally, direct taxes are more sensitive to the GDP growth rate. Statement 3 is correct.

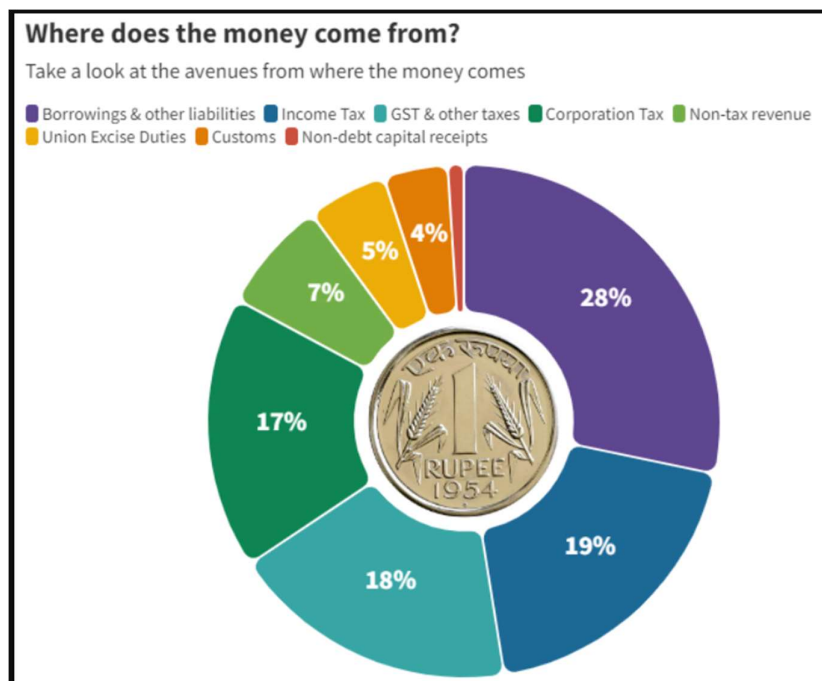
What is tax elasticity?

- **A similar looking concept is tax elasticity. It refers to changes in tax revenue in response to changes in the tax rate. Statement 4 is correct.**

- For example, how tax revenue changes if the government reduces corporate income tax from 30 percent to 25 percent indicate tax elasticity.

Q11 ANSWER (a)

Explanation:



Budget at a Glance

- The Revised Estimate (RE) of the total receipts other than borrowings is Rs 27.56 lakh crore.
- The RE of the total expenditure is Rs 44.90 lakh crore.
- The revenue receipts at Rs 30.03 lakh crore are expected to be higher than the Budget Estimate (BE).
- It reflects strong growth momentum and formalisation in the economy.
- It suggests that income tax revenues will account for 19%, Corporate tax will account for 17%, GST for 18% and borrowings for 28% of all government resources in FY25.

Rupee come from:

- Borrowings and other liabilities account for the largest avenue from where the Budget money comes, followed by income tax and GST and other taxes.

Rupee goes to:

- When it comes to expenditure, the highest amount goes towards paying interest and the money given to the states in the form of taxes and duties, accounting for 20% each of the total expenditure.

Q12 ANSWER (c)

Explanation:

Context:

A Green Propulsion System, developed under the Technology Development Fund (TDF) scheme of the Defence Research and Development Organisation (DRDO), has successfully demonstrated in-orbit functionality on a payload launched by PSLV C-58 mission.

- The TDF is a flagship programme of the Ministry of Defence executed by DRDO under the 'Make in India' initiative for funding innovation in defense and aerospace, especially to start-ups and MSMEs.

What is Propulsion Technology?

- Propulsion means to push forward or drive an object forward.
- A propulsion system is a machine that produces thrust to push an object forward.
- On aeroplanes, thrust is usually generated through some application of Newton's third law of action and reaction.

Green Propulsion Technology by ISRO:

The Indian Space Research Organisation (ISRO) embarked on the development of Green Propulsion Technology in 2018, aiming to create environmentally friendly alternatives for propellants.

Key milestones in ISRO's Green Propulsion endeavours include:

- **Eco-Friendly Solid Propellant:** ISRO developed an eco-friendly solid propellant consisting of Glycidyl Azide polymer (GAP) as fuel and Ammonium Di-Nitramide (ADN) as the oxidizer in 2018. **Statement 1 is correct.**
- **Testing Various Combinations:** ISRO engaged in technology demonstration projects involving green propellant combinations, such as kerosene, Hydrogen Peroxide, Liquid Oxygen, ADN-Glycerol-water, ADN-Methanol-water.
- **Liquid Oxygen and Hydrogen Propulsion Systems:** ISRO initiated testing of propulsion systems based on Liquid Oxygen and Liquid Hydrogen for launch vehicles, expanding the scope of green propulsion technologies.
- **ISORENE Development:** ISRO introduced ISORENE, a rocket-grade version of kerosene, as an alternative to conventional Hydrazine rocket fuel. **Statement 2 is correct.**
- **Electric Propulsion System:** ISRO successfully demonstrated the Electric Propulsion system in the South Asia Satellite (GSAT-9) launched in May 2017. This technology offers enhanced efficiency and control.

Types of Propulsion Systems in Satellites:

1. Chemical Propulsion

- **Bi-Propellant Systems:**
 - Utilize two separate propellants that combine in a combustion chamber.

- Common propellant combinations include liquid oxygen (LOX) and hydrazine.
- **Mono-Propellant Systems:**
 - Use a single propellant that decomposes exothermically to produce thrust.
 - Hydrogen peroxide is a common choice for mono-propellant systems.
- 2. Electric Propulsion**
 - **Ion Thrusters:**
 - Expel ions at high speeds using electric or magnetic fields.
 - Ideal for long-duration missions due to high specific impulse.
 - **Hall Effect Thrusters:**
 - Accelerate plasma using magnetic fields.
 - Balances thrust and efficiency, suitable for station-keeping and orbit adjustments.
- 3. Green Propulsion**
 - **Water Electrolysis Propulsion:**
 - Utilizes water as a propellant, separating it into hydrogen and oxygen through electrolysis.
 - Environmentally friendly and suitable for small satellites.
 - **Green Mono-Propellants:**
 - Focuses on developing non-toxic, environmentally friendly mono-propellants.
 - Aims to reduce the environmental impact of satellite propulsion.

Applications of Propulsion Systems in Satellites:

- **Orbit Insertion:** Chemical propulsion is commonly used during launch to insert satellites into their designated orbits.
- **Station-Keeping:** Electric propulsion systems help satellites maintain their positions in geostationary or other orbits.
- **Collision Avoidance:** Propulsion systems enable satellites to adjust their orbits to avoid collisions with space debris or other satellites.
- **End-of-Life Manoeuvres:** Satellites use propulsion systems to deorbit and perform end-of-life manoeuvres to reduce space debris.

Q13 ANSWER (d)

Explanation:

Context:

The recent study published by the Department of Energy's SLAC National Accelerator Laboratory have unveiled new insights into the formation of diamonds within the icy giants of our solar system, Neptune and Uranus.

Diamond Rain

- There is a high possibility of diamonds raining on hundreds of exoplanets in space.
- **Diamond rain may become a common phenomenon inside ice-giant planets like Uranus and Neptune.**
- Diamonds are gradually forming from the polystyrene at temperatures around 2200 degrees Celsius and pressures around 19 gigapascals, conditions which are similar to those in the interiors of Uranus and Neptune.

- Diamond rain is a possibility on several of the smaller planets such as mini-Neptunes, which are abundant outside our solar system.
- **These diamonds are result of extremely compressed carbon compounds present deep inside the core of exoplanets at extremely low temperatures.**

Q14 ANSWER (a)

Explanation:

Subika Painting:

Subika paintings are an early visual art form from Manipur. Pair 1 is correctly matched.

The paintings are based on stories and events from the Hindu epic and Puranas.

The style is intricately linked to the Meitei community's cultural history through its 6 surviving manuscripts that include:

- Subika
- Subika Achouba
- Subika Laishaba
- Subika Choudit
- Subika Cheithil
- Thengrakhel Subika

Basohli painting – Is a traditional art form that originated in the Basohli town of Jammu and Kashmir, known for its rich cultural heritage. Pair 2 is incorrectly matched.

- It is a distinct style of miniature painting that has a unique blend of Hindu mythology, folk art, and Persian influences.

Pichwai paintings – Are a traditional Indian art form that originated in the town of Nathdwara in Rajasthan, India over 400 years ago. Pair 3 is incorrectly matched.

Thangka paintings – Of Arunachal Pradesh are famous in the Tawang, West Kameng, and Upper Siang districts. Pair 4 is incorrectly matched.

- The process involves a picture panel of paint which is put on a silk border or cover. The dyes of the painting are vibrant.

Q15 ANSWER (b)

Explanation:

Context:

Astro Sat, India's first, dedicated multi-wavelength astronomy mission, accomplished the difficult task of measuring the X-ray polarisation of the Cygnus X-1 black hole system.

About Cygnus X-1:

- **It was discovered over four decades ago.**
- **It is one of the first confirmed black hole systems in our galaxy.**
- The black hole in Cygnus X-1 is 20 times heavier than the Sun, and has a companion - a heavy supergiant star (40 times more massive than the Sun) in a binary system.
- **It is located at a distance that is about 400 times more than the distance between Earth and Sun.**
- Due to the gravitational pull of the black hole, material from the supergiant falls and spirals in towards the black hole.
- This process leads to the formation of a thin accretion disk which is responsible for soft X-rays.

Significance of X-ray Polarisation:

- **Normal X-ray measurements only reveal the energy or intensity of the radiations.**
- **Polarisation characteristics of X-rays, which tells about the orientation of the oscillating electric field, holds clues on the geometry and other properties of the black hole.**
- This measurement of high polarization in this source in the 100-380 keV implies that radiation emitted from the source at energies above 100 keV, is likely to have originated at the black hole jet
- Polarization is one of the properties that a photon carries from the celestial objects in the sky.

Q16 ANSWER (c)

Explanation:

Context:

GHAR - GO Home and Re-Unite Portal have been developed and launched by the National Commission for Protection of Child Rights (NCPCR).

About GHAR Portal:

- **It is a portal to digitally monitor and track the restoration and repatriation of children according to the protocols under the Juvenile Justice (Care and Protection of Children) Act, 2015, and Rules thereof.**
- **It has been developed and launched by the National Commission for Protection of Child Rights (NCPCR).**

The following are the salient features of the portal:

- Digital tracking and monitoring of children who are in the Juvenile Justice system and have to be repatriated to another Country/State/District.
- Digital transfer of cases of children to the concerned Juvenile Justice Board/Child Welfare Committee of the State. It will help in the speedy repatriation of children.
- Where there is a requirement of a translator/interpreter/expert, request will be made to the concerned State Government.

- Child Welfare Committees and District Child Protection Officers can ensure proper restoration and rehabilitation of children by digitally monitoring the progress of the case.
- A checklist format will be provided in the forms so that the children who are being hard to repatriate or children who are not getting their entitled compensation or other monetary benefits can be identified.
- List of Government implemented schemes will be provided, so that at the time of restoration, the Child Welfare Committees can link the child with the schemes to strengthen the family and ensure that the child remains with his/her family.

Q17 ANSWER (d)

Explanation:

Context:

The Indian Air Force will be conducting Exercise Vayu Shakti-24 on 17 February 2024 at the Pokhran Air to Ground Range, near Jaisalmer.

- **The Indian Air Force is slated to carry out three large scale war games on February 17, namely, Vayu Shakti, Gagan Shakti and Tarang Shakti.**
- It will be a riveting demonstration of the offensive and defensive capabilities of the IAF, spanning across day and night.
- The exercise will also showcase joint operations with the Indian Army.

Exercise Vayu Shakti

- **The IAF will first undertake the major "Vayu Shakti" firepower demonstration, which is held once every three years, with 135 fighters, aircraft, helicopters and drones at the Pokhran field firing ranges. Statement 1 is incorrect.**

Gagan Shakti'

- The second mega exercise will be 'Gagan Shakti'.
- In this, almost the entire air fleet race would be activated from north to south, and from west to east to test integrated war fighting strategies and tactics with the other two forces and other stakeholders.
- All the potent weapon systems like the Rafale fighter aircraft and the S-400 air defense systems would be participating in the 'Gagan Shakti' exercise.
- **The exercise, which is held once in five years, is also going to be the biggest ever of the series with active participation from other two services.**

Tarang Shakti

- **The third major exercise, Tarang Shakti, would be the first ever multinational exercise to be held in the country.**
- **This will see aircraft from friendly air forces like the US, Germany, France, Australia and neighbouring and other friendly countries taking part in it. Statement 2 is incorrect.**

Q18 ANSWER (b)

Explanation:

About Indonesia:

Political Features

- An archipelago, located off the coast of mainland Southeast Asia in the Indian and Pacific oceans.
- **Shares borders with Malaysia, Papua New Guinea and East Timor.**
- **Maritime Neighbours: Singapore, Philippines, Australia, and India.**

Geographical Features

- Five main islands: Sumatra, Java, Kalimantan (two-thirds of the island of Borneo), Sulawesi and Papua.
- Positioned in boundary zone of 3 major tectonic plates: Indian-Australian, Eurasian and Pacific.
- Java Trench is the deepest point of the Indian Ocean.
- Highest Peak: Puncak Jaya.



Q19 ANSWER (b)

Explanation:

- About:
- The Mekong, or Mekong River, is a trans-boundary river in Southeast Asia. It is the world's twelfth longest river and the seventh longest in Asia.
- The Mekong flows from China to Myanmar, Laos, Thailand, Cambodia and Vietnam.

Mekong River Commission (MRC):

- **Mandate:** It is inter-governmental organisation to jointly manage the shared water resources and the sustainable development of the Mekong River.
- **Membership:** Cambodia, Laos, Thailand, Vietnam. The two upper states of the Mekong River Basin, the People's Republic of China and the Union of Myanmar, are dialogue partners to the MRC.
- **Headquarters:** Vientiane, Laos.
- **Established in:** 1995.



Q20 ANSWER (c)

Explanation:

Context:

Recently, the pressure on European museums to return artefacts taken from Southeast Asia during colonial times is growing.

UNESCO 1970 Convention:

- **1970 Convention** – It refers to ‘Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property’. Statement 1 is correct.
- **1970 Convention** defines ‘Cultural Property’ as ‘a property designated by countries having importance for archaeology, prehistory, history, literature, art or science’.
- It is the principal legal source when a country makes a claim to have its possessions returned.
- **Launch** – It came into force in 1972.
- **State Parties** – 144, India ratified in 1977. Statement 3 is correct.

Objectives – To urge States Parties to take measures to prohibit, prevent the illicit trafficking and return the cultural property.

- To provide a common framework for the States Parties on the measures and to safeguard the identity of peoples and promote peaceful societies.

Principles – Prevention, restitution and international cooperation.

Limitations – It does not apply retrospectively, so it does not include the peak phase of colonialism. Statement 2 is correct.

Ownership approval – The requesting State Party shall furnish, at its expense, the documentation and other evidence necessary to establish its claim for recovery and return.

Significance of returning artefacts – It can provide significant soft-power benefits for European countries in their extension of influence in regions such as Southeast Asia.

Indian laws in Protection of Antiquities

- Before Independence – Antiquities (Export Control) Act of 1947 ensured that “no antiquity could be exported without license.”
- After Independence – Ancient Monuments and Archaeological Sites and Remains Act was enacted in 1958.
- The Antiquities and Art Treasures Act was enacted in 1972 (AATA), implemented from April 1, 1976.
- Item-67 of the Union List, Item-12 of the State List, and Item-40 of the Concurrent List of the Constitution deal with the country’s heritage.

Q21 ANSWER (a)

Explanation:

Context:

The MEA’s total development assistance to various countries and regions such as Latin America and Eurasia has been pegged at Rs 4,883 crore.

- The ministry allocated a total of Rs 22,154 crore for the 2024-25 fiscal in the Interim budget as against last year’s outlay of Rs 18,050 crore.
- In line with India’s ‘Neighbourhood First’ policy, the largest share of aid portfolio for 2024-25 went to Bhutan with an allocation of Rs 2,068 crore as against Rs 2,400 crore in 2023-24.
- **Nepal would be provided Rs 700 crore against Rs 650 crore in 2023-24.**
- **The assistance to the Maldives has been kept at Rs 600 crore as against Rs 770 crore in 2023-24, despite recent strain in the bilateral ties.**
- ‘The allocation for Chabahar Port has also been maintained at Rs 100 crore, underlining India’s focus on connectivity projects with Iran.
- **In continuation with India’s special relationship with the people of Afghanistan, a budgetary aid of Rs 200 crore has been set aside.**
- In 2023-24, it was Rs 220 crore.

- An amount of Rs 120 crore will be provided to Bangladesh against Rs 130 crore in 2023-24.
- Sri Lanka will get development aid worth Rs 75 crore (up from Rs 60 crore in 2023-24).
- Mauritius to receive Rs 370 crore (up from Rs 330 crore), **while for Myanmar it is at Rs 250 crore (down from Rs 370 cr in 2023-24).**

Q22 ANSWER (d)

Explanation:

About:

Unified Payments Interface (UPI) is a system that powers multiple bank accounts into a single mobile application of any participating bank. The interface has been developed by the National Payments Corporation of India (NPCI).

