ALL INDIA MOCK TEST 1 - 2025

GENERAL STUDIES I - EXPLANATION

INDEX

1. Consider the following statements with respect to Indian geographical features :
   1. The width of the Central Highlands decreases from West to East.
   2. The height of the Western Ghats increases from North to South.
   3. The part of the Himalayas in the state of Sikkim is known as the Purvanchal Himalayas.

   Which of the above statements is/are correct ?
   (a) 1 only
   (b) 1 and 2 only
   (c) 2 and 3 only
   (d) 1, 2 and 3

EXPLANATION:

The part of the Peninsular plateau lying to the north of the Narmada River, covering a major area of the Malwa plateau, is known as the Central Highlands. It is bounded by the Vindhyan range in the south and the Aravallis in the northwest.
The further westward extension gradually merges with the sandy and rocky desert of Rajasthan. The flow of the rivers draining this region, namely the Chambal, the Sind, the Betwa and the Ken, is from southwest to northeast, thus indicating the slope.
The Central Highlands are wider in the west but narrower in the east. The eastward extensions of this plateau are locally known as the Bundelkhand and Baghelkhand. The Chotanagpur plateau marks the further eastward extension, drained by the Damodar River. **So, Statement 1 is correct.**

The Western Ghats and the Eastern Ghats mark the western and eastern edges of the Deccan Plateau, respectively. The Western Ghats lie parallel to the western coast.
They are continuous and can be crossed through passes only. The Western Ghats are higher than the Eastern Ghats.
Their average elevation is 900 1600 metres. The height of the Western Ghats progressively increases from north to south. The highest peaks include the Anai Mudi (2,695 metres) and the Doda Betta (2,637 metres).
So, Statement 2 is correct.

Purvanchal covers the hilly regions of:
- Nagaland
- Manipur
- Mizoram
- Tripura
- Part of Assam and Arunachal Pradesh

Beyond the Dihang gorge in Arunachal Pradesh, the Himalayas take a sharp southward bend, forming the Purvachal or Eastern Hills.
These mountain ranges extend across an area of approximately 98,000 square kilometres (around 37,900 square miles), covering parts of Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, and eastern Assam.
Sikkim, on the other hand, is located west of the Brahmaputra valley and forms part of the main Himalayan chain. Sikkim is part of the Eastern Himalayas, not the Purvanchal ranges. **So, Statement 3 is not correct.**

2. Consider the following statements :
   Statement 1 :
   Deep-focus earthquakes are common in Benioff zones.
   Statement 2 :
   All Benioff zones are characterised by subduction and are associated with volcanic islands and deep ocean trenches.
   Statement 3 :
   Iceland, an island in the North Atlantic Ocean, is an example of the Benioff zone.

Which one of the following is correct in respect of the above statements ?

(a) Both Statement 2 and Statement 3 are correct, and both of them explain Statement 1

(b) Both Statement 2 and Statement 3 are correct, but only one of them explains Statement 1

(c) Both Statement 2 and Statement 3 are correct, but none of them explains Statement 1

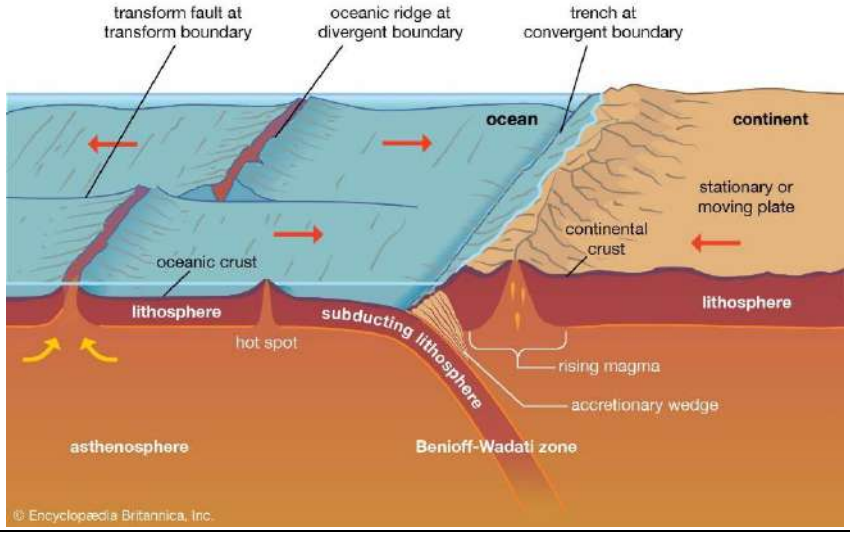
(d) Neither Statement 2 nor Statement 3 is correct.

(e) EXPLANATION:

In general, the term "deep-focus earthquakes" is applied to earthquakes deeper than 70 km. The deeper-focus earthquakes commonly occur in patterns called Wadati-Benioff Zone or Benioff zones that dip into the Earth, indicating the presence of a subducting slab. The dip angles of these slabs average about 45°, with some shallower and others nearly vertical. **So, Statement 1 is correct.**

Subduction zones are characterised by seismicity from the surface down to almost 700 km depth, and are often referred to as Wadati–Benioff zones.

Benioff zones coincide with tectonically active island arcs such as Japan, Vanuatu, Tonga, and the Aleutians, and they are normally but not always associated with deep ocean trenches such as those along the South American Andes. Exceptions to this rule include Romania and the Hindu Kush mountain system. **So, Statement 2 is not correct.**



Iceland is an island country located in the North Atlantic Ocean. Iceland lies on the Mid-Atlantic Ridge, a constructive (divergent) plate boundary where the North American and Eurasian plates are moving away from each other.

As the plates pull apart, molten rock (magma) rises up and erupts as lava, creating a new ocean crust. The island is covered with more than 100 volcanoes. Iceland is an example of constructive boundary and not an example of the Benioff zone. **So, Statement 3 is not correct.**

3. Consider the following statements :

Statement 1 :

Equatorial and mid-latitude regions experience relatively more rainfall compared to the subtropical and polar regions.

Statement 2 :

High concentrations of dust and salt particles act as hygroscopic nuclei around which water vapour condenses to produce clouds.

Which one of the following is correct in respect of the above statements ?

(a) Both Statement-I and Statement-II are correct and Statement II explains Statement-I.

(b) Both Statement I and Statement II are correct, but Statement II does not explain Statement I.

(c) Statement-I is correct, but Statement-II is incorrect.

(d) Statement-I is incorrect, but Statement-II is correct.

EXPLANATION:

The average yearly precipitation over the Earth is about 100 cm (39 inches), but it is distributed unevenly. The regions with the highest rainfall are found in the equatorial zone and the monsoon areas of Southeast Asia, while middle latitudes receive moderate amounts. Desert regions in the subtropics and near the poles experience very little precipitation.

- The equator receives the most direct sunlight, causing warm, moist air to rise and cool, forming clouds that lead to heavy rainfall.
- Mid-latitude regions also get rainfall when moist air from warmer areas meets cooler air, causing precipitation.
- In contrast, subtropical regions are dry because of sinking air that prevents cloud formation, while polar regions receive little rainfall due to cold, dry air. **So, Statement I is correct.**

Atmosphere has a sufficient capacity to keep small solid particles, which may originate from different sources and include sea salts, fine soil, smoke-soot, ash, pollen, dust and disintegrated particles of meteors.

Dust particles are generally concentrated in the lower layers of the atmosphere, yet convectional air currents may transport them to great heights.

The higher concentration of dust particles is found in subtropical and temperate regions due to dry winds compared to equatorial and polar regions.

Dust and salt particles act as hygroscopic nuclei around which water vapour condenses to produce clouds.

So, Statement II is correct, but Statement II does not explain Statement II.

4. With reference to the hill stations in India, consider the following locations :

1. Shimla
2. Gangtok
3. Darjeeling
4. Mussoorie

Which of the following options correctly represents their order from north to south ?

(a) 1, 2, 3, 4

(b) 4, 1, 3, 2

(c) 1, 4, 2, 3

(d) 2, 1, 4, 3

EXPLANATION:

The arrangement of the hill stations from north to south is as follows:

- Shimla is the capital city of Himachal Pradesh. It is located in the north-west Himalayas at an average altitude of 2,205 metres (7,234 ft). Shimla is located at a high latitude of 31.10° N.

- Mussoorie (Uttarakhand) is located in the foothills of the Garhwal Himalayan range, 38 Km from Dehradun, Mussoorie, which is also a Gateway to the Gangotri and Yamunotri shrines. Mussoorie, with a latitude of 30.45° N, is located to the south of Shimla.
- Gangtok (Sikkim) is located in the eastern Himalayas at an elevation of approximately 1,650 meters. Geographically, Gangtok district occupies the south-east corner of the state. Gangtok has a latitude of 27.33° N, which places it further south than both Shimla and Mussoorie.
- Darjeeling- Located in West Bengal, lies about 305 miles (490 km) north of Kolkata, at an elevation of about 7,000 feet (2,100 metres) above sea level. Despite being very close to Gangtok in terms of geographic location (in the eastern Himalayas), Darjeeling, with a latitude of 27.03° N, is the southernmost of the hill stations in the list.

Therefore, the correct order of the places form north to south is Shimla → Mussoorie → Gangtok → Darjeeling. **So, Option (c) is correct.**

5. Consider the following statements :
   1. Relatively high temperatures and evenly distributed precipitation throughout the year.
   2. Precipitation ranges from 75 to 200cm.
   3. Both tropical and frontal cyclones are operational in this region at different times of the year.

   The above characteristics describe which of the following climates ?
   (a) Humid subtropical climate
   (b) Tropical monsoon climate
   (c) Mediterranean climate
   (d) Marine west coast climate

EXPLANATION:

The most widely used classification of climate is the empirical climate classification scheme developed by V. Koeppen and popularly called the Koeppen Climate Classification. It is an empirical classification based on mean annual and mean monthly temperature and precipitation data.

- Humid subtropical climate , the major climate type of the Köppen classification, is characterized by relatively high temperatures and evenly distributed precipitation throughout the year.
- This climate type is found on the eastern sides of the continents between 20° and 35° N and S latitude.
- Annual precipitation totals average about 100 cm (39 inches) but vary from 75 to over 200 cm (30 to 79 inches).
- Summers are usually somewhat wetter than winters, with much of the rainfall coming from convectional thunderstorm activity; tropical cyclones also enhance warm-season rainfall in some regions.
- The coldest month is usually quite mild (5–12 °C), although frosts are not uncommon, and winter precipitation is derived primarily from frontal cyclones along the polar front. **So, Option (a) is correct.**

Tropical monsoon and trade-wind littoral climate are major climate types of the Köppen classification and are characterized by small annual temperature ranges, high temperatures, and plentiful precipitation. Despite their resemblance to wet equatorial climates, tropical monsoon and trade-wind littoral climates exhibit a short dry season, usually in the low-sun ("winter") season, and the highest temperatures generally occur at the end of this clear spell. These climates are found primarily in southern and southeastern Asia. **So, Option (b) is not correct.**

Mediterranean climate(Cs), the major climate type of the Köppen classification, is characterized by hot, dry summers and cool, wet winters and is located between about 30° and 45° latitude north and south of the Equator and on the western sides of the continents. The monthly average temperature in summer is around 25° C, and in winter below 10°C. The annual precipitation ranges between 35 - 90 cm. **So, Option (c) is not correct.**

Marine west coast climate is located poleward from the Mediterranean climate on the west coast of the continents. Due to marine influence, the temperature is moderate, and in winter, it is warmer than at its latitude.
The mean temperature in summer months ranges from 15°-20°C and in winter 4°-10°C. Precipitation occurs throughout the year. Precipitation varies greatly from 50-250cm.
So, Option (d) is not correct.

6. With reference to Volcanic landforms, consider the following statements :
   1. Volcanic rocks are intrusive form of rocks formed due to the cooling of magma beneath the Earth's surface.
   2. Plutonic rocks are extrusive form of rocks formed due to the cooling of lava at the surface of the Earth.
   3. Sill, Dykes and Batholiths are examples of Intrusive forms.

Which of the above statement(s) is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 3 only
(d) 1, 2 and 3

EXPLANATION:

Volcanic landforms are geological structures created by volcanic activity. These landforms vary in size and form, ranging from small cones and lava flows to expansive islands and plateaus. Volcanic landforms are classified into two main types: intrusive forms and extrusive forms. When a volcanic eruption occurs, lava is released and, upon cooling, solidifies into igneous rocks. This cooling process can happen in two ways:

- **Extrusive forms:** Lava reaches the Earth's surface, where it cools rapidly, forming extrusive igneous rocks, also known as volcanic rocks. These rocks cool quickly, resulting in small crystals that are typically not visible to the naked eye.
- **Intrusive forms:** Lava that cools beneath the Earth's surface, within the crust, forms intrusive rocks. These rocks, also known as plutonic rocks, cool slowly, allowing larger crystals to form, which are often visible without the aid of a microscope. This slow cooling process results in a rock texture known as phaneritic.

Depending on where the cooling of lava occurs, the resulting igneous rocks are classified as either volcanic rocks (when cooled at the surface) or plutonic rocks (when cooled within the crust). **So, Statements 1 and 2 are not correct.**

Some examples of intrusive landforms are as follows:

- **Dyke**: A dyke is formed when magma forces its way through cracks and fissures in the Earth's crust, solidifying almost perpendicular to the surrounding rock layers. As it cools, it develops into a wall-like structure, oriented vertically or at a steep angle.
- **Sills and Sheets:** These are near-horizontal bodies of intrusive igneous rock. Sills are thicker horizontal deposits, while sheets are thinner, flat-lying layers of rock that form in a similar manner.
- **Batholiths:** A batholith is a large mass of magmatic material that cools and solidifies at great depths within the Earth's crust. Over time, erosion exposes the batholith, which often forms large, dome-shaped structures on the Earth's surface.
- **Lacoliths:** These are large, dome-shaped intrusive bodies with a flat base. They are formed when magma intrudes between layers of rock but doesn't reach the surface. The magma often pushes the overlying rocks upward, creating a dome-like structure. The lacolith is typically connected to a magma chamber below through a pipe-like conduit. **So, Statement 3 is correct.**

7. "Humidity is a measure of water vapour in the atmosphere". In this regard, consider the following statements :
   1. Absolute humidity is the amount of water vapor in grams present per cubic meter of air.
   2. Specific humidity is the amount of water vapor in grams per kilogram of air.
   3. Relative humidity is the percentage of water vapour present in the air relative to the maximum amount it could hold at a given temperature.

   How many of the above statements are correct?

   (a) Only one
   (b) Only two
   (c) All three
   (d) None

EXPLANATION:

Humidity is a measure of water vapor in the atmosphere. It is expressed quantitatively in different ways. Most of the water vapor in the atmosphere is contained within the first 10,000 feet or so above the Earth's surface.
The actual amount of water vapour present in the atmosphere is known as the absolute humidity. It is the weight of water vapour per unit volume of air and is expressed in terms of grams per cubic metre.
The ability of the air to hold water vapour depends entirely on its temperature. The absolute humidity differs from place to place on the surface of the Earth. The higher the amount of water vapour, the higher the absolute humidity.
For example, at temperatures in the mid-80s Fahrenheit, a maximum of about 30 grams of water vapor can exist in each cubic meter of air. **So, Statement 1 is correct.**

Specific humidity refers to the amount of water vapor contained in a unit mass of air, expressed as grams of water vapor per kilogram of air. Absolute and specific humidity are quite similar in concept. **So, Statement 2 is correct.**

Relative humidity (RH), expressed as a percentage, also measures water vapor, but relative to the air's temperature. In other words, it represents the actual amount of water vapor in the air compared to the maximum amount the air can hold at its current temperature.
Warm air can possess more water vapour (moisture) than cold air, so with the same amount of absolute/specific humidity, air will have a higher relative humidity if the air is cooler and a lower relative humidity if the air is warmer. **So, Statement 3 is correct.**

8. How many of the following regions are generally characterised by the presence of acidic soil ?
   1. Equatorial Rainforests
   2. Boreal/Coniferous Forests
   3. Temperate Grasslands
   4. Hot Deserts

   Select the correct answer :

   (a) Only one
   (b) Only two
   (c) Only three
   (d) All four

EXPLANATION:

Soil pH measures the concentration of hydrogen ions (H^+) and determines whether the soil is acidic or alkaline. A higher concentration of H^+ ions makes the soil acidic, while a higher concentration of hydroxyl ions (OH^-) makes it alkaline. A neutral pH occurs when H^+ and OH^- ions are balanced.
Slightly acidic soils (with a pH between 6.5 to 7) are ideal for plant growth, as this is when most nutrients are available to crops. Soils with a pH below 5.5 are considered highly acidic, which can lead to problems like toxicities (e.g., aluminum) and nutrient deficiencies (e.g., molybdenum). These soils are commonly found in Acrisols, Alisols, Podzols, and Dystric subgroups.
Rainforest soils tend to be nutrient-poor and acidic, with low organic matter. The heavy rainfall leaches nutrients from the soil, and rapid decomposition keeps organic matter low. These soils are typically Oxisols, characterized by advanced weathering, high clay content, and deficiencies in calcium and phosphorus. **So, Statement (1) is correct.**

Boreal forest soils are typically low in fertility, thin, and acidic. This is because the decomposition of conifer needles creates acidic humus, known as podzolic soils.
These soils are usually found under coniferous forests and are formed on non-calcareous, nutrient-poor parent material.

Due to this, the soil is not very suitable for plant growth, as most of the nutrients are concentrated in a thin layer at the surface. This results from the breakdown of needles that fall from coniferous trees. **So, Statement (2) is correct.**

Temperate grassland soils are derived from a variety of parent materials. The best temperate soils are deep, basic or neutral, and fertile and contain large quantities of organic matter. The dominant soil type is Mollisol. Because temperate grasslands have rich soil, most of the grasslands have been converted into fields for crops or grazing land for cattle. **So, Statement (3) is not correct.**

Desert soil is sandy soil and is found in low-rainfall areas. Such soil is alkaline in nature, with a high pH value, and is unproductive. It is rich in soluble salts and poor in nitrogen and organic matter content. The physical conditions of the soil are unfavourable as it has a low water-holding capacity due to high sand content. They are sometimes classified as lithosols, which means stones or mineral soil. **So, Statement (4) is not correct.**

9. Consider the following statements :
   1. The moon's attraction on Earth is roughly twice as strong as that of the Sun.
   2. The perihelion and Aphelion positions of the Earth with respect to the Sun do not affect the tidal ranges.
   3. The variations in tides due to changes in the distance between the moon and the Earth are known as spring tides and neap tides.

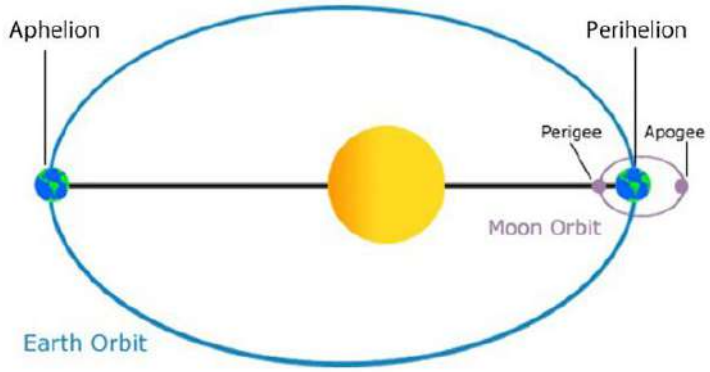
   Which of the above statements is/are correct ?

   (a) 1 only
   (b) 1 and 2 only
   (c) 2 and 3 only
   (d) 1, 2 and 3

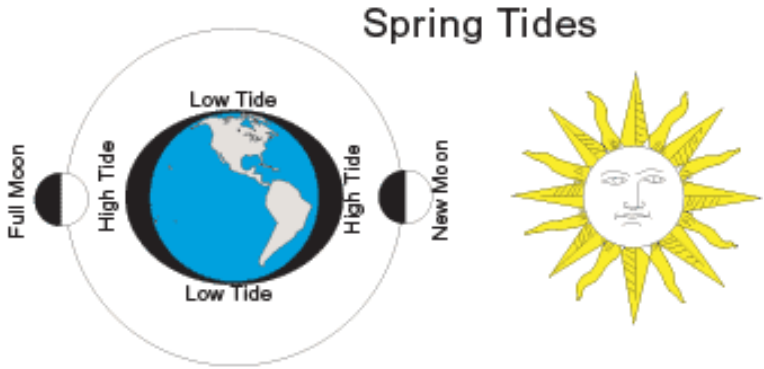
EXPLANATION:

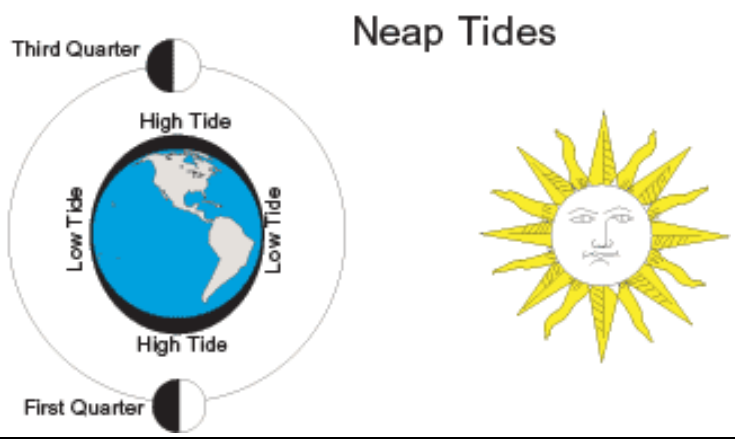
The Moon's gravitational pull causes about twice the tidal effect on Earth compared to the Sun, even though the Sun's overall gravitational force on Earth is much stronger.
While the Sun is far more massive than the Moon, the Moon's much closer distance to Earth results in a stronger gravitational gradient, leading to a greater tidal effect.
Tidal forces depend not just on the strength of gravity but also on how close the object is. Therefore, even though the Sun's attraction is much stronger overall, the Moon creates stronger tides because of its proximity. **So, Statement 1 is correct.**

When the Earth is closest to the Sun (perihelion), around 3rd January each year, tidal ranges are also much greater, with unusually high and unusually low tides. When the Earth is farthest from the Sun (aphelion), around the 4th of July each year, tidal ranges are much less than average.
The perihelion and Aphelion positions of the Earth with respect to the Sun affect the tidal ranges.
So, Statement 2 is not correct.



The variations in tide heights due to the Moon's changing distance from Earth are correctly described as apogean tides and perigean tides.
When the Moon is at its farthest point (apogee), tides are lower than normal, while at its closest point (perigee), they are higher than normal.
Apart from this, twice a month, when the Earth, Sun, and Moon align in a straight line, their combined gravitational pull causes very high and very low tides known as spring tides.
About a week later, when the Sun and Moon are at right angles to each other, their gravitational forces partly cancel out, leading to moderate tides called neap tides.
Spring tides and neap tides are caused by the position of the Sun, Moon, and Earth, not by their distance.
So, Statement 3 is not correct.





10. Consider the following description :
    1. This crop requires 21° to 27° Celsius for growth.
    2. This crop is majorly cultivated as a Kharif crop.
    3. This crop is majorly produced in the states of Karnataka, Madhya Pradesh and Uttar Pradesh.

    Which of the following crops is described above ?
    (a) Wheat
    (b) Rice
    (c) Maize
    (d) Sugar cane

EXPLANATION:

Wheat is the second most important cereal crop in India and a staple food in the northern and north-western regions. It is a rabi crop, meaning it is grown in the winter season. Wheat requires a cool growing season and bright sunshine at the time of ripening.
The crop needs 50 to 75 cm of annual rainfall, which should be evenly distributed throughout its growing period. In India, there are two main wheat-growing zones:

- The Ganga-Satluj plains in the north-west.
- The black soil regions of the Deccan Plateau.

The major wheat-producing states include Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Bihar, and Rajasthan. **So, Option (a) is not correct.**

Rice is the staple food for the majority of people in India and the second-largest producer of rice in the world, after China.

- It is a kharif crop, which means it is grown during the monsoon season.
- Rice requires high temperatures (above 25°C) and high humidity, with an annual rainfall of over 100 cm. In regions with less rainfall, rice is grown with the help of irrigation.
- Rice is mainly cultivated in the plains of northern and northeastern India, coastal areas, and deltaic regions.
- The development of a dense network of canal irrigation and tubewells has enabled rice cultivation in regions with less rainfall, such as Punjab, Haryana, western Uttar Pradesh, and parts of Rajasthan. **So, Option (b) is not correct.**

- Maize is a crop which is used both as food and fodder. It is a kharif crop which requires a temperature between 21°C and 27°C and grows well in old alluvial soil.
- In some states like Bihar, maize is grown in the rabi season also. Use of modern inputs such as HYV seeds, fertilisers and irrigation has contributed to the increasing production of maize.
- Major maize-producing states are Karnataka, Madhya Pradesh, Uttar Pradesh, Bihar, Andhra Pradesh and Telangana. **So, Option (c) is correct.**

- Sugarcane is both a tropical and subtropical crop that thrives in a hot and humid climate. It requires temperatures between 21°C to 27°C and an annual rainfall ranging from 75 cm to 100 cm. In regions with lower rainfall, irrigation is necessary.
- Sugarcane can be grown in a variety of soils but requires significant manual labor throughout the entire process, from sowing to harvesting.
- India is the second-largest producer of sugarcane in the world, after Brazil. Sugarcane is the primary source of sugar, gur (jaggery), khandsari, and molasses.
- The major sugarcane-producing states in India are Uttar Pradesh, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Bihar, Punjab, and Haryana. **So, Option (d) is not correct.**

11. Which of the following statements best reflects the relationship between liberty and equality ?
    (a) Political liberty automatically ensures economic equality.
    (b) Liberty and equality are unrelated concepts in a democratic society.
    (c) Economic equality is the foundation for political liberty.
    (d) Political liberty is more important than economic equality.

EXPLANATION:

Liberty means freedom from restrictions on individual actions and the opportunity for personal growth. Equality means there are no special privileges for any group, and everyone has the same opportunities without discrimination.

Political liberty is the right to act freely without being controlled by others. It means all citizens have an equal right to be part of political decisions. This includes:

- Right to vote
- Right to contest elections
- Right to hold public office
- Right to criticize the government
- Right to appeal
- Right to form political parties
- Freedom of the press

These rights must be given equally to everyone, regardless of caste, colour, creed, religion, or region.
Economic equality means fair distribution of wealth and opportunities. It includes:

- Equal chances to earn a living
- Equal pay for equal work
- Meeting basic economic needs
- Reducing wealth inequality

True political liberty cannot exist without economic equality. If some people are very poor and others very rich, the poor might not have the resources to fully participate in politics. Economic equality helps ensure that everyone can enjoy their political rights. Thus, it can be concluded that, Economic equality is the foundation for political liberty. **So, Option (c) is correct.**

Political freedom alone does not guarantee that people will be economically equal. Economic inequality can persist even in politically free societies. **So, Option (a) is not correct.**

Liberty and equality are foundational and interdependent principles in a democracy.
According to Harold Joseph Laski a British Political theorist and economist "Political equality is never real unless it is accompanied by virtual economic equality"
Equality ensures that all citizens have equal access and opportunity to participate in political and social processes, while liberty empowers them to freely exercise their rights and freedoms. Without equality, the benefits of liberty cannot be fully realized, as social or economic disparities may prevent individuals from enjoying their rights on an equal footing. **So, Option (b) is not correct.**

Both political liberty and economic equality are crucial, the importance of one over the other can vary based on the context and perspective.
Political liberty without economic equality can be seen as incomplete, as economic disparities can skew political power and influence. Thus, it cannot conclude that Political liberty is more important than economic equality. **So, Option (d) is not correct.**

12. Failing to inform a person of the reason for their arrest in a language they understand, at the time of arrest or afterwards, violates which of the following ?
    1. Article 20
    2. Article 21
    3. Article 22
    4. Code of Criminal Procedure

    Select the correct answer using the codes given below :
    (a) 1 and 4 only
    (b) 2 only
    (c) 1, 2, and 4 only
    (d) **2, 3, and 4 only**

EXPLANATION:

Article 20 of the Indian Constitution deals with protection in respect of conviction for offences. It provides important safeguards for individuals against arbitrary and unfair criminal prosecution. It mainly covers three protections that are mentioned below:

- Article 20(1): No one can be convicted for an act that was not a crime when it was committed. (No retrospective punishment.)
- Article 20(2): A person cannot be punished more than once for the same offence. (Protection against double jeopardy.)
- Article 20(3): A person cannot be forced to testify against themselves during a trial. (Protection against self-incrimination.)

