

Q.1) Consider the following types of vehicles:

I. Full battery Electric vehicles

II. Hydrogen fuel cell vehicles

III. Fuel cell electric hybrid vehicles

How many of the above are considered as alternative powertrain vehicles?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) c

Exp) Option c is the correct answer.

Alternative powertrain vehicles are those that **do not rely solely on conventional internal combustion engines (ICEs) using petrol or diesel**. Instead, they use alternative energy sources such as electricity, hydrogen, or a combination of power sources. They are more environmentally friendly and often reduce or eliminate tailpipe emissions.

Option I is correct: Full Battery Electric Vehicles (BEVs)

- Full Battery Electric Vehicles **operate entirely on electricity stored in high-capacity batteries**. These batteries are charged using external power sources like home chargers or public charging stations.
- **BEVs have no internal combustion engine**, meaning they do not consume petrol or diesel at all. Instead, they use an electric motor to power the wheels. This results in **zero tailpipe emissions**, making them environmentally friendly.
- Common examples of BEVs include the **Tesla Model 3 and Nissan Leaf**.
- Since they completely replace the traditional fuel system with electric propulsion, **BEVs are considered a key category of alternative powertrain vehicles**.

Option II is correct: Hydrogen Fuel Cell Vehicles (FCEVs)

- Hydrogen Fuel Cell Vehicles generate electricity onboard by using a chemical process in a **fuel cell**, where **hydrogen gas reacts with oxygen from the air**. This process produces electricity that powers an electric motor, with **only water vapor as the byproduct**, making these vehicles **emission-free at the tailpipe**.
- FCEVs **do not rely on fossil fuels or internal combustion engines**, and unlike BEVs, they do not require external charging; instead, they are refueled with compressed hydrogen gas.
- Vehicles like the **Toyota Mirai and Hyundai NEXO** are prime examples of FCEVs.
- Because they use hydrogen fuel cells instead of conventional engines, they are **classified as alternative powertrain vehicles**.

Option III is correct: Fuel Cell Electric Hybrid Vehicles (FCHEVs):

- Fuel Cell Electric Hybrid Vehicles **combine the technologies of fuel cell vehicles and battery-electric vehicles**. In these vehicles, both a hydrogen fuel cell and a battery system work together to power an electric motor.

- The fuel cell generates electricity from hydrogen, while the battery can store energy from regenerative braking or from the fuel cell. This hybrid system provides flexibility in power delivery, better efficiency, and potentially extended driving range.
- An example of such a vehicle is the **Mercedes-Benz GLC F-CELL**.
- Since these vehicles do not depend on conventional internal combustion engines and operate primarily on hydrogen and electricity, they significantly reduce environmental impact and are therefore **considered a form of alternative powertrain vehicle**.

Source: <https://e-amrit.niti.gov.in/types-of-electric-vehicles>
<https://www.acea.auto/fact/alternative-powertrains/>

Q.2) With reference to Unmanned Aerial Vehicles (UAVs), consider the following statements:

- I. All types of UAVs can do vertical landing.
 - II. All types of UAVs can do automated hovering.
 - III. All types of UAVs can use battery only as a source of power supply.
- How many of the statements given above are correct?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) d

Exp) Option d is the correct answer.

Option I is incorrect: Not all UAVs are capable of vertical landing. Only UAVs designed with VTOL (Vertical Take-Off and Landing) capabilities can land vertically.

1. **Multicopter UAVs (e.g., quadcopters, hexacopters) :** These drones can take off and land vertically, because they generate lift directly from their rotors, making them suitable for operations in confined spaces
2. **Fixed-Wing UAVs:** Resembling traditional airplanes, these drones require runways or catapult systems for takeoff and landing. They cannot perform vertical landings unless specifically designed as hybrid VTOL (Vertical Take-Off and Landing) systems.
3. **Hybrid VTOL UAVs:** These combine features of both fixed-wing and rotary-wing designs, allowing for vertical takeoff and landing as well as efficient forward flight

So, **not all UAVs** have vertical landing capability.