- **UPI is a payment system that allows money transfer between any two bank accounts by using a smartphone.**
- UPI allows a customer to pay directly from a bank account to different merchants, both online and offline, without the hassle of typing credit card details, IFSC code, or net banking/wallet passwords.
- It merges several banking features, seamless fund routing & merchant payments into one hood.
- It was launched in April 2016 and today, the platform has emerged as a popular choice among users for sending and receiving money.
- It also caters to the “Peer to Peer” collect request which can be scheduled and paid as per requirement and convenience.
- In 2018, an upgraded version of UPI 2.0, was launched by the National Payments Corporation of India (NPCI).

Key features of UPI:

- **Invoice in the inbox:** This feature is designed for customers to check the invoice sent by the merchant prior to making payment. It will help customers to view and verify the credentials and check whether it has come from the right merchant or not.
- **One-time mandate:** UPI Mandate, which means customers including both merchants and individual users can pre-authorize a transaction and pay at a later date, can be created and executed instantly. On the date of actual purchase, the amount will be deducted and received by the merchant/individual user.
- **Linking of overdraft account:** In addition to current and savings accounts, customers can link their overdraft account to UPI.
- **Signed intent and QR:** This feature helps customers to check the authenticity of merchants while scanning QR or quick response code. It notifies the user with information to ascertain whether the merchant is a verified UPI merchant or not. This provides additional security. Customers will be informed in case the receiver is not secured by way of notifications.

About National Payments Corporation of India (NPCI):

- **NPCI is an umbrella organisation for operating retail payments and settlement systems in India.**
- **It is an initiative of the Reserve Bank of India (RBI) and Indian Banks' Association (IBA) under the provisions of the Payment and Settlement Systems Act, 2007 for creating a robust Payment and Settlement Infrastructure in India.**

Q23 ANSWER (d)

Explanation:

Primary Macro-nutrients Essential for Plant Growth

Nutrient	Contribution to Plant Growth
Nitrogen	Essential for leaf and stem growth, protein synthesis, and overall vigour
Phosphorus	Crucial for root development, flowering, fruiting, and energy transfer
Potassium	Aids in overall plant health, stress resistance, and regulation of water
Calcium	Important for cell wall structure, cell division, and enzyme activation
Magnesium	Essential component of chlorophyll, involved in photosynthesis and metabolism
Sulfur	Necessary for protein synthesis, enzyme function, and nutrient uptake
Carbon	Main component of organic molecules, essential for photosynthesis

Hydrogen	Critical for biochemical reactions , water uptake, and maintaining pH
Oxygen	Involved in respiration, energy release, and nutrient transport
Iron	Key for chlorophyll synthesis, electron transfer, and enzyme activation
Zinc	Essential for enzyme function, hormone regulation, and protein synthesis
Manganese	Required for photosynthesis, enzyme activation, and nitrogen metabolism
Copper	Important for enzyme activity, lignin formation, and nutrient uptake
Boron	Facilitates cell division, sugar transport, and hormone regulation
Molybdenum	Needed for nitrogen fixation, enzyme activity, and amino acid synthesis
Chlorine	Involved in photosynthesis, water regulation, and ion balance
Nickel	Required for nitrogen metabolism, enzyme activation, and seed development
Cobalt	Essential for nitrogen fixation, vitamin B12

	synthesis , and enzyme activity
--	--

Context:

What is Nano DAP?

DAP (Di-Ammonium Phosphate):

- DAP is the second most commonly used fertilizer in India after urea.
- DAP is a preferred fertilizer in India because it contains both Nitrogen and Phosphorus which are primary macro-nutrients and part of 18 essential plant nutrients.
- Fertilizer grade DAP contains 18% Nitrogen and 46% Phosphorus. It is manufactured by reacting Ammonia with Phosphoric acid under controlled conditions in fertilizer plants.

Nano DAP:

- **Nano DAP is a specialised form of DAP designed with the goal of improving the fertiliser's effectiveness in promoting plant growth and development.**
- **In 2023 Indian Farmers Fertiliser Cooperative (IFFCO) launched its Nano DAP, containing 8% Nitrogen and 16% Phosphorus by volume.**
- **Unlike conventional DAP, which comes in granular form, IFFCO's Nano DAP is in liquid form.**

Q24 ANSWER (b)

Explanation:

Ilseinhohle Cave Site

During the Re-excavation of Ilseinhohle Cave Site, it was recently found that the site provides evidence for the first dispersal of Homo sapiens across the higher latitudes of Europe.

- The researchers re-excavated the Ilseinhohle cave site in Ranis, Germany, aiming to locate remaining deposits from man excavation in 1930 while also clarifying the chronology of the site.
- The site provides evidence for the first dispersal of Homo sapiens across the higher latitudes of Europe.
- The stone artefacts that were thought to be produced by Neanderthals were in fact part of the early H. sapiens tool kit.
- During the re-excavation a 1.7-metre-thick rock and human fossils was found.
- The site now has the oldest H. sapiens fossils.
- Bones and stone artefacts from the cave showed that these people hunted large mammals including reindeer, horses, bison and woolly rhinoceroses.
- The results from the Ilseinhohle in Ranis fundamentally change our ideas about the chronology and settlement history of Europe north of the Alps.

- **The new study's revelations mean that Homo-sapiens reached Northern Europe before Neanderthals went extinct.**

Q25 ANSWER (c)

Explanation:

Context:

Higher photorespiration in warmer climates

A ground-breaking study by a team led by the Pennsylvania State University has revealed that trees release more carbon dioxide (CO₂) in warmer and drier climates.

Photorespiration

- **A process that involves the uptake of oxygen and release of carbon dioxide by the plant. Statement 1 is correct.**
- **It occurs in the cells of plants during both day and night. Statement 2 is correct.**
- It decreases the sugar synthesis and wastes the energy of the cell.
- It is opposite of photosynthesis process, which involves the inhaling of carbon dioxide and release of oxygen by trees.
- Thus, it reverses the carbon-capturing process of photosynthesis

Rate of photorespiration is measured using wood samples. Researchers can now predict future tree "breathing" and unravel the past by examining fossilised wood.

- **Findings of the research – It have challenged the prevailing notion of trees as climate change warriors.**
- Accelerated photorespiration – In regions with heightened temperatures and water scarcity.
- Rate of photorespiration – It is up to 2 times higher in warmer climates, especially when water is limited than the cooler and wetter regions.
- Reducing carbon dioxide emissions is crucial for mitigating climate change, as this is a major greenhouse gas contributing to global warming.

Q26 ANSWER (b)

Explanation:

The Aldabra Atoll is situated in the Indian Ocean. It is one of the world's largest coral atolls and is located in the Aldabra Group of islands in the Seychelles. The atoll is renowned for its rich biodiversity and is a UNESCO World Heritage Site.

Context:

The flightless Aldabra rail:

- Scientific name: *Dryolimnas cuvieri aldabranus*
- It lives on a coral atoll off the southeast coast of Africa.

- Appearance: It's about the size of a chicken, with a flecked gray back, a rusty red head and chest and a white throat.
- It is a subspecies of the white-throated rail (*Dryolimnas cuvieri*) and is the only living flightless bird in the Indian Ocean.
- In losing its ability to fly once again, the Aldabra rail has essentially evolved twice, rising from the dead through a process called iterative evolution.

What is Iterative evolution?

Iterative evolution can be defined as "the repeated evolution of a specific trait or body plan from the same ancestral lineage at different points in time."

Q27 ANSWER (d)

Explanation:

Context:

To protect Amazon, conservators try to save pollinator Stingless bees.

- A stingless bee is a bee that appears very similar to a honeybee, but is incapable of stinging.
- **These bees are eusocial, which means that they live together in hives and produce honey. Statement 1 is incorrect.**
- **These are native to the Amazon.**
- **Their honey, which is runny enough to be drunk like a liquid and is said to have a citrusy aftertaste**
- **It is used by many Indigenous Peruvians as a natural medicine.**

Distribution: Stingless bees can be found mostly in tropical and subtropical regions. Statement 2 is incorrect.

- These bees cannot sting but nature has made sure to give them other ways of defending themselves.
- These bees do possess stingers, but they are too small to be useful in defense. Instead of stinging, stingless bees use their mandibles to bite their attackers.

Threats:

- The Amazon is home to hundreds of species of stingless bee, but as deforestation converts the tropical landscape into farms and ranches, these and other native pollinators are in danger of disappearing.
- Pesticides and climate change.

Q28 ANSWER (b)

Explanation:



Q29 ANSWER (c)

Explanation:

Context:

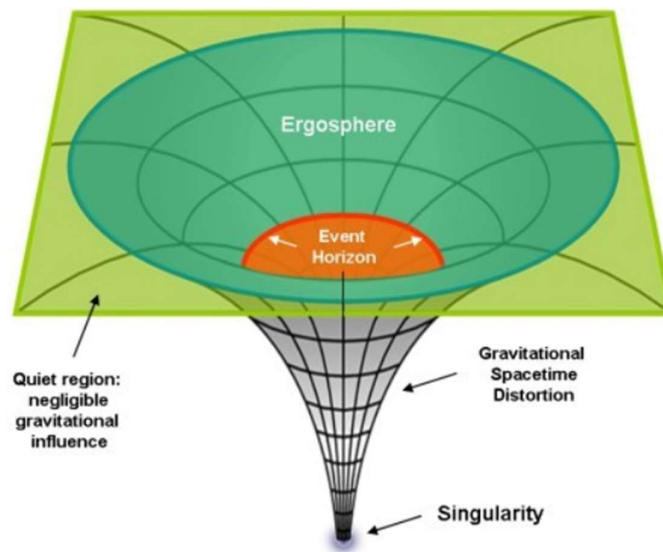
Scientists theorize that extracting matter and energy from the Ergosphere, the region between the event horizon and the stationary limit of a rotating black hole, is possible.

What is Ergosphere?

- **The ergosphere is a region surrounding a rotating black hole, located between the event horizon and the stationary limit.**
- In this area, space-time itself is dragged along with the rotation of the black hole.
- Objects within the ergosphere are forced to rotate along with the black hole's spin due to the distortion of spacetime caused by its immense gravitational pull.

The event horizon, on the other hand, is a theoretical boundary around a black hole beyond which no radiation can escape.

Black Hole Regions



Q30 ANSWER (d)

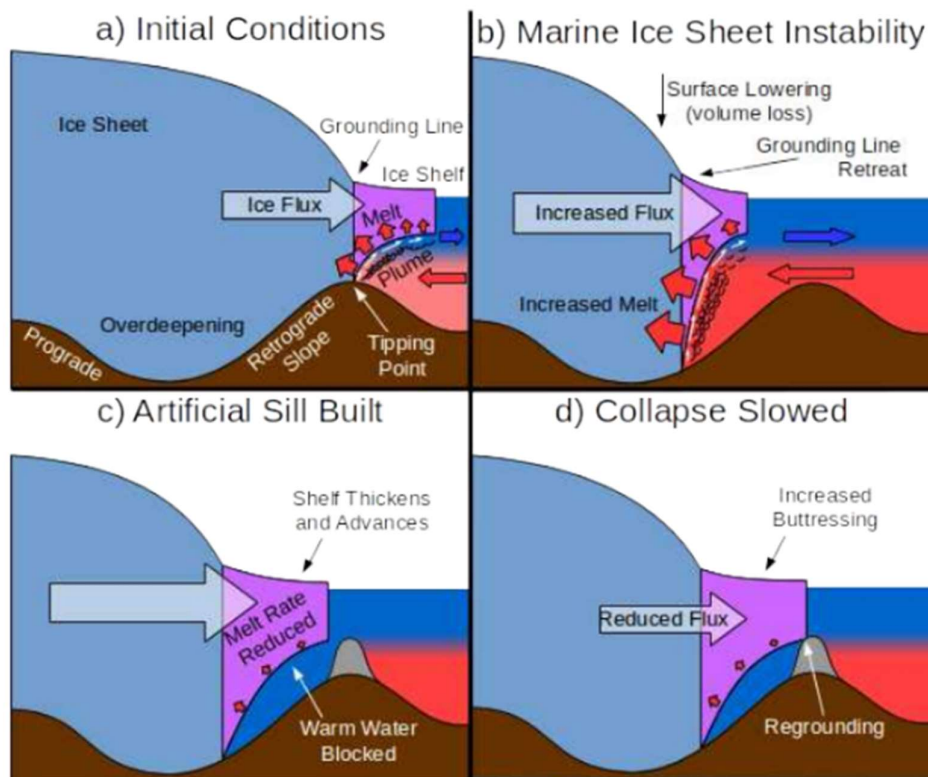
Explanation:

Context:

Seabed Curtain project

Scientists are working on an unusual plan to prevent Antarctic glaciers from melting through seabed curtain project.

- **Aim – To build a set of giant underwater curtains in front of ice sheets to protect them from being eroded by warm sea water.**
- **Need – Ice in Polar Regions is now disappearing at record rates as global warming intensifies.**
- Warmer air melts the surface of glaciers, while they are also eroded at their bases by warm seawater.
- Loss of the Thwaites and Pine Island glaciers could be enough to raise sea levels round the world by 3 metres if they melted.
- **Proposal – To construct a 100km-long curtain attached to the bed of the Amundsen Sea and would rise by about 200 metres.**
- **Curtain – It would stretch along the seabed opposite the Thwaites and Pine Island glaciers to act as plugs that prevent the giant ice sheets behind them from sliding into the ocean.**
- **Working – It would partially restrict the inflow of relatively warm water that laps at the bases of coastal Antarctic glaciers and undermines them.**



Q31 ANSWER (c)

Explanation:

Context:

The GRAPES-3 experiment discovered a new feature in the cosmic-ray proton spectrum at about 166 tera-electron-volt (TeV) energy while measuring the spectrum spanning from 50 TeV to a little over 1 peta-electron-volt (PeV).

- Gamma Ray Astronomy PeV EnergieS phase-3 (GRAPES-3) is designed to study cosmic rays with an array of air shower detectors and a large area muon detector. Statement 1 is correct.
- Location: It is located in Ooty, India. Statement 2 is correct.
- It is operated by the Tata Institute of Fundamental Research.
- It aims to probe acceleration of cosmic rays in different astrophysical settings.

Its objectives are to study

- The origin, acceleration and propagation of $>10^{14}$ eV cosmic rays in the galaxy and beyond.
- Existence of “Knee” in the energy spectrum of cosmic rays.
- Production and/or acceleration of highest energy ($\sim 10^{20}$ eV) cosmic rays in the universe.
- Astronomy of multi-TeV γ -rays from neutron stars and other compact object.
- Sun the closest astrophysical object, accelerator of energetic particles and its effects on the Earth.

Key facts about Cosmic rays:

- These rays were discovered more than a century ago.
- They are considered to be the most energetic particles in the universe.
- Our planet is constantly bombarded by them from outer space almost uniformly from all directions at a constant rate.
- They enter into Earth's atmosphere and induce a shower of particles that travel to the ground almost at the speed of light.
- The shower particles constitute electrons, photons, muons, protons, neutrons etc.
- They have been observed over a remarkably wide energy range (108 to 1020 eV).

Q32 ANSWER (a)

Explanation:

Context:

During the launch event of " Digital India FutureLABS Summit 2024" held at IIT-Delhi, three Indigenous Technologies - Thermal camera, CMOS camera and Fleet Management System designed and developed by CDAC Thiruvananthapuram under InTranSE Program of MeitY were transferred to 12 Industries.

- **The Intelligent Transportation System Endeavor (InTranSE) is a revolutionary collaborative research and development programme.**
- **It is an initiative of the Union Ministry of Electronics & IT.**
- **Purpose: To synergize the transformation in Intelligent Transportation System the Ministry of Electronics & IT took early steps by bringing together premier academic institutes like Indian Institute of Technology (IIT), Indian Institute of Science (IISc), Indian Institute of Management (IIM) etc. and Premier R&D Centre like C-DAC under one umbrella.**
- This initiative formulated the Collaborative Intelligent Transportation Systems Endeavor for Indian Cities (InTranSE) during the year **2009-2012 (Phase-I)** that witnessed IIT Bombay, IIT Madras, IIM Calcutta and C-DAC Thiruvananthapuram collaboratively developing, implementing, demonstrating and knowledge transfer of ITS products and solutions.
- **The InTranSE Phase-II program (2019-2021) is aiming at undertaking R&D projects collaboratively with IIT Bombay, IIT Madras, IISc Bangalore and C-DAC Thiruvananthapuram**
- **Significance: It will achieve traffic efficiency by minimizing traffic problems, prompting efficient infrastructure usage, enriching users with prior information about traffic and reducing travel time as well as enhancing safety and comfort of commuters.**

Q33 ANSWER (c)

Explanation:

Masara	Philippines
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Abkhazia	Georgia
Ziguinchor	Senegal
Lake Rotorua	New Zealand

Context:

Magnetic Anomaly under Lake Rotorua

Recently, scientists have unveiled a hidden hydrothermal system and a magnetic anomaly beneath the waters of Lake Rotorua.

- Mapping Lake Rotorua's floor, showed a series of eruption craters, traces of an ancient river, and a significant magnetic anomaly in the southern part of the lake.
- Magnetic anomaly – Typically, volcanic rocks exhibit strong positive magnetic responses due to the presence of magnetite.
- But in Lake Rotorua, the hydrothermal fluids have altered the magnetite into pyrite, or fool's gold.
- This results in a reduced magnetic signal.