Therefore, the failure to communicate the grounds of arrest to a person in a language they understand, either at the time of arrest or subsequently, does not constitute a violation of Article 20 of the Indian Constitution. **So, Statement 1 is not correct.**

In an important ruling, the Supreme Court recently stated that informing an arrested person about the grounds of arrest is not just a formality, but a mandatory constitutional requirement.
The Court emphasized that the reasons for arrest must be clearly explained in a language the person understands, ensuring they fully grasp the basic facts. This communication protects their constitutional rights.
Under Article 22(1) of the Constitution, it is a fundamental right to be informed promptly and clearly about the reasons for arrest. If this is not done, it violates Article 22(1) and also the right to personal liberty under Article 21. In such cases, the arrest becomes illegal and the person must be released immediately. Even under strict laws like the PMLA and UAPA, the violation of these rights can lead to bail or release.
Additionally, Section 50 of the CrPC mandates that when someone is arrested without a warrant, they must be immediately informed of the reasons for arrest in a language they understand.
Thus, failure to inform the arrested person of the grounds of arrest, in a language they comprehend, violates Article 21, Article 22, and Section 50 of the CrPC.
So, Statements 2, 3 and 4 are correct.

13. Which of the following statements regarding the Electors Photo Identity Card (EPIC) in India are correct ?
    1. The Election Commission of India (ECI) issues the EPIC card to eligible voters as proof of their identity.
    2. The EPIC card contains details such as the voter's name, photograph, gender, date of birth, and a unique identification number.
    3. Voters without an EPIC card are not allowed to vote, even if their names appear on the electoral roll.

    Select the correct answer using the codes below :

    (a) 1 and 2 only
    (b) 1 and 3 only
    (c) 2 and 3 only
    (d) 1, 2 and 3

EXPLANATION:

The Election Commission of India (ECI) provides every registered voter with a unique identification number known as the EPIC number (Electors Photo Identity Card). This EPIC number is a 10-character alphanumeric code printed on the Voter ID card.
The Voter ID card is an essential document for every Indian citizen, as it is required to cast a vote in elections and also serves as a valid proof of identity. **So, Statement 1 is correct.**

The EPIC card entails all the necessary information of a voter. Voter ID cards comprise the details mentioned below:

- Name of the cardholder
- Gender
- A unique Voter ID/EPIC number
- Passport-size photograph of the cardholder
- Father's name of the cardholder
- Date of birth of the cardholder
- Address of the cardholder
- Assembly constituency number, name and address
- Electoral registration officer's signature. **So, Statement 2 is correct.**

The Citizens are required to have a valid Voter ID with a unique 10-digit alphanumeric Electoral Photo Identity Card Number (EPIC) issued by the ECI.
It serves as the primary identification document for citizens exercising their voting rights during the elections.
However, if an individual lost his/her voter ID card or doesn't hold a physical copy of their voter card, he/she can still participate in the democratic exercise.
One can vote without possessing a physical copy of a voter ID, but it is to be ensured that their name is enlisted in the Election Commission's voter list. **So, Statement 3 is not correct.**

14. For which of the following states does the President enjoy the power to direct an act of Parliament that does ***not*** apply or apply with specified modifications and exceptions to a tribal area in the state?
    1. Assam
    2. Arunachal Pradesh
    3. Meghalaya
    4. Tripura
    5. Mizoram

    Select the correct answer using the code given below :

    (a) 1, 2 and 4 only
    (b) **3, 4 and 5 only**
    (c) 1, 3, 4 and 5 only
    (d) 1, 2, 3 and 5 only

EXPLANATION:

The Sixth Schedule of the Indian Constitution provides special provisions for the tribal areas in Assam, Meghalaya, Tripura, and Mizoram.
This is because the tribes in these states have not fully integrated into mainstream culture. While tribes in other parts of India have adopted the majority culture, the tribes in these states still preserve their distinct cultures and traditions. As a result, these areas are given more autonomy for self-governance.
Acts of Parliament or the state legislature do not apply directly to these autonomous districts and regions, or they apply with certain modifications and exceptions.
The power of direction in these areas lies with either the President or the Governor.

- In Assam, the Governor has this power for both Acts of Parliament and the state legislature.
- In Meghalaya, Tripura, and Mizoram, the President has authority over Acts of Parliament, while the Governor has it over Acts of the state legislature. **So, Option (b) is correct.**

15. Which of the following statements regarding curative petitions in the Supreme Court of India are correct ?
    1. A curative petition is filed after the dismissal of the review petition to prevent the miscarriage of justice.
    2. It is governed by Article 137 of the Indian Constitution.
    3. The petition is heard by the same bench that had passed the original judgment.

    Select the correct answer using the codes given below :

    (a) 1 and 2 only
    (b) 2 and 3 only
    (c) 1 and 3 only
    (d) 1, 2, and 3

EXPLANATION:

A curative petition is a judicial innovation developed by the Supreme Court of India in the landmark case Rupa Ashok Hurra vs. Ashok Hurra (2002). It is intended to prevent a miscarriage of justice and correct gross errors in judgments, even after a review petition has been dismissed.
Constitutionally, a final ruling of the Supreme Court can typically be challenged only through a review petition, which is limited to procedural grounds. However, curative petitions act as a last resort to address grave miscarriages of justice.
The main aim of a curative petition is to prevent injustice and deter abuse of the legal process. These petitions are usually decided by judges in chambers, unless a majority of the judges involved conclude that the matter requires an open-court hearing.
So, Statement 1 is correct.

Curative petitions are grounded in Article 137 of the Indian Constitution, which grants the Supreme Court the power to review its own judgements and orders. The Court exercises this power in accordance with laws and rules framed under Article 145.

- According to Article 137, the Supreme Court has the power to review any judgement or order passed by it. **So, Statement 2 is correct.**
- Article 145 of the Constitution provides for rules of the court i.e. subject to the provisions of any law made by the Parliament, the Supreme Court may from time to time with the approval of the President make rules for regulating the practice and procedure of the court.
- Also, according to clause (3) of Article 145, in any case involving a substantial question of law as to the interpretation of the Constitution, the number of judges should be five.
- Article 147 of the Constitution of India serves a limited purpose to clarify the reference regarding any substantial question of law.

A curative petition must first be circulated to a bench comprising the three senior-most judges of the Supreme Court, along with the judges who delivered the original judgment, if they are available.
It is only when a majority of these judges conclude that the matter warrants a hearing that the petition is then listed for an open-court hearing, typically before the same bench that delivered the original judgment. Therefore, it is not mandatory that the petition is heard by the same bench that had passed the original judgment. **So, Statement 3 is not correct.**

16. When the law is used as an instrument of suppression, oppression and social control in the course of implementing a political agenda, it is known as :
    (a) Rule of law
    (b) Rule by law
    (c) Rule by decree
    (d) Autocratic legality

EXPLANATION:

The rule of law is a principle of governance in which all persons, institutions and entities, public and private, including the State itself, are accountable to laws that are publicly promulgated, equally enforced and independently adjudicated, and which are consistent with international human rights norms and standards. **So, Option (a) is not correct.**

Rule by law is when the law is used as an instrument of suppression, oppression and social control in the course of implementing a political agenda. While the rule of law is declared a basic feature of the Constitution, rule by law is the exact opposite of all that is represented by rule of law. The rule of law is a government run by law, not men. **So, Option (b) is correct.**

Rule by decree is a system of governance where laws are made and enforced by a single person or a small group, often bypassing the usual legislative process. This power can be granted in times of emergency or can be used to bypass parliamentary scrutiny, potentially leading to a form of authoritarianism. **So, Option (c) is not correct.**

Autocratic legalism is the weaponization and instrumentalization of the law and the legal system to advance, strengthen, and reinforce authoritarianism and the interests of autocratic leaders and institutions. In this context, autocrats utilize constitutionalism and legal precepts to articulate and justify behaviour that egregiously violate basic civil rights, human rights, and due process of the law. **So, Option (d) is not correct.**

17. Labour Bureau, an attached office of the Ministry of Labour and Employment has been compiling Consumer Price Index for Rural Labourers. Which of the following statements about the index are correct ?
    1. It is published every month on the basis of wholesale prices collected at the village level.
    2. The base year for the index is currently 2019.

    Which of the statements given above is/are correct?
    (a) 1 only
    (b) 2 only
    (c) Both 1 and 2
    (d) Neither 1 nor 2

EXPLANATION:

Labour Bureau, an attached office of the Ministry of Labour and Employment, has been compiling the Consumer Price Index for Rural Labourers. The existing series of CPI Numbers for Agricultural and Rural Labourers (base 1986-87=100) covers data from 600 sample villages selected from 20 States every month.

- The indices for 20 States and all-India for Agricultural and Rural Labourers are compiled on a monthly basis as per the methodology suggested by the Technical Advisory Committee on Statistics of Prices of Cost of Living.
- The Field Operations Division of the National Statistical Office has been entrusted with the responsibility of collecting rural retail prices (not wholesale prices) every month from shops and markets catering to 600 representative sample villages spread over 66 National Sample Survey (NSS) regions in 20 States. **So, Statement 1 is not correct.**
- Price collection from these sample villages is staggered over the four weeks of a month, with one-fourth of the sample being covered every week.
- These prices are collected on the fixed price collection day, which may be a "Haat" day for non-daily markets or any market day for daily markets. The price returns are scrutinised and processed by the Labour Bureau, and the discrepancies, if any, are sorted out through correspondence and field inspections by the Bureau staff.
- The Labour Bureau is in the Final stage of approval to revise the base year for the consumer price index for agricultural and rural labourers (CPIAL/RL) to 2019-20, from 1986-87, besides developing an index for all states and Union Territories (UTs). Therefore, as of now, the base year for the Consumer Price Index for Rural Labourers stands at 1986-87. **So, Statement 2 is not correct.**

18. Consider the following statements :

    Assertion (A) *:*

    The Comptroller and Auditor General of India (CAG) exercises control over the maintenance of accounts for all three levels of the Panchayat Raj Institutions.

    Reason (R) *:*

    As per the Indian Constitution, the Comptroller and Auditor General of India (CAG) is mandated to audit the Local bodies.

    Which one of the following is correct in respect of the above statements ?
    (a) Both A and R are individually true, and R is the correct explanation of A
    (b) Both A and R are individually true, but R is not the correct explanation of A
    (c) **A is true, but R is false**
    (d) A is false, but R is true

EXPLANATION:

The Constitution of India (Article 148) provides for an independent office of the Comptroller and Auditor General of India (CAG). He is the head of the Indian Audit and Accounts Department. He is the guardian of the public purse and controls the entire financial system of the country at both the levels–the Centre and the state. His duty is to uphold the Constitution of India and the laws of Parliament in the field of financial administration.

- The Eleventh Finance Commission (EFC) recommended that the Comptroller and Auditor General of India shall be responsible for exercising control and supervision over the proper maintenance of accounts and their audit for all three tiers/levels of Panchayati Raj Institutions and Urban Local Bodies (ULBS).
- The State Government accordingly allowed (April 2004) the audit of accounts of ULB to be done by the Accountant General according to which Accountant General will be at liberty to conduct audit of such number of ULBs in such manner as it deems fit since all ULBs were in receipt of grants from the consolidated fund of the Centre/State and issue audit/inspection reports. **So, Statement 1 is correct.**

The Constitution of India, through Article 149, provides a framework for the Comptroller and Auditor General of India's (CAG) duties and powers, but does not explicitly list them. The Parliament has enacted the CAG's (Duties, Powers and Conditions of Service) act, 1971. This Act was enacted by the Indian Parliament to define the specific duties, powers, and conditions of service for the Comptroller and Auditor General of India (CAG).

- C&AG's mandate for audit of Local Bodies flows basically from the CAG's DPC Act 1971, and he has been conducting the audit of receipts and expenditure of those local bodies both rural and urban, which are substantially financed from Union or State revenues under Section 14 of the Act. **So, Statement 2 is not correct.**

A is true, but R is false.

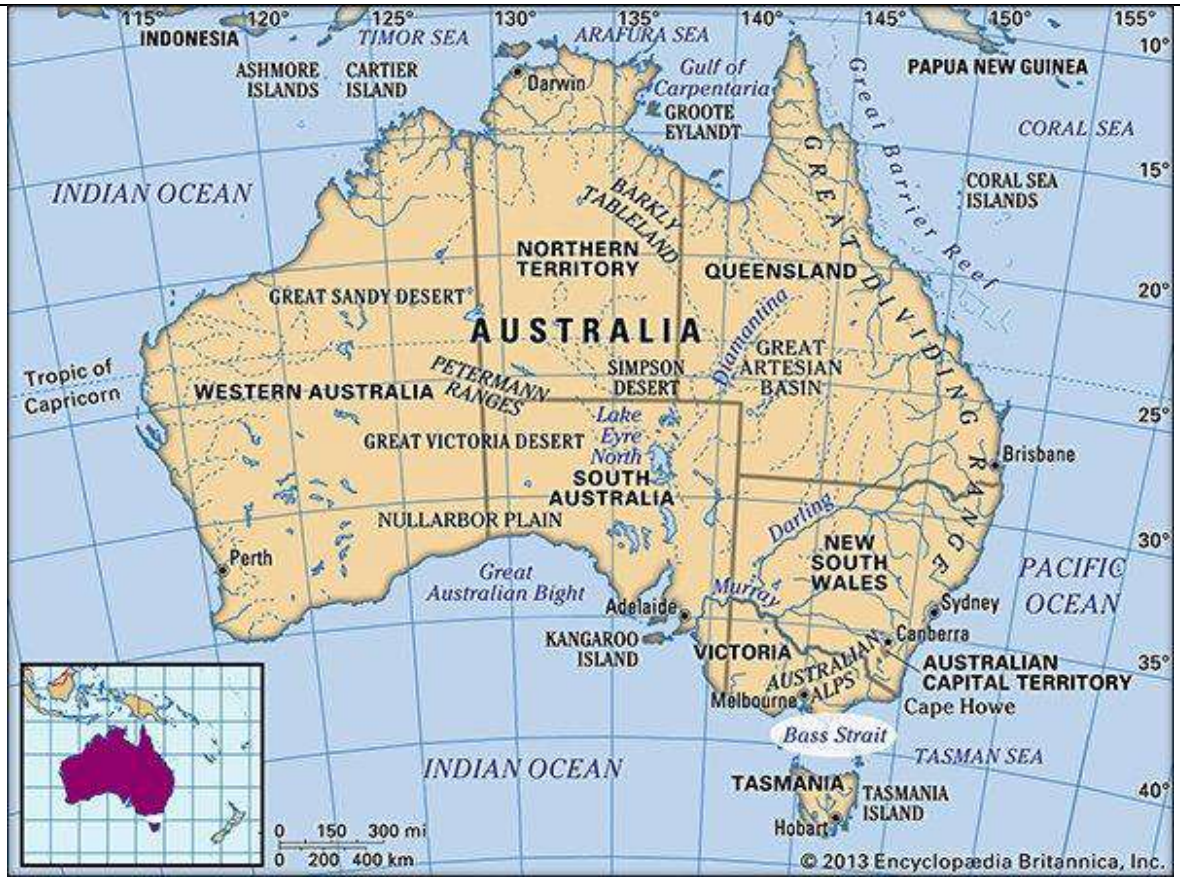
19. Consider the following statements with respect to Australia :
    1. The Bass Strait separates Australia from Tasmania.
    2. The Torres Strait separates the Arafura Sea from the Coral Sea.
    3. Australia is the world's largest producer of uranium.

    Which of the statements given above are correct ?

    (a) **1 and 2 only**
    (b) 2 and 3 only
    (c) 1 and 3 only
    (d) 1, 2 and 3

EXPLANATION:

Bass Strait is a channel separating Victoria, Australia, from the island of Tasmania to the south. Its maximum width is 150 miles (240 km), and its depth is 180–240 feet (50–70 m). Bass Strait is considered an international strait under the United Nations Convention on the Law of the Sea (UNCLOS), which mandates the removal of any structures no longer in use from the strait. **So, Statement 1 is correct.**



The Torres Strait is located at the maritime border of Australia and New Guinea. It is a passage between the Coral Sea, on the east, and the Arafura Sea, in the western Pacific Ocean. It is bordered by the Western Province of Papua New Guinea to the north and the Cape of York Peninsula (Queensland, Australia) to the south. The strait is 93 miles wide and 15 m deep. It has many reefs and shoals dangerous to navigation, and its larger islands are inhabited. **So, Statement 2 is correct.**

Australia's uranium reserves are the world's largest, with around one-third of global resources. Australia is also the world's fourth largest producer (not the world's largest producer), behind Kazakhstan, Canada and Namibia. Australia exports all its uranium production to countries that have signed bilateral safeguards agreements, which ensure that Australian uranium is only used for peaceful purposes and does not contribute to any military applications. **So, Statement 3 is not correct.**

20. Consider the following :
    1. Armed Forces
    2. Police Force
    3. Intelligence Organisation of the state

    For which of the above does the State Legislature have the authority to impose limitations upon the enforcement of Fundamental Rights ?
    (a) 1 only
    (b) 2 only
    (c) 3 only
    (d) None

EXPLANATION:

Article 33 empowers the Parliament, not the State Legislature, to restrict or abrogate the fundamental rights of the members of armed forces, para-military forces, police forces, intelligence agencies and analogous forces. The objective of this provision is to ensure the proper discharge of their duties and the maintenance of discipline among them.

- The power to make laws under Article 33 is conferred only on Parliament and not on state legislatures. Any such law made by Parliament cannot be challenged in any court on the ground of contravention of any of the fundamental rights.
- Accordingly, the Parliament has enacted the Army Act (1950), the Navy Act (1950), the Air Force Act (1950), the Police Forces (Restriction of Rights) Act, 1966, the Border Security Force Act and so on. These impose restrictions on their freedom of speech, right to form associations, right to be members of trade unions or political associations, right to communicate with the press, right to attend public meetings or demonstrations, etc. **So, Option (d) is correct.**

21. With reference to agriculture during the Neolithic period, consider the following statements :
    1. Compared to other Neolithic sites, the cultivation of wheat and barley is predominant in the Ganga River valley.
    2. The domesticated rice was predominant in South India, where it is absent in the central region.
    3. Cultivation of lentils and millets was found in the areas of the Mid-eastern Ganga valley region.

    Which of the statements given above is/are correct ?
    (a) 1 only
    (b) 1 and 2 only
    (c) **3 only**
    (d) 2 and 3 only

EXPLANATION:

The Neolithic period marked the beginning of agriculture and animal domestication. The evidence of cultivation of crops like wheat, barley and cotton were discovered from Mehrgarh.

- Agriculture in the Neolithic period in India marked a significant transition in human history, as communities shifted from a nomadic hunter-gatherer lifestyle to settled agricultural practices. During this period, people began to cultivating crops, domesticating animals, and establishing permanent settlements.
- Rice cultivation was one of the key agricultural practices during the Neolithic period in India. It was primarily practiced in the fertile river valleys of the Ganga and Brahmaputra rivers in eastern India.

The cultivation of rice played a crucial role in the development of settled agricultural communities. The cultivation of wheat and barley was prevalent in the north western parts of India.

- In terms of plant crops, wheat and barley were predominant in Mehrgarh in Baluchistan, but rice was important in the central region around Prayagraj. Therefore, the cultivation of wheat and barley was not predominant in the Ganga River valley. **So, Statement 1 is not correct.**
- Senuwar in the Mid-eastern Ganga valley region has produced evidence of cultivated rice, barley, field pea (Pisum sativum), lentil and millets. **So, Statement 3 is correct.**

The Neolithic cultures of South India are found mainly in Andhra Pradesh, Karnataka and north-western part of Tamil Nadu. Kupgal, Budihal, Kodekal, Kudatini, Sanganakallu, T.Narsipur, and Brahmagiri are the Neolithic sites of South India.

- The Neolithic people of South India had an agro-pastoral economy. They had domesticated cattle (Bos indicus), buffalo (Bubalus bubalis), sheep (Ovis aries), goat (Capra hircus aegagrus), pig (Sus scrofa cristatus), dog (Canis familiaris) and fowls (Gallus sp.). Cattle were their main source of economy. Terracotta figurines of cattle have also been found.
- The Neolithic people of Soth India cultivated plants mainly millets, pulses and legumes.
- Evidence of the cultivation of finger millet (Eleusine coracana), kodo millet (Paspalum scrobiculatum), horse gram (Dolichos biflorus), green gram (Vigna radiata), black gram (Phaseolus mungo) and hyacinth bean (Dolichos lablab) was found in South Indian Neoloithic sites. Barley (Hordeum vulgare) and rice (Oryza sativa) have been found at very few sites.
- Therefore, during Neolithic period there was no rice domestication in south India while the Central India was an independent centre of rice cultivation. **So, Statement 2 is not correct.**

22. With reference to the Literature during the Gupta period, which of the following statements are correct?
    1. 'Puranas', the writing of literature began during the Gupta period.
    2. Narada Smriti mentions the social and economic rules and regulations during the Gupta period.
    3. The early history of Harsha was reconstructed based on the work of Banabhatta

    Select the correct answer using the codes given below :
    (a) 1 and 2 only
    (b) 2 and 3 only
    (c) 1 and 3 only
    (d) **1, 2 and 3**

EXPLANATION:

The Gupta period marks the beginning of the writing of the literature known as Puranas. These texts refer to the stories about the Hindu gods and mention the ways to please them through fasts and pilgrimages.

- The major Puranas written in this period are the Vishnu Purana, Vayu Purana and the Matsya Purana.
- For the worship of Shiva, Shiv Purana was written whereas the various incarnations of Vishnu are glorified in Varaha Purana, Vamana Purana, and Narasimha Purana. They were meant for the worship by common man. **So, Statement 1 is correct.**

Some Smritis or the law books were also compiled in the Gupta period. One of these, the Narada Smriti throws light on the general social and economic rules and regulations of the period. **So, Statement 2 is correct.**

In the seventh century Banabhatta, the court poet of Harsha, wrote Harshacarita praising his patron. Written in an ornate style, it became a model for later writers. The early history of Harsha is reconstructed on the basis of this text. Another text written by him is Kadambari. Harsha too was considered to be a literary monarch. He is said to have authored three plays: Priyadarshika, Nagananda and Ratnavali. **So, Statement 3 is correct.**

23. Consider the following pairs :

Sl.No.	*Term*		*Meaning*
1.	Khudkasht	-	Peasants who cultivated their own land
2.	Paikasht	-	Peasants who cultivated land not owned by them but rented or leased from a landlord
3.	Muazarian	-	Sharecroppers or tenant farmers

How many of the above pairs is/are correctly matched ?

(a) Only one
(b) Only two
(c) **All three**
(d) None

EXPLANATION:

During the Sixteenth and Seventeenth Centuries about 85% of the population of India lived in its villages. Within the village, peasants were divided into various categories based on the type and nature of their landholdings.

- **Khudkasht:** The term Khudkasht implied hereditary ownership of land and the right to sell or mortgage it. The essential feature of this tenure was the possession and use of personal ploughs for tilling the land holding owned by the family. Khudkasht had the right to get back his holding even after the lapse of 10-15 years, provided he cleared revenue dues. The upper caste and richer Khudkasht relied on full or part-time labour for cultivating their holdings, as their women did not work in the fields, and the Brahmans and Rajputs did not plough land themselves.
- In their case, the use of hired labour irrespective of the size of land holding was indispensable. The number of ploughs owned by a Khudkasht was a measure of his status. A section of the raiyat who did not own ploughs had to lean heavily on those Khudkasht who possessed surplus ploughs. Hence, Khudkasht refers to peasants who cultivated their own land. **So, Pair 1 is correct.**

The Pai Kasht : The pai or the pahis were those who came from villages other than the village where they resided. The position and the nature of their land rights varied depending on their caste, duration of stay, their agricultural capital, availability of land and the customary practices of the area. They were mostly inferiors in caste and status. Occasionally, those from the upper castes also became pahis.

- There were two categories of pahis. The first may be termed non-resident cultivators. They usually came from neighbouring villages and cultivated land without becoming residents of the village. They tilled the land as tenants and had no right to sell or mortgage it. The pahis were induced to develop newly colonized and depopulated villages, and they were charged land revenue at a concessional rate.
- The second category of pahis was essentially migratory cultivators who came from far-off villages and Parganas. Hence, Paikasht refers to peasants who cultivated land not owned by them but rented or leased from landlords. **So, Pair 2 is correct.**

The Muzarians: The muzarian were, as a category of cultivators less privileged than the khwud kashta and were occasionally dependent on the village money lender, zamindar and headman for bullocks, ploughs and seeds, etc.

- The muzarian belonged to two distinct categories, namely state tenants and tenants of superior section.
- State tenants were those who cultivated surplus land and land abandoned by some khwud kashta in the village under specific terms and conditions mentioned in the patta issued by the state revenue officials. There used to be competition to attract tenants on the part of the state officials, madad-i maash, and inam holders. Hence, muzarians refers to sharecroppers or tenant farmers. **So, Pair 3 is correct.**

24. In the context of Indian history, the Mausoleums "Ibrahim Rauza" and "GolGumbaz" are located in
    (a) **Bijapur**
    (b) Bidar
    (c) Ahmednagar
    (d) Champaner

EXPLANATION:

Both Ibrahim Rauza and Gol Gumbaz are located in Bijapur, Karnataka. These architectural marvels are significant examples of Indo-Islamic architecture and are associated with the Adil Shahi dynasty.

- **Gol Gumbaz**: which is popular in the Bijapur area is by itself very famously known as round dome or a roof top in a rounded shape. It is known as the tomb (mausoleum) of the ruler Muhammad Adil Shah II, who lived in the year (1627-57 AD) and is generally known as the seventh Sultan of Bijapur of the Adil Shahi dynasty of the 17th century.
- The construction of this was done between the years 1626 to 1656. Gol Gumbaz is one of the mausoleum masterpiece of Islamic architecture with a huge proportions of the architectural summit of Adil Shahi dynasty. The floor area is covered with about 1703.56 m2 almost the major under any domed building in the world.

- **Ibrahim Rauza**: In Bijapur, Karnataka, is the tomb complex where Ibrahim Adil Shah II is buried along with his wife, Queen Taj Sultana. It is one among the supreme achievements of the Adil Shahi's which is remarkably considered and finely decorated. It was completed in the year 1627 by Ibrahim Adilshah –II, it is a square structure with twin buildings and delicate carvings. The building was designed by the Persian architect Malik Sandal with the sentence of Quraan are beautifully covered on the walls.

So, Option (a) is correct.

25. Which one of the following statements is ***incorrect*** with reference to British India ?
(a) The Regulating Act of 1773 formally, for the first time, recognised British Parliamentary rights to control Indian affairs of the company's Indian affairs
(b) Pitt's India Act 1784 asserted the undoubted sovereignty of the crown of the United Kingdom over Indian possession of the company.
(c) The Charter Act of 1833 threw open of the company's services to the native Indians.
(d) The Charter Act of 1853 introduced the recruitment examination for the civil services.