Option II is incorrect: Hovering refers to **maintaining a stationary position in the air without moving forward or backward**. Automated hovering means the UAV can maintain its position without manual input. Again, **only certain types of UAVs can do this**.

1. **Multicopter UAVs:** These can hover easily due to their multiple rotors and precise thrust control. They often come with GPS and autopilot systems that allow automated hovering at a fixed altitude and position.
2. **Fixed-Wing UAVs:** These cannot hover because they depend on constant forward movement to generate lift. They behave like small airplanes and will stall if they try to stop moving forward.

Hence, **not all types of UAVs can do automatic hovering.**

Option III is incorrect: UAVs utilize various power sources depending on their design and intended use:

1. **Battery-Powered (usually lithium-polymer or lithium-ion) UAVs:** Common among small drones, batteries offer a clean and quiet power source but are limited in energy density.
2. **Internal Combustion Engine (petrol/diesel) UAVs:** Used in larger drones, these engines provide higher energy density, allowing for longer flight times.
3. **Fuel Cell-Powered UAVs:** These systems offer high energy efficiency and are used in specialized applications.
4. **Hybrid Systems:** Combining batteries with other power sources like fuel cells or combustion engines, these systems aim to balance endurance and performance.

Therefore, **not all UAVs rely solely on batteries for power.**

Source: <https://www.auav.com.au/articles/drone-types/>
<https://www.shearwater.ai/post/6-energy-sources>

Q.3) In the context of electric vehicle batteries, consider the following elements:

- I. Cobalt
- II. Graphite
- III. Lithium
- IV. Nickel

How many of the above usually make up battery cathodes?

- a) Only one
- b) Only two
- c) Only three
- d) All the four

Ans) c

Exp) Option c is the correct answer.

Most electric vehicles use lithium-ion batteries. These batteries have **two key electrodes:**

- **Cathode (positive electrode):** This is where lithium ions are stored when the battery is discharged.
- **Anode (negative electrode):** This is where lithium ions move during charging.

The cathode material determines the battery's energy capacity, lifespan, and safety.

Option I is correct: Cobalt – Used in Cathode

Cobalt is **commonly used in EV battery cathodes**, particularly in chemistries like **Nickel Manganese Cobalt Oxide (NMC)** and **Nickel Cobalt Aluminum Oxide (NCA)**. It enhances energy density and stability.

Option II is incorrect: Graphite – Used in Anode

Graphite is the **most common material used for the anode** (the negative electrode) in lithium-ion batteries, **not the cathode**.

Option III is correct: Lithium – Used in Cathode

Lithium is a fundamental element in lithium-ion batteries, and it is **present in the cathode material** (e.g., **lithium cobalt oxide, lithium iron phosphate, lithium nickel manganese cobalt oxide**). The movement of lithium ions between the cathode and anode is how the battery stores and releases energy.

Option IV is correct: Nickel – Used in Cathode

Nickel is a **key element in** many high-energy density **EV battery cathodes**, such as NMC and NCA. It contributes to higher energy density and allows for longer driving ranges.

Source:

<https://economictimes.indiatimes.com/industry/renewables/how-do-electric-vehicle-batteries-work/articleshow/95529209.cms?from=mdr>
<https://www.aquametals.com/recyclopeda/lithium-ion-anode-and-cathode-materials/>

Q.4) Consider the following:

- I. Cigarette butts
- II. Eyeglass lenses
- III. Car tyres

How many of them contain plastic?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) c

Exp) Option c is the correct answer.

Option I is correct: Cigarette Butts:

Cigarette filters are **predominantly made from cellulose acetate, a man - made plastic derived from cellulose**.

While it may resemble cotton, it's actually a form of plastic that is slow to degrade. When discarded, these filters can leach toxic substances like nicotine and heavy metals into the environment, posing risks to wildlife and ecosystems

Option II is correct: Eyeglass Lenses

Modern eyeglass lenses are commonly crafted from plastic materials such as **CR-39** (Columbia Resin #39) and **polycarbonate**. CR-39 is a lightweight plastic offering good optical clarity, while polycarbonate is known for its impact resistance and UV protection

Option III is correct: Car Tyres

Tyres contain both natural rubber and synthetic rubber, the latter being derived from plastic polymers like styrene-butadiene rubber (SBR) and polybutadiene rubber.