Lake Rotorua

- **Geography – It is situated atop a dormant volcanic crater on New Zealand's North Island.**
- Formation – When a magma chamber collapsed following a volcanic eruption, created the Rotorua Caldera.
- Characteristics – It is shallow, with an average depth of about 10 m, and is part of the Taupo Volcanic Zone.
- It is renowned for its geothermal marvels such as bubbling mud pools, shooting geysers, and natural hot springs.
- **But despite the intense geothermal activity, its temperature at the bottom remains cooler.**

Significance of discovery – It confirm for the 1st time that the hydrothermal activity on the mainland extends into the submerged realm of Lake Rotorua.

It helps to deepen our understanding of the complex interplay between land, water, and the forces beneath the Earth's crust.

Q34 ANSWER (d)

Explanation:

Context:

The Geological Institute of Israel recently uncovered a never-before-known about underwater canyon near Cyprus that dates back to the Messinian Event.

About Messinian Event:

- **Also known as the Messinian Salinity Crisis (MSC), the Messinian event was a geological event during which the Mediterranean Sea went into a cycle of partial or nearly complete desiccation (drying up).**
- It was one of the most severe ecological crises in the Earth's history.
- The MSC began approximately 6 million years ago (MYA) and lasted until around 5.3 MYA.

How has it unfolded?

- It began when the connection between the Atlantic Ocean and the Mediterranean Sea was cut off.
- This occurred due to a combination of lowered sea levels in the global oceans and collision between the European and African plates that caused the land to lift.
- Normally, there is much more evaporation than precipitation over the Mediterranean Sea. This means that much more water is leaving than entering the sea.
- Without a significant source of water from the Atlantic Ocean, this led to the evaporation of much of the Mediterranean Sea.
- A large underground canyon formed, and rivers made deep incisions into the bottom of the basin. This canyon was much larger than the Grand Canyon and had a depth of up to 2,000 meters (6562 feet).
- As the water in the Mediterranean evaporated, the salt that was in the water was left behind and began to build up in layers on the floor of the Mediterranean.
- Two major salts that were deposited on the floor were Halite and Gypsum. Some of the salt deposit areas were 800 meters (2,500 feet) deep.
- However, the salt in the Mediterranean did not deposit on the floor as quickly as the water was evaporating. This means that whatever water was left in the Mediterranean became very salty.
- This high amount of salt in the water (also known as salinity) caused the Mediterranean to become deadly to all marine life.
- The Mediterranean continued to dry up until there was almost no water left.
- It ended with the Zanclean flood, when the Atlantic reclaimed the basin.

Q35 ANSWER (c)

Explanation:

Context

The Interim Budget 2024-25 has increased the Gender Budget.

About:

- **The quantum of Gender Budget reported in 2024-25 is 38.6% more than budget estimates of 2023-24.**
- **The share of Gender Budget in the total Union Budget increased to 6.5% in 2024-25 from 5% in 2023-24.**

What is Gender Budgeting?

- Gender Budgeting is a strategy with gender responsive formulation of legislation, policies, plans, programmes, and schemes; resource allocation; implementation; tracking of expenditure, audit, and impact assessment.
- **It aims to ensure that public resources are collected and spent efficiently based on differing gender needs and priorities. Statement I is correct.**
- **Gender Budgets are not separate budgets for women; neither do they imply that funds be divided into half for men and women or that budgets should be divided into half. Statement II is incorrect.**
- They are attempts to disaggregate the government's budget according to its differential impact on different Genders, and reprioritize allocations to bridge gender gaps.

Gender-responsive budgeting in India was adopted in 2005. It comprises two parts:

- Part A: It encompasses schemes that allot 100 percent of the funds for women (such as maternity benefits).
- Part B: It consists of schemes that allocate at least 30 percent of funds for women (such as the Mid-Day Meal scheme).

Q36 ANSWER (c)

Explanation:

Context:

Conservation Reserve

The Telangana Forest Department moots conservation reserve in Tadoba-Kawal tiger corridor.

The proposed conservation reserve comprises areas of tiger corridor between the Tadoba-Andhrari Tiger Reserve in Maharashtra and the Kawal Tiger Reserve in Mancherial district of Telangana State.

- **Conservation Reserve – A protected area that act as buffer zones to or connectors and migration corridors between established national parks, wildlife sanctuaries and reserved forests. Statement 1 is correct.**
- Aim – To protect landscapes, seascapes, flora and fauna and their habitat.
- **Legality – Wildlife (Protection) Amendment Act of 2002, the amendment to the Wildlife Protection Act of 1972. Statement 2 is correct.**
- **It is designated by the state government after discussing it with nearby communities. Statement 3 is incorrect.**
- Criteria for designation – Uninhabited and completely owned areas of the Government.

Managed by – Conservation Reserve Management Committee.

- **1 from each village panchayat.**
- **3 from NGOs and 1 each from the departments of Agriculture and Animal Husbandry.**

- A member-secretary who will be the representative from the Forest or Wildlife wing.

Coverage – There are 115 existing Conservation Reserves in India covering an area of 5548.75 km², which is 0.17% of the geographical area of India as of 2023.

- The 1st conservation reserve of India is located near Tiruppadaimarathur in Tamil Nadu. Statement 4 is correct.

Q37 ANSWER (a)

Explanation:

Context:

Hindu Kush Himalaya

ICIMOD experts call for urgent finance to prevent collapse of nature in High Mountain Asia in a recent meeting at Kathmandu.

- High Mountain Asia comprises of mountain ranges such as the Tian Shan, Kunlun Shan, Pamir, Karakoram, Hindu Kush, the Tibetan Plateau and the Himalayas. Mountains cover 22% of Earth's land surface but hold 50% of the world's global biodiversity hotspots.
- **Geography – It stretches 3,500 kms and spans 8 countries, is home to most of the snow and ice on Earth outside the poles. (Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan.) Statement 1 is incorrect.**
- **Importance – It comprises 4 biodiversity hotspots out of the world's 36 global biodiversity hotspots, 2 of the global 200 eco regions, 575 Protected Areas, 335 important bird areas. Statement 2 is correct.**
- Still 85% of mountain communities remain dependent on this biodiversity, for food, water, flood control and cultural identity.

Water Tower of Asia – Hindu Kush Himalayas

- It provides clean water for a third of the world's population.
- At least 12 rivers fan out across the Asian continent from it.
- The Indus, Ganga and Brahmaputra towards the Arabian Sea and Bay of Bengal
- Syr Darya and Amu Darya towards the now-dead Aral Sea
- The Tarim toward the Taklamakan
- The Yellow River towards the Gulf of Bohai
- The Yangtze towards the East China Sea
- The Mekong towards the South China Sea
- The Chindwin, Salween and Irrawaddy towards the Andaman Sea

HinduKush

- Biodiversity on the brink – 70% of the original biodiversity has been lost over the last century.
- It is estimated to be warming at nearly 2 times the average rate of warming in the Northern Hemisphere.

- 241 million people live in the HKH region, of whom 31% are food-insecure and 50% of whom face some form of malnutrition.
- **The International Centre for Integrated Mountain Development (ICIMOD), a regional intergovernmental organization established in 1983 to make Hindu Kush Himalaya region greener, more inclusive and climate resilient. Statement 3 is correct.**
- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), an independent intergovernmental body established in 2012 for conservation and sustainable use of biodiversity. UNEP provides secretariat services to it.



Q38 ANSWER (b)

Explanation:

Context:

Recently, the Ministry of Statistics and Programme Implementation (MoSPI) released the results of the Annual Survey of Industries (ASI) for the reference periods of 2020-21 and 2021-22 referred to as ASI 2020-21 and ASI 2021-22.

What is the Annual Survey of Industries (ASI)?

The Annual Survey of Industries (ASI) is the principal source of industrial statistics in India. It started in 1960 with 1959 as the base year and continues annually except for 1972, under the Collection of Statistics Act, of 1953.

From ASI 2010-11, the Survey is being conducted under the Collection of Statistics Act, 2008. Statement 2 is correct.

The Collection of Statistics Act, 2008 has been amended in 2017 as the Collection of Statistics (Amendment) Act, 2017 which extends the coverage to All India.

The National Statistical Office (NSO) conducts the ASI. The NSO is part of the MoSPI. Statement 1 is correct.

The MoSPI is responsible for the coverage and quality of released statistics.

Scope and Coverage:

- **ASI covers factories registered under Sections 2(m)(i) and 2(m)(ii) of the Factories Act, 1948.**
- **Bidi and cigar manufacturing establishments registered under the Bidi & Cigar Workers (Conditions of Employment) Act, 1966. Statement 3 is incorrect.**
- Electricity undertakings engaged in generation, transmission and distribution of electricity, not registered with the Central Electricity Authority (CEA).
- Units with 100 or more employees registered in the Business Register of Establishments (BRE) prepared and maintained by the State Governments as and when such lists are shared by the respective State Governments.

Data Collection Mechanism:

- **Data for ASI are collected from the selected factories under the Collection of Statistics Act 2008 as amended in 2017 and Rules framed there under in 2011.**

Key Highlights:

GVA Growth:

- GVA grew by 8.8% in 2020-21 due to a sharp fall in input, while it rose significantly by 26.6% in 2021-22, driven by industrial output growth of over 35%.

Sector Performance:

- Industries like Basic metals, Pharmaceuticals, Motor vehicles, and Food Products were major contributors to GVA growth in 2021-22.

Employment

- Total employment in the sector rebounded in 2021-22, growing by 7.0% year-on-year and exceeding pre-pandemic levels.

State Rankings:

- **Gujarat led in GVA in 2020-21 and ranked second in 2021-22, while Maharashtra topped in 2021-22, followed by Tamil Nadu, Karnataka, and Uttar Pradesh.**

Tamil Nadu, Gujarat, Maharashtra, Uttar Pradesh, and Haryana emerged as the top five states employing the highest number of persons in the manufacturing sector in both 2020-21 and 2021-22. Statement 4 is incorrect.

Q39 ANSWER (c)

Explanation:



Context:

Recently, Cameroon adopted the Nagoya Protocol to benefit from its rich biodiversity.

About Nagoya Protocol

- **The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation is a supplementary agreement to the UN Convention on Biological Diversity (CBD).**
- It is an offshoot of the CBD that addresses fair and equitable benefit sharing in the context of biodiversity access.
- Cameroon in central Africa is home to vast biological resources, which have long been exploited by foreign firms, without fair and equitable benefits to the communities that own them.
- It provides a transparent legal framework for the effective implementation of objectives of the CBD, that is the fair and equitable sharing of benefits arising out of the utilisation of genetic resources.
- **The Nagoya Protocol on Access and Benefit Sharing was adopted on 29 October 2010 in Nagoya, Japan and entered into force in 2014, 90 days after the deposit of the fiftieth instrument of ratification.**

Q40 ANSWER (a)

Explanation:

Context:

The Indian Institute of Technology Kanpur (IIT-K) has successfully established and tested India's first Hypervelocity Expansion Tunnel Test Facility recently.

About India's first Hypervelocity Expansion Tunnel Test Facility:

- **The S2, nicknamed 'Jigarthanda', is a 24-meter-long facility located at IIT Kanpur's Hypersonic Experimental Aerodynamics Laboratory (HEAL) within the Department of Aerospace Engineering.**
- **It is India's first Hypervelocity Expansion Tunnel Test Facility.**
- It was indigenously designed and developed over three years with funding and support from the Aeronautical Research and Development Board (ARDB), the Department of Science and Technology (DST), and IIT Kanpur.
- It is capable of generating flight speeds between 3-10 km/s, **simulating the hypersonic conditions encountered during the atmospheric entry of vehicles, asteroid entry, scramjet flights, and ballistic missiles.**
- **It will be a critical asset for the Indian Space Research Organisation (ISRO) and the Defence Research and Development Organisation (DRDO).**
- It will serve as a testing ground for ongoing missions of ISRO and DRDO like Gaganyaan, Reusable Launch Vehicles (RLV), and hypersonic cruise missiles, enabling the development of more advanced and reliable aerospace technologies.

Q41 ANSWER (d)

Explanation:

Context

Indigenous CAR-T cell therapy (NexCAR19) is now available for commercial use.

About

- NexCAR19 is the indigenously developed therapy for B-cell cancers (types of cancers that form in the immune system's cells) such as leukemia and lymphoma.
- It has been developed collaboratively by ImmunoACT, a company incubated at the Indian Institute of Technology Bombay (IITB), and Tata Memorial Hospital.
- The commercial use of this therapy was approved by the Central Drugs Standard Control Organisation (CDSCO).

CAR-T Cell Therapy

- CAR-T cell therapy, short for chimeric antigen receptor T-cell therapy, is an innovative form of immunotherapy used to treat certain types of cancer.
- It involves genetically modifying a patient's own T cells (a type of immune cell) to recognize and attack cancer cells.

What are B and T-Cells?

B-cells and T-cells are a specific type of white blood cell called lymphocytes.

They help the immune system to fight germs and protect from disease.

Types of T cells:

- **Cytotoxic T-cells: They kill cells infected with viruses and bacteria, and they also destroy tumour cells. Statement 1 is incorrect.**
- **Helper T-cells: They send signals that direct other immune cells to fight infection. Statement 2 is incorrect.**

- **Regulatory T-cells (Tregs):** These cells suppress excessive immune responses to prevent autoimmune reactions and maintain immune tolerance. They play a crucial role in preventing the immune system from attacking the body's own cells and tissues. Statement 3 is incorrect.

T-cells start in bone marrow, mature in thymus and eventually relocate to lymph tissue or bloodstream.

B-cells make antibodies in response to antigens (antibody generators).

- There are two main types of B-cells: plasma cells and memory cells. Both types help to protect from infection and disease.

Q42 ANSWER (d)

Explanation:

Coal Mines in India		
Coal Mine	States	Features/Prominence
Jharia, Dhanbad, Bokaro, Jayanti, Godda, Giridih (Karbhari Coal Field), Ramgarh, Karanpura, Daltonganj	Jharkhand	Dhanbad – One of the oldest in Jharkhand and the richest coalfields of India. It is the storehouse of the best metallurgical coal i.e coking coal. Gondwana Coalfield. Giridih (Karbhari Coal Field) gives the finest coking coal in India for metallurgical purposes.
Raniganj Coalfield, Dalingkot (Darjeeling) Birbhum , Chinakuri	West Bengal	Darjeeling and Jalpaiguri are the chief producing districts. Gondwana Coalfields
Korba, Bishrampur, Sonhat, Jhilmil , Hasdo-Arand	Chhattisgarh	Gondwana Coalfields
Jharsuguda, Hingiri, Rampur, Talcher	Odisha	Talcher – Ranks 2nd in reserves after Raniganj i.e. (24,374 million tonnes) Most of the coal is suitable for steam and gas production and utilised in thermal

		power plants at Talcher. Gondwana Coalfields
Singareni, Kantapalli	Kothagudem, Telangana/ Andhra Pradesh	Most of the coal reserves are in Godavari valley. Non-coking variety is explored. The workable collieries are situated at Kothagudem and Singareni. Gondwana Coalfields
Neyveli	Tamil Nadu	Tertiary coalfield
Kamptee(Nagpur), Wardha, Walarpur, Ghughus and Warora	Maharashtra	Gondwana Coalfields
Ledo, Makum, Najira, Janji, Jaipur	Assam	Assam coals have low ash and high coking qualities. sulphur content is high, good for metallurgical purposes. The coal is best for making liquid fuels and hydrogenation processes. Tertiary Coalfields
Darrangiri (Garo hills), Cherrapunji, Liotryngew, Maolong and Langrin coalfields (Khasi & Jaintia Hills)	Meghalaya	Tertiary Coal Field
Singrauli, Sohagpur, Johila, Umaria, Satpura coalfield	Madhya Pradesh	Singrauli is the largest coalfield of MP. Gondwana Coalfields.

Q43 ANSWER (a)

Explanation:

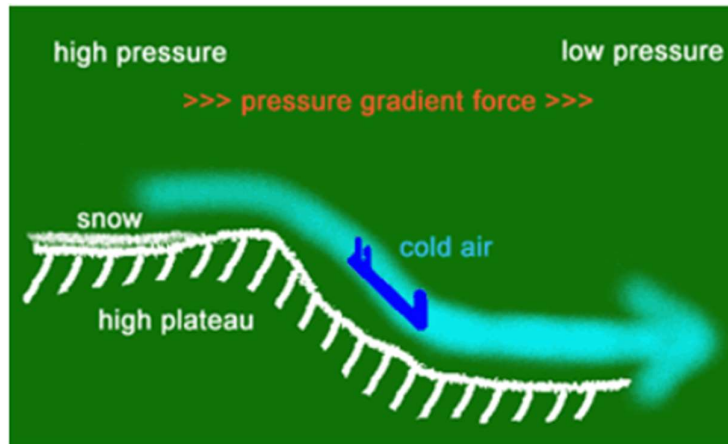
Context:

According to new research, glaciers around the world's tallest mountains are actually getting slightly colder during the warm season due to intensification of katabatic winds.