EXPLANATION:

In these circumstances, the Parliament passed its first important Act in 1773, called the Regulating Act to control the Company's Administration. The Act made changes in the constitution of the Company at home; the whole of the territories in India were subjected to some degree of control.
This act was of great constitutional importance as
- It was the first step taken by the British Government to control and regulate the affairs of the East India Company in India;
- It recognised, for the first time, the political and administrative functions of the Company; and
- It laid the foundations of central administration in India. **So, Option (a) is correct.**

The Pitt's India Act of 1784, sometimes described as the "half-loaf system", as it sought to mediate between Parliament and the company directors, enhanced Parliament's control by establishing the Board of Control, whose members were selected from the British cabinet.
Thus, the act was significant for two reasons: first, the Company's territories in India were for the first time called the 'British possessions in India'; and second, the British Government (not under the crown of the United Kingdom) was given the supreme control over Company's affairs and its administration in India, **So, Option (b) is not correct.**

The Charter Act of 1833 attempted to introduce a system of open competition for the selection of civil servants. It stated that the Indians should not be debarred from holding any place, office or employment under the Company.
Section 87 of the Act declared, "that no native or natural born subject of the crown resident in India should be by reason only of his religion, place of birth, descent, colour or any of them be disqualified for any place in the company's service." **So, Option (c) is correct.**

Charter Act of 1853 was the last of the series of Charter Acts passed by the British Parliament between 1793 and 1853. It was a significant constitutional landmark.
It introduced an open competition system of selection and recruitment of civil servants. The covenanted civil service was, thus, thrown open to the Indians also. Accordingly, the Macaulay Committee (the Committee on the Indian Civil Service) was appointed in 1854. **So, Option (d) is correct.**

26. Consider the following statements :
Statement 1 :
Hindu-Muslim unity was absent in the peasant struggles of the second half of the 19th century CE in Bengal.
Statement 2 :
The Aligarh movement of Syed Ahmed Khan resulted in the consolidation of the Muslim peasantry in Bengal.
Which one of the following is correct in respect of the above statements ?
(a) Both Statement I and Statement II are correct, and Statement II is the correct explanation of Statement I
(b) Both Statement I and Statement II are correct, but Statement II is not the correct explanation of Statement I
(c) Only one of the statements given above is correct
(d) None of the statements given above is correct

EXPLANATION:

During the Indigo Revolt (1859–60) of the late 19th century, peasants in Bengal launched a movement against the cultivation of indigo. Both Hindu and Muslim peasants united in the struggle, going on strike and filing cases against the planters. Their movement received support from the press and Christian missionaries.
In response, the government issued an order in November 1860 stating that it was illegal to force raiyats to cultivate indigo. This marked a significant victory for the peasants.
Thus shows that the Hindu Muslim unity was present in the peasant struggles of the late 19th century CE in Bengal. **So, Statement 1 is not correct.**

The Aligarh movement emphasised reconciliation of Islamic teachings with the needs of the modern age. Syed Ahmed Khan initiated a process of growth among Indian Muslims through better education and employment opportunities, aiming at the welfare of Muslims through Western education and the support of the British government.
The Aligarh Movement emerged as a liberal, moderntrend among the Muslim intelligentsia based in the Mohammedan Anglo-Oriental College, Aligarh. It aimed at spreading

- Modern education among Indian Muslims without weakening their allegiance to Islam;
- Social reforms among Muslims relating to purdah, polygamy, widow remarriage, women's education, slavery, divorce, etc.
- The movement's followers' ideology was based on a liberal interpretation of the Quran, and they sought to harmonise Islam with modern liberal culture.

They wanted to impart a distinct socio-cultural identity to Muslims on modern lines. Soon, Aligarh became the centre of religious and cultural revival of the Muslim community. This Aligarh movement by Syed Ahmed Khan not result in the consolidation of Muslim peasantry in Bengal. **So, Statement 2 is not correct.**

27. Which among the following statements is correct regarding social reformations in Modern Indian History ?
    (a) Veerasalingam Pantalu supported widow remarriage in Madras Province.
    (b) Keshab Chandra Sen formed the Nabo Bidhan New Dispensation Movement.
    (c) Swami Dayanand Saraswati invoked the authority of the Vedas as the most authentic Indian religious text.
    (d) All the above-given statements are correct.

EXPLANATION:

Social reform movements in Modern Indian History emerged as efforts to address deeply entrenched social and religious issues such as caste discrimination, gender inequality, child marriage, illiteracy, sati, and untouchability.These movements sought to modernize Indian society by promoting education, equality, and rational thinking, while actively opposing orthodox beliefs and harmful traditional practices.

- Veerasalingam Pantulu - By the second half of the nineteenth century, movements in favour of widow remarriage spread to other parts of the country. In the Telugu-speaking areas of the Madras Presidency, he formed an association for widow remarriage.
- Keshab Chandra Sen – joined the Brahmo Samaj in 1858 and played a key role in expanding its influence beyond Bengal to regions like Uttar Pradesh, Punjab, Madras, and Bombay.
  He introduced radical changes by strongly criticising the caste system, advocating for women's rights, and supporting widow remarriage.
  However, his decision to allow the marriage of his 14-year-old daughter to the prince of Cooch Behar contradicted his own stance against child marriage, leading to a split among his followers.
  In response, he established a new organization called Naba Bidhan (or Nava Vidhana, meaning "New Dispensation"), where he continued to promote a blend of Hindu philosophy and Christian theology.
- Swami Dayanand Saraswati - He founded Arya Samaj in 1875 and undertook the task of reforming the Hindu religion in North India. He considered the Vedas to be infallible and the foundation of all knowledge. He rejected all those religious thoughts which were in conflict with the Vedas. He believed that every person had the right to have direct access to God. It started the Shuddhi Movement to bring back those Hindus who had converted to Islam and Christianity. Satyarth Prakash was his most important book.

So, Option (d) is correct.

28. With reference to Land revenue settlements in India, consider the following statements :
    1. The provision of Patta was rarely followed by zamindars in permanent settlement.
    2. The Ryotwari system comprised more than Half of British Indian territory.
    3. The Ricardian theory of rent prompted the making of the Mahalwari settlement.

    Which of the statements given above is/are correct ?
    (a) 1 and 3 only
    (b) 2 only
    (c) 1 and 2 only
    (d) 1, 2 and 3
    (e) EXPLANATION:

The Permanent Settlement or Zamindari System covered around 19 per cent of the territory under British rule. Introduced in Bengal and Bihar, it was extended to Orissa, Banaras (Varanasi), and northern Madras. The zamindars were given proprietary rights over their land. Under the settlement, zamindars were required to issue written agreements (pattas) to each cultivator, specifying what the tenant was to pay. However, no such agreements were made; the result was that the peasants were at the mercy of the zamindars to be exploited and harassed for more rent, driving the cultivators into the clutches of moneylenders. The peasantry was reduced to serfdom. **So, Statement 1 is correct.**
Thomas Munro and Captain Alexander Read devised the Ryotwari system. When Munro became the governor of Madras Presidency in 1820, he introduced the system, which came to be known as the Ryotwari System. From the company's point of view, the most important reason for the adoption of this system was that it brought in a larger revenue than any other system could have done, as no intermediaries were involved, and whatever was extracted from the cultivator went directly to the government. The major areas where it was implemented were Madras, Bombay and parts of Assam, Sind and Berar. It was implemented in 51% of British areas. **So, Statement 2 is correct.**
David Ricardo, a classical economist developed a theory in 1817 to explain the origin and nature of economic rent. Rent is the payment made to the landlord for the use of land. Ricardo was of the view that rent is paid for the fertility of land. Ricardo stated “Rent is the portion of the produce of the earth which is paid to landlord for the use of the original and indestructible powers of the soil . The influence of the Ricardian theory of rent prompted the making of the Mahalwari Settlement. But the new settlement was enmeshed in confusion and corruption from the very beginning, as it was virtually impossible to implement in practice. The survey, which was at the core of the new arrangement, failed because it was too complex to be carried out with the existing administrative machinery. **So, Statement 3 is correct.**

29. Consider the following statements :
    1. Bharat Stree Mahamandal, convened by Sarla Devi, promoted the education of women all over India.
    2. Ramabai Ranade founded Arya Mahila Samaj, whose plea resulted in medical education for women in Lady Dufferin College.
    3. In 1925, Meherbai Tata was instrumental in the formation of the National Council of Women in India.

    Which of the statements given above are correct ?
    (a) 1 and 2 only
    (b) 2 and 3 only
    (c) 1 and 3 only
    (d) **1, 2 and 3**

EXPLANATION:

In 1910, Sarla Devi Chaudhurani convened the first meeting of the Bharat Stree Mahamandal in Allahabad. Considered the first major Indian women's organization set up by a woman, its objectives included the promotion of education for women, abolition of the purdah system and improvement in the socio-economic and political status of women all over India. Sarla Devi believed that the man working for women's upliftment lived 'under the shade of Manu'. **So, Statement 1 is correct.**

Pandita Ramabai Saraswati founded the Arya Mahila Samaj to serve the cause of women. She pleaded for improvement in the educational syllabus of Indian women before the English Education Commission, which was referred to Queen Victoria.
This resulted in medical education for women, which started at Lady Dufferin College. Later, Ramabai Ranade established a branch of Arya Mahila Samaj in Bombay. **So, Statement 2 is correct.**

In 1925, the National Council of Women in India, a national branch of the International Council of Women, was formed. Mehribai Tata played a vital role in its formation and advancement.
She opined that the purdah system, caste differences and lack of education prevented women from working to solve societal problems. Other women who held important positions on the executive committee of the council included:

- Cornelia Sarabji, India's first lady barrister;
- Tarabai Premchand, wife of a wealthy banker;
- Shaffi Tyabji, a member of one of Mumbai's leading Muslim families and
- Maharani Sucharu Devi, daughter of Keshab Chandra Sen. **So, Statement 3 is correct.**

30. Match the following dynasties with their capital towns :

	Dynasties		***Capital Towns***
A.	Cholas	1.	Manyakheta
B.	Rashtrakutas	2.	Thanjavur
C.	Kalachuris	3.	Tripuri
D.	Paramaras	4.	Dhar

Select the correct answer using the codes given below :

(a) A-1, B-2, C-3, D-4
(b) A-2, B-1, C-4, D-3
(c) A-2, B-1, C-3, D-4
(d) A-4, B-3, C-1, D-2

EXPLANATION:

The Chola dynasty consisted of South Indian Tamil rulers of ancient origin who predated the early Sangam poems. The dynasty originated in the fertile Kaveri (Cauvery) River valley. Uraiyur (now part of Tiruchchirappalli) was its earliest known capital.
Thanjavur, a city in eastern Tamil Nadu, lies in the Kaveri River delta, about 30 miles (50 km) east of Tiruchchirappalli. It served as an early capital of the Chola Empire from the 9th to the 11th century. Thanjavur remained significant during the Vijayanagara, Maratha, and British periods.
A-2

Manyakheta, located in present-day Karnataka, India, about 85 miles (135 km) southwest of Hyderabad, was the site of a former city.
It was founded in the 9th century by the Rashtrakuta ruler Amoghavarsha I and became the capital of the Rashtrakuta dynasty.
In 972 CE, it was sacked by the Paramara ruler Siyaka. After the downfall of the Rashtrakutas the following year, it was taken over by the Chalukyas, who adopted it for a period as their capital. Subsequently, the city declined and became a village. **B-1**

The best-known Kalachuri dynasty ruled in central India, with its capital at the ancient city of Tripuri (modern-day Tewar in Madhya Pradesh). Their origins trace back to around the beginning of the 8th century, although the dynasty comes into clearer focus only with the reign of Kokalla I (c. 850–885 CE). **C-3**

The Paramaras ruled over a vast region around Malwa from the 9th to the 13th centuries. Two of their most celebrated rulers were Vakpati Munja and Bhojadeva.

- Vakpati Munja was a great general, an accomplished poet, and a renowned patron of art and literature. He excavated the Munja Sagar at Dhar and Mandu and built several beautiful temples.
- Bhojadeva, the most illustrious Paramara king, is considered one of the greatest monarchs of ancient India. He shifted his capital from Ujjain to Dhar, where he established a university for Sanskrit studies known as Bhoja Shala, which enshrined an image of the goddess Saraswati.

In 1305 CE, the entire Malwa region came under the control of Ala-ud-din Khalji when Dhar and Mandu were captured.

Dhar remained under the rule of the Delhi Sultans until the reign of Muhammad bin Tughlaq. During that period, Dilawar Khan Ghuri served as the governor of Malwa. In 1401 CE, he declared independence and established the Malwa Sultanate, with Dhar as its capital. **D-4**

31. Consider the following statements :

Statement 1 :

Ecotone is considered as a zone of tension.

Statement 2 :

Organisms present in an ecotone are entirely different from those found in the adjoining communities.

Statement 3 :

The population density of species is greater in an ecotone than in either of the adjoining communities.

Which one of the following is correct in respect of the above statements ?

(a) Both Statement 2 and Statement 3 are correct and Statement 2 explains Statement 1
(b) Both Statement 2 and Statement 3 are correct and Statement 3 explains Statement 1
(c) **Both Statement 2 and Statement 3 are correct but none of them explains Statement 1**
(d) Neither of the statements are correct

EXPLANATION:

Ecotone is a zone of junction between two or more diverse ecosystems e.g. the mangrove forests. They represent an ecotone between marine and terrestrial ecosystems. Some more examples of ecotone are – grassland, estuary and river banks.

Ecotones are of great environmental importance.

- It may be wide or narrow.
- It is a zone of tension (as it has conditions intermediate to the bordering ecosystems). **So, Statement 1 is correct.**
- It could contain species that are entirely different from those found in the bordering systems(adjoining communities). **So, Statement 2 is correct.**
- Ecotones can be natural or man-made. For example, the ecotone between an agricultural field and a forest is a man-made one.

Edge effects refer to the changes in population or community structures that occur at the boundary of two habitats. Generally, a greater number of species are found in these regions (ecotones), and this is called the edge effect. The species found here are called edge species. Sometimes, the number of species and the population density of some of the species in the ecotone is much greater than that of either community. **So, Statement 3 is correct.**

32. Consider the following statements with reference to Coral reefs in India :
    1. All three major reef types occur in India.
    2. Only 3% of the total number of coral species are endemic to India.
    3. The Andaman Islands have around 80% of the global maximum for coral diversity.

    How many of the statements given above are correct ?
    (a) Only one
    (b) Only two
    (c) **All three**
    (d) None

EXPLANATION:

The Indian subcontinent, with its coastline extending over 8,000 km and subtropical climatic conditions, has very few coral reef areas when compared to other regions of the world. In India, the reefs are distributed along the east and west coasts at restricted places.

Fringing reefs are found in the Gulf of Mannar and Palk Bay. Platform reefs are seen along the Gulf of Kachchh. Patchy reefs are present near Ratnagiri and Malvan coasts. Fringing and barrier reefs are found in Andaman and Nicobar Islands. Atoll reefs are found in Lakshadweep.

Therefore, all three major reef types, atoll, fringing, and barrier, occur in India. **So, Statement 1 is correct.**

India is centrally placed within the warm tropical region of the Indian Ocean and exhibits Extensive coral reefs throughout its marine territories. Coral species are very wide-ranging.

- thirty-one corals are endemic to the Indonesian-Philippines centre of diversity, which is supposed to be the first in the endemism (5% of the total number of species of corals, i.e., 581),
- twenty-one species in the Caribbean and Gulf of Mexico (37% of the total number of species),
- 18 species in the Red Sea (6% of the total number of species) and
- At least six are endemic to India (3% of the total number of species). **So, Statement 2 is correct.**

The Andaman Islands have around 80% of the global maximum for coral diversity, suggesting a final count could reach 400 species of coral. Other major coral reefs in India, such as the moderately diverse Lakshadweep and highly diverse Gulf of Mannar, have 100+ species each, except the Gulf of Kachchh, where the diversity is minimal. **So, Statement 3 is correct.**

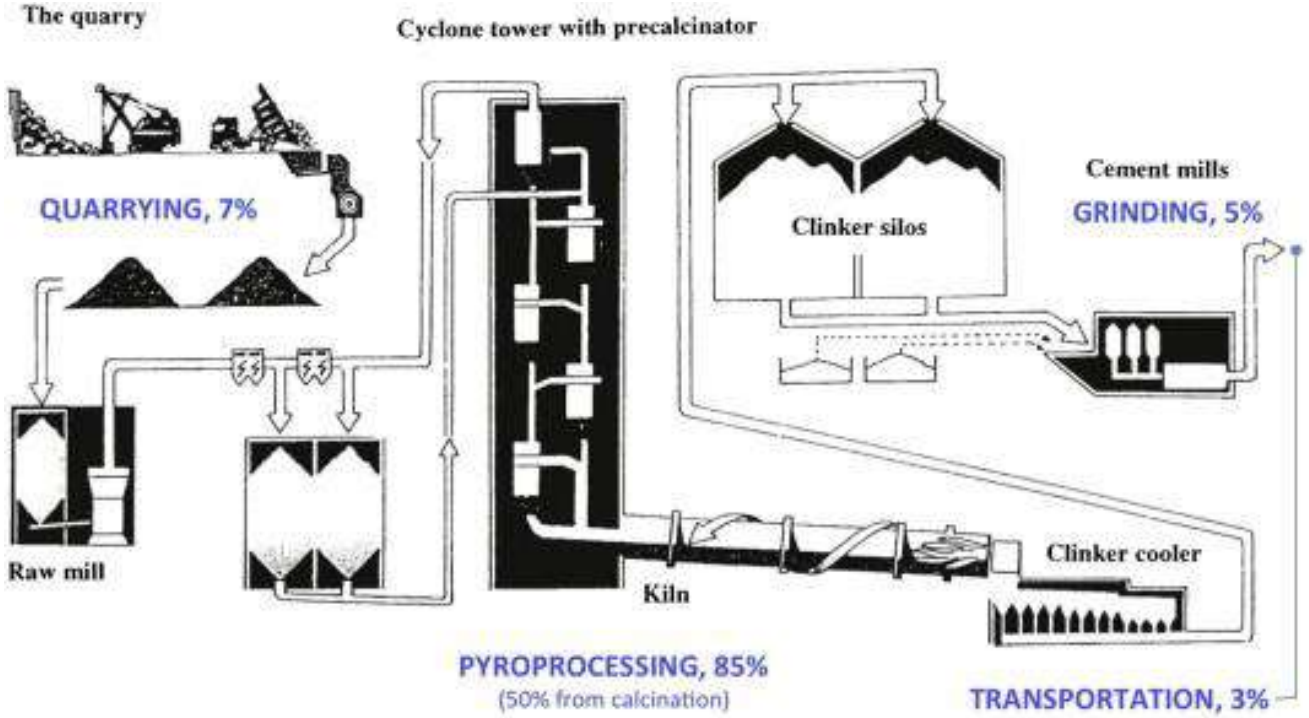
33. Consider the following :
    1. Sulphur Dioxide
    2. Nitrogen Dioxide
    3. Hydrochloric acid
    4. Heavy metals
    5. Hydrogen Fluoride

How many of the pollutants mentioned above are released from the Cement Industry ?

(a) Only two
(b) Only three
(c) Only four
(d) **All five**

EXPLANATION:

Cement manufacturing is a significant mineral commodity industry. Ninety per cent of emissions from cement making are from the kiln, where limestone and silica (shale and sand) are heated to high temperatures (~1450°C) to chemically create the material called clinker necessary in making cement.



According to the World Economic Forum, global cement manufacturing is responsible for about 8% of the world's total CO2 emissions.

- The cement industry has been categorized as highly polluting by the Central Pollution Control Board (CPCB).
- The main pollutants emitted from cement industries include Particulate Matter, Sulphur Dioxide (SO2) and Nitrogen Dioxide (NO2).
- Furthermore, cement factories produce several heavy metals such as arsenic (As), cadmium (Cd), chromium (Cr), mercury (Hg), nickel (Ni), lead (Pb), zinc (Zn), and copper (Cu).
- In addition to the emission of greenhouse gases and primary air pollutants, cement production also releases a range of other hazardous atmospheric substances.
- These include hydrogen chloride (HCl), non-methane volatile organic compounds (NMVOCs), polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs), polycyclic aromatic hydrocarbons (PAHs), and fluorides.
- Hydrogen fluoride is used in many applications and its most important use is in the chemical industry for the production of most fluorine-containing chemicals. Cement and glass industries are concerned of their HF releases.
- Hydrogen fluoride (HF) can be released during the manufacture of cement. Fluoride, present in raw materials like limestone, can be converted into HF during the high-temperature processes of cement production. **So, Option (d) is correct.**

34. With reference to the 'Cadmium', consider the following statements :
    1. Cadmium may be released into the environment due to the combustion of fossil fuels.
    2. Cadmium is naturally present in the Earth's crust and oceans.
    3. Phosphorus fertilisers and sewage sludges are a major source of environmental releases of cadmium.

    Which of the statements given above are correct ?
    (a) 1 and 2 only
    (b) 2 and 3 only
    (c) 1 and 3 only
    (d) **1, 2 and 3**

EXPLANATION:

Cadmium is a soft, bluish-white metal with a low melting point, which is generally present in zinc ore deposits such as greenockite (CdS). The principal source of cadmium is zinc ore sphalerite. Other sulphides and sulphosalts may also carry small amounts of the metal.
Cadmium is primarily emitted into the atmosphere through activities such as metal production, fossil fuel combustion, and waste incineration. In the air, it typically exists in the form of cadmium oxide, cadmium chloride, and cadmium sulfate, which are relatively stable and undergo little chemical transformation.**So, Statement 1 is correct.**

Naturally, cadmium is found in the earth's crust at concentrations of 0.1–0.5 ppm, often in association with zinc, lead, and copper ores. It is also present in ocean water, with average concentrations ranging from <5 to 110 ng/L, and higher levels near coasts. Natural sources of cadmium emissions include volcanic eruptions, forest fires, and sea salt aerosols. **So, Statement 2 is correct.**

Anthropogenic Sources of Cadmium (Cd):
Cadmium enters soil and groundwater through combustion emissions, sewage sludge, landfills, mining, metal industries, and accidents. Phosphorous fertilizers and sewage sludges are also major sources of environmental releases of cadmium, which contain cadmium as an impurity and can alter soil chemistry, leading to contamination. Local sources like mines cause localized contamination, while diffuse sources such as atmospheric emissions, wastewater reuse, and agriculture contribute to widespread distribution. **So, Statement 3 is correct.**

35. The first African cheetahs from Namibia were released in Kuno National Park, Madhya Pradesh. And later, it was planned to introduce more cheetahs into the Gandhi Sagar Wildlife Sanctuary in Madhya Pradesh and the Mukundara Hills Tiger Reserve in Rajasthan.
    Which of the following is best suitable reason for the introduction for cheetah into these National Parks ?
    (a) To restore the species extinct in India for decades
    (b) **Presence of dry savanna forest and riverine valley**
    (c) No human settlements in the region or immediate vicinity.
    (d) Potential of coexistence of predators.

EXPLANATION:

The Cheetah, Acinonyx jubatus, is the world's fastest mammal and is endemic to the savannahs of Africa. The cheetah was declared extinct in India in 1952. The main goal of the cheetah reintroduction project is to establish viable cheetah metapopulation in India that allows the cheetah to perform its functional role as a top predator.

- The Kuno-Palpur National Park in Madhya Pradesh state was selected as Kuno National Park, a wildlife sanctuary 320 kilometres south of New Delhi selected for its abundant prey and grasslands. Kuno, as the national park, consists of a riverine forest and a dry savanna forest.

- Cheetah cubs born in Madhya Pradesh have the world's highest survival rate. In contrast, cubs in other countries often struggle to adapt to local climates. Gandhi Sagar Sanctuary offers an ideal environment for cheetahs, prompting the State to introduce them there to enrich the sanctuary.
- Mukundara Hills Tiger Reserve in Rajasthan was initially considered as a potential site for cheetah introduction, but it has not been selected due to concerns about the compatibility of tigers and cheetahs in the same habitat, as well as the fact that the primary focus of the reserve is tiger conservation. The reserve was also considered for cheetah reintroduction, but the National Tiger Conservation Authority (NTCA) ultimately decided against it, citing the reserve's current focus on tiger conservation and potential challenges in managing both species.

The best suitable reason for the introduction of cheetah into these National Parks is due to the presence of dry savanna forest and riverine valley. **So, Option (b) is correct.**

36. Stubble burning, the practice of setting fire to crop residue after harvest, causes severe air pollution. Which of the following are alternative ways in which paddy straw can be utilised ?
    1. Biomass gasification process
    2. Bioethanol production
    3. Raw materials in the paper and pulp industry
    4. Lignin products

    Select the correct answer using the codes given below :
    (a) 1, 2 and 3 only
    (b) 2, 3 and 4 only
    (c) 1, 3 and 4 only
    (d) **1, 2, 3 and 4**

EXPLANATION:

India, the world's second-largest agro-based economy and a major rice producer with 20% of the world's total rice production in the world behind China. India faces serious environmental issues due to stubble burning, especially in northern states like Punjab and Haryana.

After harvesting rice, farmers often burn leftover crop residue (stubble) to quickly clear fields for the next sowing season. This practice, known as Parali burning, contributes significantly to air pollution, particularly in Delhi during September and October, causing severe health and environmental problems.

There are various management practices that are developed to control air pollution caused due to crop residue:

- Bioenergy Production: Paddy straw can be used to generate bioenergy through processes such as biomass gasification, pyrolysis, and biogas production. This can help reduce the reliance on fossil fuels and mitigate greenhouse gas emissions. Paddy straw can be utilised for anaerobic digestion, which produces valuable biogas that can be purified and used as CNG and PNG in the city gas distribution networks. There is a CBG (compressed biogas) plant based on paddy straw in Sangrur, Punjab. With the amount of straw burned in the north-western States of India, we can produce more than ₹270 crore of renewable gas.
- Bioethanol production: Paddy straw contains up to 40 per cent cellulose. The cellulose in paddy straw can be used for ethanol production, as microorganisms like S. cerevisiae can convert the cellulose into ethanol. This bioethanol is an excellent biofuel, and as per the government of India's roadmap for ethanol blending by 2020–25, up to 20 per cent ethanol can be blended into petrol by 2025–26. The amount of ethanol that can be produced from paddy straw would be worth ₹1,600 crore, a direct saving to the government.
- Lignin: Paddy straw also contains up to 20 per cent lignin, which is a sustainable resource for a variety of products such as polymers, mixed phenols, mixed aromatic alcohols, mixed organic acids, mixed hydrocarbons, mixed quinones, mixed benzylic aldehydes, aromatic pyrolysis oil, alkyl benzenes,

carbon fibres, and activated carbon. Lignin-derived materials and fuels can be both sustainable and economical, with potential applications like activated carbons, resins, carbon fibres, nanoparticle synthesis, photovoltaic cell development, adsorption of heavy metal ions in water, water flocculation, etc.

- Paper and Pulp Industry: Paddy straw, along with wheat straw, can be used as a raw material in the paper and pulp industry. It can help reduce the demand for wood-based pulp, conserving forests and biodiversity. This will help us further protect the environment and reduce health risks for human beings. As a general rule of thumb, it is estimated that approximately 1.5 to 2 tonnes of rice straw are needed to produce one tonne of pulp, which may vary as per paper quality. This means that to completely replace wood in the global paper industry, approximately 200 to 250 million tonnes of rice straw would be needed annually. **So, Option (d) is correct.**

37. Consider the following statements :

Statement 1 *:*

Carbon Capture Utilisation and Storage (CCUS) significantly reduces carbon dioxide emissions from power plants and industrial applications, which account for about 50% of all greenhouse gas emissions.

Statement 2 *:*

CCUS reduces carbon emissions by storing carbon without entering the atmosphere.

Which one of the following is correct in respect of the above statements ?

(a) Both Statement I and Statement II are correct, and Statement II is the correct explanation of Statement I

(b) Both Statement I and Statement II are correct, but Statement II is not the correct explanation of Statement I

(c) Statement I is correct, but Statement II is incorrect

(d) Statement I is incorrect, but Statement II is correct

EXPLANATION:

Globally, the power and industrial sectors contribute to about 50% of total greenhouse gas (GHG) emissions.

Carbon Capture, Utilization, and Storage (CCUS) programme aims to reduce carbon emissions by either storing or reusing it so that captured carbon dioxide does not enter the atmosphere. Department of Science and Technology (DST) aims to nurture the area of Carbon Capture, Utilization, and Storage through the emphasis on research and development and capacity building of both human resources as well as infrastructure to evolve technologies and methodologies that address issues related to high capital costs, safety, logistics and high auxiliary power consumption.