These synthetic materials enhance durability, flexibility, and resistance to wear, making tyres a significant contributor to microplastic pollution over time.

Source:

<https://www.earthday.org/tiny-but-deadly-cigarette-butts-are-the-most-commonly-pollute-d-plastic/>

<https://www.warbyparker.com/learn/types-of-lenses-for-glasses>

<https://www.nationalgeographic.com/environment/article/tires-unseen-plastic-polluter>

Q.5) Consider the following substances:

I. Ethanol

II. Nitroglycerine

III. Urea

Coal gasification technology can be used in the production of how many of them?

a) Only one

b) Only two

c) All the three

d) None

Ans) b

Exp) Option b is the correct answer.

Coal gasification is a process that **converts coal into syngas** (synthesis gas), a mixture primarily consisting of carbon monoxide (CO), hydrogen (H₂), carbon dioxide (CO₂), and methane (CH₄).

This is achieved by reacting coal at high temperatures (typically above 1000°C) with a controlled amount of oxygen and/or steam.

Syngas is a valuable feedstock and can be further processed to produce various chemicals, fuels, and fertilizers.

Option I is correct: Ethanol

Ethanol can be produced indirectly from coal through the coal gasification route.

- In this method, **coal is gasified to produce syngas, which is then converted into ethanol** through a catalytic or microbial fermentation process.

While ethanol is most commonly produced from sugar or starch-based biomass through fermentation (especially in countries like India and Brazil), coal-to-ethanol technology is used in countries with abundant coal resources but limited agricultural biomass.

Option II is incorrect: Nitroglycerine

Nitroglycerine cannot be produced through coal gasification.

- It is a chemical compound synthesized by the nitration of glycerol (glycerin) using a mixture of concentrated nitric acid and sulfuric acid.
- Glycerol, the key raw material in this process, is typically a byproduct of the soap-making or biodiesel industries and has no direct connection with coal or syngas.

Since neither glycerol nor the acids used in nitration are derived from coal or its gasification products, **coal gasification plays no role in the production of nitroglycerine.**

Option III is correct: Urea

Urea is one of the most important fertilizers and can indeed be **produced using coal gasification technology**.

- In this process, coal is gasified to produce syngas, which is further used to synthesize ammonia via the Haber-Bosch process.
- The ammonia thus obtained is then reacted with carbon dioxide to produce urea.
- This method offers an alternative to conventional natural gas-based urea production and has been adopted in coal-rich countries.

Source: <https://coal.gov.in/sites/default/files/ncgm/ncgm21-09-21.pdf>
<https://indianexpress.com/article/explained/explained-how-coal-gasification-can-help-india-bring-down-its-urea-import-6025114/>
<https://www.nobelprize.org/alfred-nobel/nitroglycerine-and-dynamite/>

Q.6) What is the common characteristic of the chemical substances generally known as CL-20, HMX and LLM-105, which are sometimes talked about in media?

- a) These are alternatives to hydro-fluorocarbon refrigerants
- b) These are explosives in military weapons
- c) These are high-energy fuels for cruise missiles
- d) These are fuels for rocket propulsion

Ans) b

Exp) Option b is the correct answer.

The substances **CL-20, HMX, and LLM-105** are all part of a class of chemicals known as **high-energy explosives**. These are **powerful explosive compounds developed for military applications**, particularly in warheads, bombs, and other precision munitions.

Overview of Each Compound:

- **CL-20(Hexanitrohexaazaisowurtzitane):** Developed in the 1980s at the U.S. Naval Air Weapons Station China Lake, CL-20 is among the most powerful non-nuclear explosives known. It offers superior performance compared to traditional explosives like HMX and RDX, with higher detonation velocity and energy density.
- **HMX:** An acronym for "**High Melting explosive**," HMX is a widely used and powerful nitroamine high explosive, chemically related to RDX. It has been used for decades in various military applications
- **LLM-105 :** Synthesized in the 1990s at Lawrence Livermore National Laboratory, LLM-105 is an insensitive high explosive. It is designed to withstand high temperatures and mechanical shocks, making it suitable for use in munitions where safety and stability are paramount

Source: <https://www.pib.gov.in/newsite/PrintRelease.aspx?relid=67872>
<https://www.osti.gov/servlets/purl/1879800>

Q.7) Consider the following statements:

- I. It is expected that Majorana 1 chip will enable quantum computing.
- II. Majorana 1 chip has been introduced by Amazon Web Services (AWS).
- III. Deep learning is a subset of machine learning.