Katabatic wind:

- It is also called as mountain breeze as they move from a higher elevation of a mountain to a lower elevation. Statement I is correct.
- Origin – During and after sunset, air near the top of elevated land surfaces cools relatively quicker than air at lower altitudes.

- **As air cools, it becomes denser and heavier, then flows down the side of the mountain, resulting in a katabatic wind. Statement II is correct.**
- Over glacial mountains – If the slopes are covered with ice and snow, it will blow both at night and day.
- On warm days, air just above the glacier's surface warms and rises, creates a vacuum.
- Thus, cold air around the snowy peaks rushes down due to gravity, creating a downhill katabatic wind.



- Characteristics – It typically peak in the afternoon, reach speeds of over 100 mph.
- **Examples – Foehn winds, Santa Ana and others**
- **Climate change impacts – As average global temperatures rise worldwide, more air warms and rises from the mountain's surface, forcing more cold air down as katabatic winds, thus causing the cooling trend over the last 15 years over the Himalayas.**
- **Impact on glacier melting – These chilly winds may have partly helped in slowing the melting of these glaciers which otherwise could have been even worse.**
- However, glaciers will continue to melt with climate change because glacial melting is not just linked to air temperature close to the ice.

Q44 ANSWER (c)

Explanation:

Context:

Speaker of State Legislative Assemblies (SLA)

Recently, Speaker of Bihar State Legislative Assembly had refused to resign until floor test in Assembly citing constitutional provisions.

- SLA – State Legislative Assembly is the legislative wing of the government, the lower house in Bicameral States and the sole house in unicameral states and are also called as Vidhan Sabha.
- **Speaker of SLA – Article 178 of Indian constitution provides for speaker to preside over the sessions of SLA. Statement 1 is correct.**

- **It is modelled on the basis of Office of Speaker in Britain. Statement 2 is correct.**
- **Election** – After every general election, the SLA at its 1st session shall elect Speaker and Deputy Speaker from amongst its members.
- **Term – He remains in office till the next speaker sworn in.**
- Independence – The **salary of speaker is charged on the Consolidated Fund of the State.**
- His resignation from the party does not account for defection and thereby upholds his independence.
- Vacancy – According to Article 179, it arises, if he resigns or removed from office by a resolution of SLA or ceases to be a member of the house or he dies.
- Article 180 says that, while the office of Speaker is vacant, the duties of the office shall be performed by the Deputy Speaker or, if it is also vacant, by such member of the SLA as the Governor may appoint for the purpose.
- **Removal – A no-confidence motion can be brought against the Speaker after 14 days of giving notice to the Secretary. Statement 3 is correct.**
- Article 181 says that, when a motion for his removal is discussed in the house, he does not preside over the SLA.

Powers and Functions – He ensures quorum, order and discipline in the house and may adjourn or suspend the sitting to maintain this.

- He does not participate in the debate and casts a vote only if there is tie in voting.
- He may even suspend or expel members of the house for unruly behaviour.
- He decides whether a bill is money bill or not and his decisions cannot be challenged in the court of law.
- Unlike Speaker of Lok Sabha, Speaker of SLA does not preside over Joint Session of the 2 houses as there is no provision of joint session in bicameral states.

Q45 ANSWER (d)

Explanation:

- **World Wildlife Fund (WWF) has urged the Romanian government to classify Mahmudia wetland as a ‘national interest ecological restoration area’.**
- It aims to protect its natural progress and foster community prosperity.
- A significant portion of the naturally regenerated wetlands within the Romanian Danube Delta faces the possibility of reversion to agricultural land.
- **In June 2023, the Danube River’s high waters has breached the dyke enclosing a marshland in Mahmudia.**
- The ensuing flood submerged 1,000 hectares of farmland, converting them into a typical delta ecosystem.

Q46 ANSWER (c)

Explanation:

Context:

Rio De Janeiro Declared a Dengue Health Emergency.

About Rio De Janeiro

- Rio de Janeiro is a city in Brazil and it is shaped by interaction with mountains and sea.
- It lies in the narrow strip of alluvial plain between Guanabara Bay and the Atlantic Ocean.
- It is widely recognized as one of the world's most beautiful and interesting urban centres.

Brazil

- **Brazil is a country in South America and is the fifth largest country in the world. Statement 1 is correct.**
- **It borders every South American country except Chile and Ecuador. Statement 2 is correct.**
- **To the north, it shares a boundary with Colombia, Venezuela, Guyana, Suriname, and French Guiana. To the northwest, it meets Peru and Bolivia, to the west Argentina and Paraguay, to the southwest Uruguay, and to the south it is bounded by the Atlantic Ocean.**

Q47 ANSWER (c)

Explanation:

Context:

Recently, the International Energy Agency (IEA) has released the Indian oil market outlook to 2030 report, which looks in-depth at how India's role on the global oil market may evolve over the period through to 2030.

What are the Key Highlights of the Report?

India's Dominance in Oil Demand Growth:

- **India is projected to become the largest source of global oil demand growth between now and 2030, surpassing China by 2027. Statement 1 is correct.**
- India's oil demand is set to rise by about 1.2 million barrels per day (bpd) by 2023. This increase constitutes over a third of the expected global demand growth of 3.2 million bpd by 2030.
- India's total oil demand projections will stand at 6.64 million bpd in 2030 against 5.48 million bpd in 2023.

Growth in Fuel Demands:

- **Diesel/gasoil is identified as the single largest source of oil demand growth in India, accounting for nearly half of the rise in the nation's demand and over one-sixth of total global oil demand growth through 2030. Statement 2 is correct.**
- Jet-kerosene demand is poised to grow strongly, at around 5.9% per year on average, but from a low base compared to other countries.

- India's petrol demand is projected to grow by 0.7% on average, as the electrification of India's vehicle fleet avoids a more substantial rise.
- Gasoline demand is projected to grow modestly due to the electrification of India's vehicle fleet. LPG demand is expected to increase due to investments in production facilities.

Crude Oil Imports:

- India's Crude oil imports are forecasted to rise by over a fourth to 5.8 million bpd by 2030 due to robust oil demand growth and declining domestic production. India currently depends on imports to meet over 85% of its oil requirement.
- India currently is the third largest consumer of crude oil behind the US and China. The domestic consumption as per the oil ministry data is around 5 mb/d.

Investment in Refining Sector:

- Over the next seven years, 1 mb/d of new refinery distillation capacity will be added – more than any other country in the world outside of China.
- Several other large projects are currently under consideration that may lift capacity beyond the 6.8 mb/d capacity that we expect so far.

Role in Global Oil Markets:

- India's role as a global swing supplier has risen since 2022 as the loss of Russian product exports to European markets has increased the pull of Asian diesel and jet fuel westward.
- **In 2023, India was the fourth-largest exporter of middle distillates globally and the sixth largest refinery product exporter at 1.2 mb/d.**

Biofuels in Decarbonisation:

- Biofuels are also expected to play a key role in India's decarbonisation of the transport sector.
- **India is already the world's third-largest producer and consumer of ethanol, as domestic production has tripled over the last five years. Statement 3 is correct.**
- Supported by the country's abundant feedstocks, political support and effective policy implementation, **its ethanol blending rate of around 12% is amongst the world's highest.**
- India has advanced by five years its deadline for doubling nationwide ethanol blending in gasoline to 20% in Q4 2026.

Recommendations:

- **India's current oil stock holding levels equate to 66 days of net-import cover, with Strategic Petroleum Reserve (SPR) stocks of seven days. Statement 4 is incorrect.**
- IEA member countries maintain a stockpile equivalent to 90 days of their demand.
- Strategic petroleum reserves help mitigate the impact of emergencies like wars on energy supplies.

Explanation:

Context:

Researchers recently reported on the potential of using MXene coatings that can guide microwaves in space and lighten satellite payloads.

About Mxenes:

- **Mxenes, first discovered in 2011, are ceramics that comprise one of the largest families of two-dimensional (2D) materials.**
- **Unlike most 2D ceramics, MXenes have inherently good conductivity and excellent volumetric capacitance because they are molecular sheets made from the carbides and nitrides of transition metals like titanium.**
- They are made from a bulk crystal called MAX.
- They have the general formula of $M_{n+1}X_nT_x$, where M is an early transition metal, X is carbon and/or nitrogen, and T is a functional group on the surface of an MXene (typically O, OH, and F).
- Among various types of MXenes, **titanium carbide ($Ti_3C_2T_x$) is the most widely used.**
- Some potential applications of MXenes include energy storage (such as lithium-ion batteries and supercapacitors) due to their high conductivity and large surface area, electromagnetic interference shielding, catalysis, sensors, and water purification, among others.

Q49 ANSWER (c)

Explanation:

Context:

In a first, the Centre has on boarded 11 fair price shops on the state-run e-commerce portal Open Network Digital Commerce (ONDC).

Open Network Digital Commerce (ONDC):

- **It is an open-source network set up to enable buyers and sellers to transact with each other irrespective of the e-commerce platform on which either of them is registered. Statement I is correct.**
- It will enable local commerce across segments, such as mobility, grocery, food order and delivery, hotel booking and travel, among others, to be discovered and engaged by any network-enabled application.
- **It is an initiative of the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry. Statement II is incorrect.**

Purpose

- To promote open networks for all aspects of exchange of goods and services over digital or electronic networks.

- To create new opportunities, curb digital monopolies and by supporting micro, small and medium enterprises and small traders and help them get on online platforms.
- It seeks to democratise digital or electronic commerce, moving it from a platform-centric model to an open-network.

Benefits:

- It offers small retailers an opportunity to provide their services, and goods to buyers across the country through an e-commerce system.
- It enables merchants to save their data to build credit history and reach consumers.
- It is expected to digitise the entire value chain, promote inclusion of suppliers, derive efficiencies in logistics and enhance value for consumers.
- ONDC protocols would standardize operations like cataloguing, inventory management, order management and order fulfilment.

Q50 ANSWER (b)

Explanation:

Context:

The current Election Commissioner is about to retire and appointment of the new Election Commissioner will follow the consultative process as directed by the supreme court of India.

Election Commissioners:

- Article 324 deals with the conditions for the appointment of the Election Commissioner.
- The process for the appointment of Election Commissioner (EC) - The appointment of the chief election commissioner and other election commissioners shall be made by the president.
- They were appointed solely at the discretion of the government.
- The power to make appointments rested exclusively with the Executive (Union Government).
- The Prime Minister held the power to decide the appointment, with the President formally appointing the chosen candidate.
- The Supreme Court bench in 2022 directed for a consultative process in which a collegium or a body of persons is tasked with the responsibility to select the Election Commissioners.
- On March 2023, the final verdict of the Supreme Court bench said that the appointment of the Chief Election Commissioner and the Election Commissioners shall be made by the President on the advice of a select Committee.
- Following the final verdict of the Supreme Court, The Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Bill, 2023 was passed.
- According to the law The CEC and ECs will be appointed by the President upon the recommendation of a Selection Committee.

- **The Selection Committee will consist of the Prime Minister, a Union Cabinet Minister and Leader of Opposition/leader of the largest opposition party in Lok Sabha. Statement 1 is correct.**
- **A Search Committee headed by the Cabinet Secretary will propose a panel of names to the Selection Committee.**
- **Eligibility for the posts includes holding (or having held) a post equivalent to the Secretary to the central government.**

Removal – The Chief Election Commissioner can be removed from office in like manner and on like grounds as a judge of the Supreme Court.

- **The other Election Commissioners can only be removed from office on the recommendation of the Chief Election Commissioner. Statement 2 is incorrect.**

Dinesh Goswami Committee – Recommended that, for the appointment of the Chief Election Commissioner and ECs the President consult the:

- Chief Justice of India and the Leader of the Opposition (or)
- The leader of the largest Opposition group.

The recommendations of Dinesh Goswami Committee for appointment of CECs and ECs are consultative in nature and not solely depend on the union government. Statement 3 is incorrect.

Q51 ANSWER (a)

Explanation:

Payment aggregators

- A payment aggregator is a third-party service provider that enables customers to make and businesses to accept payments online by acting as middlemen.
- **They do not process payments themselves but act as facilitators, routing them to acquiring banks. Statement 2 is incorrect.**
- Payment aggregators enable clients to accept various payment methods such as debit cards, credit cards, cardless EMIs, UPI, bank transfers, e-wallets, and e-mandates.
- **Merchants only need one account with the aggregator, which handles settlements with different payment methods. Statement 3 is incorrect.**

Types:

1. Bank Payment Aggregators:

- A bank payment aggregator facilitates online payments from different payment methods.
- Since it is operated by a bank, it does not require further authorisation from the Reserve Bank of India (RBI).

2. Third-Party Payment Aggregators

- **Third-party payment aggregators are non-bank payment aggregators and they require authorisation from the RBI to operate. Statement 1 is correct.**

- Third-party payment aggregators take on the technological and operational burdens involved in managing payments from different payment methods.

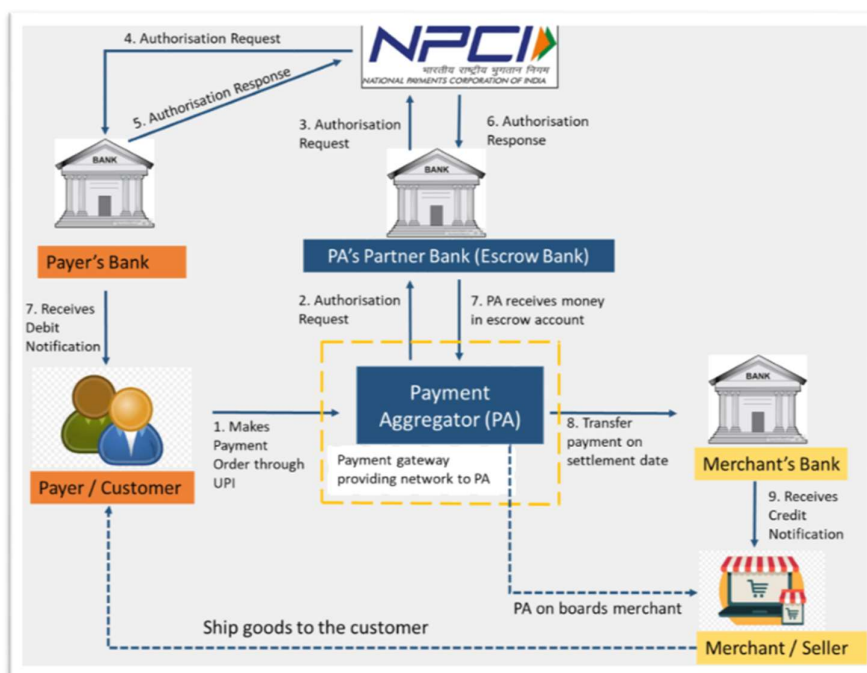


Fig 1: End to end non-bank payment aggregator transactional flow

The blue dotted lines in the fig. do not form part of payment system, but forms an important part of legal basis in merchant on-boarding process and shipment of goods to the customers in a PA business model.

Source: Author

Payment Aggregator vs Payment Gateway

- According to the RBI, both payment aggregators and gateways facilitate online payments, but only payment aggregators handle funds.
- Payment gateways are termed as technology infrastructure providers for online payments.
- Hence, RBI guidelines for payment aggregators are stricter.

Q52 ANSWER (a)

Explanation:

Context

The Union Cabinet approved the Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY).

About

- It is a sub scheme under the Pradhan Mantri Matsya Sampada Yojana, for the micro and small enterprises operating in the fisheries sector with an expected investment of ₹6,000 crore in the next four years. Statement 1 is correct.
- The sub-scheme PM-MKSSY is with 50% public finance, including the World Bank and the Agence Française de Développement (AFD) external financing,

and the rest 50% investment from the private sector leverage. Statement 2 is incorrect.

- It will be implemented for four years from 2023-24 to 2026-27 across all the States and union territories. Statement 3 is correct.

Significance: Fishers, aquaculture farmers, fish workers and fish vendors are expected to benefit from the scheme.

- It is aimed at gradual formalisation of the fisheries sector and enhanced access to institutional credit.

Fisheries Sector of India

- India is the 3rd largest fish producing and 2nd largest aquaculture producing nation in the world.
- India is the 4th largest exporter of fish and fisheries products with a growth in exports of 26.73% in terms of quantity between FY 2021-22 and FY 2022-23.
- In terms of employment, the sunrise sector supports the livelihood of over 30 Mn people in India.
- The Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying has implemented a flagship scheme “Pradhan Mantri Matsya Sampada Yojana (PMMSY)- to bring about Blue Revolution through sustainable and responsible development of the fisheries sector in India.

Q53 ANSWER (d)

Explanation:

Context:

U.N. Women will provide technical assistance for the Safe City project

About Safe City Project:

- Safe City Projects have been approved by the Ministry of Home Affairs with centrally sponsored funding. Statement 1 is incorrect.
- The Empowered Committee under Nirbhaya Fund has approved Safe City projects in 8 selected cities (Delhi, Mumbai, Kolkata, Chennai, Bengaluru, Hyderabad, Ahmedabad and Lucknow). Statement 3 is incorrect.

Objectives: It aims to create a safe, secure and empowering environment for women in public places, to enable them to pursue all opportunities without the threat of gender-based violence and/or harassment. Statement 2 is incorrect.

- It also aims to prevent and curb all forms of crimes against women and girl children in public places by providing safer urban infrastructure and efficient access to law enforcement agencies.