CCUS refers to a suite of technologies that can play an important and diverse role in meeting global energy and climate goals. It involves three major steps:

- Capture: The separation of CO2 from other gases produced at large industrial process facilities such as coal and natural-gas-fired power plants, steel mills, cement plants and refineries. The CO2 can also be captured directly from the atmosphere via Direct Air Capture (DAC) technology.
- Transport: If not being used on-site, the captured CO2 is compressed and transported via pipelines, trucks, ships or other methods by pipeline, ship, rail or truck to a suitable site for geological storage or utlisation.
- Storage/Utilisation: CO2 is injected into deep underground rock formations, usually at depths of one kilometre or more. Alternatively, the CO2 is used as a resource to create valuable products or services.

Both Statement I and Statement II are correct, and Statement II is the correct explanation of Statement I.

38. Which of the following processes affects the amount of dissolved oxygen in water ?
    1. Photosynthesis
    2. Respiration
    3. Oxidation of various wastes
    4. Reaeration

    Select the correct answer using the codes given below :

    (a) 2 and 3 only
    (b) 1, 2 and 3 only
    (c) **1, 2, 3 and 4**
    (d) 3 and 4 only

EXPLANATION:

The amount of dissolved oxygen (DO) is an important parameter of water quality. Dissolved oxygen is the amount of oxygen that is present in water. Water bodies receive oxygen from the atmosphere and aquatic plants. Running water, such as that of a swift-moving stream, dissolves more oxygen than the still water of a pond or lake.

Processes that affect the amount of dissolved oxygen in water:

- Photosynthesis – During photosynthesis, the chlorophyll containing cells of green plants, in the presence of sunlight, are able to convert carbon dioxide and water into glucose and oxygen. Photosynthesis occurs only during the daytime (6 am – 6 pm) and results in increasing the DO level in water.
- Respiration – Respiration is almost the opposite of photosynthesis, in which an organism derives its energy from the combustion of organic matter in the presence of oxygen. Energy Respiration is a continuous 24-hour process that removes oxygen from water.
- Oxidation of various wastes - The various wastes present in the water get oxidized by the consumption of dissolved oxygen, which results in a decrease in oxygen level in water. In addition to the microorganism-mediated oxidation of organic waste, oxygen is also consumed in the bio-oxidation of nitrogenous material and also in the chemical or biochemical oxidation of various reducing agents present in water.
- Reaeration – Reaeration is a process in which oxygen enters the water body through the contact that the water surface makes with the atmosphere. The solubility of oxygen in freshwater is low (14.7 ppm at 0 °C at 1 atm pressure) and it further decreases with an increase in temperature (7.0 ppm at 35 °C at 1 atm pressure). The variation of solubility of oxygen in water with increasing temperature.

Thus, all the above-given processes affect the amount of dissolved oxygen in water. **So, Option (c) is correct.**

39. Which of the following statements is/are correct with reference to Bisphenol A (BPA) ?
    1. BPA plays a key role in the manufacturing of polycarbonate plastics
    2. BPA is a component of hard plastics found in food and soft drink containers.
    3. BPA is an endocrine-disrupting chemical found in baby feeding bottles, which affects the oestrogen levels in infants.

    Select the correct answer using the codes given below :

    (a) 1 only
    (b) 1 and 2 only
    (c) 2 and 3 only
    (d) **1, 2 and 3**

EXPLANATION:

Bisphenol A (BPA) is a chemical produced in large quantities primarily for use in the production of polycarbonate plastics. It is a phenolic chemical that has been used for over 50 years in the manufacturing

of polycarbonate and polyvinyl chloride plastics, and it is one of the highest-volume chemicals produced worldwide. **So, Statement 1 is correct.**

BPA is a component of hard plastics. Because BPA is found in plastics used for food and some drink containers, many people are exposed to low levels of BPA every day due to leaching. It is also found in various products, including shatterproof windows, eyewear, water bottles, and epoxy resins that coat some metal food cans, bottle tops, and water supply pipes.
Bisphenol A can leach into food from the protective internal epoxy resin coatings of canned foods and from consumer products such as polycarbonate tableware, food storage containers, water bottles, and baby bottles.
The degree to which BPA leaches from polycarbonate bottles into liquid may depend more on the temperature of the liquid or bottle than the age of the container. BPA can also be found in breast milk. **So, Statement 2 is correct.**

Endocrine disrupters are synthetic substances that, when introduced into the body, either imitate or block the effects of the body's natural hormones.
BPA has been categorized as an endocrine-disrupting chemical (EDC), which implies that it can interfere with the function of hormones by altering their synthesis, transition, and/or binding to hormone receptors and thus disrupt several physiological processes.
Plastic containers commonly used for storing milk or other foods, including baby bottles, Tetra Pak packaging, and local plastic bags, may carry a risk of bisphenol exposure. When it migrates into food, it poses health risks by mimicking estrogen.
Therefore, BPA exposure, particularly during fetal development and infancy, can affect estrogen levels in infants. **So, Statement 3 is correct.**

40. Which one of the following pair of Ramsar site and state is ***not*** correctly matched ?
    (a) Khecheopalri Wetland : Sikkim
    (b) Bakhira wildlife sanctuary : Uttar Pradesh
    (c) **Therthangal Bird sanctuary : West Bengal**
    (d) Udhwa Lake : Jharkhand

EXPLANATION:

Khecheopalri Lake, originally known as Kha-Chot-Palri (meaning the heaven of Padmasambhava), is a lake located near Khecheopalri village, 147 kilometres (91 mi) west of Gangtok in the West Sikkim district of the Northeastern Indian state of Sikkim. The formation of the lake is estimated to be 3500 years old.

- The lake is situated amidst pristine forest at an altitude of 1,700 metres (5,600 ft) near Tsozo village. Located 34 kilometres (21 mi) to the northwest of Pelling town, the lake is sacred for both Buddhists and Hindus, and is believed to be a wish fulfilling lake.
- The lake drains a catchment area of the Ramam watershed (Ramam mountain gives its name to the valley).**So, Row 1 is correct.**

Bakhira Wildlife Sanctuary, situated in Sant Kabir Nagar district in Uttar Pradesh, comprises largely of a shallow river connecting freshwater marshes and is located to the west of Rapti river. Famed as the largest natural floodplain wetland of eastern Uttar Pradesh, the wetland spans across an area of 2,894 ha.

- The major source of water is precipitation and inflows from the Ami River, which ensures a perennial source of water for this wetland, forming conducive habitats for myriad forms of plant and animal species.
- Bakhira wetland provides a safe wintering and staging ground for a large number of migratory bird species of Central Asian Flyway, with prominent ones being red-crested pochard (Netta rufina), Northern pintail (Anas acuta) and Northern shoveller (Anas clypeata). **So, Row 2 is correct.**

Therthangal Bird Sanctuary is situated in Ramanathapuram district, Tamilnadu. The sanctuary is home to many important endemic and near-threatened species, including the Painted stork, Black-headed ibis,

Spot-billed pelican, Oriental darter and Pallied harrier, among others. The sanctuary also harbours rich biodiversity, particularly among the lower vertebrate groups such as amphibians and reptiles (herpatofauna) as well as invertebrates. This sanctuary is also rich in avifauna. **So, Row 3 is not correct.**

The Udhwa Lake Bird Sanctuary (ULBS) is located at Rajmahal Subdivision of Sahebganj district of Jharkhand. The largest natural Gangetic floodplain wetland of Jharkhand was declared a sanctuary in 1991 under the Wildlife Protection Act (1972). The sanctuary comprises of two connected complex wetlands namely the Barhel lake (area of 410 ha) and the Pataura lake (area of 155 ha).

- The Udhwa lake a natural wetland is situated in the alluvial plains of River Ganga and is surrounded by several hillocks of Rajmahal hills. The Udhwa Nala connects the wetland to the Ganges near the Farakka Barrage and it forms the main source of water to the wetland sanctuary. **So, Row 4 is correct.**

41. Consider the following pairs :

Sl.No.	***Area of Conflict mentioned in the News***		***The country where it is located***
1.	Goma	-	Democratic Republic of Congo
2.	Aleppo	-	Syria
3.	Kharkiv	-	Russia

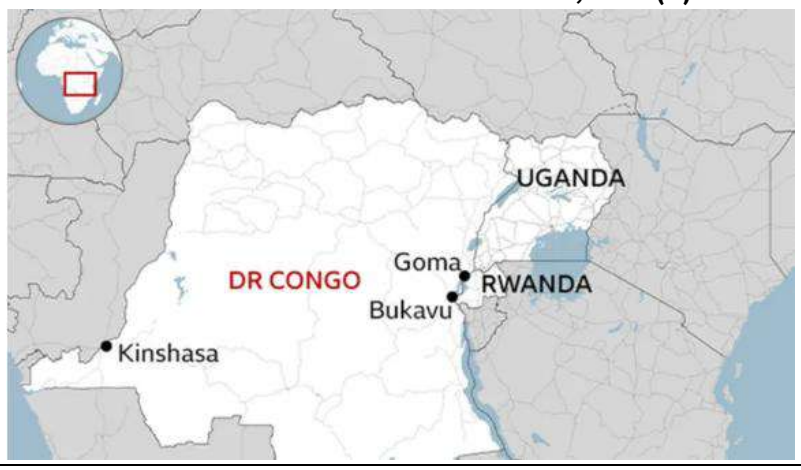
How many of the pairs given above is/are correct ?

(a) None of the above
(b) One pair only
(c) **Two pairs only**
(d) All the three pairs

EXPLANATION:

The crisis in the Democratic Republic of Congo (DRC) is back in the spotlight after the M23 (Mouvement du 23 Mars) militia, backed by eastern neighbour Rwanda, captured the mineral-rich city of Goma in the eastern Democratic Republic of Congo which lies on the border between the two countries.

- While the root cause of the crisis is generally attributed to the 1994 Rwandan genocide, the region has been beset with conflict between the Hutus and Tutsis since colonial times, so much so that some 1,50,000 Tutsis had migrated to neighbouring countries even before Rwanda's independence from Belgium in 1962.
- UN estimates suggest that the fighting, which began in January 2025, has taken the lives of more than 2,900 people, displaced close to 7,00,000 and injured many more. Since then, clashes have spread to the south of the border, with the rebels eyeing Bukavu, the capital of the South Kivu province, another resource-rich region that is situated in the east of the DRC. **So, Pair (1) is correct.**



Aleppo, principal city of northern Syria is a UNESCO World Heritage site in 1986. It is situated in the north-western part of the country, about 30 miles (50 km) south of the Turkish border.

- Aleppo was a focal point of the Syrian Civil War from 2012 until 2016, when opposition fighters there surrendered the city to government forces.
- Although hostilities in the civil war died down in 2020, Aleppo was retaken by opposition fighters in November 2024 in a sudden renewal in fighting. **So, Pair 2 is correct.**

Kharkiv, city, northeastern Ukraine. It lies at the confluence of the Uda, Lopan, and Kharkiv rivers. The city was the scene of heavy fighting during the Russian invasion of Ukraine in 2022.

Kharkiv is one of the most important cultural and educational centres of Ukraine.

Ukrainian forces eventually held firm and even though the city of Kharkiv has come under repeated attack from glide bombs fired by Russian warplanes, it remains beyond the range of Russian artillery. **So, Pair (3) is not correct.**

42. Recently, India has become a member/observer of which of the following organisations ?
    1. Eurodrone program
    2. Cape Town Convention
    3. International Medical Device Regulators Forum
    4. G7

    Select the correct answer using the codes given below :

    (a) 1 and 3 only
    (b) 1 and 4 only
    (c) 1, 2 and 3 only
    (d) 2 and 4 only

EXPLANATION:

The Eurodrone is a collaborative development program involving Germany, France, Italy, and Spain. It is a key component of Europe's collective defence strategy, aimed at reducing reliance on non-European platforms such as the U.S.-made MQ-9 Reaper and the Israeli-made Heron drones.

The Eurodrone Remotely Piloted Aircraft System (RPAS) is a drone designed for long-endurance missions, including Intelligence, Surveillance, Target Acquisition, and Reconnaissance (ISTAR), maritime surveillance, anti-submarine warfare, and airborne early warning.

The programme is managed by OCCAR (Organisation for Joint Armament Cooperation), with Germany acting as the lead nation.

- India has officially joined the MALE RPAS (Medium-Altitude Long-Endurance Remotely Piloted Aircraft System) programme, also known as the Eurodrone programme, as an Observer State.
- The Aeronautical Development Establishment (ADE) of the Defence Research and Development Organisation (DRDO) will represent India in the Eurodrone programme.
- This marks a significant milestone in multilateral collaboration between India and the European Union in the field of defence technology development. **So, Statement 1 is correct.**

The Cape Town Convention (CTC) is a global treaty that guarantees the rights of lessors to repossess leased high-value equipment such as aircraft, engines, and helicopters in case of payment defaults.

- It was adopted at a conference in Cape Town in November 2001 under the International Civil Aviation Organisation (ICAO) and the International Institute for the Unification of Private Law (UNIDROIT).
- The convention aims to solve the problem of obtaining certain rights to aviation assets such as aircraft engines, helicopters, and airframes, which, by their nature, have no fixed location.
- In September 2023, the Aviation Working Group (AWG) cut India's rating in terms of compliance with the Cape Town Convention as lessors faced difficulties in taking back aircraft that were leased to Go First.
- India is a signatory of the Cape Town Convention, but it has yet to ratify the convention. Once the legislation is enacted, the Convention will get legal backing in India and ensure compliance with the international norms related to the leasing of aircraft.

Thus, India is not a member of the Cape Town Convention. **So, Statement 2 is not correct.**

The International Medical Device Regulators Forum (IMDRF), which was established in 2011, is a group of global medical device regulators whose aim is to speed up the adoption of international medical device regulatory harmonisation and convergence.
Its members include national regulatory authorities of the U.S., Australia, Canada, the European Union, Japan, the United Kingdom, Brazil, Russia, China, South Korea, Singapore and the World Health Organization (WHO).

- To achieve global alignment in its medical device regulatory system, enhance the competitiveness of the domestic industry and boost transnational prominence, the Central Drugs Standard Control Organization (CDSCO), under the Ministry of Health and Family Welfare, applied for Affiliate Membership in the International Medical Device Regulators Forum (IMDRF) in 2024.
- India became an affiliate member of IMDRF in 2024, enhancing global collaboration and harmonization in medical device regulations for public health.
- As an affiliate member, India will participate in IMDRF open sessions for information exchange on technical topics with other regulators, discuss the latest medical device regulatory strategies and trends, and provide feedback on its experience and perspectives. **So, Statement 3 is correct.**

The Group of Seven (G-7) is an intergovernmental organization made up of the world's largest developed economies: France, Germany, Italy, Japan, the United States, the United Kingdom, and Canada.
Government leaders of these countries meet periodically to address international economic and monetary issues, with each member taking over the presidency on a rotating basis.
The major purpose of the G-7 is to discuss and sometimes act in concert to help resolve global problems, with a special focus on economic issues. Since its inception in the early 1970s, the group has discussed financial crises, monetary systems, and major world crises, such as oil shortages.
Recently, Italy invited several states and international organizations to the outreach session of the summit, including India. This will mark India's 11th participation, although India is not an official member of the G7 nations. **So, Statement 4 is not correct.**

43. The Kampala Declaration 2025 is related to :
    (a) Elimination of Ozone Depleting Substances
    (b) Preservation of 30% of Earth's land and ocean area by 2030
    (c) New Collective Quantified Goal (NCQG) on Climate Finance
    (d) **Comprehensive Africa Agriculture Development Program**

EXPLANATION:

The Kampala Declaration 2025 was adopted during the African Union's Extraordinary Summit on the Post-Malabo Comprehensive Africa Agriculture Development Programme (CAADP) held in Kampala, Uganda.

- This declaration sets the foundation for a new 10-year strategy and action plan to be implemented from 2026 to 2035, aimed at transforming Africa's agriculture and food systems.
- The goal is to boost agri-food production by 45% by 2035, helping the continent move towards full food security within a decade.
- The plan includes key targets such as reducing post-harvest losses by 50%, tripling intra-African trade in agricultural products and inputs, and increasing the share of locally processed food to 35% of agri-food GDP.
- It also focuses on building resilient, sustainable food systems by supporting smallholder farmers, encouraging agro-processing, and promoting climate-resilient practices.
- This strategy is a major step in Africa's efforts to reduce dependency on food imports and ensure a more self-sufficient and prosperous agricultural future. **So, Option (d) is correct.**

44. Consider the following statements with respect to the Rashtriya Gram Swaraj Abhiyan :
    1. It aims to strengthen rural and traditional local bodies for achieving Sustainable Development Goals through inclusive local governance.
    2. It provides special assistance for strengthening the Gram Sabhas in PESA areas.
    3. It is a Centrally Sponsored Scheme under the Ministry of Panchayati Raj institutions.

How many of the above statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

EXPLANATION:

Rashtriya Gram Swaraj Abhiyan (RGSA) was revamped, and the Centrally Sponsored Scheme of Revamped Rashtriya Gram Swaraj Abhiyan (RGSA) under the Ministry of Panchayati Raj (MoPR) was approved for implementation from the financial year 2022-23 to 2025-26 to build the capacity of elected representatives of Panchayati Raj Institutions (PRIs).

- The primary objective of Revamped RGSA is to develop the governance capabilities of the Panchayats to deliver on the Sustainable Development Goals (SDGs), which are within the purview of the Panchayats.
- The approved RGSA scheme will help more than 2.78 lakh Rural Local Bodies, including Traditional Bodies, across the country develop governance capabilities to deliver on SDGs through inclusive local governance, with a focus on optimum utilisation of available resources. **So, Statements 1 and 3 are correct.**

The scheme will have both Central Component and national Level activities, viz. National Plan of Technical Assistance, Mission Mode project on e-Panchayat, Incentivization of Panchayats, Action Research & Media and State component - Capacity Building & Training (CB&T) of Panchayati Raj Institutions (PRIs), Institutional support for CB&T, Distance learning Facility, Support for construction of Gram Panchayat (GP) Bhawan, co-location of Common Service Centres (CSCs) in GP Bhawans and computer for GPs with special focus on NE States, Special Support for strengthening Gram Sabhas in PESA Areas, support for innovation, support for Economic Development & Income Enhancement support for Economic Development & Income Enhancement etc. **So, Statement 2 is correct.**

45. With reference to recent military exercises, consider the following statements :

1. Surya Kiran is a joint military exercise between the Indian Army and the Nepalese Army.
2. Naseem Al Bahr is a bilateral naval exercise between the Indian Navy and the Royal Navy of Oman.
3. Africa India Key Maritime Engagement (AIKEYME) is a joint naval exercise between India and nine African nations.

Which of the above statements are correct ?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) **1, 2 and 3**

EXPLANATION:

Surya Kiran is a biannual joint military exercise conducted between the Indian Army and the Nepalese Army, held alternately in India and Nepal.
The exercise aims to strengthen cooperation and enhance interoperability between the two forces, particularly in jungle warfare and counter-terrorism operations in hilly and mountainous regions.
It also includes training in Humanitarian Assistance and Disaster Relief (HADR), focusing on medical support and aviation operations.
This exercise provides both armies with the opportunity to share knowledge, improve coordination, and learn from each other's experiences. **So, Statement 1 is correct.**

Naseem Al Bahr is a bilateral naval exercise between the Indian Navy and the Royal Navy of Oman, first conducted in 1993. This long-standing exercise aims to enhance interoperability and strategic cooperation between the two navies, reflecting the strong ties between India and Oman.

The exercise comprises two main phases: the harbour phase and the sea phase.

- During the harbour phase, personnel from both navies engage in professional interactions, including subject matter expert exchanges and planning conferences, complemented by sports activities and social events.
- The sea phase involves joint naval operations such as gun firings at surface inflatable targets, close-range anti-aircraft firings, manoeuvres, and replenishment at sea approaches (RASAPS)

This exercise underscores India's commitment to constructive collaboration and mutual growth with like-minded nations in the Indian Ocean Region. **So, Statement 2 is correct.**

India recently launched its largest-ever six-day joint naval exercise with nine African nations, called Africa India Key Maritime Engagement (AIKEYME). The name "AIKEYME" is derived from the Sanskrit word "Aikyam," meaning togetherness and unity.

The exercise involved Comoros, Djibouti, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa, India, and Tanzania as co-hosts.

The primary goal was to enhance interoperability and foster synergy among the maritime forces of the participating nations to address common regional maritime challenges.

The exercise was conducted in two phases:

- Harbour Phase: Focused on training and tabletop exercises to tackle piracy.
- Sea Phase: Included practical exercises such as search and rescue missions, helicopter operations, and more.

The AIKEYME exercise was India's first initiative to engage with African nations on maritime security and highlights the strong bilateral relations between India and the African countries involved. **So, Statement 3 is correct.**

46. Consider the following :
    1. Patna-Purnea Expressway
    2. Buxar-Bhagalpur Expressway
    3. Vishakhapatnam-Chennai Industrial Corridor
    4. Hyderabad-Bengaluru Industrial Corridor
    5. Polavaram Irrigation Project

    Under the Union Budget 2024-25, which of the above-mentioned infrastructural developments were included as part of the Purvodaya initiative ?

    (a) 1, 2, 3 and 4 only
    (b) 3 and 4 only
    (c) 1, 2 and 5 only
    (d) **1, 2, 3, 4 and 5**

EXPLANATION:

The Purvodaya initiative is a transformative plan aimed at the all-around development of the eastern region of India, encompassing Bihar, Jharkhand, West Bengal, Odisha, and Andhra Pradesh.

This comprehensive strategy focuses on human resource development, infrastructure enhancement, and economic opportunities to propel the region towards becoming a key driver of Viksit Bharat (Developed India).

Key aspects of Purvodaya initiatives are as follows:

- The development of the Amritsar-Kolkata Industrial Corridor includes a key industrial hub at Gaya.
- The plan also emphasizes crucial road connectivity projects such as
    - Patna-Purnea Expressway,
    - Buxar-Bhagalpur Expressway,
    - Spurs to Bodhgaya, Rajgir, Vaishali, and Darbhanga,
    - A new two-lane bridge over the Ganga River at Buxar.

- Purvodaya also addresses Andhra Pradesh's development under the Andhra Pradesh Reorganisation Act, with funding for infrastructure projects like water, power, railways, and roads in the Kopparthy node on the Vishakhapatnam-Chennai Industrial Corridor and Orvakal node on the Hyderabad-Bengaluru Industrial Corridor.
- The Polavaram Irrigation Project, vital to Andhra Pradesh, will be prioritised to ensure farmers' welfare and enhance food security. **So, Option (d) is correct.**

47. Consider the following statements
    1. India's first white tiger breeding centre was approved in Madhya Pradesh.
    2. Chhattisgarh is the first Indian state to link the forest ecosystem with Green GDP.
    3. India's first-ever census of coastal and wader birds took place in Gujarat.

    How many of the statements given above is/are correct ?
    (a) None of the above
    (b) One statement only
    (c) Two statements only
    (d) **All the three statements**

EXPLANATION:

The Central Zoo Authority (CZA) has given its green signal to India's first white tiger breeding centre in Madhya Pradesh's Rewa district, believed to be home to the last white tiger in the wild.
The white tiger breeding centre is part of a revised masterplan for Maharaja Martand Singh Judeo White Tiger Safari and Zoo in Mukundpur.
The safari is named after the last maharaja of Rewa, who found a white tiger in the Govindgarh jungle in 1951. He named it Mohan and was so fascinated by it that he started a white tiger breeding and conservation programme. **So, Statement 1 is correct.**

Chhattisgarh is the first Indian state to introduce an innovative plan that connects the ecosystem services of its forests with the Green Gross Domestic Product (Green GDP).
The moves aimed to highlight the direct link between the significant environmental contributions of forests like clean air, water conservation, biodiversity and the state's economic progress.
The action plan is designed to ensure that economic development is achieved while preserving the pristine environment for future generations.

- Chhattisgarh, with 44 per cent of its land covered by forests, has natural resources that are central to the livelihoods of millions of people.
- By linking these benefits to the Green GDP, Chhattisgarh intends to improve budget planning and create policies prioritising economic growth and ecological sustainability.

To accurately estimate the economic value of forests, the scientists will assess the essential ecosystem services they provide. This includes:

- Clean Air: The Amount of CO_2 absorbed by trees and converted into Oxygen will be quantified, and its market value will be added to Green GDP.

- Water Conservation: The water provided by the forest through rivers and springs will be calculated for its economic impact.
- Biodiversity: The contribution of forest fauna (animals, birds, insects) to maintaining ecological balance and aiding farming.

So, Statement 2 is correct.

India's first-ever census of coastal and wader birds took place from January 3 to 5, 2025, at Gujarat's Marine National Park in Jamnagar. The Marine National Park and Marine Sanctuary in Gujarat is India's first marine national park.

- Spanning the districts of Devbhoomi Dwarka, Jamnagar, and Morbi, it covers approximately 170 km of coastline and 42 islands between Okha and Navlakhi.
- This protected area in the Gulf of Kutch was established to conserve marine biodiversity and mangrove ecosystems.
- It extends from the breeding grounds of Siberia in the north to the non-breeding wintering grounds of Southwest Asia, the Maldives and the British Indian Ocean Territory.
- Migratory birds, especially waterbirds, complete their journey through this flyway, passing through several countries during their annual migration.
- More than 300 local and migratory birds are found in Jamnagar.
- More than 50 species of wader birds alone are found.
- Among these, birds like 'Crab plover', 'Great Knot' are extremely rare elsewhere, but found in abundance in Jamnagar. **So, Statement 3 is correct.**

48. The Chaturbhuj Nala rock shelter is an archaeological treasure trove nestled within the serene landscapes of which of the following sanctuaries / national park ?
    (a) Nanjarayan Bird Sanctuary
    (b) **Gandhi Sagar Sanctuary**
    (c) Kuno National Park
    (d) Keoladeo National Park

EXPLANATION:

Chaturbhuj Nala is an archaeological treasure trove nestled within the serene landscapes of the Gandhi Sagar Sanctuary in Mandsaur, 85 km from Ratlam. Here, amidst the tranquil beauty of nature, thousands of ancient rock paintings adorn the rocky cliffs, offering a glimpse into the rich tapestry of human history. Chaturbhuj Nala dates back to the pre-pastoral era, spanning over 6,000 to 12,000 years and extending into the early medieval age of the 10th century. Chaturbhuj Nala was discovered in 1977, and a 5-kilometre trail leads to the intricate rock paintings in shades of red, ochre, white, and black. The paintings depict scenes of men riding cattle, women dancing, warriors marching, and hunting expeditions featuring a diverse array of wildlife.

The Gandhi Sagar Sanctuary covers an area of 368.62 sq km and is located in the districts of Mandsaur and Neemuch in western Madhya Pradesh, right on the border with Rajasthan. The sanctuary is situated on a flat rocky plateau, with the Chambal River cutting it into two almost equal halves. The Gandhi Sagar dam, constructed on the river in 1960, lies within the sanctuary's area, and so do parts of its reservoir, which is 726 sq km in area and the third largest in the country. **So, Option (b) is correct.**

49. The Global Hunger and Poverty Alliance 2024 was recently launched under which of the following ?
(a) BRICS
(b) **G20**
(c) UNDP
(d) FAO

EXPLANATION:

The Global Hunger and Poverty Alliance 2024 was recently launched under the G20. This initiative was introduced during the G20 Leaders' Summit in Rio de Janeiro, Brazil.

- It aims to accelerate efforts to eradicate hunger and poverty while promoting the Sustainable Development Goals (SDGs).
- The Alliance, established over the course of a year through extensive dialogues, brings together developed nations, NGOs, and financial institutions to provide financial support and expertise to countries in need. The goal is to eliminate all nations from the Food and Agriculture Organization's (FAO) hunger map by 2030.
- It consists of 148 members. This includes 82 countries, the African Union, the European Union, 24 international organizations, 9 international financial institutions, and 31 philanthropic and non-governmental organizations.
- Notably, the Alliance has been open to membership even for countries that are not part of the G20 since July 2024. Brazil and Bangladesh were the first to join, followed by all G20 members and several countries and entities from all continents.
- The Alliance will serve as an independent platform aimed at eradicating hunger and poverty by the year 2030. It is fundamentally based on three key pillars:
  - National – Coordination of specific public policies.
  - Knowledge – Integration of data and technologies for evidence-based solutions.
  - Financial – Large-scale resource mobilization. **So, Option (b) is correct.**

50. Consider the following statements :
1. The United Nations has the authority to recognise a state or a Government.
2. Admission to the UN requires a recommendation from the UN Security Council followed by a two-third majority approval in the UN General Assembly.
3. Any one of the five permanent members of the UNSC can block a country's admission by exercising a veto.