How many of the statements given above are correct?

- a) I and II only
- b) II and III only
- c) I and III only
- d) I, II and III

Ans) c

Exp) Option c is the correct answer.

Statement I is correct: Microsoft introduced the Majorana 1 chip, the world's first quantum chip, explicitly stating its expectation that it "will realize quantum computers capable of solving meaningful, industrial-scale problems in years, not decades.

It leverages the world's first topoconductor, a breakthrough type of material which can observe and control Majorana particles to produce more reliable and scalable qubits, which are the building blocks for quantum computers.

Statement II is incorrect: The Majorana 1 chip is developed by Microsoft, not Amazon Web Services (AWS). Amazon Web Services has introduced its own quantum chip named "Ocelot," which focuses on improving quantum error correction.

Statement III is correct: Deep learning is indeed a subset of machine learning.

It involves algorithms inspired by the structure and function of the human brain, known as artificial neural networks to process and analyze information. It is used in many AI tasks today, including image and speech recognition, object detection, and natural language processing.

Source:

<https://news.microsoft.com/source/features/innovation/microsofts-majorana-1-chip-carves-new-path-for-quantum-computing/>

<https://indianexpress.com/article/technology/tech-news-technology/microsoft-majorana-1-new-quantum-computing-chip-explained-9846515/>

<https://www.ibm.com/think/topics/deep-learning>

Q.8) With reference to monoclonal antibodies, often mentioned in news, consider the following statements:

- I. They are man-made proteins.
- II. They stimulate immunological function due to their ability to bind to specific antigens.
- III. They are used in treating viral infections like that of Nipah virus.

Which of the statements given above are correct?

- a) I and II only
- b) II and III only
- c) I and III only

d) 1, II and III

Ans) d

Exp) Option d is the correct answer.

Statement I is correct: Monoclonal antibodies are **man-made antibodies artificially created in laboratories using biotechnology**. Scientists produce them by cloning a single white blood cell (B-cell) that produces a desired antibody. Since all the antibodies are copies (clones) of one original cell, they are called monoclonal antibodies.

These proteins are designed to mimic the immune system's ability to fight off harmful pathogens such as viruses and bacteria.

Statement II is correct: Monoclonal antibodies are highly specific – **they are engineered to bind to a particular antigen** (a molecule or protein found on the surface of pathogens or abnormal cells). This binding can:

- Neutralize the pathogen (by blocking its activity),
- Mark it for destruction by other immune cells,
- Or block receptors that the virus uses to enter human cells.

By binding to these specific targets, mAbs enhance the immune response and help the body fight disease more effectively.

Statement III is correct: Monoclonal antibodies have been developed as therapeutic options for several viral infections, including:

- **COVID-19** (e.g., Casirivimab and Imdevimab)
- **Ebola virus** (e.g., Inmazeb, Ebanga)
- **Nipah virus:** A monoclonal antibody called m102.4 has shown potential against the Nipah virus. It was used under compassionate use protocols in a few cases and is under further clinical investigation.

Source:

<https://www.thehindu.com/sci-tech/health/nipah-virus-outbreak-kerala-what-are-monoclonal-antibodies/article67330401.ece>

Q.9) Consider the following statements:

I. No virus can survive **in ocean waters.**

II. No virus can infect bacteria.

III. No virus can change the cellular transcriptional activity in host cells.

How many of the statements given above are correct?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) d

Exp) Option d is the correct answer.

Statement I is incorrect: Viruses are abundant in ocean waters. Oceans are estimated to contain more than 10^{30} viruses, making them one of the most virus-rich environments on Earth.