UN Women

- UN Women is the United Nations entity dedicated to gender equality and the empowerment of women.

- In July 2010, the United Nations General Assembly created UN Women.
- A global champion for women and girls, UN Women was established to accelerate progress on meeting their needs worldwide.
- It works globally to make the vision of the Sustainable Development Goals a reality for women and girls and stands behind women's equal participation in all aspects of life.

Q54 ANSWER (c)

Explanation:

Context:

Over 600 turtles seized from smugglers were released into the Gomti River recently.

About Gomti River

- **It is a tributary of the Ganges River.**

Course:

Origin: It is an alluvial river that originates from the Gomat Taal, otherwise called Fulhaar Jheel, found near the Madho Tanda in Pilibhit district in Uttar Pradesh, India.

The characteristic of the river is perennial. The river is characterized by sluggish flow throughout the year, except during the monsoon season, when heavy rainfall causes a manifold increase in the runoff.

Major Cities: There are various cities that are situated on the banks of the river Gomti, such as Sultanpur, Lucknow, Jaunpur, and Lakhimpur Kheri. Pair 1 is correctly matched.

List of Important Cities on Rivers in India

City	State	River
Agra	Uttar Pradesh	Yamuna
Ahmedabad	Gujarat	Sabarmati
Allahabad	Uttar Pradesh	Confluence of Ganga, Saraswati, and Yamuna
Ayodhya	Uttar Pradesh	Sarayu
Badrinath	Uttarakhand	Alaknanda
Bhagalpur	Bihar	Ganga
Bangalore	Karnataka	Vrishabhavathi
Bareilly	Uttar Pradesh	Ram Ganga
Cuttack	Odisha	Mahanadi
Chennai	Tamil Nadu	Adyar
Coimbatore	Tamil Nadu	Noyyal
Delhi	Delhi	Yamuna
Dibrugarh	Assam	Brahmaputra
Ferozpur	Punjab	Satluj

Gaya	Bihar	Falgu
Gwalior	Madhya Pradesh	Chambal
Guwahati	Assam	Brahmaputra
Haridwar	Uttarakhand	Ganga
Hyderabad	Telangana	Musi
Jabalpur	Madhya Pradesh	Narmada
Jamshedpur	Jharkhand	Subarnarekha
Jaunpur	Uttar Pradesh	Gomti. Pair 4 is correct.
Kanpur	Uttar Pradesh	Ganga
Kolkata	West Bengal	Hooghly
Kurnool	Andhra Pradesh	Tungabhadra
Kota	Rajasthan	Chambal
Lucknow	Uttar Pradesh	Gomti
Ludhiana	Punjab	Sutlej
Mathura	Uttar Pradesh	Yamuna
Nasik	Maharashtra	Godavari
Pandharpur	Maharashtra	Bhima. Pair 3 is correct.
Patna	Bihar	Ganga
Panaji	Goa	Mandavi
Rourkela	Odisha	Brahmani. Pair 2 is incorrect.
Sambalpur	Odisha	Mahanadi
Surat	Gujarat	Tapti
Srinagar	Jammu and Kashmir	Jhelum
Tirucharapalli	Tamil Nadu	Kaveri
Ujjain	Madhya Pradesh	Shipra
Varanasi	Uttar Pradesh	Ganga
Vadodara	Gujarat	Vishwamitri, Mahi, Narmada
Vijayawada	Andhra Pradesh	Krishna

Q55 ANSWER (b)

Explanation:

- **Kalingarayan Anicut is 13th century barrage on the Bhavani River in Erode, Tamil Nadu, one of the oldest water diversion projects in the world.**
- **It is recognised as a World Heritage Irrigation Structure by the International Commission on Irrigation and Drainage (ICID) in 2021.**
- **It was built by Kalingarayan, then king of Poondurai Nadu, one of the subdivisions in Kongu Nadu.**
- In 1240, he joined the Madurai Pandyas as a soldier and in 1265, Sadayavarman Sundara Pandyan bestowed the title, 'Kalingarayan' and appointed him to rule Poondurai Nadu.

Q56 ANSWER (c)

Explanation:

- **The Pantanal wetland is the world's largest freshwater wetland and one of the world's most productive habitats.**
- **It is located mostly in Brazil, but also extends in parts of Bolivia and Paraguay.**
- **It is fed through the Paraguay River and tributaries.**



Q57 ANSWER (c)

Explanation:

Context:

A senior official from Myanmar said that, the Kaladan Project has “almost died” after the rebel Arakan Army (AA) captured the Paletwa township near Mizoram border in January, 2024.

Kaladan Project:

- **KMTTP – Kaladan Multi-Modal Transit Transport Project, was launched under Framework agreement in 2008, between Ministry of External Affairs, India and the Government of Myanmar. To provide connectivity between India and Myanmar. Statement I is correct.**
- **It aims to connect the port of Kolkata with the port of Sittwe in Rakhine which would then be connected to Mizoram by road and the Kaladan River which flows by Paletwa. Statement II is incorrect.**
- **Budget – Estimated around 500 million USD.**
- **Project Development Consultant (PDC) – Inland Waterways Authority of India (IWAI).**

- **Progress – Sittwe Port was inaugurated in May 2023 and has been operationalised.**
- **Advantages – The transportation of goods from Kolkata to Aizawl and Agartala will incur at least 50% lesser cost and time.**
- **Marine transport will considerably bring down environmental cost of transport with drop in fossil fuel carbon emission.**
- **Challenges – Funding has been delayed for multiple reasons, including the Rohingya crisis and recent tripartite conflict between the Junta's forces, the Arakan Army and the rebels of Chin state.**



Q58 ANSWER (a)

Explanation:

- **Ras Al-Khair is a town and port currently under development in the Eastern Province of Saudi Arabia.** It is on the eastern coast, 60 km (37 mi) north of Jubail. It is also known under its project name of "Minerals Industrial City".
- **King Abdul Aziz Port, also known as Dammam Port, is a port in the city of Dammam, Saudi Arabia.** It is the largest port in the Persian Gulf, and the third largest and third busiest port in the Middle East and North Africa (MENA) region, after the Jeddah Islamic Port.

Q59 ANSWER (d)

Explanation:

Context:

Recently, a volcano erupted in Iceland.

Volcano Country

Ioto	Japan
Ulawun	Papua New Guinea
Shishaldin	United States
Ubinas	Peru
Klyuchevskoy	Russia
Mayon	Philippines
Kikai	Japan

Q60 ANSWER (a)

Explanation:

- **In the overall tax collections by the government, direct tax collections accounted for 54.62 per cent share in financial year 2022-23, a four-year high. Statement 1 is correct.**
- **Direct taxes as a share of the overall taxes had stood at 52.27 per cent in FY22, 46.84 per cent in FY21, 52.42 per cent in FY20 and 54.83 per cent in FY19. Statement 2 is incorrect.**
- A higher direct taxes-to-indirect taxes ratio is considered progressive as indirect taxation hurts the poor more than direct taxes.
- **Among states and union territories, Maharashtra accounted for 36.4 per cent (Rs 6.05 lakh crore) of the overall direct tax collections in the country in the financial year 2022-23, followed by Delhi at 13.3 per cent (Rs 2.22 lakh crore), Karnataka at 12.5 per cent (Rs 2.08 lakh crore) and Tamil Nadu at 6.4 per cent (Rs 1.07 lakh crore). Statement 3 is incorrect.**
- Cumulatively, these four states accounted for 68.6 per cent of the overall direct tax collections in FY23.

Statement 4 is incorrect.

DIRECT TAX COLLECTIONS						TAX BUOYANCY		
(In ₹ Rs Cr)								
Financial Year	Corporate Tax	Personal Income Tax*	Other Direct Tax	Total	YoY growth	Financial Year	Direct tax-GDP ratio	Buoyancy factor
2018-19	6,63,572	4,73,179	967	11,37,718	13.5%	2018-19	6.02%	1.29
2019-20	5,56,876	4,92,717	1,088	10,50,681	-7.7%	2019-20	5.23%	-1.21
2020-21	4,57,719	4,87,560	1,897	9,47,176	-9.9%	2020-21	4.78%	-*
2021-22	7,12,037	6,96,604	3,781	14,12,422	49.1%	2021-22	5.97%	2.52
2022-23	8,25,834	8,33,307	4,545	16,63,686**	17.8%	2022-23	6.11%	1.18

*Includes Securities Transaction Tax **Provisional
Source: CBDT

*As both GDP growth rate were negative, tax buoyancy has not been computed for FY 2020-21

NUMBER OF RETURN FILERS					
Financial Year	Individual	Firm	HUF	Company	Total*
2018-19	5,95,44,767	13,18,828	11,66,432	8,47,860	6,33,18,586
2019-20	6,11,30,366	12,98,406	11,58,601	8,40,511	6,48,65,888
2020-21	6,31,71,013	14,10,154	12,01,502	9,24,296	6,72,08,614
2021-22	6,54,61,868	14,51,576	12,26,587	9,71,319	6,96,35,446
2022-23	6,96,90,925	15,10,551	12,46,413	10,27,200	7,40,10,269

*Total includes AOPs, local authorities and others
Source: Ministry of Finance

Q61 ANSWER (b)

Explanation:

- **Bharat Ratna, the country's highest civilian award instituted in 1954**, is given in recognition of exceptional service and performance of the highest order in any field of human endeavor. Any person without distinction of race, occupation, position or sex is eligible for this award.
- **The recommendations for Bharat Ratna are made by the Prime Minister to the President. The number of annual awards is usually restricted to a maximum of three in a particular year. However, in 2024, it was awarded to five people.**
- **On conferment of the award, the recipient receives a Sanad (certificate) signed by the President and a medallion. The award does not carry any monetary grant.** The award cannot be used as a prefix or suffix to the recipient's name. However, should an award winner consider it necessary, he or she may use the following expression in their biodata or letterhead or visiting card etc. to indicate that he or she is a recipient of the award: 'Awarded Bharat Ratna by the President' or 'Recipient of Bharat Ratna Award'.

Some facts about Bharat Ratna Awards:

- **Three people were awarded the Bharat Ratna in its first year: C Rajagopalachari, the only Indian governor-general, Sarvepalli Radhakrishnan, India's second president and Scientist CV Raman. Statement 4 is correct.**

- **The Bharat Ratna ceremony is usually held at Rashtrapati Bhavan. But in 1958, a special ceremony for the award was held in the Brabourne Stadium in Mumbai to honour social reformer Dhondo Keshav Karve, also known as Maharishi Karve on his 100th birthday. Statement 1 is incorrect.**
- Technically, Mother Teresa was an Indian citizen and Badshah Khan was born in undivided India. Nelson Mandela was the first foreigner, a citizen of a country in another continent, to be awarded the Bharat Ratna.
- Two former pilots have been awarded the Bharat Ratna. The first was Rajiv Gandhi, posthumously in 1991 and the other was Industrialist, philanthropist and aviation pioneer JRD Tata in 1992.
- Pandit Ravi Shankar, in 1999 was the first Grammy winner to be awarded a Bharat Ratna.
- In 2001, the two people awarded the Bharat Ratna were both from the field of music — one classical and one largely popular: Ustad Bismillah Khan and Lata Mangeshkar.
- **Morarji Desai discontinued the Bharat Ratna awards when he came to power in 1977, calling them “worthless and politicized” and then accepted the award himself when he was nominated in 1991. Statement 2 is correct.**
- The leaf of Peepul tree (Ficus Religiosa) is used in the design of the awards along with an image of the sun and the words ‘Bharat Ratna’ in Devanagari script.
- In 1992, which nominee’s family vociferously opposed the decision of the government to award this leader a posthumous Bharat Ratna on the ground that nobody had actual proof that he had died? Netaji Subhas Chandra Bose
- **Lal Bahadur Shastri was the first person to be honored posthumously. Statement 3 is incorrect.**

Q62 ANSWER (c)

Explanation:

Context:

India’s post-COVID-19 economic recovery, emphasizing robust exports, increased domestic investments, and the FY25 Interim Budget’s record-high public capital expenditure, focusing on infrastructure and fiscal consolidation.

India’s Economic Recovery Post-COVID-19:

- **Notable recovery marked by robust exports and domestic investments.**
- Exports benefited from global supply chain ease and a surge in services exports.
- **Domestic investments driven by the government’s focused capital expenditure (capex) push.**

Improved Investment Ratio:

- **National Statistical Office estimates India’s investment ratio at 29.8% of GDP in 2023-24, a significant improvement from the 2020-21 low of 27.3%. Statement 2 is correct.**
- **Ranks fourth best in G-20 countries for the investment ratio improvement post-COVID-19. Statement 3 is correct.**

Record High Capex in FY25 Interim Budget:

- **FY25 Interim Budget emphasizes public capex, setting a record high at ₹11.11 trillion, comprising 4% of GDP and 23.3% of total expenditure. Statement 1 is correct.**
- **Notable two-thirds allocated to economic services, focusing on hard infrastructure sectors like roads and railways.**

PM Gati Shakti Program:

- Introduction of PM Gati Shakti program identifies economic rail corridors to enhance logistics efficiency.
- Focus areas include energy, mineral, and cement corridors, port connectivity corridors, and upgrading 40,000 rail bogies to Vande Bharat standards.

Record High Defence Capex:

- Atmanirbhar Bharat campaign prioritizes defence capex, allocating ₹1.72 trillion, reaching 0.5% of GDP in FY25.
- Launch of a new scheme for deep-tech technologies in defence to expedite self-reliance.

Loans and Advances for Capex Creation:

- Loans and advances increase to ₹1.71 trillion in FY25, facilitating State participation in ground-level capex creation.
- States contribute significantly to general government capex, holding a 44% share as of December 23.

Inclusive Agenda Integration:

- Despite a focus on hard infrastructure, FY25 Budget addresses the housing sector and aims to include two crore additional houses in the next five years.
- Emphasis on green energy ambitions, providing one crore households with 300 units of free electricity monthly through rooftop solarization.

Challenges in PSE Capex:

- Public sector enterprises (PSEs) experience a slowdown in capex spending, with a reduction from ₹4.88 trillion to ₹3.26 trillion in FY24.
- Modest growth projected in PSE capex to ₹3.43 trillion in FY25, with a ratio to GDP at 1.0%, the lowest in recent history.

Q63 ANSWER (a)

Explanation:

Context:

Recently NASA has reported that, the climate change is accelerating the demise of the Aral Sea.

Aral Sea – An endorheic lake, once the 4th largest saline lake in the world with a surface area of 66,900 square km.

- **Endorheic lakes do not have a natural outflow and lose water solely by evaporation or underground seepage or both. Caspian Sea, Great Salt Lake in Utah and Dead Sea are some of the endorheic lakes.**

Geographical location – Between Kazakhstan in the north and Uzbekistan in the south.

- **Formation** – It was made by waters from the Syr Darya and the Amu Darya rivers that were dependent on glacial melt.
- **Catchment area** – It is approximately 1.5 million square miles and drains Uzbekistan and portions of Kazakhstan, Tajikistan, Afghanistan, Turkmenistan, Iran, and Kyrgyzstan.
- **Threat** – Climate change, human engineering & agricultural projects has shrunk about less than 25% of its former size.
- **Water diversion project** – In 1960, the Soviet Union diverted the Syr Darya and the Amu Darya rivers for irrigation that lead to gradual drying up of the lake.

The North Aral Sea (called the Small Aral Sea) had separated from the South (Large) Aral Sea.

- **Impacts** – Its demise is the cause of land degradation and desertification, drinking water shortages, malnutrition, and deteriorating health conditions in the surrounding areas.
- **The United Nations Development Program (UNDP) calls the destruction of the Aral Sea ‘the most staggering disaster of the 20th century’.**
- The salinity level of Aral Sea has risen from less than 10 grams/litre to over 100 g/l in the remnant lake. It has also now become the Aralkum Desert, a significant new source of sand and dust storms.
- **Measures – 5 countries, Turkmenistan, Kazakhstan, Tajikistan, Uzbekistan, and Kyrgyzstan adopted the Aral Sea Basin Program in 1994 as part of the restoration strategy.**



Q64 ANSWER (c)

Explanation:



Q65 ANSWER (b)

Explanation:

Context:

During her Interim Budget address, the finance minister unveiled a Rs 1 lakh crore fund aimed at offering long-term, low-cost, or zero-interest loans for research and development initiatives.

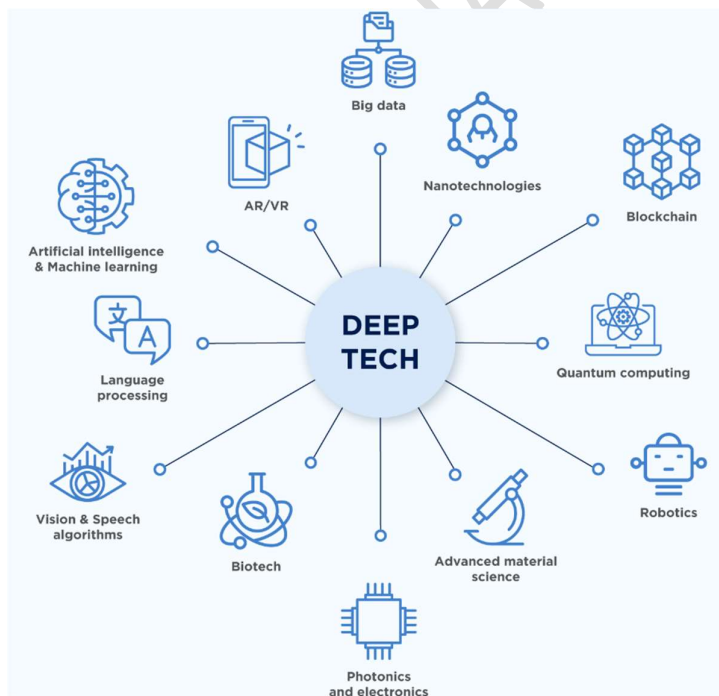
What is Deep Tech?