Which of the statements given above is/are correct ?
(a) 1 and 2 only
(b) **2 and 3 only**
(c) 2 only
(d) 1, 2 and 3

EXPLANATION:

The United Nations is neither a State nor a Government and therefore does not possess any authority to recognize either a State or a Government. As an organization of independent States, it may admit a new State to its membership or accept the credentials of the representatives of a new Government. **So, Statement 1 is not correct.**

A country becomes a member of the United Nations in accordance with the Charter of the United Nations, which states that membership "is open to all peace-loving States that accept the obligations contained in the United Nations Charter and, in the judgment of the Organisation, are able to carry out these obligations."
States are admitted to membership in the United Nations only if the Security Council recommends admission, after which the recommendation is presented to the General Assembly for consideration. A two-

thirds majority vote is necessary in the Assembly for admission to a new state. Membership becomes effective on the date the resolution for admission is adopted. **So, Statement 2 is correct.**

When the Security Council reviews a membership application, at least 9 out of 15 members must vote in favour for the recommendation to pass. However, if even one of the five permanent members — China, France, Russia, the United Kingdom, or the United States — votes against it, the application is blocked, as their veto power overrides the majority. **So, Statement 3 is correct.**

51. Under the Prevention of Money Laundering Act, who has the arbitrary authority to arrest a person in connection with the offense of money laundering ?
    1. Enforcement Directorate
    2. Goods and Services Officers
    3. Customs officers

    Select the correct answer using the codes given below :
    (a) 1 only
    (b) 2 and 3 only
    (c) 1, 2 and 3
    (d) **None**

EXPLANATION:

The Prevention of Money Laundering Act, 2002 (PMLA) is an act to prevent money laundering and to provide for confiscation of property derived from, or involved in, money laundering and matters connected therewith or incidental thereto, came into force on July 1, 2005.

Director, Financial Intelligence Unit - India (FIU-IND) and Director (Enforcement) have been conferred with exclusive and concurrent powers under relevant sections of the Act to implement the provisions of the Act.

- In the matter of Power to arrest the person in connection with the offence of money laundering:
  - Under section-19 of the Prevention of Money Laundering Act (PMLA), 2002 empowers the officers of the Enforcement Directorate (ED) to arrest any person who is guilty of money laundering under the Act. The arrest can be made if the officer has "reason to believe" on the basis of material in his possession that validates the accusation.
  - Goods and Service officers and Customs officials don't have the authority to arrest the accused person under the PMLA Act, while they can arrest the concerned person Section 69 of the GST Act and under Section 104 of the Customs Act. **So, Statement 2 and 3 are not correct.**
- In the matter of arrest the person 'arbitrarily' in connection with the offence of money laundering
  - The Supreme Court declared in a recent judgment that Customs officers and Goods and Services Tax (GST) officers have a duty, like their Enforcement Directorate (ED) counterparts under the Prevention of Money Laundering Act, to not arrest people arbitrarily on a whim.

Therefore, Under the Prevention of Money Laundering Act, the Enforcement Directorate (ED) does not have the power to arrest a person arbitrarily in connection with the offence of money laundering. **So, Statements 1 is not correct.**

52. With regard to the Cities Coalition for Circularity, consider the following statements :
    1. It is a multi-national alliance to foster city-to-city collaboration to advance sustainable urban development.
    2. It underscores India's commitment to promoting the principles of reduce, reuse, and recycle (3R) and the broader circular economy.
    3. It was launched by India, as part of the 12th Regional 3R and Circular Economy Forum in Asia and the Pacific.

    How many of the above statements are correct?
    (a) Only one
    (b) Only two
    (c) **All three**
    (d) None

EXPLANATION:

India launched the Cities Coalition for Circularity (C-3), which is a multi-nation alliance for city-to-city collaboration, knowledge-sharing, and private sector partnerships for sustainable urban development. This forum would provide a critical platform for policymakers, industry leaders, researchers, and development partners to discuss and implement sustainable solutions for waste management and resource efficiency in economies in the Asia-Pacific region. **So, Statement 1 is correct.**

India follows and strongly advocates the P (Pro-Planet People) approach and highlights the role of 3Rs and circular economy principles in ensuring sustainable urban development and resource efficiency.
The role of 3R (reduce, reuse and recycle) and circular economy principles in ensuring sustainable urban development and resource efficiency and has also mentioned that India has always been more than willing to share it experiences and learnings in its journey towards creating a circular economy. **So, Statement 2 is correct.**

The 12th Regional 3R and Circular Economy Forum in Asia and the Pacific was held in Jaipur, India, in March 2025, marking a significant milestone in regional cooperation for sustainable waste management and circular economy initiatives. **So, Statement 3 is correct.**
At the inaugural session of the 2025 Forum, the Union Minister of Housing & Urban Affairs announced the Cities Coalition for Circularity (C-3). Agreements worth ₹1,800 crore will be signed under this initiative, benefiting 18 cities across 14 States and serving as lighthouse projects for other urban areas.

53. Which of the following statements are correct regarding 'Mutual Credit Guarantee Scheme for MSME's ?
    1. The scheme facilitates collateral-free loans from banks and financial institutions to support MSME's.
    2. An MSME firm must have a valid Udyam Registration Number to avail this scheme.
    3. The loan amount guaranteed to the MSME shall not exceed Rs . 10 crore.
    4. The minimum cost of equipment /machinery should be 25% of the project cost.

    Select the correct answer using the codes given below :

    (a) 1 and 2 only
    (b) 2 and 4 only
    (c) 3 and 4 only
    (d) 1, 2, 3 and 4

EXPLANATION:

The Union Government launched the 'Mutual Credit Guarantee Scheme for MSMEs', (MCGS-MSME) which was announced in the Union Budget 2025-26 to boost the micro, small, and medium enterprises.

- The scheme will facilitate collateral free loans by banks and financial institutions to MSMEs who are in need of debt capital for their expansion and growth.
- The scheme is expected to facilitate easy availability of credit for MSMEs and give a major boost to the manufacturing sector in India.
- The Scheme is being implemented by National Credit Guarantee Trustee Company Limited (NCGTC), a wholly owned company of Department of Financial Services, Ministry of Finance, Government of India. **So, Statement 1 is correct.**

The eligibility criteria for borrowers under Mutual Credit Guarantee Scheme for MSMEs (MCGS-MSME) is as below:

- It should be an MSME with valid Udyam Registration Number; **So, Statement 2 is correct.**
- It should not be an Non-Performing Asset (NPA) with any lender;
- Minimum cost of equipment /machinery is 75% of project cost; **So, Statement 4 is not correct.**

The scheme would provide 60 per cent guarantee coverage by the National Credit Guarantee Trustee Company Ltd (NCGTC) to member lending institutions (MLIs) and the guaranteed loan amount will not exceed Rs 100 crore, although the total project cost can be higher. **So, Statement 3 is not correct.**

- Under the scheme, loans up to Rs 50 crore will have a repayment period of up to 8 years with a moratorium period of up to 2 years on principal instalments.
- For loans above Rs 50 crore, a higher repayment schedule and moratorium period on principal instalments can be considered.

54. The "when–listed" platform recently seen in the news is related to :
(a) A platform which provides detailed information on the listed shares in the secondary market.
(b) A platform which aims to give an idea about the upcoming IPOs.
(c) **A platform which aims to reduce 'grey market activity' in companies' stocks.**
(d) A platform which aims to help foreign investors to understand the Indian primary market opportunities.

EXPLANATION:

The Securities and Exchange Board of India (Sebi) is planning to introduce a "when-listed" platform, which will allow trading companies' shares in a period between allotment of shares post the closure of the Initial Public Offering (IPO) bidding process and the official listing on stock exchanges.
According to Sebi it will facilitate the trading of such unlisted shares in a regulated manner.

- The platform aims to reduce 'grey market activity' in companies' stocks. Simply put, the grey market refers to the unofficial trading of securities even before being listed on stock exchanges. This is an unregulated market and works on demand and supply, with investors purchasing or selling shares notionally in the grey market even before they get listed.
- The grey market is a cash market and there is no delivery of shares. Many retail investors also look at the premium offered in the grey market on shares of a company which has launched an IPO, before considering investing in the offer.
- At present, once the bidding process for an IPO closes, shares have to be listed on bourses in trading plus three (T+3) working days.
- The allotment of shares has to be done on T+1 day. In the period between the allotment of shares and listing day, investors trade in the grey market. It is this pre-listing grey market trading activity which the Sebi wants to reduce.

So, SEBI introduce a "when-listed" platform that if anyway investors do kerb trading (grey market trading), why not give them an opportunity (to trade) in a proper regulated way. **So, Option (c) is correct.**

55. Which of the following statements is correct about Bima Sakthi yojana ?
(a) It is an initiative of LIC to provide free insurance coverage to women farmers in India over the next 5 years.
(b) It is an initiative of the GOI to provide insurance coverage to women entrepreneurs in India over the next five years.
(c) **It is an initiative of LIC to appoint women insurance agents over the next three years.**
(d) It is an initiative of IRDAI to increase insurance per capita among women in India.

EXPLANATION:

Recently, the Prime Minister launched the 'Bima Sakhi Yojana' of Life Insurance Corporation of India (LIC) here under which 2 lakh woman insurance agents will be appointed over the next three years.
Bima Sakhi Yojana an initiative of state-owned Life Insurance Corporation of India (LIC), is designed to empower women aged 18-70 years who are Class X pass.

- They will receive specialised training and a stipend for the first three years to promote financial literacy and insurance awareness.

- Under the scheme, the woman agents will also get a stipend of Rs 7,000 per month for the first year, Rs 6,000 per month in the second year and Rs 5,000 per month in the third year.
- Bima Sakhis will also get the benefit of commission.
- After training, they can serve as LIC agents, and the graduate Bima Sakhis would have the opportunity to qualify for being considered for Development Officer roles in LIC.

So, Option (c) is correct.

56. Which of the following is/are the measures to control vertical fiscal imbalance in our country?
    1. Promoting fiscal federalism
    2. Increased tax devolution
    3. Decrease in cess and surcharges

    Select the correct answer using the codes given below :

    (a) 1 only
    (b) 1 and 2 only
    (c) 2 and 3 only
    (d) All three

EXPLANATION:

Fiscal imbalance is a measure of fiscal sustainability. It occurs when a government's future debt obligations don't align with its future revenues. Fiscal imbalances can be either horizontal or vertical. Both can impact a government's revenue and spending.

The fiscal imbalance due to the difference between the revenue resources and expenditure commitments of the Central government, and those of the State governments put together is called as the Vertical Fiscal Imbalance (VFI). It is natural that the federal governments of any country have vertical fiscal imbalance irrespective of their development status.

Recently, The 15th Finance Commission had noted that India has had a larger, and rising, vertical imbalance than most other federations. These imbalances were further magnified during periods of crises, such as the COVID-19 pandemic, which drove a large wedge between one's own revenues and expenditure responsibilities at the sub-national level.

The measures to be taken to control vertical fiscal imbalance in our country:

- The share of net proceeds devolved to the States must be rised to about 49% including cess and surcharges to eliminate VFI. Such an increase in devolution would place more untied resources in the hands of the States to spend on their citizens. **So, Statement 2 is correct.**
- It would also ensure that States' expenditures better respond to jurisdictional needs and priorities, and that the efficiency of expenditures is enhanced. Overall, it will be a move towards a healthy system of cooperative fiscal federalism. Thus, promoting fiscal federalism. **So, Statement 1 is correct**.
- Increases in cess and surcharges are causing the divisible pool to shrink as these are not shareable with the states. So, Cess and Surcharges must be decreased. **So, Statement 3 is correct.**

57. Which of the following are part of the revenue receipts of the Union budget ?
    1. Income tax collected from residents
    2. Earnings from government companies
    3. Proceeds from the sale of shares of government companies
    4. Recovery of loans given to other countries
    5. Salaries paid to government employees

    Select the correct answer using the codes given below :

    (a) **1 and 2 only**
    (b) 1, 2 and 5 only
    (c) 3 and 4 only
    (d) 1, 2, 3, 4 and 5

EXPLANATION:

Revenue receipts are current incomes of government, which neither create liabilities nor cause any reduction in the assets of the government. These receipts are classified into Tax Revenue and Non-tax Revenue.

- Tax revenues, an important component of revenue receipts, have for long been divided into
  - Direct taxes (personal income tax collected from residents) and firms (corporation tax). **So, Statement 1 is correct.**
  - Indirect taxes like excise taxes (duties levied on goods produced within the country), customs duties (taxes imposed on goods imported into and exported out of India) and service tax.

Other direct taxes like wealth tax, gift tax and estate duty (now abolished) have never brought in large amount of revenue and thus have been referred to as 'paper taxes'.

- Non-tax revenue of the central government mainly consists of
  - Interest receipts on account of loans by the central government,
  - Dividends and Profits on investments made by the government (Earnings from government companies), **So, Statement 2 is correct.**
  - Fees and other receipts for services rendered by the government.

Cash grants-in-aid from foreign countries and international organisations are also included.

Capital receipts are those receipts of the government which either create liability or cause any reduction in the assets of the government. The major sources of capital receipts of the central government are:

- Borrowings
- Recovery of Loans
  - The money the government had lent out in the past in India (states, UTs, PSUs, etc.) and abroad their capital comes back to the government when the borrowers repay them as capital receipts. **So, Statement 4 is not correct.**
  - The interests which come to the government on such loans are part of the revenue receipts.
- Disinvestment - Resale of shares of public sector undertakings.
  - Selling its shares to general public and to financial institutions. This selling of shares of public sector undertakings by the government is known as 'disinvestment of public sector undertakings'. **So, Statement 3 is not correct.**

When government incurs expenditure that neither creates any asset nor reduces any liability, such expenditure is known as revenue expenditure.

For Example, payment of salaries to government employees, maintenance of public property, providing free education and health services to people, etc constitute revenue expenditure. These do not create any public asset. **So, Statement 5 is not correct.**

58. Consider the following statements about Planetary pressures-adjusted Human Development Index (PHDI) :
    1. It is the level of HDI adjusted by per capita carbon dioxide emissions and per capita material footprint.
    2. PHDI reflects a concern for intergenerational inequality
    3. As planetary pressures increase, the PHDI falls below the HDI.

    How many of the above statements is/are correct ?

    (a) Only one
    (b) Only two
    (c) **All three**
    (d) None

EXPLANATION:

The United Nations Development Programme (UNDP) introduced the Planetary Pressures-adjusted Human Development Index (PHDI) in its 2020 Human Development Report.

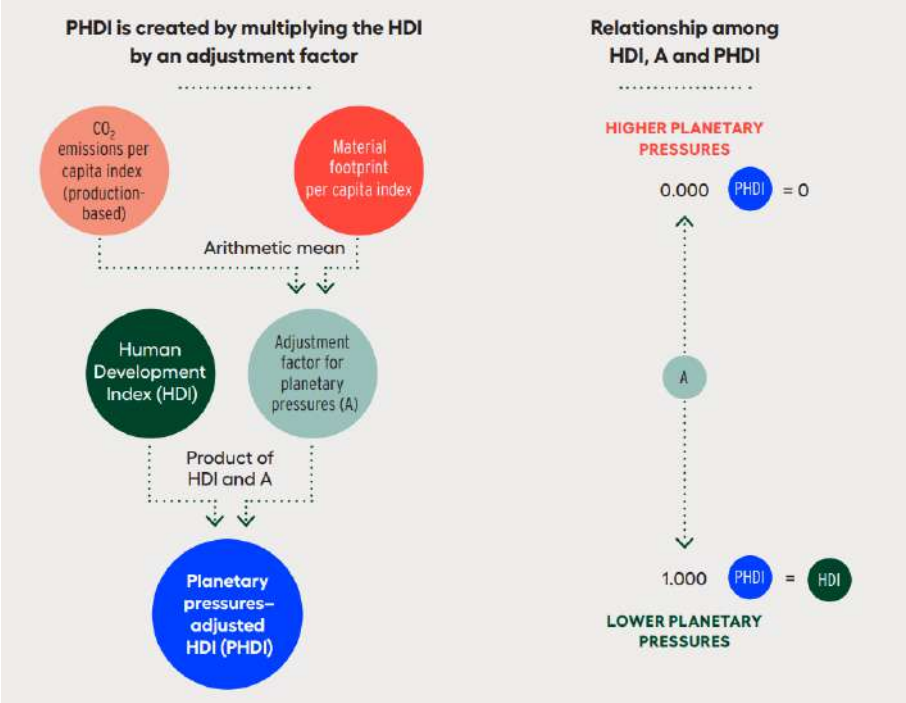
PHDI is an experimental index that adjusts the HDI for planetary pressures in the Anthropocene. PHDI is the level of human development adjusted by carbon dioxide emissions per person (production-based) and material footprint per capita to account for the excessive human pressure on the planet. It should be seen as an incentive for transformation. **So, Statement 1 is correct.**

- In an ideal scenario where there are no pressures on the planet, the PHDI equals the HDI.
- However, as pressures increase, the PHDI falls below the HDI. In this sense, the PHDI measures the level of human development when planetary pressures are considered. **So, Statements 3 is correct.**

Intergenerational inequality refers to the unequal distribution of resources, opportunities, and outcomes across generations.

PHDI discounts the HDI for pressures on the planet to reflect a concern for intergenerational inequality, similar to the Inequality-adjusted HDI adjustment, which is motivated by a concern for intragenerational inequality.

It is computed as the product of the HDI and (1 – index of planetary pressures), where (1 – index of planetary pressures) can be seen as an adjustment factor. **So, Statement 2 is correct.**



59. In the context of the Indian economy, consider the following statements :
    1. Treasury bills are short-term money market instruments with maturity periods of 91 days, 182 days and 364 days.
    2. Cash Management Bills are overnight borrowing instruments.
    3. Ways and Means Advances are short-term money market instruments with a maturity period of up to 90 days.

    Which of the above statements is/are correct?

    (a) 1, 2 and 3
    (b) 1 only
    (c) 1 and 3 only
    (d) 3 only

EXPLANATION:

Treasury bills, or T-bills, finance the short-term requirements of the Government. They form an integral part of the money market and are currently issued in three tenors, namely, 91 days, 182 days and 364 days.
Treasury bills are zero coupon securities and pay no interest. Instead, they are issued at a discount and redeemed at the face value at maturity. The return to the investors is the difference between the maturity value or the face value and the issue price. **So, Statement 1 is correct.**

In order to meet the temporary mismatches in the cash flow of the Government of India, in consultation with RBI, a new short-term instrument, known as Cash Management Bills (CMBs), was introduced in 2010.

- CMBs have all the attributes of Treasury bills (T-bills) but are issued for maturities of less than 91 days. The tenor, notified amount and date of issue of the CMBs depend upon the temporary cash requirement of the Government.
- Like T-bills, CMBs are also issued at a discount and redeemed at face value on maturity.
- Unlike T-Bills, a non-competitive bidding scheme has not been extended to CMBs. However, these instruments are tradable and qualify as SLR investments.

Overnight borrowing market instrument is known as Call Money Market (CMM), not Cash Management Bills. Call Money Market is basically an interbank money market where funds are borrowed and lent, generally, for the period between 2 days and 14 days, also called money at call or Overnight borrowing market. **So, Statement 2 is not correct.**

Ways and Means Advances (WMAs) are temporary advances extended by RBI to the governments to bridge the interval between expenditure and receipts. They are not sources of finance but are meant to provide support for purely temporary difficulties that arise on account of mismatch/shortfall in revenue or other receipts for meeting the government liabilities. They have to be periodically adjusted to enable the use of such financing for future mismatches.
Ways and Means Advances (WMA) enables the Centre and States to borrow money with a maturity period of up to 90 days from the RBI to tide over their liquidity mismatches. This is guided under Section 17(5) of the RBI Act, 1934. **So, Statement 3 is correct.**

60. In the context of banking in India, which of the following refers to the mechanism that acts as a financial safety net for banks by requiring them to maintain High-Quality Liquid Assets to meet 30 days of net cash outflows under stressed conditions ?
    (a) Leverage Ratio
    (b) Interest Coverage Ratio
    (c) **Liquidity Coverage Ratio**
    (d) Capital Adequacy Ratio

EXPLANATION:

A leverage ratio, as defined under Basel-III norms, is a type of financial measurement used in finance, business, and economics to evaluate the level of debt relative to another financial metric. It can be used to measure how much capital comes in the form of debt and loans or assess the ability of a company to meet its financial obligations. Common leverage ratios include the debt-equity ratio, equity multiplier, degree of financial leverage, and consumer leverage ratio. **So, Option (a) is not correct.**

The Interest Coverage Ratio (ICR) is a financial ratio that is used to determine how well a company can pay the interest on its outstanding debts. The ICR is commonly used by lenders, creditors, and investors to determine the riskiness of lending capital to a company. The interest coverage ratio is also called the "times interest earned" ratio. **So, Option (b) is not correct.**

Liquidity Coverage Ratio (LCR), a regulatory standard developed by the Basel Committee on Banking Supervision, acts as a bank financial safety net, which requires banks to maintain High-Quality Liquid Assets (HQLAs) to meet 30 days net outgo under stressed conditions. HQLAs include assets like government securities and AAA-rated corporate bonds. RBI has prescribed that banks maintain an LCR of at least 100 per cent.

- The objective of the LCR is to promote the short-term resilience of banks' liquidity risk profiles. It does this by ensuring that banks have an adequate stock of unencumbered high-quality liquid assets (HQLA) that can be converted easily and immediately in private markets into cash to meet their liquidity needs for a 30 calendar-day liquidity stress scenario.
- The LCR will improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source, thus reducing the risk of spillover from the financial sector to the real economy. **So, Option (c) is correct.**

Capital Adequacy Ratio (CAR) is the ratio of a bank's capital in relation to its risk-weighted assets and current liabilities. It is decided by central banks and bank regulators to prevent commercial banks from taking excess leverage and becoming insolvent in the process. The risk-weighted assets take into account credit risk, market risk and operational risk.
The Basel III norms stipulated a capital to risk-weighted assets of 8%. However, as per RBI norms, Indian scheduled commercial banks are required to maintain a CAR of 9%, while Indian public sector banks are emphasized to maintain a CAR of 12%. **So, Option (d) is not correct.**

61. Consider the following pairs :

Sl.No.	***River linking projects***		***Connecting states***
1.	Ken-Betwa river linking project	-	Madhya Pradesh and Maharashtra
2.	Parbati-Kalisindh-Chambal link project	-	Madhya Pradesh and Rajasthan
3.	Godavari-Cauvery Link Project	-	Andhra Pradesh and Telangana

Which of the pairs given above is/are correct ?
(a) 1 only
(b) 1 and 3 only
(c) 2 only
(d) **2 and 3 only**

EXPLANATION:

Ken- Betwa River Linking National Project (KBLP) envisages transferring water from the Ken River to the Betwa River, both tributaries of the Yamuna.

- The Ken-Betwa Link Canal will be 221 km in length, including a 2-km tunnel. It is the first project under the National Perspective Plan for the interlinking of rivers, which was prepared in 1980.
- This plan has 16 projects under its peninsular component, including the KBLP. Apart from this, 14 links are proposed under the Himalayan rivers development plan.
- The project lies in Bundelkhand, which spreads across 13 districts of Uttar Pradesh and Madhya Pradesh.
- According to the Jal Shakti Ministry, the project will be of immense benefit to the water-starved region, especially the districts of Panna, Tikamgarh, Chhatarpur, Sagar, Damoh, Datia, Vidisha, Shivpuri and Raisen of Madhya Pradesh, and Banda, Mahoba, Jhansi and Lalitpur of Uttar Pradesh. **So, Pair 1 is not correct.**

The Parbati-Kalisindh-Chambal (PKC) link project aims to divert surplus water from the Parbati, Newaj, and Kalisindh rivers—tributaries and sub-tributaries of the Chambal River—to the Chambal River at Rana Pratap Sagar or Gandhi Sagar.
This project is designed to provide irrigation to around 2.8 lakh hectares in both Rajasthan and Madhya Pradesh (totaling 5.6 lakh hectares), along with supplying drinking and industrial water to 13 districts in eastern Rajasthan and the Malwa-Chambal region of Madhya Pradesh. It also aims to recharge tanks along the route.
The modified link will ensure the optimal and economic use of water resources in the Chambal basin, and specific project components will be finalized at the Detailed Project Report (DPR) stage in consultation with both states. **So, Pair 2 is correct.**

The Godavari–Cauvery link project consists of the following three links:
- Godavari (Inchampalli) - Krishna (Nagarjunasagar)
- Krishna (Nagarjunasagar) - Pennar (Somasila)
- Pennar (Somasila) - Cauvery (Grand Anicut)

The revised proposal, now referred to as the Godavari (Inchampalli)–Cauvery (Grand Anicut) link, envisions transferring 7000 Mm^3 of water from the Godavari basin to the Cauvery basin.
The project aims to benefit the states of Telangana, Andhra Pradesh, and Tamil Nadu, addressing irrigation, drinking water, and inter-state water needs. **So, Pair 3 is correct.**

62. The Berne Convention, the Washington treaty and the Paris Convention are related to which of the following international organisations ?
    (a) World Intellectual Property Organisation (WIPO)
    (b) United Nations Framework Convention on Climate Change (UNFCCC)
    (c) International Civil Aviation Organisation (ICAO)
    (d) International Monetary Fund (IMF)

EXPLANATION:

The origins of WIPO go back to 1883 and 1886, when the Paris Convention for the Protection of Industrial Property and the Berne Convention for the Protection of Literary and Artistic Works provided for the establishment of an "International Bureau." The two bureaus were united in 1893 and, in 1970, replaced by the WIPO by virtue of the WIPO Convention.
- The Berne Convention, adopted in 1886, deals with the protection of works and the rights of their authors. It provides creators such as authors, musicians, poets, painters, etc., with the means to control how their works are used, by whom, and on what terms.
- The Washington Treaty on Intellectual Property in Respect of Integrated Circuits was adopted in 1989 and provides protection for the layout designs (topographies) of integrated circuits. The Treaty has not yet entered into force, but has been ratified or acceded to by the following States: Bosnia and Herzegovina, Egypt and Saint Lucia.
- The Paris Convention, adopted in 1883, applies to industrial property in the widest sense, including patents, trademarks, industrial designs, utility models, service marks, trade names, geographical indications and the repression of unfair competition. This international agreement was the first major step taken to help creators ensure that their intellectual works were protected in other countries.

The Berne Convention, the Paris Convention, and the Washington Treaty are treaties administered by the World Intellectual Property Organization (WIPO), an intergovernmental organization which became one of the specialized agencies of the United Nations system in 1974. **So, Option (a) is correct.**

63. Which of the following statements is correct regarding the “Market Intervention Scheme” in agriculture ?
    1. It is a component of the Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA).
    2. The scheme ensures farmers receive a fair price for perishable crops covered under MSP.
    3. Recently, the Government of India has revised the Market Intervention Scheme (MIS) guidelines by increasing the procurement limit of crops from 20% to 25%.