- The **vast majority of these are bacteriophages**, which infect marine bacteria.
- These viruses play a key role in regulating microbial populations, nutrient cycling, and even in carbon cycling, by influencing the death and lysis (breaking down) of microbial cells.
- Marine viruses are an active area of research in marine biology, virology, and climate science.

Statement II is incorrect: There is a well-known class of viruses called bacteriophages (or simply phages) that specifically infect bacteria.

These are widely used in research and have even found therapeutic applications (called phage therapy) to combat antibiotic-resistant bacterial infections.

Bacteriophages attach to bacterial cells, inject their genetic material, and hijack the bacterial machinery to replicate themselves.

Statement III is incorrect: Viruses are obligate intracellular parasites, meaning they rely on host cell machinery to replicate.

To achieve this, **many viruses manipulate and alter the host cell's transcriptional activity** (and other cellular processes) to favor viral gene expression and replication. This can involve activating or repressing host genes, hijacking host transcription factors, or introducing their own transcriptional machinery.

Source:

<https://asm.org/articles/2023/june/marine-viruses-submerged-players-of-climate-change>

<https://www.who.int/europe/news-room/fact-sheets/item/bacteriophages-and-their-use-in-combating-antimicrobial-resistance>

<https://pmc.ncbi.nlm.nih.gov/articles/PMC7173423/>

<https://indianexpress.com/article/lifestyle/health/covid-19-infection-can-change-structure-of-our-genes-study-8516088/>

Q.10) Consider the following statements:

Statement I: Activated carbon is a good and an attractive tool to remove pollutants from effluent streams and to remediate contaminants from various industries.

Statement II: Activated carbon exhibits a large surface area and a strong potential for adsorbing heavy metals.

Statement III: Activated carbon can be easily synthesized from environmental wastes with high carbon content.

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

- Both Statement II and Statement III are correct and both of them explain Statement I
- Both Statement II and Statement III are correct but only one of them explains Statement I
- Only one of the Statements II and III is correct and that explains Statement I
- Neither Statement II nor Statement III is correct

Ans) a

Exp) Option a is the correct answer.

Activated carbon is a highly porous material that has an exceptionally large surface area, making it an effective adsorbent. It is widely used to remove pollutants from water and air, particularly in industries dealing with heavy metal contamination, wastewater treatment, and chemical processes.

Statement I is correct: Activated carbon is widely recognized for its effectiveness in environmental applications, particularly in the treatment of industrial effluents and polluted water or air.

- It functions primarily through adsorption, a process in which contaminants adhere to the surface of the carbon material.
- Due to its high efficiency in removing a wide range of pollutants—including dyes, organic compounds, and heavy metals—activated carbon is extensively used in sectors such as chemical manufacturing, textiles, food processing, and water treatment.

Statement II is correct: One of the most important physical properties of activated carbon is its extremely large surface area.

This large surface area is due to its highly porous structure. This **large surface area provides numerous active sites for adsorption**. This makes it especially useful in removing toxic metals from industrial effluents and contaminated water sources.

Therefore, the **features mentioned in this statement are key scientific reasons behind the effectiveness described in Statement I**.

Statement III is correct: Activated carbon can be produced from a wide range of carbon-rich waste materials, including agricultural by-products like coconut shells, rice husks, sawdust, sugarcane bagasse, and nutshells.

These materials are subjected to carbonization and activation processes to create the porous structure necessary for adsorption.

This **ease of synthesis from waste makes activated carbon accessible and attractive**, especially in developing countries and for large-scale industrial applications — thus **supporting and explaining the attractiveness mentioned in Statement I**.

Conclusion:

All three statements are correct. **Both Statement II** (which explains the functional mechanism — high surface area and adsorption capacity) and **Statement III** (which explains the practical and economic benefits — easy synthesis from waste) **help in explaining why activated carbon is an attractive tool for pollution control, as stated in Statement I**.

Therefore, Both Statement II and Statement III are correct and both of them explain Statement I.