About:

- **Deep tech or deep technology** refers to a class of startup businesses that develop new offerings based on tangible engineering innovation or scientific discoveries and advances.
- **Deep tech fields** like Artificial Intelligence, advanced materials, blockchain, biotechnology, robotics, drones, photonics, and quantum computing are moving more and more quickly from early research to market applications.

Characteristics of Deep Tech:

- **Impact:** The deep tech innovations are very radical and disrupt an existing market or develop a new one. Innovations based on deep tech often change lives, economies, and societies.
- **Time & Scale:** The time required for deep technology to develop the technology and reach market-ready maturity is way more than shallow technology development (like mobile apps and websites).
- **Capital:** Deep tech often requires a lot of early-stage funding for research and development, prototyping, validating hypothesis, and technology development.



Q66 ANSWER (b)

Explanation:

	UPA-I	UPA-II	NDA-I	NDA-II	Interim Budget
	2004-05 to 2008-09 (Annual Average)	2009-10 to 2013-14 (Annual Average)	2014-15 to 2018-19 (Annual Average)	2019-20 to 2023-24* (Annual Average)	2024-25 Budget Estimates
Expenditures (% of GDP)					
Total Expenditure	14.8	15	12.8	15.5	14.5
Revenue Expenditure	12.6	13.2	11.1	13.1	11.1
Capital Expenditure	2.2	1.8	1.7	2.4	3.4
Food Subsidy	0.7	0.9	0.8	1.2	0.6
Fertiliser Subsidy	0.7	0.8	0.5	0.6	0.5
Petroleum Subsidy	0.1	0.7	0.2	0.1	0.0
Defence	2.1	2.0	1.6	1.6	1.4
Agriculture	0.2	0.3	0.3	0.6	0.4
Education	0.5	0.7	0.5	0.4	0.4
Health	0.3	0.3	0.3	0.3	0.3
Rural Development	0.8	0.8	0.7	0.9	0.8
Urban Development	0.1	0.1	0.2	0.3	0.2
Revenues (% of GDP)					
Centre's Revenue Receipts	10.0	9.2	8.6	8.7	9.2
Centre's Tax Revenue (Net of States' Share)	7.7	7.3	7.1	7.4	7.9
Non-Tax Revenue	2.1	1.8	1.5	1.3	1.2
Gross Tax Revenue	10.8	10.2	10.8	10.9	11.7
Corporation Tax	3.3	3.7	3.3	2.8	3.2
Taxes on Income	1.8	2	2.3	2.9	3.5
Union Excise	2.7	1.7	1.8	1.4	1.0
GST	n.a.	n.a.	1.1	3.0	3.3
Customs	1.9	1.6	1.2	0.7	0.7
Deficits & Debt Indicators (% of GDP)					
Fiscal Deficit	4.0	5.4	3.7	6.6	5.1
Revenue Deficit	2.5	4	2.5	4.3	2.0
Interest Expenditure	3.6	3.2	3.1	3.4	3.6
Central Government Liabilities (end of period) #	58.6	52.2	49.6	58.1	57.2
States' Finances (% of GDP)					
States' Share in Central Tax Revenues	2.8	2.8	3.7	3.4	3.7
Net Resources Transferred to States & UTs	4.7	4.8	6.1	6.7	6.9
State Governments' Liabilities (end of period) #	13.6	14.9	20.9	25.7	26.9

Q67 ANSWER (a)

Explanation:

TABLE 2: Macroeconomic Indicators

	UPA-I	UPA-II	NDA-I	NDA-II
	2004-05 to 2008-09	2009-10 to 2013-14	2014-15 to 2018-19	2019-20 to 2023-24
Growth & Inflation				
Nominal GDP Growth Rate (Annual Average)	14.6	15.3	11.0	9.7
Real GDP Growth Rate (Annual Average)	6.9	6.7	7.4	4.4
Annual CPI Inflation - Average of Months (End of Period)*	9.1	9.4	3.4	5.9
Annual Food Inflation - Average of Months (End of Period)*	12.3	11.9	0.7	7.1
Sectoral Shares in GVA				
Gross Value Added (Basic Prices) Growth Rate (Annual Average)	7.0	6.3	7.0	4.5
Share of Agriculture in GVA (%) (End of Period)	19.6	17.8	14.8	14.4
Share of Services in GVA (%) (End of Period)	47.9	51.1	54.0	54.6
Share of Industry in GVA (%) (End of Period)	32.4	31.2	31.2	31.0
Share of Manufacturing in GVA (%) (End of Period)	17.1	17.2	18.3	17.7
Domestic Consumption & Investment				
Private Consumption (PFCE) as % of GDP (Annual Average)	56.9	56.2	58.9	60.9
Real Private Consumption Expenditure (PFCE) Growth % (Annual Average)	5.9	6.4	7.2	4.7
Investment (GFCF) as % of GDP (Annual Average)	33.5	33.2	28.9	28.6
Public Investment (GFCF) as % of GDP (Annual Average)	8.0	7.6	7.0	7.5
Private Investment (GFCF) as % of GDP (Annual Average)	25.5	25.6	21.9	21.1
Real Investment (GFCF) Growth Rate % (Annual Average)	12.3	7.5	7.3	6.2

Source: Union Ministry of Statistics & Programme Implementation & Reserve Bank of India
 *CPI-IW till 2008-09, CPI-Combined for Subsequent Periods

Q68 ANSWER (d)

Explanation:

Context:

Chhattisgarh's Ocher Studio is helping to preserve India's 4,000-year-old craft- Dhokra Shilpkala.

About Dhokra Shilpkala

- **The word "Dhokra" is believed to be derived from the Dhokra Damar tribes, who are the traditional metal smiths of Central India. Statement I is incorrect.**
- The origins of Dhokra Shilpkala can be traced back to the tribal communities residing in the regions of Chhattisgarh, Jharkhand, West Bengal, and Odisha, where it evolved as an integral part of their cultural and religious practices.
- **Technique and Process: What sets Dhokra Shilpkala apart is its remarkable technique of metal casting, which involves using the lost wax casting method, also known as cire perdue. Statement II is correct.**

Artistry and Designs:

- Its design has rustic charm and the organic nature of its designs.
- Artisans draw inspiration from nature, mythology, and everyday life, incorporating motifs such as animals, birds, deities, and tribal symbols into their creations.

- From miniature figurines and jewelry to larger-than-life sculptures and functional objects, Dhokra Shilpkala encompasses a wide range of artistic expressions.

Q69 ANSWER (d)

Explanation:

- **Thanthai Periyar Wildlife Sanctuary is a proposed protected area in the Erode, Tamil Nadu.**
- The Government of Tamil Nadu notified it in March 2023, making it the 18th wildlife sanctuary in TamilNadu.
- It is located between the Sathyamangalam Tiger Reserve of Tamil Nadu and the Male Mahadeshwara Wildlife Sanctuary and the Cauvery Wildlife Sanctuary of Karnataka.
- The landscape is also a tiger corridor identified by the National Tiger Conservation Authority.

Sunabeda Wildlife Sanctuary is a wildlife sanctuary and a proposed tiger reserve located in the Nuapada district of Odisha, adjoining Chhattisgarh

Sepahijala Wildlife Sanctuary is a wildlife sanctuary in Tripura, India, of some 18.53 square kilometres (7.15 sq mi), about 25 kilometres (16 mi) from the city centre, located in Bishalgarh. It is a woodland with an artificial lake and natural botanical and zoological gardens. It also has clouded leopard enclosures.

About Rollapadu Wildlife Sanctuary:

- **It is located in the state of Andhra Pradesh.**
- It lies between the Nallamalai and Yerramalai hill ranges of the Eastern Ghats.
- It was declared a sanctuary in 1988 to protect the dwindling populations of the critically endangered Great Indian Bustard.
- Uniqueness: It is the only GIB Sanctuary in Andhra Pradesh.
- It owes its genesis to the discovery of the endangered Great Indian Bustard (GIB).

Q70 ANSWER (c)

Explanation:

- **Winter dormancy in reptiles, also called brumation, is akin to hibernation in mammals.**
- Instead of experiencing long, sustained periods of inactivity, brumating reptiles stir occasionally to drink water; however, they may go without food for several months.
- Dormancy in reptiles may display a circadian rhythm, a seasonal one, or both; it is a state of torpor directly induced by low temperature.

About Brumation

- It's a state of sluggishness, inactivity, or torpor exhibited by reptiles during winter or extended periods of low temperature because of scarcity of food.
- It is a period of dormancy in reptiles, similar to hibernation in mammals, to conserve energy and survive the adverse environmental conditions.

- During brumation, reptiles may retreat to underground burrows, rock crevices or other sheltered areas where temperatures are relatively more stable.

Brumating Species

- **Turtles (box and painted), Tortoises, Snakes, Lizards and some amphibians like frogs.**
- **The Bearded Dragon is the most brumating of all the known reptiles.**

Significance of Brumation

- It allows reptiles to go weeks or even months without eating, and to conserve energy and minimise their resource requirements.
- It is crucial for reptiles to survive cold climes and endure challenging environmental conditions, until they can reemerge to feed and reproduce in more favourable climes.
- It is a survival strategy hardwired into these animals over thousands of years to adapt to sudden climatic changes.

Q71 ANSWER (d)

Explanation:

Context:

Principal Scientific Advisor to the Government of India launched “Science for Women-A Technology & Innovation (SWATI)” Portal. Statement 3 is correct.

About SWATI Portal

- **It is aimed at creating a single online portal representing Indian Women and Girls in STEMM (Science, Technology, Engineering, Mathematics & Medicine). Statement 1 is correct.**
- The database of SWATI Portal will serve in policy making to address the challenges of Gender-gap.
- **The Portal is a complete interactive database; and the first-of-its-kind in India which is developed, hosted and maintained by the National Institute of Plant Genome Research (NIPGR), New Delhi. Statement 2 is correct.**

Objectives:

- To scale up the effort exponentially to include each and every Indian woman in science, across all career stages and subjects, spanning both Academia and the Industry enabling reliable and statistically significant long-term research on the issues of equality, diversity and inclusivity in India;
- Inclusion of each and every Indian WiS, career stages, subjects, spanning both Academia and the Industry; Enabling reliable and statistically significant long-term research on the issues of equality, diversity and inclusivity in India, developing active search engine and searchable database (Name, Affiliation, Area of Interest).
- The various Sections in the portal include Icons - Awardees (Padma / Shanti Swarup Bhatnagar / Stree Shakti Science Samman) & Directors, Secretaries Academy

Presidents; Faculty- Indian Universities, Autonomous organizations including S&T Ministry/ CSIR/ DBT/ DST/ CSIR/ MHRD/ UGC/ GATI/ KIRAN.

Q72 ANSWER (c)

Explanation:

Context:

Former vice-president of India and Union Minister for Culture, Tourism and Development of the Northeast Region will be inaugurating the Sangeet Natak Akademi's 'Dakshin Bharat Sanskritik Kendra' here in Hyderabad.

- It is India's national academy of music, dance and drama.
- **It was created by a resolution of the Ministry of Education, with P.V. Rajamannar as its first Chairman. Statement 2 is correct.**
- It was set up in 1953 for the preservation and promotion of the vast intangible heritage of India's diverse culture expressed in forms of music, dance and drama.
- **Presently, it is an autonomous body of the Ministry of Culture. Statement 1 is correct.**
- **The Chairman of the Akademi is appointed by the President of India for a term of five years. Statement 3 is correct.**
- It is fully funded by the Government for the implementation of its schemes and programmes.

Aims and objectives

- To co-ordinate the activities of regional or State Akademies of dance, drama and music;
- To promote research in the fields of Indian dance, drama and music and for this purpose, to establish a library and museum, etc.;
- To co-operate with such similar akademies as there may be and other institutions and associations for the furtherance of its objects and for the enrichment of Indian culture as a whole;
- To encourage the exchange of ideas and enrichment of techniques between the different regions in regard to the arts of dance, drama and music;
- To encourage, where necessary, the establishment of theatre centres, on the basis of regional languages, and co-operation among different theatre centres;

The Sangeet Natak Akademi Awards are the highest national recognition conferred on practising artists.

The Akademi also confers Fellowships on eminent artists and scholars of music, dance and drama; and has in 2006 instituted annual awards to young artists – the Ustad Bismillah Khan Yuva Puraskar.

Q73 ANSWER (b)

Explanation:

Context:

Recently few scientists using the Palaeo Proxies technique have noted that that the earth's surface has already warmed by more than 1.5 degrees C on average over pre-industrial levels.

- **Palaeo Proxies are tools that scientists use to reconstruct past climate and environmental conditions.**
- The technique that uses chemical evidence stored in various organic matter, such as corals, stalactites and stalagmites to approximate the temperature at some point in the past.
- These proxies are typically derived from physical, biological, or chemical processes that respond to changes in temperature or other climatic factors.
- It is still only indirect evidence of temperature changes with respect to a baseline temperature.
- Since palaeo proxies don't directly measure the temperature, we call them proxies of past temperature deviations (the 'palaeo' denotes the past).

Limitations – It can only provide temperature anomalies on long timescales, such as centuries or thousands of years.

- Even the best proxies only offer estimates on weekly or seasonal timescales.
- All temperature proxies are local or regional, making global temperature estimates uncertain.

Q74 ANSWER (d)

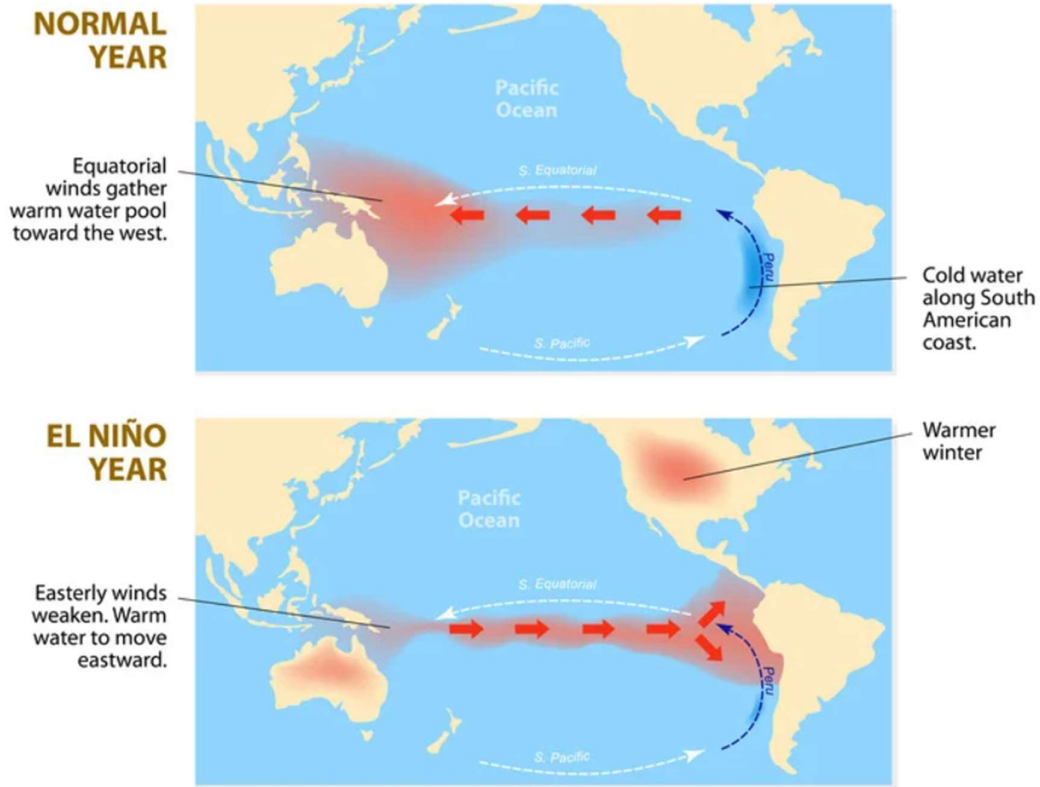
Explanation:

Context:

The El Nino and La Nina are the two phases of the El Nino Southern Oscillation (ENSO) phenomenon that occurs in the equatorial Pacific Ocean.

- **During El Nino, temperatures higher than normal prevail mainly over eastern and central parts of the equatorial Pacific Ocean. Statement 1 is incorrect.**
- El Nino is mostly associated with hot summers and lack of rainfall during monsoon season in India.
- **During La Nina, temperatures lower than normal prevail mainly over eastern and central parts of the equatorial Pacific Ocean. Statement 2 is incorrect.**
- La Nina is just an amplification of normal cold conditions in the eastern tropical Pacific. The spring barrier may not be so important since strong El Ninos tend to transition into La Ninas.