    Select the correct answer using the codes given below :
    (a) 1 and 2 only
    (b) 2 and 3 only
    (c) 1 and 3 only
    (d) 1, 2 and 3

EXPLANATION:

Market Intervention Scheme (MIS) is implemented for procurement of horticultural/agricultural commodities which are perishable in nature and are not covered under the Price Support Scheme (MSP-

Minimum support price). Therefore, MIS ensures farmers receive a fair price for perishable crops not covered under MSP. **So, Statement 2 is not correct.**

- The objective of intervention is to protect the growers of these commodities from making distress sale in the event of a bumper crop during the peak arrival period when the prices tend to fall below economic levels and cost of production.
- The condition is that there should be either at least a 10 percent increase in production or a 10 percent decrease in the ruling market prices over the previous normal year.
- The Market Intervention Scheme (MIS) is implemented at the request of a state / UT government which is ready to bear 50 percent of the loss (25 percent in case of North-Eastern States), if any, incurred on its implementation.
- The extent of total amount of loss to be shared on a 50:50 basis between the central government and the state government is restricted to 25 percent of the total procurement value which includes cost of the commodity procured plus permitted overhead expenses.
- The government has made MIS a component of the integrated scheme of Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA). **So, Statement 1 is correct.**
- The procurement/coverage limit of production quantity of crops has been increased from the existing 20 per cent to 25 per cent. **So, Statement 3 is correct.**

64. Consider the following statements about Mughal Painting :
    1. Humayun invited two Persian artist Mir Sayyid Ali and Abdus samad to establish a studio in royal court.
    2. The Hamza Nama Painting was the earliest portrait painting during the Akbar period.
    3. Shah Jahan encouraged miniature Painting, which was created by using jewel-like colours with intricate fine lines.

    How many of the above given statement(s) is/are correct?
    (a) Only one
    (b) Only two
    (c) All three
    (d) None

EXPLANATION:

Mughal Painting is the style of miniature Painting that developed in the northern Indian subcontinent in the sixteenth century and continued till the mid-nineteenth century. It is known for its sophisticated techniques and diverse range of subjects and themes.

- During exile in Shah Tahmasp's court, Humanyun witnessed the magnificent artistic tradition of miniature paintings and manuscripts. He was thrilled to see the skilful artists in practice, creating splendid works of art for Shah Tahmasp. Impressed by the artists and with an ambition to recreate such art workshops in India, Humayun brought back with him the master artists when he regained power in India. He invited two Persian artists—Mir Sayyid Ali and Abd us Samad, to establish a studio in his court and carry out royal paintings. **So, Statement 1 is correct.**

Humayun's rule began a period of intense patronage for the art of Painting and calligraphy. He founded the Nigaar Khana (painting workshop), which was also a part of his library. He started the project of illustration of Hamza Nama, which was continued by his son and successor Akbar.

- The tradition and fascination for Painting started by Humayun was carried forward by his illustrious son Akbar.
- The earliest of his projects is the continuation of his father's artistic legacy of Hamza Nama, an illustrated account of the heroic deeds of Hamza, the uncle of Prophet Muhammad.
- Akbar was delighted to hear the stories of Hamza, a character much loved in the Middle East's popular and intellectual circles, who were read out aloud by a professional narrator.

Simultaneously, the corresponding folios and painted Hamza Nama narrative were held for a clear view. The emperor took great interest in both the pictorial narrative and the recitation of Hamza Nama. Because of the peculiar function of these paintings, their format is large. The base surface is cloth with paper at the back, on which the narrative text is written to help the narrator, and the technique applied is gouache, which is water-based and in opaque colours. **So, Statement 2 is correct.**

Shah Jahan encouraged the artists in the atelier to create magnificent works that were a blend of imagination and documentation. Idealisation and great stylisation were preferred over naturalistic rendering and accurate depiction.

- The artworks produced under his supervision concentrated on miniature Painting, subliminal qualities, and exalted beautification, which were created using jewel-like colours, perfect rendering, and intricate fine lines.
- The higher concepts in the Painting were given much prominence, and the visuals were created meticulously to cull out the multitude of interpretations that a single painting could offer.
- His love for sparkling jewels and gems, passion for monumental architecture, and choice of painting subjects inform us of the majestic image that he wanted to leave behind. Imperial portraits with glorious titles were painted to present the personality of the emperor himself.

Padshahnama (The Chronicles of the King) is one of the most exuberant painting projects undertaken by his court atelier and reflects the extraordinary manuscript that presents the height that Indian miniature Painting achieved. **So, Statement 3 is correct.**

65. With reference to the schools of art, consider the following statements :
    1. The human form of Buddha is found in both the Gandhara and Mathura schools of art.
    2. The sculptural tradition in Gandhara had the confluence of Bactria, Parthia and the local Gandhara tradition.
    3. In Mathura, Vaishnava and Shaiva images were found in larger numbers than Buddha images.
    4. The Buddha image at Mathura is based on Yaksha images, while in Gandhara, it possesses Hellenistic features.

    Which of the statements given above are correct ?
    (a) 1, 2 and 3 only
    (b) **1, 2 and 4 only**
    (c) 2, 3 and 4 only
    (d) 1, 2, 3 and 4

EXPLANATION:

From the first century CE onwards, Gandhara (now in Pakistan), Mathura in northern India and Vengi in Andhra Pradesh emerged as important centres of art production.

- Buddha in the symbolic form got a human form in Mathura and Gandhara. **So, Statement 1 is correct.**
- The sculptural tradition in Gandhara was confluent with Bactria, Parthia, and the local Gandhara tradition. **So, Statement 2 is correct.**
- The Buddha image in Mathura is modelled on the lines of earlier Yaksha images, whereas in Gandhara, it has Hellenistic features. Early Jain Teerthankar images and portraits of kings, especially the headless Kanishka, are also found in Mathura. **So, Statement 4 is correct.**
- Images of the Vaishnava (mainly Vishnu and his various forms) and Shaiva (mainly the lingas and mukhalingas) faiths are also found in Mathura, but Buddhist images are found in large numbers. It may be noted that the images of Vishnu and Shiva are represented by their ayudhas (weapons). **So, Statement 3 is not correct.**
- There is boldness in carving the large images, the volume of the images is projected out of the picture plane, the faces are round and smiling, and heaviness in the sculptural volume is reduced to relaxed flesh.

66. Recently, the Citizenship Amendment Act (CAA) of 2019 was enacted. In this regard, consider the following statements :
    1. Person of Indian origin
    2. A person married to an Indian citizen
    3. A minor child of an Indian citizen
    4. Illegal migrants belonging to the Buddhist religion from Afghanistan who entered India before 2016.
    5. Registered as an Overseas Citizen of India Cardholder

Who among the above are eligible to apply for citizenship through naturalization / registration?
(a) 1, 2 and 4 only
(b) 1, 3, 4 and 5 only
(c) 1, 2, 3, 4 and 5 only
(d) **1, 2, 3 and 5 only**

EXPLANATION:

In India, the following are the sections that deals with the eligibility criteria to apply for citizenship through naturalization/registration:

- Section 5(1)(a): A person of Indian origin who is ordinarily living in India for 7 years can apply for citizenship by registration.
  (Person of Indian origin is someone whose parents or grandparents were born in undivided India.) **So, Statement 1 is correct.**
- Section 5(1)(c): A person married to an Indian citizen can apply for registration as an Indian citizen, provided the marriage has lasted for at least 2 years. **So, Statement 2 is correct.**
- Section 5(1)(d): A minor child (under 18s years) of an Indian citizen is eligible to be registered as an Indian citizen. **So, Statement 3 is correct.**
- Section 5(1)(e): A person whose parents are already registered as Indian citizens under Section 5(1)(a) (person of Indian origin) or Section 6(1) (naturalization) can also apply for registration.
- Section 5(1)(f): A person who, or whose either parent, was a citizen of independent India (after 15 August 1947) can apply for registration.
- Section 5(1)(g): A person who is registered as an Overseas Citizen of India (OCI) under Section 7A can apply for full citizenship through registration. **So, Statement 5 is correct.**

The Citizenship Act of 1955 prohibits illegal migrants from acquiring Indian citizenship. It defines an illegal migrant as a foreigner

- who enters India without a valid passport or travel documents or
- stays beyond the permitted time.

A special provision exists for the submission of applications for Indian Citizenship under the Citizenship Amendment Act of 2019. It specifically provides that the Hindus, Sikhs, Buddhists, Jains, Parsis and Christians from Afghanistan, Bangladesh and Pakistan who entered India on or before December 31, 2014, will not be treated as illegal migrants.

Therefore, it can be said that the Illegal migrants belonging to the Buddhist religion from Afghanistan who entered India in 2016 are not eligible to apply for citizenship through naturalization/registration. **So, Statement 4 is not correct.**

67. After a State Legislature passes a Bill, which of the following actions by the Governor under Article 200 of the Constitution could be considered "illegal" and "erroneous in law" ?
    1. Governor can grant assent or withhold the assent or can reserve the Bill for the President's consideration.
    2. The bill can be sent to the legislature for reconsideration
    3. The reconsidered bill can be assented, withhold or reserved for President's assent.

    Select the correct answer using the codes given below :
    (a) 2 only
    (b) **3 only**
    (c) 1 and 2 only
    (d) 1 and 3 only

EXPLANATION:

Article 200 of the Constitution states that when a Bill has been passed by the Legislative Assembly of a State or, in the case of a State having a Legislative Council, has been passed by both Houses of the Legislature of the State, it shall be presented to the Governor, and the Governor can:

- Give his/her assent to the Bill or
- Withholds his/her assent to the Bill or

- Reserve the Bill for the consideration of the President.
- The Governor can return the Bill (if it is not a money bill) for reconsideration by the state legislature.
  - However, if the Bill is passed again by the state legislature with or without amendments, the Governor shall not withhold assent.
  - He/she can either give his assent to the Bill or reserve the Bill for the Consideration of the President, which in the opinion of the Governor would, if it became law, derogate the powers of the High Court, as to endanger the position which that Court is by this Constitution designed to fill.

Therefore, the reconsidered Bill can either be assented to or reserved for the President's assent, while the Governor can't withhold the reconsidered Bill, which could be regarded as "illegal" and "erroneous in law".
So, Statement 3 is correct, and Statements 1 and 2 are not correct.

68. Which of the following statements is/are correct ?
    1. The Supreme Court of India hears only petitions filed in the English language.
    2. The Constitution of India mandates that every Bill introduced in Parliament must be accompanied by its Hindi translation.

    Select the correct answer using the codes below :

    (a) 1 only
    (b) 2 only
    (c) Both 1 and 2
    (d) Neither 1 nor 2

EXPLANATION:

According to Article 348(1)(a) of the Constitution of India states that all proceedings in the Supreme Court and in every High Court, shall be in English language. However, Article 348 (2) of the Constitution of India provides that the Governor of a State may, with the previous consent of the President, authorize the use of Hindi Language, or any other language used for any official purposes of the State, in proceedings in the High Court having its principal seat in that State.
Further, Section 7 of the Official Language Act, 1963 states that the Governor of a State may, with the previous consent of the President, authorize the use of Hindi or the official language of the State, in addition to the English Language, for the purposes of any judgment, decree or order passed or made by the High Court for that State and where any judgment, decree or order is passed or made in any such language (other than the English Language), it shall be accompanied by a translation of the same in the English Language issued under the authority of the High Court. **So, Statement 1 is correct.**

The constitution of India does not mandate that every bill introduced in parliament must be accompanied by its Hindi translation. While the Official Languages Act, 1963, provides for the languages that may be used for the official purposes of the union, for the transaction of business in parliament, for central and state acts and for certain purposes in high courts. Under the authoritative text in the English language of all Bills to be introduced or amendments thereto to be moved in either House of Parliament shall be accompanied by a translation of the same in Hindi, authorised in such manner as may be prescribed by rules made under this Act. **So, Statement 2 is not correct.**

69. Which one of the following is correct with reference to 'Proportionate Justice' ?
    (a) It primarily takes into account the availability of resources.
    (b) It seeks to repair harm by providing an opportunity for those who are harmed.
    (c) It rewards people based on the scale and quality of their effort.
    (d) It recognizes the needs of the people based only on their economic status

EXPLANATION:

General principles of social justice are three principles: Equal Treatment for Equals, Proportionate Justice and Recognition of Special Needs.

- Equal Treatment for Equals:

- Apart from equal rights, the principle of treating equals equally would require that people should not be discriminated against on grounds of class, caste, race or gender. They should be judged on the basis of their work and actions and not on the basis of the group to which they belong.

➢ Proportionate Justice:
- It means rewarding people in proportion to the scale and quality of their efforts. Although people should get the same reward for the same work, it would be fair and just to reward different kinds of work differently if we take into account factors such as the effort required, the skills required, the possible dangers involved in that work, and so on. **So, Option (c) is correct.**
- If we use these criteria, we may find that certain kinds of workers in our society are not paid a wage which takes such factors sufficiently into account. For instance, miners, skilled craftsmen, or people in sometimes dangerous but socially useful professions like policemen may not always get a reward when compared to what some others in society may be earning.
- For justice in society, the principle of equal treatment needs to be balanced with the principle of proportionality.

➢ Recognition of Special Needs:
- A third principle of justice, which we recognize, is for a society to take into account the special needs of people while distributing rewards or duties. This would be considered a way of promoting social justice. People with special needs or disabilities could be considered unequal in some particular respect and deserving of special help.
- In India, lack of access to good education or health care and other such facilities is often found combined with social discrimination on the grounds of caste. The Constitution, therefore, allowed for reservations of government jobs and quotas for admissions to educational institutions for people belonging to the Scheduled Castes and Tribes.

70. In India, the taxes on mineral rights are :
(a) levied by the Centre but collected and appropriated by the States.
(b) levied and collected by the Centre but assigned to the States.
(c) levied and collected by the Centre but distributed between the Centre and the States.
(d) levied, collected, and retained by the States.

EXPLANATION:

The 80th Amendment Act of 2000 and the 101st Amendment Act of 2016 have introduced major changes in the scheme of the distribution of tax revenues between the Centre and the states.
There are two types of taxes that the state government is tasked with collecting. They are:
➢ Taxes levied by the central government
➢ Taxes levied by the state government
Taxes that the state government levies are the ones on which they have the freedom to decide the amount of taxation. These taxes are levied, collected and retained by the state government. These are the taxes, the rates of which tend to differ from one state to another. Taxes that are levied by the state government are enumerated in the state list and are 18 in number. Some of them are
➢ Land revenue;
➢ Taxes on agricultural income;
➢ Duties in respect of succession to agricultural land;
➢ Estate duty in respect of agricultural land;
➢ Taxes on lands and buildings;
➢ Taxes on mineral rights;
➢ Duties of excise on alcoholic liquors for human consumption; opium, Indian hemp and other narcotic drugs and narcotics, not including medicinal and toilet preparations containing alcohol or narcotics;
➢ Taxes on the consumption or sale of electricity, etc.,
Thus, the taxes on mineral rights are levied, collected, and retained by the States. **So, Option (d) is correct.**

71. With reference to the Tokamak Reactors recently seen in the news, consider the following statements:
    1. Nuclear fusion reaction occurs at high temperature
    2. Gases are maintained in plasma state
    3. Fuel production is easier than fission reactors

    Which of the following are advantages of the reactor ?
    (a) 1 and 2 only
    (b) 2 and 3 only
    (c) 3 only
    (d) 1, 2 and 3

EXPLANATION:

A Nuclear fusion reaction can take place at a sufficient rate only at high temperatures greater than 100 million Kelvin. At this condition the reacting nuclei exists in a plasma state and this kind of energy is required for positively charged nuclei to overcome their natural charge repulsion.
The tokamak is a donut shape experimental machine designed to harness the energy of fusion. Inside a tokamak, a fusion plasma is created and confined by strong magnetic fields. In order for fusion to occur in the very hot gas or plasma created inside the Tokamak, the plasma must be heated to temperatures in excess of 150 million degrees Celsius. The energy produced through the fusion of atoms in the plasma is absorbed as heat in the walls of the vessel. Just like a conventional power plant, a fusion power plant will use this heat to produce steam and then electricity through turbines and generators. **So, Statement 1 is correct.**

Plasma is one of the four states of matter, along with gases, liquids, and solids. In plasma, some of the electrons separate and become free from neutral atoms (atoms that have an equal number of protons and electrons and thus a neutral charge). The resulting free electrons make plasma different from the other states of matter, where the electrons are held close to nuclei. When the atoms in plasma separate from their negatively charged electrons, they no longer have a neutral electrical charge. Instead, the atoms become ions—positively charged particles. Therefore, plasma is an ionized state made up of positively charged ions and negatively charged electrons.
The temperatures within a tokamak must reach 150 million °C to turn the gas into plasma and for the fusion reaction to take place. **So, Statement 2 is correct.**

Fission reactors rely on fissile materials like uranium and plutonium. The availability, extraction and enrichment of uranium are complex and energy-intensive processes. In contrast, fusion reactors like the tokamak use isotopes of hydrogen called deuterium and tritium.
Deuterium is abundant in seawater, accounting for 1 in every 6700 atoms. Various chemical separation methods enable deuterium to be extracted from water. Tritium is produced from lithium. Future fusion power plants will be designed to manufacture tritium from lithium and feed the fuel into the reactor. **So, Statement 3 is correct.**

72. Consider the following
    Statement I :
    Hydrogen Fuel Cell Electric Vehicles (FCEV) produce less environmental pollution.
    Statement II :
    FCEVs produces electrical energy from Liquid Hydrogen with efficiencies up to 60%
    Statement III :
    Proton Exchange Membrane (PEM) based fuel cells produce water and water vapour as by-product

    Which one of the following is correct in respect of the above statements ?
    (a) Both Statement-II and Statement-III are correct and both of them explain Statement-I
    (b) Both Statement-II and Statement-III are correct, but only one of them explains Statement-I
    (c) Only one of the Statements II and III is correct and that explains Statement-I
    (d) Neither Statement-II nor Statement-III is correct

EXPLANATION:

Hydrogen Fuel cell electric vehicles (FCEVs) use a propulsion system similar to that of electric vehicles, where energy stored as hydrogen is converted to electricity by the fuel cell.

- Unlike conventional internal combustion engine vehicles, FCEV vehicles produce no harmful tailpipe emissions-they only emit water vapour and warm air. **So, Statement I is correct.**
- Fuel cells have several benefits over conventional combustion-based technologies. Fuel cells can operate at higher efficiencies than combustion engines and can convert the chemical energy in the liquid hydrogen fuel directly to electrical energy with efficiencies of up to 60%. **So, Statement II is correct.**
- The most common type of fuel cell for vehicle applications is the polymer electrolyte membrane (PEM) fuel cell, also known as the PEM (Proton Exchange Membrane) fuel cell. In a PEM fuel cell, an electrolyte membrane is sandwiched between a positive electrode (cathode) and a negative electrode (anode). Hydrogen is introduced to the anode, and oxygen (from air) is introduced to the cathode. The hydrogen molecules break apart into protons and electrons due to an electrochemical reaction aided by a catalyst. Protons then travel through the membrane to the cathode. The electrons are forced to travel through an external circuit to perform work (providing power to the electric motor) and then recombine with the protons on the cathode side, where the protons, electrons, and oxygen molecules combine to form water and water vapour. **Both Statement II and Statement III are correct, and both of them explain Statement I.**

73. The terms Sarvam 2B, Command R7B, Mistral 7B, and BharatGen recently seen in the news are in the context of _____.
    (a) Supercomputers
    (b) **Large Language Models**
    (c) Quantum Cryptography
    (d) Autonomous space launch systems

EXPLANATION:

Large language models (LLMs) are deep learning algorithms that can recognise, summarise, translate, predict, and generate content using very large datasets. Sarvam 2B, Command R7B, Mistral 7B, and BharatGen are various LLMs.

- Sarvam 2B, by startup Sarvam AI, is a two-billion-parameter open-source large language model specifically designed for Indian languages. The Indian languages it currently supports are: Bengali, Gujarati, Hindi, Kannada, Malayalam, Marathi, Oriya, Punjabi, Tamil, and Telugu. The model will be trained a data mixture containing equal parts of English and Indic tokens.
- Command R7B, released by AI startup Cohere, is the smallest and fastest in its R model series. Command R7B is built to support fast prototyping and iteration and uses retrieval-augmented generation (RAG) to improve its accuracy. The model features a context length of 128K and supports 23 languages. It outperforms others in its class of open-weights models — Google's Gemma, Meta's Llama, Mistral's Ministral — in tasks including math and coding.
- Mistral 7B, developed by Mistral AI, is a 7-billion-parameter LLM that outperforms larger models like Llama 2 13B in reasoning and code generation tasks. It utilizes advanced attention mechanisms for improved performance. **So, Option (b) is correct.**

74. Which among the following releases the World Air Quality Report ?
    (a) World Health Organization
    (b) IQAir
    (c) United Nations Economic Commission for Europe
    (d) State of Global Air

EXPLANATION:

Recently, IQAir released of its 7th annual World Air Quality Report, highlighting alarming trends of the world's most polluted countries, territories, and regions in 2024. For this year's report, data from more than 40,000 air quality monitoring stations across 8,954 locations in 138 countries, territories, and regions were analyzed by IQAir's air quality scientists.

The World Air Quality Report, which compiles measurements of air pollution from around the globe, should be a rallying call for urgent and concerted international efforts to cut pollutant emissions.

Key findings from the 2024 World Air Quality Report:

- Only 17% of global cities meet WHO air pollution guideline.
- Seven countries met the WHO annual average PM2.5 guideline of 5 µg/m3: Australia, Bahamas, Barbados, Estonia, Grenada, Iceland, and New Zealand.

The five most polluted countries in 2024 were:

- Chad (91.8 µg/m3): More than 18 times higher than the WHO PM2.5 annual guideline.
- Bangladesh (78.0 µg/m3): More than 15 times higher than the WHO PM2.5 annual guideline.
- Pakistan (73.7 µg/m3): More than 14 times higher than the WHO PM2.5 annual guideline.
- Democratic Republic of the Congo (58.2 µg/m3): More than 11 times higher than the WHO PM2.5 annual guideline.
- India (50.6 µg/m3): More than 10 times higher than the WHO PM2.5 annual guideline.
- A total of 126 (91.3%) out of 138 countries and regions exceeded the WHO annual PM2.5 guideline value of 5 µg/m3.
- Byrnihat, India was the most polluted metropolitan area of 2024, with an annual average PM2.5 concentration of 128.2 µg/m3. The region of Central & South Asia was home to the top seven most polluted cities in the world. India was home to six of the nine most polluted global cities. **So, Option (b) is correct.**

75. Which of the following best describes the term "Yamanaka factors" ?
    (a) They are the genes responsible for determining the sex of a child.
    (b) They are used in space science to detect the position of the Black Hole.
    (c) They are the determinants of movements of lithospheric plates.
    (d) **They are a set of four special genes that can turn a regular adult cell back into a pluripotent stem cell.**

EXPLANATION:

Induced pluripotent cells (iPSCs) are reprogrammed somatic cells that can differentiate into every cell type of the three germ layers, the endoderm, the ectoderm, and the mesoderm. They have the potential of unlimited proliferation and differentiation, like embryonic stem cells (ESs), and give rise to different cells and tissue types, such as connective, epithelial, muscle, and nervous cells and tissues.

Yamanaka and Takahashi discovered the core transcriptional factors required for reprogramming somatic cells to induce pluripotent stem cells, *Oct4*, *Sox2*, *Klf4*, and *c-Myc* (OSKM)

The Yamanaka factors are four special genes that can turn a regular adult cell back into a stem cell-like state, where they can grow into almost any type of cell in the body. **So, Option (d) is correct.**

76. Consider the following :
    1. White Blood Cells
    2. Red Blood Cells
    3. Platelets
    4. Plasma

    Which of the above mentioned components of blood contains DNA ?
    (a) 1 and 3 only
    (b) 3 only
    (c) 3 and 4 only
    (d) 1, 2, 3 and 4

EXPLANATION:

Blood is a special connective tissue consisting of a fluid matrix, plasma, and formed elements.
Leucocytes are also known as white blood cells (WBC) as they are colourless due to the lack of haemoglobin. They are nucleated and are relatively small in number, which averages 6000-8000 mm–3 of blood. They circulate in the blood and mount inflammatory and cellular responses to injury or pathogens. Leucocytes are generally short-lived. We have two main categories of WBCs – granulocytes and agranulocytes.
White cells, containing a nucleus and able to produce ribonucleic acid (RNA), can synthesize protein. They comprise three classes of cells, each unique as to structure and function, that are designated granulocytes, monocytes, and lymphocytes.
Nucleus is a dense membrane bound structure. This nucleus contains the chromosomes which in turn contain the genetic material, DNA. Thus, WBC contains nucleus which inturn contains DNA. **So, Statement 1 is correct.**

Erythrocytes, or Red blood cells (RBC), are commonly known as cells with no nucleus or mitochondria and are assumed to be a transportation vehicle (are assumed to be a transportation vehicle for oxygen, carbon dioxide, and metabolic by-products of cells). A recent study confirms that RBC contains long DNA fragments inside with stain by both microscope and flow cytometry, which covers most nuclear and mitochondrial genome regions by next-generation sequencing (NGS). **So, Statement 2 is correct.**

Platelets, also called thrombocytes, are cell fragments produced from megakaryocytes (special cells in the bone marrow). Platelets can release a variety of substances, most of which are involved in the coagulation or clotting of blood.
Platelets are products of megakaryocytes, that contain megakaryocyte-derived pre-mRNA and mRNA and carry out splicing and protein synthesis, but do not contain a nucleus and are not thought to contain genomic DNA. However it has been reported that platelets contain histone proteins, raising the possibility that they may carry some megakaryocyte DNA as well. Notably, the total amount of DNA present in platelets (~2×10^{-6} genomes/platelet) suggests that only a small fraction (~0.1%) of a megakaryocyte genome DNA is present in the platelets. **So, Statement 3 is correct.**

Plasma is a straw coloured, viscous fluid constituting nearly 55 per cent of the blood. 90-92 per cent of plasma is water, and proteins contribute 6-8 per cent of it. Fibrinogen, globulins and albumins are the major proteins.
Small amounts of DNA circulate in both healthy and diseased human plasma/serum, and increased concentrations of DNA are present in the plasma of cancer patients. **So, Statement 4 is correct.**

77. Consider the following :
    1. Sunglasses to reduce eye strain
    2. Controlling Brightness in a Liquid Crystal Display
    3. Enhancing Colour Contrast in Cameras
    4. Visualising Stress Pattern in Plastics

    How many of the above uses the Polarisation Effect ?
    (a) Only one
    (b) Only two
    (c) Only three
    (d) All four

EXPLANATION:

Polarisation refers to the property of certain electromagnetic radiations in which the direction and magnitude of the vibrating electric field are related in a specified way. Normally, light vibrates in all directions, but when it's polarised, only specific directions are allowed.
Glare caused by the light reflected from a smooth surface can be reduced by using polarising materials called polaroids, which are made from tiny crystals of quinine iodosulphate, all lined up in the same

direction in a sheet of nitrocellulose. Such crystals (called dichoric) transmit light in one specific plane and absorb those in a perpendicular plane.

Applications of Polarisation:

- Polarized sunglasses selectively transmit light with a specific polarization state (usually horizontal), reducing the glare caused by light scattering or reflections off surfaces like water, snow, or glass. These sunglasses improve visual performance in high-glare environments, such as sunny days. They are particularly beneficial for drivers, outdoor enthusiasts, and individuals with light-sensitive conditions, such as photophobia or migraines.
- While polarized lenses are generally beneficial in reducing glare and enhancing visual comfort, they can interfere with the visibility of certain displays, such as computer and liquid crystal display (LCD) screens, that use polarization to display images. This is due to the orientation of the polarizing filters in the lenses, which may block or distort the light emitted from these screens. Users may experience a darkening or colour shift when viewing computer monitors, smartphones, tablets, or other devices with LCD screens while wearing polarized eyewear.
- Polaroid discs are used in photography as 'filters' in front of the camera lens and facilitate details which would otherwise be hidden by glare. Polarizing filters can greatly improve the quality of our photos by enhancing contrast and color. Using these filters, we can control how much light enters our cameras, reducing glare and unwanted reflections.
- Polarimeters are used in the sugar industry for quality control.
- Polarized light reveals stress patterns in clear plastic. When certain plastics are placed between two pieces of polarizing material, their stress patterns become dramatically visible in a brightly coloured display. A stressed plastic object can be used to illustrate stresses found in bones. **So, Option (d) is correct.**

78. Consider the following statements :
    1. The hormone from this gland regulates calcium and phosphate levels in the blood.
    2. The functioning of the gland is independent of the Pituitary gland
    3. Humans have four of these glands

    Which of the following endocrine glands is described above ?