THE EL NIÑO PHENOMENON



Q75 ANSWER (c)

Explanation:

Bidri Craft Karnataka

Aranmula Kannadi Kerala

Kamrupi Assam

Bronze Crafts:

- Rare Jain imagery and icons (Karnataka)
- Pahaldar Lamps (Jaipur and parts of Uttar Pradesh)
- **Pembarthi craft (Telangana)**

Other Metal Crafts:

- Marori work of Rajasthan
- **Tarkashi (Rajasthan). Pair 4 is incorrect.**
- Bidri Craft (Karnataka).

Q76 ANSWER (a)

Explanation:

Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

The Atlantic Meridional Overturning Circulation (AMOC) plays a crucial role in moderating the climate of Europe and North America and influences temperatures near the Equator. It moves warm ocean water from the tropics to the northern Atlantic Ocean basin.

- **AMOC transports warm salty surface waters from the tropics to the northern regions.**
- **The waters then cool down, increase in density and sink in the North Atlantic Ocean, in a phenomenon called downwelling or overturning.**
- **Cold, fresh water from the melting ice of the Arctic is added to the cooler ocean that moves towards the equator.**
- **This cycle, therefore, acts like a heat conveyor belt, warming the northern latitudes and cooling the southern latitudes.**

Q77 ANSWER (c)

Explanation:

Context:

A rating system for the hospitality sector has become a non-starter with no State opting for it as of now.

Swachhata Green Leaf Rating:

The ranking scheme was launched in November 2023 by the Union Tourism Ministry in collaboration with the Department of Drinking Water and Sanitation.

- **The rating will be based on compliance with the safe sanitation practices outlined in the guidelines.**

Aim: To ensure world-class hygiene and sanitation in all hospitality facilities of the country with or without restaurants.

Objective: The objective is to prevent pollution in water bodies and keep the environment clean.

Target groups: Hotels, resorts, lodges, homestays, 'Dharamshalas' and camps which have portable toilets.

Q78 ANSWER (b)

Explanation:

Context:

The GROW report provides state-wise and district-wise analysis for greening and restoration projects was recently released by the NITI Aayog.

- **Greening India's Wastelands with Agroforestry (GROW) Report provides state-wise and district-wise analysis, supporting government departments and industries for greening and restoration projects. Statement 2 is correct.**
- **It is an initiative of NITI Aayog. Statement 1 is incorrect.**
- NITI Aayog utilized remote sensing and GIS to assess agroforestry suitability across all districts in India.
- Using thematic datasets, an Agroforestry Suitability Index (ASI) was developed for national-level prioritization.
- Current report underscores the potential benefits of converting underutilized areas, especially wastelands, for agroforestry.
- The GROW initiative aligns with national commitments, aiming to restore 26 million hectares of degraded land by 2030 and create an additional carbon sink of 2.5 to 3 billion tonnes of carbon dioxide equivalent.
- Agroforestry integrates trees, crops, and livestock, addressing food, nutrition, energy, employment and environmental challenges.

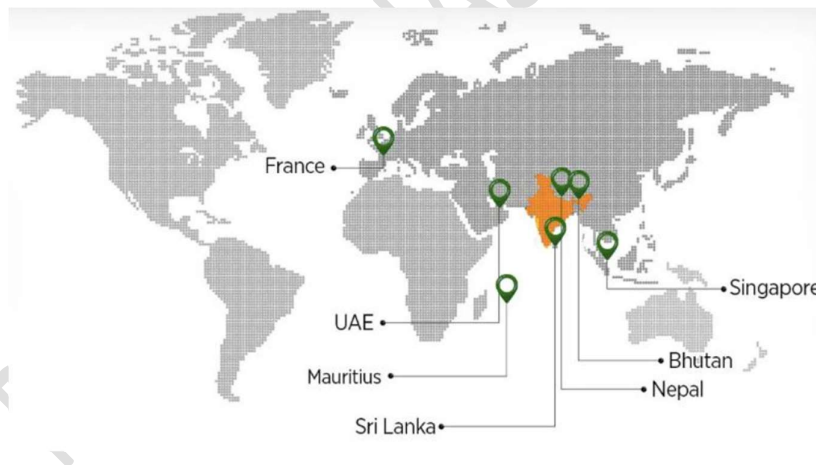
Q79 ANSWER (c)

Explanation:

Context:

Government releases list of countries where UPI Payments are accepted.

France, UAE, Mauritius, Sri Lanka, Singapore, Bhutan, and Nepal are the countries that accept UPI payments, according to the government.



Q80 ANSWER (a)

Explanation:

Context:

Recently, the Odisha government declared the Gupteswar forest in Koraput district as its fourth Biodiversity Heritage Site (BHS). Pair 1 is correctly matched.

About Biodiversity Heritage Site:

- These are areas that are unique, ecologically fragile ecosystems having rich biodiversity comprising of any one or more of the components such as;
- species richness, high endemism, presence of rare, endemic and threatened species, keystone species, species of evolutionary significance, wild ancestors of domestic/cultivated species or landraces or their varieties, past pre-eminence of biological components represented by fossil beds and having cultural or aesthetic values.

Some heritage sites in India

Goa

- **Purvatali Rai:** This sacred grove dedicated to the folk deity Betal is Goa's 1st Biodiversity Heritage Site. **Pair 2 is incorrect.**

Karnataka

- **Nallur Tamarind Grove:** It is India's first Biodiversity Heritage Site. It is a relic of the Chola Dynasty with a group of old tamarind plants standing like ageless sentinels. **Pair 3 is incorrect.**

Maharashtra

- **Glory of Allapalli:** It is a reserved forest having biological, ethnical and historical values. **Pair 4 is incorrect.**

Q81 ANSWER (b)

Explanation:

Context:

The Indian Prime Minister will attend the World Government Summit 2024 as a guest of honour in UAE.

About World Government Summit (WGS):

- It is an annual global gathering that brings together world leaders, policymakers, experts, and thought leaders from various fields to discuss and address pressing global issues.
- **It was established in 2013 under the leadership of the Vice President and Prime Minister of the UAE.**
- **It is annually held in Dubai, UAE.**
- The Summit, in its various activities, explores the agenda of the next generation of governments, focusing on harnessing innovation and technology to solve universal challenges facing humanity.
- Since its inception, the Summit has championed the mission of shaping future governments and creating a better future for humanity.

World Government Summit (WGS) 2024:

- **Theme: “Shaping Future Governments”**

It will focus on six main themes:

1. Government Acceleration and Transformation
2. Artificial Intelligence and The Next Frontiers
3. Reimagining Development and Future Economies
4. Future Societies and Education
5. Sustainability and The New Global Shifts
6. Urbanization and Global Health Priorities

Q82 ANSWER (a)

Explanation:

What is MSP?

- Minimum Support Price (MSP) is a form of market intervention by the Government of India to insure agricultural producers against any sharp fall in farm prices. MSP protects the producer- farmers against distress sale during bumper production years.
- MSPs have no statutory backing — a farmer cannot demand MSP as a matter of right.

Who decides what the MSP would be and how?

The Cabinet Committee of Economic Affairs announces the MSP at the start of each sowing season, taking into account the recommendations of the Commission for Agricultural Costs and Prices (CACP).

While recommending MSPs, the CACP looks at following factors:

- the demand and supply of a commodity;
- its cost of production;
- the market price trends (both domestic and international);
- inter-crop price parity;
- the terms of trade between agriculture and non-agriculture (that is, the ratio of prices of farm inputs and farm outputs);
- a minimum of 50 per cent as the margin over the cost of production; and
- the likely implications of an MSP on consumers of that product.

Calculation Formula

- **The CACP makes projections using state-wise, crop-specific production cost estimates provided by the Directorate of Economics & Statistics in the Agriculture Ministry.**
- **The CACP does not do any field-based cost estimates itself. Statement 1 is incorrect.**
- **The CACP calculates three types of costs — A2, A2+FL and C2 — for each mandated crop for different states. Statement 2 is correct.**
 - **A2 cost: It is the lowest and covers all paid-out costs directly incurred by the farmer — in cash and kind — on seeds, fertilizers, pesticides, hired labour, leased-in land, fuel, irrigation, etc.**
 - **A2+FL cost: It includes A2 plus an imputed value of unpaid family labour.**

- **C2 cost: It is the highest of the three costs and defined as a more comprehensive cost that factors in rentals and interest for owned land and fixed capital assets, on top of A2+FL.**

The National Commission for Farmers, chaired by MS Swaminathan, had recommended MSP under the C2+50 percent formula. That is, the total cost of the crop (C2) and the profit thereon is 50 percent. Statement 3 is incorrect.

- **However, the government announces MSP on the basis of A2+FL. Statement 4 is incorrect.**

Q83 ANSWER (c)

Explanation:

Context

The Commerce and Industry Ministry is for expanding the codes of classification (HSN codes) for rice.

About

- **It is to separate the varieties of non-basmati rice that are not traditionally consumed in the country from the popular staple variety of non-basmati white rice.**
- **It is also to exclude them from export curbs when restrictions are being contemplated on them.**
- **It comes after the government has temporarily banned all categories of non-basmati white rice for exports.**

Need for the separate code:

- **At present, there are just six HSN codes for non-basmati rice while there are 30-40 varieties of such rice grown in the country.**
- **When there is a ban on non-basmati white rice, all varieties get banned, whether it is sona masuri, govind bhog and kala namak or the normal non-basmati white rice.**
- **There is also a demand from the industry for new HSN codes for other varieties of rice.**
- **APEDA is also working on separate HSN codes for GI (Geographical Indications) rice varieties like red rice, black rice and kalanamak rice.**

HSN codes

- **HSN codes, or Harmonized System of Nomenclature codes, are six-digit numerical codes used to classify traded goods globally. Statement I is correct.**
- **It was developed by the World Customs Organization (WCO) and is considered the global standard when it comes to naming goods. Statement II is incorrect.**

Structure of HSN codes:

The six-digit code structure provides increasingly detailed product classifications:

- First two digits: Chapter (broad product category, e.g., vegetable products)
- Next two digits: Heading (more specific product group, e.g., fresh vegetables)
- Last two digits: Subheading (specific product, e.g., tomatoes)
- Additional digits: Some countries add additional digits to further classify products at the national level.

Key functions of HSN codes

- **Product identification:** Each code corresponds to a specific product or group of products, providing a standardized way to classify and identify goods across borders.
- **Customs clearance:** HSN codes facilitate efficient customs clearance by enabling authorities to quickly identify and assess applicable duties and taxes on imported goods.
- **Trade statistics:** By tracking trade flows based on HSN codes, governments and international organizations can gather valuable data on global trade patterns and trends.
- **Negotiating trade agreements:** HSN codes serve as a common language for countries negotiating trade agreements, ensuring accurate product coverage and tariff concessions.

Q84 ANSWER (a)

Explanation:

Context:

Researchers at the Institute of Advanced Study in Science and Technology (IASST) have pioneered a novel method of Plasma Enhanced Chemical Vapour Deposition Technique (PECVD) for directly synthesising CNTs on glass substrates at a temperature of 750 °C. Statement 1 is correct.

About Carbon nanotubes (CNTs)

- They are pivotal in advancing modern technology by showcasing extraordinary properties.
- Applications: They have found applications in diverse fields, including rechargeable batteries, flexible electronics, aerospace, transparent electrodes, touch screens, supercapacitors, and medicine.

Recent Developments: The experiment is performed using the Plasma Enhanced Chemical Vapour Deposition Technique (PECVD), where plasma is generated using a specially designed spiral-shaped fused hollow cathode source.

- **This innovative process circumvents the need for elevated temperatures and eliminates the necessity for a transition metal catalyst. Statement 2 is incorrect.**

Why Needed? Conventional CNT synthesis methods require high temperatures (~1000 0C) and metal catalysts (Fe, Co, and Ni).

- These catalysts pose biocompatibility concerns for potential biomedical applications.

- **The challenge of removing these catalysts from CNTs adds a significant cost, highlighting the urgent need for cleaner, more sustainable CNT synthesis methods – an exciting frontier in the realm of nanotechnology.**
- This study enables the production of clean CNTs suitable for applications in energy research, biomedical fields, and optoelectronics.

Q85 ANSWER (d)

Explanation:

Union Government has constituted “Sanjay Agarwal Committee on Minimum Support Price (MSP)”, to make it more effective and transparent. Committee has been created around eight months later the three farm Acts were repealed.

Tasks given to the committee

- The Sanjay Agarwal committee has been tasked to make suggestions, in a bid to provide greater autonomy to “Commission for Agricultural Costs and Prices”. This move is directed towards strengthening agricultural marketing system, in line with changing requirements of India.

Committee would deal with issues related to natural farming, including:

- Formulating strategies to make Krishi Vigyan Kendras and other R&D institutions as knowledge centres on natural farming,
- Established a chain of laboratories, to provide organic certification to products produced by natural farming.
- Committee will also work on crop diversification, in order to take farmers out of wheat and rice cycles.
- It will finally map the existing cropping patterns of producer and consumer and help in creating a system to provide remunerative prices for sale of new crops.

Q86 ANSWER (c)

Explanation:

Context:

The Fourteenth Meeting of the Conference of the Parties to the Convention on the Conservation of Migratory Species of Wild Animals (COP14) will be hosted by the Government of Uzbekistan, in Samarkand from 12-17 February 2024. Statement 1 is correct.

- **It is also known as the Bonn Convention, is an environmental treaty under the aegis of the United Nations Environment Programme. Statement 2 is correct.**
- It provides a global platform for the conservation and sustainable use of migratory animals and their habitats.
- It was signed in Bonn, Germany, on 23 June 1979.

- **It is the only global and UN-based intergovernmental organisation established exclusively for the conservation and management of terrestrial, aquatic and avian migratory species throughout their range. Statement 3 is correct.**
- The parties to the convention acknowledge the importance of conserving migratory species, and the need to pay special attention to species whose conservation status is unfavourable.
- Activities by CMS Parties may range from legally binding treaties (called Agreements) to less formal instruments, such as Memoranda of Understanding.
- The Conference of Parties (COP) is the decision-making organ of this convention.

It has two Appendices.

- **Appendix I lists endangered migratory species and includes prohibitions regarding the take of these species.**
- **Appendix II lists species that have an ‘unfavourable conservation status’ (as per the conditions set out in the Convention) and encourages range states to draft range-wide agreements for conservation and management of these species.**

Q87 ANSWER (c)

Explanation:

Context:

A Stone Age wall has been discovered beneath the Baltic Sea in Germany, believed to be the oldest megastructure built by humans in Europe.

About Baltic Sea:

- It is a semi-enclosed inland sea located in Northern Europe.
- **It is an arm of the North Atlantic Ocean, extending northward from the latitude of southern Denmark almost to the Arctic Circle and separating the Scandinavian Peninsula from the rest of continental Europe.**
- **It has a coastline of approximately 8,000 km, shared by several countries, including Sweden, Poland, Lithuania, Latvia, Finland, Estonia, Germany, Denmark, and Russia.**
- **It is connected to the White Sea via the White Sea Canal and to the North Sea’s German Bight via the Kiel Canal.**
- **It connects to the Atlantic Ocean through the Danish Straits. Statement 1 is correct.**
- The Baltic Sea contains three major gulfs: the Gulf of Bothnia to the north, the Gulf of Finland to the east, and the Gulf of Riga slightly to the south of that.
- **It is often cited as the world’s largest brackish inland water body. Statement 2 is correct.**
- **Its water salinity levels are lower than that of the World Oceans due to the inflow of fresh water from the surrounding land and the sea’s shallowness. Statement 3 is correct.**
- More than 250 rivers and streams empty their waters into the Baltic Sea. **Neva is the largest river that drains into the Baltic Sea.**

- **Islands:** It is home to over 20 islands and archipelagos. **Gotland, located off the coast of Sweden, is the largest island in the Baltic Sea. Statement 4 is incorrect.**



Q88 ANSWER (d)

Explanation:

Context:

The United Nations named seven initiatives from across Africa, Latin America, the Mediterranean and Southeast Asia as the intergovernmental organisation’s World Restoration Flagships.

About UN World Restoration Flagships

- The World Restoration Flagship is part of the UN Decade on Ecosystem Restoration – led by the UN Environment Programme (UNEP) and the Food and Agriculture Organization. Statement I is incorrect.
- It aims to prevent, halt, and reverse the degradation of ecosystems on every continent and in every ocean. Statement II is correct.
- The award conferred by the UNEP and FAO of the UN makes the initiatives eligible for technical and financial support from the organisation.
- The awards track notable initiatives that provide support to global commitments in order to restore one billion hectares.