    (a) Adrenal glands
    (b) Parathyroid gland
    (c) Thyroid glands
    (d) Pancreas

EXPLANATION:

Endocrine gland mentioned above is Parathyroid gland. Endocrine glands are glands that secrete hormones directly into the bloodstream without using ducts. These hormones then travel through the blood to target organs and regulate various physiological processes. The pituitary, pineal, thyroid, adrenal, pancreas, parathyroid, thymus and gonads (testis in males and ovary in females) are the organized endocrine bodies in the human body.

- The parathyroid glands secrete a peptide hormone called parathyroid hormone (PTH). Parathyroid hormone (PTH) increases the Ca2+ levels in the blood. PTH increases calcium reabsorption in the kidneys and blocks phosphate reabsorption from the tubules. PTH also acts on the kidneys to stimulate the formation of vitamin D. Vitamin D is an essential component of calcium and phosphate homeostasis, yielding its effects on the kidneys and gastrointestinal (GI) system.
- The pituitary gland is often called the master gland because it controls the activity of many other endocrine glands through the secretion of tropic hormones. However, not all endocrine glands are under its control.

- The secretion of Parathyroid gland hormone (PTH) is regulated by the circulating levels of calcium ions. This clearly indicates that parathyroid hormone secretion is controlled by feedback from blood calcium levels. Thus, the Parathyroid gland functions independently of the pituitary gland.
- In humans, four parathyroid glands are present on the back side of the thyroid gland, one pair each in the two lobes of the thyroid gland.

Therefore, the Parathyroid gland is the above-mentioned endocrine gland. **So, Option (b) is correct.**

79. Consider the following information :

Sl.No.	***Island***	***Region***	***Disputed between***
1.	Abu Musa	Persian Gulf	Iran and UAE
2.	Triton	Gulf of Thailand	China, Vietnam and Taiwan
3.	Kuril	Sea of Okhotsk	Japan and China

How many of the above rows is/are correctly matched ?

(a) Only one
(b) Only two
(c) All three
(d) None

EXPLANATION:

Abu Musa Island is a small island near the entrance to the Persian Gulf, claimed by both Iran and the United Arab Emirates. Although Iran historically claimed ownership of all the islands in the Gulf, since the late nineteenth century, the sovereignty of Abu Musa has been in dispute.

Iran occupied the island on 30 November 1971, and from there on, Iran controlled and administered as part of the Hormozgan Province.

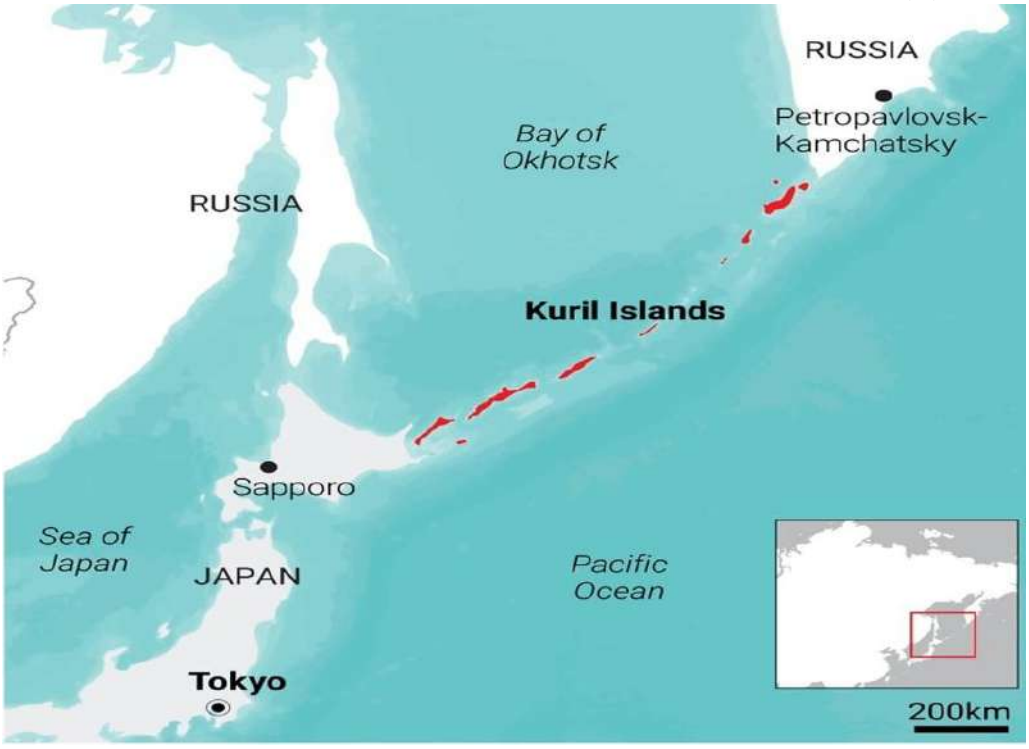
Despite the islands being small and having little in the way of natural resources or population, they are highly valued for their key strategic location in the Strait of Hormuz, arguably the most vital waterway in the world. **So, Pair (1) is correct.**

Triton Island is a rock/island located in the Paracel Islands, which is a group of about 130 small coral islands and reefs in the South China Sea. They lie about 250 miles (400 km) east of central Vietnam and about 220 miles (350 km) southeast of Hainan Island, China. China, Taiwan, and Vietnam all claim the archipelago.

Recently, Satellite images of Triton Island revealed a new structure that is a part of China's military expansion meant to support its maritime claims in the South China Sea. China claims the Paracels and the nearby Spratly Islands as its own maritime territories and has been expanding its military installations on the island chains.

Vietnam and Taiwan also claim the Paracels and Spratlys as their island groups. **So, Pair (2) is not correct.**

Kuril Islands/ Northern Territories are a set of four islands situated between the Sea of Okhotsk and the Pacific Ocean near the north of Japan's northernmost prefecture, Hokkaido. Both Moscow and Tokyo claim sovereignty over them, though the islands have been under Russian control since the end of World War II. The Soviet Union had seized the islands at the end of World War II and, by 1949, had expelled its Japanese residents. Tokyo claims that the disputed islands have been part of Japan since the early 19th century. Thus, Kuril is a disputed territory between Japan and Russia, not China. **So, Pair (3) is not correct.**



80. Who of the following said, "True nationalism lies not only in the physical unity of India but in strengthening its cultural unity" ?
    (a) Sardar Vallabhbhai Patel
    (b) **Dr. Syama Prasad Mookerjee**
    (c) Dr B R Ambedkar
    (d) C. Rajagopalachari

EXPLANATION:

Dr.Syama Prasad Mookerjee said, "True nationalism lies not only in the physical unity of India but in strengthening its cultural unity."

- Dr. Syama Prasad Mookerjee, born on 6th July 1901 in Calcutta, was a multifaceted personality-patriot, educationist, parliamentarian, statesman, and humanitarian.
- He played a pivotal role in promoting Indian languages and fostering intellectual growth, inviting luminaries like Rabindranath Tagore to inspire students.
- In August 1947, Gandhiji invited Syama Prasad to join the first national government.
- As Minister for Industries and Supplies in the Union Cabinet, he laid the firm foundation of the industrial development of the country by setting up the three most successful gigantic industrial undertakings, viz. the Chitranjan locomotive Factory, the Sindhri Fertilizer Corporation and the Hindustan Aircrafts Factory, Bangalore. **So, Option (b) is correct.**

81. With reference to the Chemical Weapon Convention (CWC), consider the following statements :
    1. It seeks to eliminate chemical weapons by prohibiting their development, production, stockpiling, and use by member states.
    2. The Organisation for the Prohibition of Chemical Weapons, an implementing body for the CWC, helps in eliminating an entire class of weapons of mass destruction.
    3. Any State Party has the right to request an on-site challenge inspection in the territory or under the control of another State Party, and the inspection cannot be refused.
    4. India is not a signatory to the Convention.

    How many of the statements given above are correct ?
    (a) Only one
    (b) Only two
    (c) **Only three**
    (d) All four

EXPLANATION:

The Chemical Weapon Convention (CWC) aims to eliminate an entire category of weapons of mass destruction by prohibiting the development, production, acquisition, stockpiling, retention, transfer or use of chemical weapons by States Parties. States Parties, in turn, must take the steps necessary to enforce that prohibition with respect to persons (natural or legal) within their jurisdiction.
Organization for the Prohibition of Chemical Weapons (OPCW) is the implementing body for The Chemical Weapon Convention (CWC). OPCW was established when the Chemical Weapons Convention entered into force on 29 April 1997, which helped in eliminating an entire class of weapons of mass destruction. **So, Statements 1 and 2 are correct.**

A unique feature of the Convention is its incorporation of the 'challenge inspection', whereby any State Party in doubt about another State Party's compliance can request a surprise inspection. Under the Convention's 'challenge inspection' procedure, States Parties have committed themselves to the principle of 'anytime, anywhere' inspections with no right of refusal. **So, Statement 3 is correct.**

India is a signatory and party to the Chemical Weapons Convention (CWC), with headquarters in The Hague, Netherlands.

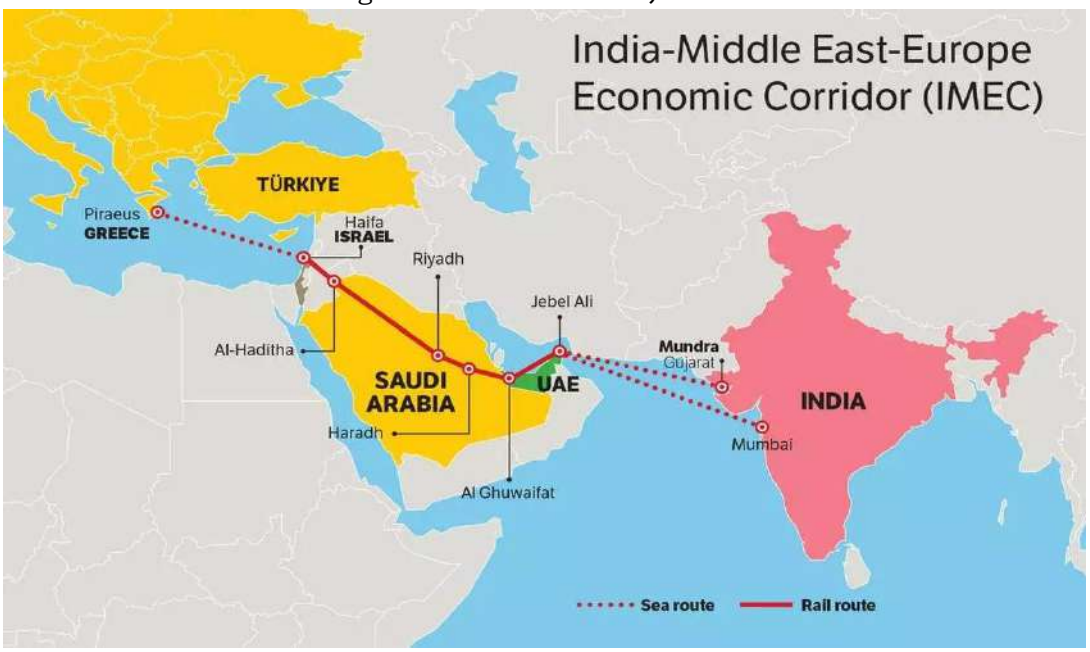
India signed the treaty in January 1993. India, pursuant to provisions of the Convention, enacted the Chemical Weapons Convention Act, 2000. The National Authority for Chemical Weapons Convention (NACWC) is the national authority responsible for implementing the Convention in India.
As of date, 193 countries are parties to the Convention. India was the First State Party to secure the distinction of chemical weapon-free state Parties by destroying its stockpile of chemical weapons among all State Parties of the Convention. **So, Statement 4 is not correct.**

82. With reference to the India-Middle East Europe Economic Corridor (IMEC), consider the following statements :
    1. IMEC tries to establish an alternative route for the Suez Canal for the transport of goods between India and Europe.
    2. IMEC is the outcome of G20 summit 2023.
    3. Chabahar Port of Iran is one of the prominent ports of the Corridor.

    How many of the above given statements is/are correct ?
    (a) Only one
    (b) Only two
    (c) All three
    (d) None

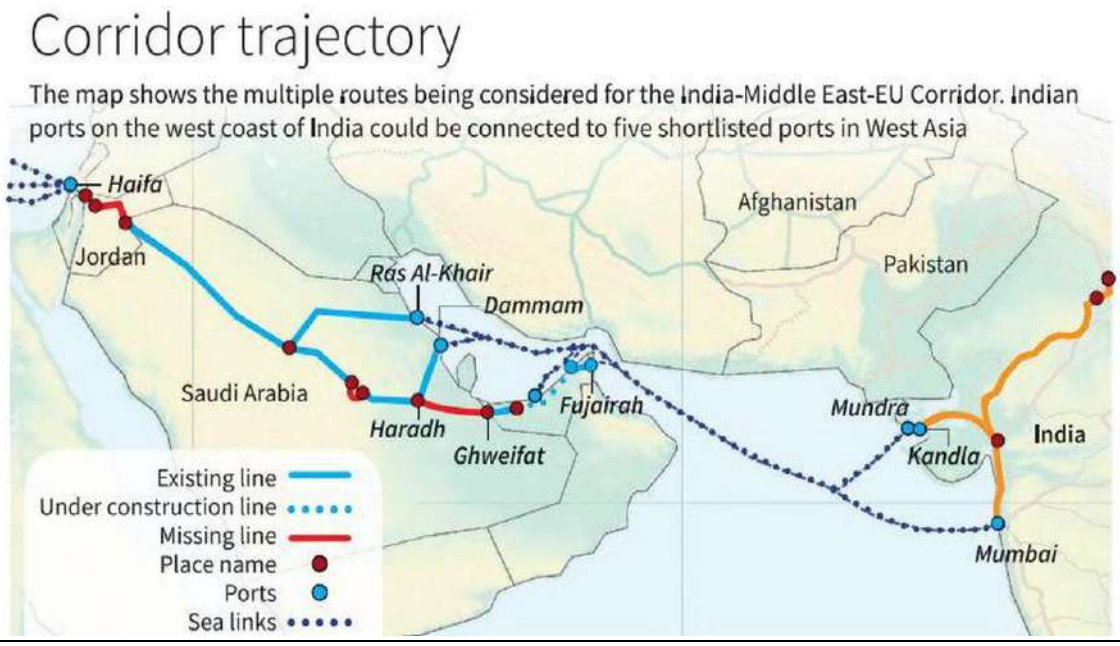
EXPLANATION:

The India-Middle East Europe Corridor (IMEC), launched on the margins of the G20 Summit in Delhi in September 2023, is an important project as it passes through Marseille in the Mediterranean Sea. The Memorandum of Understanding (MoU) was signed during the 2023 G20 New Delhi summit by the governments of India, the United States, the United Arab Emirates, Saudi Arabia, France, Germany, Italy and the European Union. Therefore, IMEC is one of the outcomes of the G20 Summit in 2023.
The IMEC aims to integrate India, Europe, and the Middle East through UAE, Saudi Arabia, Jordan, Israel and the European Union. The route, currently being used to bypass the Houthi blockade, is widely seen as a way to future-proof the India-Europe-US supply chain, avoiding the Suez Canal. The IMEC is a crucial alternative to continental transit through the Suez Canal. **So, Statements 1 and 2 are correct.**



India-Middle East-Europe Economic Corridor (IMEC) multiple route options are being considered, including ports like Haifa in Israel and Piraeus in Greece.

Among the ports that could be connected on the west coast of India are Mundra (Gujarat), Kandla (Gujarat), and Jawaharlal Nehru Port Trust (Navi Mumbai). In the Middle East, at least five ports have been shortlisted to be connected to the Indian ports, including Fujairah, Jebel Ali, and Abu Dhabi in the UAE, as well as Dammam and Ras Al Khair ports in Saudi Arabia.
Chabahar Port in Iran is important for regional connectivity, as it provides India with an alternative access point to Central Asia and Afghanistan, bypassing Pakistan. Chabahar Port is not one of the shortlisted ports of the India-Middle East-Europe Economic Corridor. **So, Statement 3 is not correct.**



83. The Kafala System, often seen in the news, is related to :
(a) Environmental conservation practices in Middle Eastern countries
(b) **A temporary labor migration framework in the Levant and Gulf**
(c) Traditional agricultural methods in North Africa
(d) Religious education in Southeast Asia

EXPLANATION:

The Kafala system, a temporary labour migration framework in the Levant (Eastern Mediterranean shore countries) and Gulf countries (Arabian Gulf countries), links migrant workers' residency to their employers, creating a stark power imbalance that leaves workers highly vulnerable to exploitation.

- This system establishes a legal relationship between the worker, their sponsor, and the state, which places immense power in the hands of employers. While it was designed to address labour market needs (particularly the demand for low-cost domestic, construction, and service-sector labour), the Kafala system is considered to be a form of modern-day slavery by several human rights activists.
- It has drawn widespread criticism for creating an environment ripe for exploitation, particularly for migrant domestic workers (MDW), most of whom are women.
- Under this system, workers cannot change jobs, leave the country, or access fundamental rights without their sponsor's consent. This power imbalance leaves workers highly vulnerable to abuse and exploitation.
- Exploitation often begins before workers arrive in the host country, as private recruitment agencies (PRA) that facilitate the migration process frequently engage in unethical practices. These include charging exorbitant fees, withholding identity documents, and failing to inform workers of their rights.

- Once in the country, migrant workers are often subjected to poor living and working conditions, underpayment, long hours, and physical or emotional abuse. Domestic workers, in particular, are isolated within their employers' homes, making them invisible to the public and excluded from the protection of labour laws.

Many countries, despite international efforts to reform, continue to exclude domestic work from legal protections, categorising these workers as "servants in the homes of individuals" rather than employees. **So, Option (b) is correct.**

84. Consider the following statements :
1. The Parliament has the sole authority to enact law related to preventive detention.
2. Under any circumstances, the person under preventive detention cannot be detained for a longer period than three months.
3. The grounds on which the order provides for preventive detention should always be communicated to the respective person.

How many of the statements given above is/are ***not*** correct ?
(a) Only one
(b) Only two
(c) All three
(d) None

EXPLANATION:

Preventive detention means detention of a person by the state without trial and conviction by court, but merely on suspicion. The detention could be up to a year unless extended.
In India, the Constitution itself makes space for preventive detention. Part III of the Constitution, which deals with fundamental rights, also gives the state the power to suspend these rights for preventive detention. Despite its emphasis on individual liberty, Part III, which forms the basic structure of the Constitution that cannot be amended, also contains provisions for preventive detention under Article 22.
The Constitution has divided the legislative power with regard to preventive detention between the Parliament and the state legislatures.

- The Parliament has exclusive authority [Entry 9 of List 1, 7th Schedule] to make a law of preventive detention for reasons connected with defence, foreign affairs and the security of India.
- Both the Parliament as well as the state legislatures can concurrently [Entry 3 of List III] make a law of preventive detention for reasons connected with the security of a state, the maintenance of public order and the maintenance of supplies and services essential to the community. **So, Statement 1 is not correct.**

The Supreme Court has ruled that the constitutional scheme which prohibits a person's preventive detention beyond a period of three months is not applicable if an advisory board has confirmed there is sufficient cause for such detention.

- Article 22(4) of the Constitution deals with protection against arrest and detention in certain cases and says "No law providing for preventive detention shall authorise the detention of a person for a longer period than three months unless— (a) an Advisory Board consisting of persons who are, or have been, or are qualified to be appointed as, Judges of a high court has reported before the expiration of the said period of three months that there is in its opinion sufficient cause for such detention."

The period of three months stipulated in Article 22(4)(a) of the Constitution is relatable to the initial period of detention up to the stage of receipt of report of the Advisory Board and does not have any bearing on the period of detention, which is continued subsequent to the confirmatory order being passed by the State Government on receipt of the report of the Advisory Board. **So, Statement 2 is not correct.**

The Fundamental Rights outlined in Part III, Article 22 provides Protection Against Arrest and Detention in Certain Cases, Article 22 (1) states that No person who is arrested shall be detained in custody without

being informed, as soon as may be, of the grounds for such arrest nor shall he be denied the right to consult, and to be defended by, a legal practitioner of his choice.
Article 22 (5) states that when any person is detained in pursuance of an order made under any law providing for preventive detention, the authority making an order providing for preventive detention shall, as soon as may be, communicate to such person the grounds on which the order has been made, excepting facts which the detaining authority considers to be against the public interest to disclose.
From the above article of the Indian Constitution, it is clear that the grounds on which the order providing for preventive detention should not always be informed to the respective person. **So, Statement 3 is not correct.**

85. Consider the following statements regarding India's demographic trends and its impact on Sustainable Development Goals (SDGs) :
    1. India's fertility rate has been declining since the 1970s and is currently below the replacement level of 2.1, which signifies a demographic shift.
    2. The demographic shift guarantees economic growth, as a higher working-age population automatically translates into higher productivity and development.

    Which of the statements given above is/are correct ?

    (a) 1 only
    (b) 2 only
    (c) Both 1 and 2
    (d) Neither 1 nor 2

EXPLANATION:

The Total Fertility Rate (TFR) is a standard demographic indicator used internationally to estimate the average number of children that a woman would have over her childbearing years.
India's fertility rate has been declining since the 1970s. The Total Fertility Rate (TFR) — the average number of children a woman is expected to have in her lifetime — has dropped significantly over the decades.
For instance, the TFR was around 5.9 children per woman in the early 1970s, and it has declined to 2.0 as per the National Family Health Survey-5 (NFHS-5, 2019–21).
This drop below the replacement level of 2.1 marks a major demographic shift in the country. **So, Statement 1 is correct.**

Demographic dividend refers to the economic growth potential that arises from a change in the age structure of a country's population, typically due to a decline in fertility and mortality rates. It highlights the economic advantages of having a substantial working-age population relative to dependent segments, such as children and the elderly.
However, this transition alone does not guarantee higher productivity or development. To fully realize the benefits of the demographic dividend, it must be supported by key factors beyond population structure — including proportional job creation, efficient resource allocation, and access to essential services like healthcare and education. Additionally, inclusive policies that address social and economic inequalities are essential.
While India's declining fertility rate and demographic shift present a valuable opportunity for economic advancement, this shift alone is not sufficient. Strategic investments in education, health, skill development, and employment generation are crucial to converting this demographic potential into actual growth. **So, Statement 2 is not correct.**

86. Consider the following descriptions :
    1. It contains a large proportion of sodium, potassium and magnesium and lacks nitrogen and calcium.
    2. The Dry climate and excessive irrigation can result in such soils

3. Adding gypsum helps in the cultivation of crops in this soil.

Which of the following type of soils is described above ?

(a) Khadar soil
(b) Peaty soil
(c) Regur soil
(d) Usara soil

EXPLANATION:

Khadar soil is a type of alluvial soil that forms the floodplains of rivers, especially in the Indo-Gangetic plain. It's characterized as a younger, newer alluvium and is deposited annually by floods, making it highly fertile and ideal for intensive agriculture. The above description is not related to Khadar soil. **So, Option (a) is not correct.**
Peaty soil is highly acidic in nature and black in colour. Excessive wetness of the soil causes decay and degradation of dead vegetation, forming a layer of partially decomposed organic matter, resulting into peaty and marshy soil. Such type of soil is, generally, found in States like Tamil Nadu, parts of Bihar and Uttar Pradesh. Thus, the above description is not related to Peaty soil **So, Option (b) is not correct.**
Regur soil, also known as black soil, is characterized by its deep, clayey texture, excellent moisture retention, and rich nutrient content. The colour of the soil is generally black due to the presence of compounds of aluminium and iron. The soil is locally known as regur which extends roughly to 64 million hectares. It is generally clayey deep and has low permeability and impregnability. Thus, the above description is not related to regur soil. **So, Option (c) is not correct.**
Usara soils, also known as saline or alkaline soils, are characterized by a high proportion of sodium, potassium, and magnesium, and a lack of nitrogen and calcium. Such soil is formed as a result of saline irrigation water and over-irrigation for a long time, which raises the water table of the soil. These soils are generally infertile and have poor drainage. They form when saline irrigation water and over-irrigation raise the water table. Usara soils are rich in carbonates and bicarbonates of sodium, making them non-porous and difficult for plants to grow in. To improve these soils, gypsum (calcium sulfate) is added. It replaces sodium ions with calcium ions, which helps improve the soil structure, reduce the dispersion of soil particles, and allow water and nutrients to move more easily. This process also lowers the alkalinity, making the soil better for plant growth and more fertile. **So, Option (d) is correct.**

87. Consider the following statements regarding Animal Welfare Board of India :

1. It is a statutory advisory body under the Wildlife Protection Act.
2. The board is chaired by the Prime Minister.
3. The mandate is to prevent the infliction of unnecessary pain or suffering on animals.
4. It imparts education on the humane treatment of animals.
5. It provides grants to welfare organizations for animal shelters.

Which of the statements given above is/are ***not*** correct ?

(a) **1 and 2 only**
(b) 5 only
(c) 2, 3 and 4 only
(d) None

EXPLANATION:

The Animal Welfare Board of India is a statutory advisory body on Animal Welfare Laws and promotes animal welfare in the country. Established in 1962 under Section 4 of the Prevention of Cruelty to Animals Act, 1960. **So, Statement 1 is not correct.**

- The Board consists of 28 Members including 6 Members of Parliament (2 Members of Parliament from Rajya Sabha and 4 Members of Parliament from Lok Sabha). Prime minister is not the chairman of the board. **So, Statement 2 is not correct.**
- Its mandate is to prevent the infliction of unnecessary pain or suffering on animals, in terms of the provision of the Prevention of Cruelty to Animals (PCA) Act, 1960. **So, Statement 3 is correct.**
- Some of functions of The Animal Welfare Board of India:
  - To impart education in relation to the humane treatment of animals and to encourage the formation of public opinion against the infliction of unnecessary pain or suffering to animals and for the promotion of animal welfare by means of lectures, books, posters, cinematographic exhibitions and the like. **So, Statement 4 is correct.**
  - To encourage by the grant of financial assistance or otherwise,(the formation or establishment of Pinjarapoles, rescue homes, animals shelters, sanctuaries and the like), where animals and birds may find a shelter when they have become old and useless or when they need protection. **So, Statement 5 is correct.**
  - To advise the Government on matters relating to the medical care and attention which may be provided in animal hospitals, and to give financial and other assistance to animal hospitals whenever the Board thinks it necessary to do so.
  - To advise the Government on matters relating to the medical care and attention which may be provided in animal hospitals, and to give financial and other assistance to animal hospitals whenever the Board thinks it necessary to do so.

88. With reference to the outcomes of UNFCCC COP29, consider the following statements :
    1. It is made mandatory for developed countries to mobilize funds to help developing countries to tackle the impact of climate change through New Collective Quantified Goal.
    2. The Baku adaptation roadmap was launched for advance implementation of the Article 7 of the Paris Agreement.

    Which of the statements given above is/are correct ?
    (a) 1 only
    (b) 2 only
    (c) **Both 1 and 2**
    (d) Neither 1 nor 2

EXPLANATION:

The UN Climate Change Conference (COP29) brought together nearly 200 countries in Baku, Azerbaijan, and reached a breakthrough agreement that will:

- Triple the finance to developing countries, from the previous goal of USD 100 billion annually to USD 300 billion annually by 2035.
- Secure efforts of all actors to work together to scale up finance to developing countries, from public and private sources to the amount of USD 1.3 trillion per year by 2035.

As per the New Collective Quantified Goal on Climate Finance (NCQG), the new goal calls on developed countries to mobilize at least $300 billion per year for developing countries. This is within the context of a wider goal involving all actors to scale up financing to developing countries to at least $1.3 trillion per year by 2035. **So, Statement 1 is correct.**

Article 7 of the Paris Agreement establishes a global goal of adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change in the context of the Agreement's temperature goal.

It aims to significantly strengthen national adaptation efforts, including through support and international cooperation.