The seven initiatives are:

1. **The Restoring Mediterranean Forests Initiative:** It involves the countries of Lebanon, Morocco, Tunisia and Türkiye.
 - It consists of a novel approach said to have protected and restored natural habitats and vulnerable ecosystems. It is also said to have led to around two million hectares of forests restored across the region since 2017.
2. **The Living Indus initiative** received approval from the Pakistan parliament in the wake of the devastating 2022 climate change-induced floods.
 - Its official launch took place at the 27th Conference of Parties to the UN Framework Convention on Climate Change in Sharm el-Sheikh.
 - It designates the Indus River as a living entity with rights — a measure taken to protect rivers elsewhere as well.
3. **The Acción Andina social movement** led by Peruvian conservation non-profit ECOAN aims to protect and restore a forest area of one million hectares.
4. **The Sri Lanka Mangrove Regeneration initiative:** It is a science-driven programme co-led by local communities. It focuses on the restoration of natural balance in the ecosystem
5. **The Terai Arc Landscape initiative:** It is aimed to restore the forests of critical corridors of the Terai Arc Landscape in collaboration with local communities working as citizen scientists, community-based anti-poaching units, forest guards, among others.
 - “It also supported the tiger population in the landscape shared by India and Nepal, which increased today to 1,174.
6. **Regreening Africa’s agriculture:** It is expected to benefit over 6,00,000 households.
7. **Growing forests in Africa's drylands initiative:** It aims to expand from 41,000 restored hectares today to 229,000 hectares by 2030.

Q89 ANSWER (c)

Explanation:

Context:

Recent findings from data collected by NASA's Cassini spacecraft reveal the presence of a vast ocean beneath the icy surface of Saturn's moon Mimas.

About Cassini Spacecraft:

- **Cassini-Huygens was a joint NASA/European Space Agency (ESA)/Italian Space Agency (ASI) space mission to Saturn.**
- It was launched on October 15, 1997.
- **The mission consisted of NASA’s Cassini orbiter, which was the first space probe to orbit Saturn, and the ESA’s Huygens probe, which landed on Titan, Saturn’s largest moon.**

Spacecraft:

- It was one of the largest interplanetary spacecrafts.
- The Cassini orbiter weighed 2,125 kg (4,685 pounds) and was 6.7 metres (22 feet) long and 4 metres (13 feet) wide.
- The instruments on board Cassini included radar to map the cloud-covered surface of Titan and a magnetometer to study Saturn’s magnetic field.

- The disk-shaped Huygens probe was mounted on the side of Cassini. It weighed 349 kg (769 pounds), was 2.7 metres (8.9 feet) across, and carried six instruments designed to study the atmosphere and surface of Titan.

Highlights:

- It orbited Saturn from 2004 to 2017, circling the planet 294 times and teaching us almost everything we know about Saturn.
- It measured the structure of Saturn's atmosphere and rings, as well as how they interact with the planet's moons.
- It also discovered six named moons and revealed Enceladus and Titan as promising locations to search for extraterrestrial life.

Key Facts about Mimas

- **It is the smallest and innermost of the major regular moons of Saturn.**
- The surface is icy and heavily cratered.
- **The most striking feature of this small moon is a gigantic crater known as Herschel.** This crater measures 80 miles (130 km) across.
 - A central peak in the centre of the crater rises to a height of 4 miles, almost as high as Mount Everest on Earth.
 - Herschel is one of the largest impact structures, relative to the size of the body, known in the solar system.
- The low density of Mimas indicates that it is composed almost entirely of water ice.

Q90 ANSWER (b)

Explanation:

Context:

Recently, for the first time the scientists have found a mushroom growing out of a frog, indicating a symbiotic relationship between a frog and the mushroom.

- Symbiosis is a term describing any relationship or interaction between two dissimilar organisms.
- The specific kind of symbiosis depends on whether either or both organisms benefit from the relationship.
- Symbiotic relationships can be useful measures of an ecosystem's health.

There are 4 main symbiotic relationships:

1. Mutualism
2. Commensalism
3. Parasitism
4. Competition

Barnacles & Swimming Crabs - In parasitism, one species (the parasite) lives with, on, or in a host species, at the expense of the host species. Pair 1 is correct.

- Examples of common parasites found in the ocean include nematodes, leeches and barnacles.

- A barnacle may root itself within a swimming crab's reproductive system. While the crab does not die from this interaction, its reproductive capabilities are greatly diminished.

Clownfish and Sea Anemones - In the warm waters of the Pacific or Indian Oceans, the excellent example of mutualism is the relationship between clownfish and sea anemones. Pair 2 is incorrect.

- In a mutualistic relationship, both species benefit.

Barnacles & Humpback Whales – The commensalistic relationship exists between them. Pair 3 is incorrect.

- Commensalism happens when one species lives with, on or in another species, known as the host.
- The host species neither benefits nor is harmed from the relationship.
- The huge whales transport the tiny barnacles to plankton-rich waters, where both species feast upon the abundant microorganisms that live there.

Corals & Sponges – It is an example of interspecific competition in the ocean is the relationship between corals and sponges. Pair 4 is correct.

- Competition can happen between members of the same species (intraspecific competition) and between different species (interspecific competition).
- Sponges are very abundant in coral reefs. If they become too successful, however, they take needed food and other resources from the corals that make up the reef.

Q91 ANSWER (d)

Explanation:

Context:

Chinese nationals have started occupying several of their model “Xiaokang” border defence villages across India’s north-eastern borders which the country has been building along the Line of Actual Control (LAC) since 2019.

Line of Actual Control (LAC)

- **LAC refers to the disputed border between India and China, spanning approximately 3,488 kilometres.**

WHY LAC OFTEN FLARES UP

23 “disputed and sensitive” areas along the unresolved 3,488-km-long LAC witness aggressive patrolling & face-offs between troops from the two sides

FLASHPOINTS INCLUDE:



India records **around 300 “transgressions”** by PLA troops every year. Number **shot up to 426 in 2017**, the year of the Doklam face-off

Q92 ANSWER (a)

Explanation:

Context:

South Korea is on high Alert as North Korea has launched Multiple Cruise Missiles into the Sea of Japan.

About:

- Sea of Japan, marginal sea of the western Pacific Ocean
- It is bounded by the Japanese archipelago, Sakhalin, the Korean Peninsula, and the mainland of the Russian Far East. Statement 1 is correct.
- The sea is separated from the East China Sea to the south by the Tsushima and Korea straits and from the Sea of Okhotsk to the north by the La Perouse and Tatar straits. Statement 2 is incorrect.



Q93 ANSWER (b)

Explanation:

Context:

India has rejected the demand of the four-nation European Free Trade Association (EFTA) for ‘data exclusivity’ provisions in the free trade agreement that both sides are negotiating.

About European Free Trade Association

- **It is an intergovernmental organisation established in 1960 by the Stockholm Convention.**
- Objective: Promotes free trade and economic integration between its members within Europe and globally.
- **Member Countries: Iceland, Liechtenstein, Norway, and Switzerland.**
- **The members of this organization are all open, competitive economies committed to the progressive liberalisation of trade in the multinational arena as well as in free trade agreements.**
- **In contrast to the European Union (EU), it is not a customs union.**

Governance

- **Its highest governing body is the EFTA Council.** It generally meets 8 times a year at the ambassadorial level and twice a year at the ministerial level.
- **EFTA Surveillance Authority (ESA):** It monitors compliance with European Economic Area (EEA) rules in Iceland, Liechtenstein and Norway.
- EFTA Court: It is based in Luxembourg and has the competence and authority to settle internal and external disputes regarding the implementation, application or interpretation of the EEA agreement.
- The headquarters of the EFTA Secretariat is located in Geneva. It assists the EFTA Council in the management of relations between the 4 EFTA States and deals with the negotiation and operation of EFTA’s FTAs.



Q94 ANSWER (c)

Explanation:

Context:

Kerala Legislative Assembly has unanimously passed a resolution urging the Centre to address the escalating human-animal conflict in the state and to classify wild boar as vermin.

- **Vermin – It means any wild animal notified under section 62 of Wildlife Protection Act.**
- **Need – To control the population of small wild animals that carry disease and destroy plants and food.**
- **Declaration of Vermin – The Central Government may, by notification, declare any wild animal specified in Schedule II to be vermin for any area and for such period as may be specified therein and so long as such notification is in force. Statement 1 is correct.**
- **Once declared as vermin, these animals can be hunted.**
- **Currently, it includes only 4 species of wild animals namely Common Crows, Fruit Bats, Rats, and Mice. Statement 2 is correct.**

Authority empowering hunting – Section 11 of the Act empowers Chief Wildlife Warden of a State (CWLW)

To declare any wild animal specified in Schedule I to be hunted if it has become dangerous to human life or disabled or diseased beyond recovery. Statement 3 is correct.

Q95 ANSWER (c)

Explanation:

Context:

Recently, Kosovo secured visa-free access to the Schengen zone, facing opposition due to its declaration of independence from Serbia.

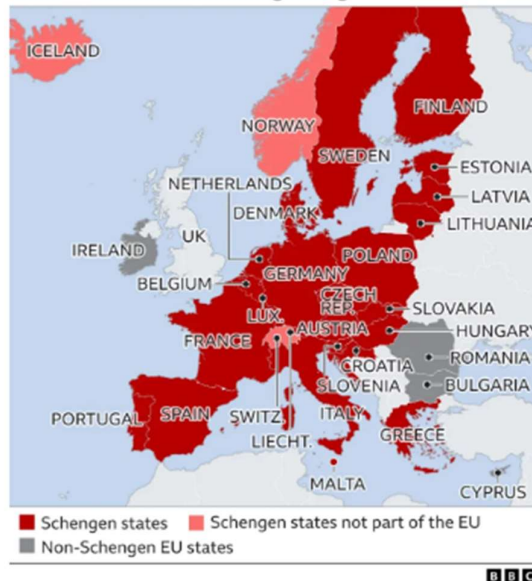
About the Schengen Zone:

- It's an area in the European Union without internal borders, allowing for the free and unrestricted movement of people.
- It allows for passport-free travel, work and living in an EU country without special formalities between countries that fall within the European zone.
- The Schengen Agreement was signed in 1985 at a Schengen village in Luxembourg (bordering France and Germany).
- The Schengen Zone covers most of the EU countries, except Cyprus and Ireland, and it includes few non-EU countries like Norway, Iceland, Switzerland, and Liechtenstein.

India and the Schengen Visa:

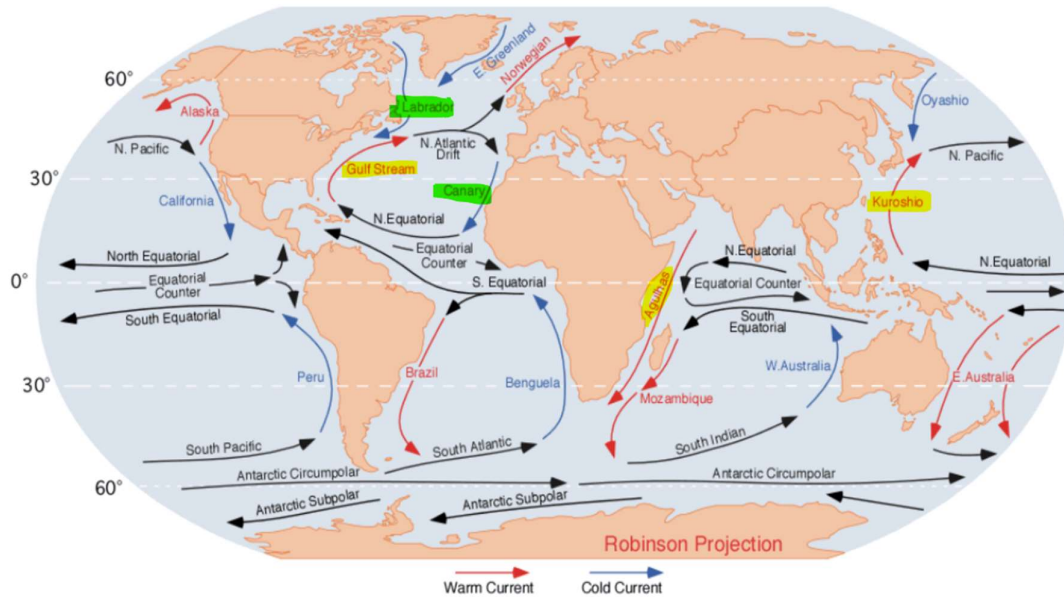
- Indian passport holders can stay in the Schengen area for up to 90 days within any 180-day period.

Countries in the Schengen Agreement



Q96 ANSWER (b)

Explanation



Q97 ANSWER (b)

Explanation:

Beed Custard Apple – Maharashtra. Pair 1 is correct.

- Custard apples, also known as sitaphal, are grown in Maharashtra's Beed area and have been designated as Geographical Indications.

Recently, the Assam government declared the GI-tagged 'Kaji Nemu' (Citrus Limon) as the State Fruit. Pair 2 is correct.

Nanjanagud Banana – Karnataka. Pair 3 is incorrect.

- Nanjanagud Banana is a type of banana that is grown in the Mysore and Chamarajanagar districts of Karnataka and is known for its distinct flavor and scent. It is included under geographical indicators.

Banaganapalle Mangoes – Andhra Pradesh. Pair 4 is incorrect.

- Banaganapalle Mangoes are grown at Banaganapalle, in the Kurnool district, and are recognized as a geographical indication in Andhra Pradesh under the horticulture products category.

Q98 ANSWER (d)

Explanation:

Context

Several states had flagged the malfunctioning of Electronic Voting Machines (EVMs) during the 2019 Lok Sabha polls according to documents obtained through the Right to Information.

Electronic Voting Machine (EVM)

- Electronic Voting Machine (EVM) is a simple electronic device used to record votes in place of ballot papers and boxes which were used earlier in conventional voting systems.
- The use of EVM started back in 1982 Kerala Assembly elections. Prior to this only ballot papers and ballot boxes were allowed.

How does the machine work?

- **EVM has two parts, it consists of a ‘control unit’ and a ‘balloting unit’, connected by a 5-meter cable.**
- The control unit is with the Election Commission-appointed polling officer and it is the brain of the EVM.
- The balloting unit is in the voting compartment into which the voter enters to cast the vote in secret by pressing the button against the name and symbol of the candidate of her choice.
- The balloting unit is turned on only after the polling officer presses the ‘Ballot’ button on it.
- **The EVM runs on a 6-volt single alkaline battery fitted in the control unit, and can even be used in areas that have no electricity. Statement 4 is correct.**

Production and design:

There are only two Indian PSUs that manufacture EVM machines;

- **Bharat Electronic Limited (BEL) and**
- **Electronics Corporation of India Limited (ECIL). Statement 1 is correct.**

The secret source code is only accessible to a few engineers.

How long can EVM be used?

- **EVMs have a life of 15 years. Chips that have the code need to be crushed in the presence of an officer of EC. Statement 3 is correct.**
- Even CU, BU display units are removed from the plastic holding and are crushed.

What is malfunctioning of EVMs?

- Malfunction or breakdown of EVMs doesn’t imply they are open to rigging or tampering.
- Like any machine, EVMs too can malfunction. However, frequent instances of breakdown can lead to interruptions in voting, slowing down the process and potentially affecting voter turnout.
- To ensure the functionality of EVMs, First-level check (FLC) is done.

First-level check (FLC):

- **FLC is the initial technical examination of the EVM's Ballot Unit (BU) and Control Unit (CU) as well as the Voter-Verified Paper Audit Trail (VVPAT). Statement 2 is correct.**
- **This process is conducted by engineers in the six months leading up to the Lok Sabha polls at the district level under the supervision of a District Election Officer (DEO).**
- **If any EVM part malfunctions during the FLC, it is returned to the manufacturers.**

Q99 ANSWER (b)

Explanation:

Context:

The Ministry of Coal, Government of India, is set to host an Industry Interaction in Hyderabad aimed at fostering the development and proliferation of coal/lignite gasification projects across the nation.

- **Coal Gasification is the process of producing syngas, a mixture consisting primarily of carbon monoxide (CO), hydrogen (H₂), carbon dioxide (CO₂), methane (CH₄), and water vapour (H₂O) – from coal and water, air and/or oxygen. Statement I is correct.**
- **Gasification occurs in a gasifier, generally a high temperature/pressure vessel where oxygen and steam are directly contacted with the coal or other feed material causing a series of chemical reactions to occur that convert the feed to syngas and ash/slag.**
- **Syngas can be used for electricity production, used in energy-efficient fuel cell technology, or as chemical “building blocks” for industrial purposes. Statement II is correct.**
- **The hydrogen can also be extracted for use in fuelling a hydrogen economy.**

Q100 ANSWER (c)

Explanation:

Context:

India has initiated an anti-dumping probe into imports of certain solar glass from China and Vietnam, following a complaint by domestic players.

About Anti-Dumping Duty:

- **Anti-dumping duty is a tariff imposed on imports manufactured in foreign countries that are priced below the fair market value of similar goods in the domestic market.**
- **The government imposes anti-dumping duty on foreign imports when it believes that the goods are being “dumped” – through the low pricing – in the domestic market.**
- **Anti-dumping duty is imposed to protect local businesses and markets from unfair competition by foreign imports. Statement 1 is correct.**

- Thus, the purpose of anti-dumping duty is to rectify the trade distortive effect of dumping and re-establish fair trade.
- **The use of anti-dumping measure as an instrument of fair competition is permitted by the World Trade Organization (WTO). Statement 2 is correct.**
- **The WTO allows the government of the affected country to take legal action against the dumping country as long as there is evidence of genuine material injury to industries in the domestic market.**
- The government must show that dumping took place, the extent of the dumping in terms of costs, and the injury or threat to cause injury to the domestic market.
- While the intention of anti-dumping duties is to protect local businesses and markets, these tariffs can also lead to higher prices for domestic consumers.

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