The Baku Adaptation Roadmap was introduced at COP29 to enhance global climate resilience, focusing on vulnerable regions and sectors.
The roadmap aims to support the implementation of National Adaptation Plans (NAPs) and facilitate the sharing of best practices, technology transfer, and mutual support among countries as it aiming at scaling up climate finance to developing country Parties to support low greenhouse gas emissions and climate-resilient development pathways and implement the nationally determined contributions and national adaptation plans. **So, Statement 2 is correct.**

89. Consider the following statements :
    1. They are herbivores.
    2. They are solitary and nocturnal in nature.
    3. They are mainly arboreal species.
    4. They have opposable thumb for adaptation for grasping branches in trees

    Which of the statements given above are correct regarding the Red Panda ?
    (a) 1 and 2 only
    (b) 3 and 4 only
    (c) 1, 2, 3 and 4
    (d) **2, 3 and 4 only**

EXPLANATION:

The red panda is slightly larger than a domestic cat, with a bear-like body and thick russet fur. The belly and limbs are black, and there are white markings on the side of the head and above its small eyes. Red pandas are very skilful and acrobatic animals that predominantly stay in trees.
Red pandas are primarily herbivores; they feed mainly on bamboo using their opposable thumb. The name panda is said to come from the Nepali word 'ponya,' which means bamboo or plant-eating animal. Access to bamboo is essential in red pandas' habitat as it makes up around 90% of its diet. **So, Statement 1 is correct.**

In the wild, the red panda prefers a solitary and nocturnal lifestyle. It is mainly active during the twilight period and the early hours of the morning. During daylight hours, they can be found resting or snoozing above the ground, lying dangled or curled up on tree branches, depending on the weather. **So, Statement 2 is correct.**

Red pandas live in high-altitude forests of Nepal, India, Bhutan, Myanmar and China. They are mainly arboreal species (species living mainly in trees), often living close to water sources and in densely bamboo-covered areas.
Red pandas are built for life in the trees. They have long, bushy tails that help them maintain balance and stay safe while traversing the canopy. Their ankles are extremely flexible, and the fibula and tibia are attached in such a way as to allow the fibula to rotate about its axis. This means that red pandas are one of the few animals on the planet that can climb straight down a tree head-first. **So, Statement 3 is correct.**

Red pandas feed mainly on bamboo using their opposable thumb. While their thumb-like appendages can be used in the same way as that of giant pandas, it is believed that the red panda's opposable thumbs may have evolved as an adaptation for grasping branches in trees rather than for stripping bamboo. **So, Statement 4 is correct.**

90. Which of the following statements is/are correct ?
    1. Increase in the level of CO_2 will significantly increase the crop yield.
    2. Warmer temperatures, wetter climates, and higher CO_2 levels favor the growth of weeds, pests, and fungus.
    3. Higher carbon dioxide increases the nitrogen content in alfalfa and soybean plants.

    Select the correct answer using the codes given below :
    (a) **1 and 2 only**
    (b) 2 and 3 only
    (c) 1 and 3 only
    (d) 1, 2 and 3

EXPLANATION:

Agriculture and fisheries are highly dependent on climate conditions. While increases in temperature and CO_2 can boost crop yields in some areas, benefits depend on factors like soil moisture, water availability, and nutrient levels. Climate change, with its impacts on droughts, floods, and water temperatures, could disrupt farming, ranching, and fishing, making it harder to produce food as in the past. Additionally, changes in farming practices and technology must be considered alongside climate effects.
A **NASA study** reveals that higher atmospheric **carbon dioxide (CO2)** levels affect crops in two significant ways. First, elevated CO2 enhances **photosynthesis**, leading to increased crop growth and higher yields. Second, it improves **water-use efficiency** by reducing the amount of water crops lose through **transpiration**. As CO2 levels rise, plants' stomata (tiny pores on leaves) open less, limiting water loss and helping crops retain more water. **So, Statement 1 is correct.**

Many weeds, pests, and fungi thrive under warmer temperatures, wetter climates, and increased CO_2 levels. Currently, U.S. farmers spend more than $11 billion per year to fight weeds, which compete with crops for light, water, and nutrients. The ranges and distribution of weeds and pests are likely to increase with climate change. This could cause new problems for farmers' crops previously unexposed to these species. **So, Statement 2 is correct.**

Higher CO_2 levels can impact crop yields. Laboratory studies suggest that elevated CO_2 may promote plant growth, but other factors like changing temperatures, ozone levels, and limitations in water and nutrients could negate these potential yield gains. For instance, if temperatures surpass a crop's optimal range or if water and nutrients are insufficient, yield improvements may be diminished or reversed.
Also, elevated CO_2 has been linked to lower protein and nitrogen content in alfalfa and soybean plants, leading to a decline in quality. This reduction in grain and forage quality can diminish the ability of pastures and rangelands to support grazing livestock. **So, Statement 3 is not correct.**

91. Consider the following pairs :

Sl.No.	Places mentioned in the news		Country it belongs to
1.	Santorini	-	Greece
2.	Vientiane	-	Philippines
3.	Darfur	-	Sudan

Which of the pairs given above is/are correct?

(a) 1 only
(b) **1 and 3 only**
(c) 3 only
(d) 2 and 3 only

EXPLANATION:

Recently, Santorini has been under a state of emergency following earthquakes, the strongest at 5.2 on the Richter scale. Over 11,000 people have evacuated, schools closed, and access restricted to certain areas. Precautionary measures extend to nearby islands, with local authorities managing resources and safety protocols efficiently.

Santorini island is located in Greece, in the Aegean Sea, 200 km southeast of Athens, 150 km south of Mykonos, and 140 km north of Crete.

Santorini's volcano is one of the few active volcanoes on Greek and European land. The islands that form Santorini came into existence as a result of intensive volcanic activity; twelve huge eruptions occurred, one every 20,000 years approximately, and each violent eruption caused the collapse of the volcano's central part creating a large crater (caldera). The volcano, however, managed to recreate itself over and over again.

So, Pair 1 is correct.

Recently, the Prime Minister of India attended the 19th East Asia Summit (EAS) on 11 October 2024 in Vientiane, Lao PDR.

Vientiane, largest city and the capital of Laos, not the Philippines. Vientiane situated on a plain just northeast of the Mekong River. The city's central river port location in a country relying heavily on rivers for transportation and its surrounding hinterland of intensive rice cultivation have made Vientiane the major economic centre of Laos.

- Laos is a landlocked country situated in Southeast Asia on the north-western part of the Indochinese Peninsula.
- It is located in the Northern and Eastern hemispheres of the Earth. Laos is bordered by five countries. It is bounded by Myanmar and China to the northwest; by Cambodia to the south; by Vietnam to the east and by Thailand to the west. **So, Pair 2 is not correct.**

Nearly 25 million people — half of Sudan's population — face extreme hunger, while people are dying in famine-hit areas in western Darfur,' says U.N. after two years of war.

Darfur is Sudan's largest region, on its western border with Libya, Chad, and the Central African Republic. Darfur has been divided into South, West, and North since 1994. The predominant ethnic groups of West Darfur are the Masalit and Fur, who have often united in marriage with Arabs and other Africans.

- Sudan is the third largest nation in all of Africa, occupying an area of 1,886,068 sq. km.
- Sudan is a Northeast African country. It is located in the Northern and Eastern Hemispheres of the Earth. Sudan is bordered by seven countries.
- Egypt bounds it to the north. It has borders with Libya and Chad to the northwest and west respectively. To the south and southeast are South Sudan and Ethiopia respectively while Eritrea borders Sudan to the east.
- The northeastern boundary is formed by the Red Sea. **So, Pair 3 is correct.**

92. With reference to Baltic sea, consider the following statements :
    1. Baltic Sea is the largest inland brackish sea in the world.
    2. The Baltic Sea is surrounded only by nine countries.
    3. The Gulf of Bothnia is on the northern part of the Baltic sea, while the Gulf of Riga is located between Estonia and Latvia.

    How many of the statements given above are correct ?
    (a) Only one
    (b) Only two
    (c) **All three**
    (d) None

EXPLANATION:

The Baltic Sea is one of the seas of the Atlantic Ocean. It is the ocean's 15th largest sea, covering an area of approximately 377,000 km2.The sea is approximately 1,600 km long and 193 km wide and has a water volume of about 21,700 km3.

- The Baltic Sea is connected to the White Sea via the White Sea Canal and to the North Sea's German Bight via Kiel Canal.
- The Baltic Sea is often cited as the world's largest brackish inland water body. 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.
- Its depth averages 55 meters and the deepest part is approximately 459 meters below the sea's surface. **So, Statement 1 is correct.**

The Baltic Sea (including the Gulf of Bothnia and the Gulf of Finland) covers an area of 377,000 km2 (146,000 sq mi), making it somewhat larger than Germany or slightly smaller than the US state of Montana. Approximately 85 million people live in the larger Baltic Sea region and use the sea for various purposes. There are nine countries with a shoreline at the Baltic Sea: Denmark, Germany, Poland, Russia (at the Gulf of Finland, and the Russian exclave of Kaliningrad Oblast), Lithuania, Latvia, Estonia, Finland, and Sweden. **So, Statement 2 is correct.**

The Baltic Sea is subdivided into several regions.

- The Gulf of Bothnia (including the Bothnia Bay) is on the northern part. The Bothnia Sea forms the gulf's southern basin. Below the Bothnia Sea is the Aland Sea, connecting the Bothnia Sea to the Baltic Sea proper.
- The Baltic Sea is connected to St. Petersburg by the Gulf of Finland.
- The Gulf of Riga is located between Estonia and Latvia. On the South of the Baltic Sea are the Bay of Gdansk, Arkona Basin, and the Bornholm Basin. **So, Statement 3 is correct.**

93. Which of the following measures is taken by the RBI or the government to counter excessive depreciation of Indian rupee in the short term ?
    (a) Raising of duty on all exports
    (b) Encourage Indian companies to invest in foreign countries
    (c) Restrict payments made by Non Resident Indians to resident Indians
    (d) **Encourage portfolio investments by foreign residents in Indian Share markets**

EXPLANATION:

Currency depreciation is a fall in the value of a currency in terms of its exchange rate versus other currencies. Currency depreciation can occur due to factors such as economic fundamentals, interest rate differentials, political instability, or risk aversion among investors.

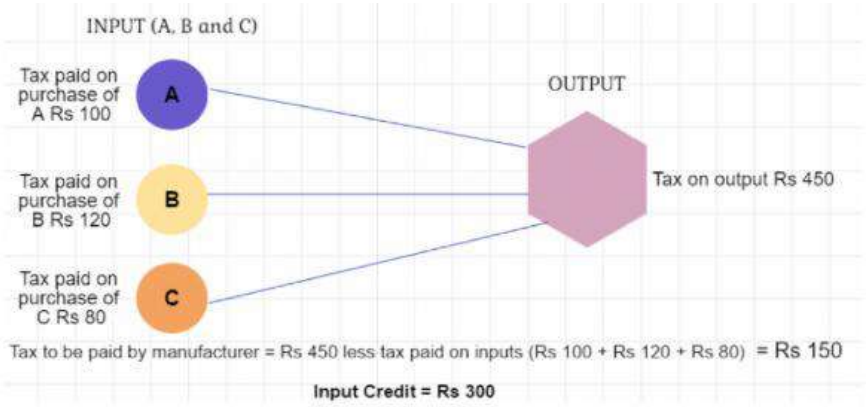
Like any other trade in life, the relative value of one currency against another depends on which is demanded more. If Indians demand more US dollar than Americans demand the Indian rupee, the exchange rate will tilt in favour of the US dollar. To counter the excessive depreciation of Indian rupee we need to reduce the demand of dollar in India, for this we need to increase the dollar inflow in India.

- Raise duty on all exports
  When tariffs and duties raise on the exported goods, demand for the exported goods in the foreign country falls. Lower demand for exported goods means the dollar inflow will reduce that lead to increase the demand of the dollar. Thus, raising the duty on exports can reduce the dollar inflow and make the Indian rupee to depreciate more. **So, Option (a) is not correct.**
- Encourage Indian companies to invest in foreign countries:
  This leads to outflow of capital, increasing demand for foreign currency and weakening the rupee further. **So, Option (b) is not correct.**
- Restrict payments made by Non Resident Indians to resident Indians:
  Any money sent from abroad to family members, friends, acquaintances or any other third party is considered as a remittance. Payments made by Non Resident Indians to resident Indians will increase the dollar inflow in India. Thus, by restricting this payments will increase the demand of the dollar and make the Indian rupee to depreciate more. **So, Option (c) is not correct.**
- Encourage portfolio investments by foreign residents in Indian share markets will increase the dollar inflow in India. This will reduce the demand for dollar. Consequently the rupee will appreciate. Thus, Encourage portfolio investments by foreign residents in Indian share markets can counter excessive depreciation of Indian rupee in the short term. **So, Option (d) is correct.**

94. Consider a production process where a final good called X is taxed at a rate of 5%. One of the inputs used is good Y, which is taxed at 18%. In the context of the Goods and Services Tax (GST), which of the following best describes the above phenomenon ?
    (a) Input tax credit
    (b) Profiteering
    (c) **Inverted duty structure**
    (d) Reverse charge mechanism

EXPLANATION:

Input tax credit means at the time of paying tax on output, you can reduce the tax you have already paid on inputs. Input tax credit is a mechanism to avoid cascading of taxes. Cascading of taxes, in simple language, is 'tax on tax'. **So, Option (a) is not correct.**



The wilful action of not changing the final price of the good or service by various means, despite the reduction in the rate of tax for that particular good or service, amounts to "profiteering".
Suppliers of goods and services are required to pass on the benefit of any reduction in the rate of tax or input tax credit to the recipients by way of a commensurate reduction in prices. The wilful failure to pass on such benefits is known as profiteering. **So, Option (b) is not correct.**

The term 'Inverted Tax Structure' refers to a situation where the rate of tax on inputs purchased (i.e. GST rate paid on inputs received) is more than the rate of tax on outward supplies (i.e. GST rate payable on sales).

Products		GST on	
Finished Goods (Output)	Raw Materials (Input)	Finished Goods	Raw Materials
Fabric Bag	Non-Woven Fabric	5%	12%

Thus, the Inverted Tax Structure clearly refers to the above phenomenon. **So, Option (c) is correct.**

Reverse Charge means the liability to pay tax is on the recipient of supply of goods or services instead of the supplier of such goods or services. **So, Option (d) is not correct.**

Normal Payment GST Process

GST Payment in case of Reverse Charge

95. When there is a high level of food inflation, which of the following fiscal measures would be appropriated to normalize the prices ?
    1. Subsidized sale of vegetables
    2. Open market sale of stocked food grains
    3. Increased import duty on pulses in short supply
    4. Increased export duty on vegetables in short supply

    Select the correct answer using the codes given below :

    (a) 1 and 2 only
    (b) 3 and 4 only
    (c) 1, 2 and 3 only
    (d) **1, 2 and 4 only**

EXPLANATION:

Retail inflation in India has reduced from 5.4 per cent in FY24 to 4.9 per cent in FY25 (April-December), aided by various government initiatives and monetary policy measures. The decline in retail inflation is primarily due to a decrease in core inflation by 0.9 percentage points between FY24 and FY25 (April-December), largely driven by core services inflation and a decrease in fuel price inflation.

Some of the appropriate fiscal measures to normalize prices during high levels of food inflation are:

- Subsidized sale of onion and tomato and release of wheat and rice stock. This will decrease the retail price of essential food commodities. **So, Statement 1 is correct.**
- Open market sale of stocked food grains. Offloading wheat and rice from the central pool. **So, Statement 2 is correct.**
- Duty-free import of pulses like desi chana, tur, urad, and masur in short supply. **So, Statement 3 is not correct.**
- Increasing the export duty on vegetables in short supply.

Example: Recently, the government increased the export duty for onions by 20%. **So, Statement 4 is correct.**

Food items	Measures undertaken
Cereals	• Stock limits on wheat from 24 June 2024 to 31 March 2025. • Open Market Sale Scheme: Offloaded wheat and rice from the central pool • Sale of wheat flour and rice under Bharat brand
Pulses	• Sale of chana dal, moong dal and masur dal under Bharat brand • Stock limits on tur and desi chana from 21 June 2024 to 30 September 2024 • Allowed duty-free import of desi chana, tur, urad and masur until 31 March 2025. • Allowed duty free import of yellow peas until 20 February 2025.
Vegetables	• Buffer Stock of Onion: A total of 4.7 lakh MT of rabi onion has been procured under Price Stabilisation Fund. • 20 per cent export duty on onion since 13 September 2024. • Subsidised sale of onion at ₹35 per kg from September -December 2024. • Subsidised sale of Tomato at ₹65 per kg in October 2024

96. Which of the following statement best describes the term "drip pricing" ?
(a) It is a marketing strategy where the prices of products and services are heavily reduced through multiple offers and discounts.
(b) It is marketing strategy in which the prices are shown in descending order to attract the customers.
(c) It is a marketing strategy where only a part of the product total cost is shown and the additional charges are revealed later when customer continues the purchase.
(d) It is a marketing strategy in which the additional charges are cancelled by the sellers to attract more customers to increase their sales.

EXPLANATION:

Drip pricing is a pricing technique where only part of an item's price is advertised, with the total amount revealed at the end of the buying process. In other words, Drip pricing is a marketing strategy where initially only a portion of a products or service's total cost is shown and the additional charges are revealed progressively as the customer moves through the purchase process.

- Drip pricing may initially withhold mandatory fees, such as local hotel taxes, booking fees, or resort fees, or may not include add-ons that are required to use a product or service, such as internet access, certain facilities, or amenities. These additional, often mandatory costs are disclosed one by one or "dripped."
  - Price dipping is commonly used in the hospitality and travel markets.
  - An example of price dipping is the cost of an aeroplane ticket that doesn't include baggage fees.
  - Price dipping can be frustrating to consumers who want to know upfront how much a product or service will cost.

So, Option (c) is correct.

97. With reference to the Centralised Pension Payment System(CPPS), consider the following statements:
1. CPPS provides a unified system that allows pension payments to be made through any bank or branch in India.
2. It is an initiative to modernize pension disbursements under the Employees' Pension Scheme.
3. It functions under the administrative control of Ministry of Social Justice and Empowerment.

Which of the statements given above is/ are correct ?
(a) 2 only
(b) **1 and 2 only**
(c) 2 and 3 only
(d) 1, 2 and 3

EXPLANATION:

The Centralised pension payment system (CPPS) is a transformative initiative empowers pensioners to access their pension seamlessly from any bank, any branch, anywhere in the country. CPPS represents a paradigm shift from the previous decentralized pension disbursement system, allows pension payments to be made through any bank or branch in India. It eliminates the need for physical verification visits and simplifies the pension disbursement process. **So, Statement 1 is correct.**

CPPS is under the administrative control of Ministry of Ministry of Labour & Employment (not under the Ministry of social justice and empowerment). **So, Statement 3 is not correct.**

- In CPPS, not only the pensioner will be able to take pension from any bank, but also, there will be no need for pensioners to visit the bank for any verification at the time of commencement of pension and the pension shall be immediately credited upon release.
- The CPPS system from January 2025 onwards would also ensure disbursement of pension throughout India without any need for transfer of Pension Payment Orders (PPO) from one office to another even when the Pensioner moves from one location to another or changes his bank or branch.
- CPPS is a testament to modernizing EPFO services including (Employees' Pension Scheme) and ensuring convenience, transparency, and efficiency for our pensioners. Employees' Pension Scheme is a social security scheme run by the Employees' Provident Fund Organisation (EPFO) for the employees of the organised sector. **So, Statement 2 is correct.**

98. Consider the following statements about semiconductors :
    1. In intrinsic semiconductors, conductivity depends on temperature.
    2. In extrinsic semiconductors, conductivity depends on the amount of impurities.
    3. Diodes and Transistors used in consumer electronics use impure semiconductors.
    4. PN Junction diodes are used in LEDs as well as Solar Photovoltaic panels.

    How many of the statements given above are correct?
    (a) Only one
    (b) Only two
    (c) Only three
    (d) **All four**

EXPLANATION:

The conductivity of a material is determined by two factors: the concentration of free carriers available to conduct current and their mobility (or freedom to move). In a semiconductor, both mobility and carrier concentration are temperature-dependent.

Semiconductors are classified on the basis of their purity as intrinsic (pure) and extrinsic (impure) semiconductors.

- The conductivity of an intrinsic semiconductor depends on its temperature, but at room temperature, its conductivity is very low. As such, no important electronic devices can be developed using these semiconductors. Hence, it is necessary to improve their conductivity. This can be done by making use of impurities. **So, Statement 1 is correct.**
- A small amount, say, a few parts per million (ppm), of a suitable impurity, is added to the pure semiconductor, and the conductivity of the semiconductor is increased manifold. Such materials are known as extrinsic semiconductors or impurity semiconductors. The deliberate addition of a desirable impurity is called doping, and the impurity atoms are called dopants. Such a material is also called a doped semiconductor. Thus, the conductivity of extrinsic semiconductors depends on the amount of impurities. **So, Statement 2 is correct.**

Extrinsic Semiconductors (impure) are employed in the manufacture of various kinds of electronic devices, including diodes, transistors, and integrated circuits. These are created by adding a small amount of dopants (impurities) to pure semiconductors like silicon (Si) or germanium (Ge). Such devices have been

widely applied because of their compactness, reliability, power efficiency, and low cost. **So, Statement 3 is correct.**

A PN junction diode is a semiconductor device formed by joining a p-type semiconductor (rich in holes) and an n-type semiconductor (rich in electrons). This junction allows current to flow in one direction only—from the p-side to the n-side—and blocks it in the reverse direction.
Junction diodes have a variety of applications in diverse fields. For example, these are used in digital displays (in watches, LED TVs or computer panels), solar panels, voltage regulators, complex chips inside domestic appliances, computer and internet hardware, laser diodes, counters, detectors, communication systems, smoke detectors, remote controls of TVs, and so on. **So, Statement 4 is correct.**

99. Consider the following information :

Sl. No.	***Vitamin***	***Chemical Name***	***Functions***
1.	Vitamin A	Retinol	Supports vision, immune function, skin health, and cell growth
2.	Vitamin B3	Pantothenic acid	Aids in energy production and DNA repair; supports skin and digestive health
3.	Vitamin B5	Nicotinic acid	Important for energy metabolism and the synthesis of hormones
4.	Vitamin B7	Folic acid	Supports DNA synthesis and cell division, crucial for pregnancy and red blood cell production

How many of the above information are correctly matched ?

(a) Only One trio is correctly matched
(b) Only Two trios are correctly matched
(c) Only Three trios are correctly matched
(d) All the above are correctly matched

EXPLANATION:

Vitamin A is a fat-soluble nutrient made up of retinoids such as **retinol, retinal**, and **retinyl esters**, and also includes **provitamin A carotenoids** like **beta-carotene** from plants.
Vitamin A comes from two sources. One group, called retinoids, comes from animal sources and includes retinol. The other group, called carotenoids, comes from plants and includes beta-carotene. The body converts beta-carotene to vitamin A.
Vitamin A is essential for vision, immunity, reproduction, bone formation, growth, and organ function. It helps keep skin and mucous membranes that line the nose, sinuses, and mouth healthy. Most of the body's vitamin A is stored in the liver in the form of retinyl esters. **So, Pair (1) is correct.**

Niacin, also known as vitamin B3, belongs to the water-soluble B complex group and is found in various foods such as bran, yeast, eggs, peanuts, poultry, red meat, fish, whole-grain cereals, legumes, and seeds. This essential vitamin plays a role in cellular metabolism as a vital component in the oxidized state of nicotinamide adenine dinucleotide (NAD, or coenzyme 1) and the reduced form of nicotinamide adenine dinucleotide phosphate (NADP, or coenzyme 2). These coenzymes actively participate in essential oxidation-reduction reactions, playing key roles in glycolysis, pyruvate metabolism, protein and amino acid metabolism, pentose biosynthesis, glycerol metabolism, synthesis of high-energy phosphate bonds, and fatty acid metabolism. Niacin is helpful in managing hyperlipidemia and is used off-label in treating pellagra, as an adjuvant for discoid lupus erythematosus, and for alleviating dermatological and neurological symptoms associated with various deficiencies. **So, Pair (2) is not correct.**

Vitamin B5, also known as pantothenic acid, is a water-soluble nutrient necessary for various metabolic functions within the body. This essential vitamin participates in energy generation, synthesizing hormones,

and maintaining optimal conditions for skin, hair, and nails. It helps produce energy by breaking down fats and carbohydrates. Vitamin B5 helps maintain a healthy digestive system and assists the body in using other vitamins, especially vitamin B2. **So, Pair (3) is not correct.**

Vitamin B7, or **biotin**, is a water-soluble B vitamin found in foods and supplements. Biotin plays a vital role in assisting enzymes to break down fats, carbohydrates, and proteins in food. It also helps to regulate signals sent by cells and the activity of genes. Biotin is found in foods like eggs, milk, and bananas. Biotin deficiency can cause thinning of the hair and a rash on the face.

Folic acid (the synthetic form of vitamin B9) is crucial for DNA and RNA synthesis, as well as the biosynthesis of purines, pyrimidines, and amino acids. Folic acid and its derivatives are extremely important in the synthesis of nucleic acids (DNA and ribose nucleic acid [RNA]) and different proteins. It is important in red blood cell formation and for healthy cell growth and function. Folic acid is crucial during early pregnancy to reduce the risk of birth defects in the brain and spine. **So, Pair (4) is not correct.**

100. Consider the following information about the Rivers in India :

Sl. No.	***River sometimes seen in the news***	***Location in state***	***Reason of being in news***
1.	Zungki River	Manipur	Development of Inland waterways.
2.	Sharavati River	Karnataka	Unlawful sand mining in the coastal zone
3.	Jiadhal river	Assam	Shift in the course due to climate change

How many of the above information about rivers is/are correctly matched ?

(a) All three given information are correct
(b) **Only two given information are correct, except the first option**
(c) Only one given information is correct, except the first two options
(d) None of the given information are correct

EXPLANATION:

Zungki River is the biggest tributary of (flows into) Tizu river located in Nagaland (not Manipur). Nagaland has a National Waterway - Tizu Zungki (NW-101). Inland Waterways Authority of India (IWAI), will be undertaking studies to ascertain the feasibility of this National Waterway for the transportation of cargo and passengers. The Govt. of Nagaland under Centrally Sponsored Scheme (CSS) has proposed a few interventions for the development of the Inland Waterways Authority in the state, like the development of the Longmatra to Avakhung stretch of Tizu-Zunki River (NW-101) and the development of Inland Waterways Projects at the Dhansiri River and Doyang Lake. **So, Pair 1 is not correct.**

River Sharavathi is spread across the Uttara Kannada and Shimoga Districts of Karnataka. Originating at Ambutirthha (Tirthahalli) (Karnataka State Gazetteer, Ramachandra et al, 2004), Sharavathi flows for a distance of nearly 128 km before it joins the Arabian Sea at Karki, Honnavar (Uttara Kannada).

- Recently, the National Green Tribunal (NGT) has directed the State Environment Impact Assessment Authority (SEIAA) and the mines and geology department to stop any unlawful/illegal sand mining in the Sharavathi river coastal zone.
- The NGT's southern zone bench of Justice Pushpa Sathyanarayana and expert member Satyagopal Korlapati was hearing an application regarding damage caused to flora and fauna due to illegal sand mining.

The SEIAA submitted before the tribunal that no environment clearance was granted to any of the parties for sand mining on the Sharavathi River in the coastal zone of Uttara Kannada district. **So, Pair 2 is correct.**

Jiadhal River, a northern tributary of the Brahmaputra, originates in the sub-Himalayan mountains of Arunachal Pradesh at an altitude of 1247m above the M.S.L. (Mean Sea Level). After passing through a narrow gorge in Arunachal Pradesh, the river enters the plains of Assam in Dhemaji district, where it flows in braided channels.

However, the tranquil flow of this vital waterway is now being disrupted by the harsh realities of climate change. Excessive rainfall, a hallmark of our changing climate, has triggered unprecedented shifts in the course of the Jiadhal river.

- The once-predictable path of this river has become erratic, carving new channels and abandoning old ones, leaving local residents grappling with uncertainty and upheaval.
- As the river meanders its way through the heart of Dhemaji, it brings with it the destructive force of soil erosion. Fertile lands, once the backbone of agriculture in the region, are now being mercilessly washed away, robbing farmers of their means of sustenance and threatening food security. **So, Pair 3 is correct.**