Source:

<https://www.watertechonline.com/wastewater/article/15549902/the-basics-of-activated-carbon-adsorption>

<https://egyankosh.ac.in/bitstream/123456789/82824/1/Block-3.pdf>

Q.11) Consider the following statements:

Statement I: Studies indicate that carbon dioxide emissions from cement industry account for more than 5% of global carbon emissions.

Statement II: Silica-bearing clay is mixed with limestone while manufacturing cement.

Statement III: Limestone is converted into lime during clinker production for cement manufacturing.

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

Ans) b

Exp) Option b is the correct answer

The cement industry is a significant source of carbon dioxide emissions due to both the chemical reactions involved in producing clinker (the main ingredient of cement) and the burning of fossil fuels to power the production process. Specifically, calcining limestone (a primary ingredient) to produce lime (CaO) releases CO₂, and burning fossil fuels to heat the kilns also contributes to emissions.

Statement I is correct: Global cement manufacturing produced 1.6 billion metric tonnes of CO₂ in 2022, the latest year for which there are figures – that's about 8% of the world's total CO₂ emissions.

Statement II is correct: Silica-bearing clay is mixed with limestone while manufacturing cement. Cement production involves mixing limestone with other materials like clay, which contains silica, along with other minerals. These materials are then processed into clinker, a key component of cement.

Statement III is correct: In the process of making cement clinker, limestone, which is primarily calcium carbonate (CaCO₃), is heated to high temperatures (1450°C or 2640°F) in a kiln. This process, called calcination, decomposes the limestone into calcium oxide (CaO), commonly known as lime, and carbon dioxide (CO₂). The lime then reacts with other raw materials like clay and silica to form the clinker, which is the main ingredient in cement.

Both Statement II and Statement III are correct but only one of them (i.e. Statement III) explains Statement I:

- Statement I discusses the environmental impact (carbon emissions) of the cement industry.
- Statement III explains why the cement industry has significant carbon emissions (as mentioned in Statement I), due to the conversion of limestone to lime releasing CO₂.

Source:

<https://www.weforum.org/stories/2024/09/cement-production-sustainable-concrete-co2-emissions/>

Q.12) Consider the following statements:

Statement I: At the 28th United Nations Climate Change Conference (COP28), India refrained from signing the 'Declaration on Climate and Health'.

Statement II: The COP28 Declaration on Climate and Health is a binding declaration; and if signed, it becomes mandatory to decarbonize health sector.

Statement III: If India's health sector is decarbonized, the resilience of its health-care system may be compromised.

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

Ans) c

Exp) Option c is the correct answer.

Statement I is correct: At the 28th United Nations Climate Change Conference (COP28), India refrained from signing the 'Declaration on Climate and Health'. The declaration calls for deep, rapid, and sustained reductions in greenhouse gas emissions to achieve health benefits, including those from lower air pollution and sustainable diets.

Statement II is incorrect: COP28 Declaration on Climate and Health is a non-binding, voluntary political declaration that aims to galvanize support for action on climate change and health. It's a call to action and a joint vision, not a legally enforceable treaty.

Statement III is correct: At COP28, India chose not to sign the "Declaration on Climate and Health". This decision is primarily due to concerns about the practicality of reducing greenhouse gas emissions from cooling in the country's healthcare infrastructure, a point within the declaration. Concerns were reportedly raised about the **practicality** of implementing cooling-related decarbonization in a country where **access to affordable and reliable cooling** (especially in rural or under-resourced health facilities) is essential for resilience. India feared that rigid decarbonization efforts in such critical infrastructure might **undermine operational capacity or resilience**, particularly in heat-prone and underserved areas.

Only statement III is correct and statement III explains statement I.

Source:

<https://www.business-standard.com/world-news/india-refrains-from-signing-health-and-clim>

[ate-declaration-at-cop28-123120300945_1.html#:~:text=Listen%20to%20This%20Article,redictions%20in%20greenhouse%20gas%20emissions.](#)

<https://www.livemint.com/news/india/india-refuses-to-sign-cop28-declaration-on-climate-and-health-heres-why-11701618953067.html>

Q.13) Consider the following statements:

Statement I: Scientific studies suggest that a shift is taking place in the Earth's rotation and axis.

Statement II: Solar flares and associated coronal mass ejections bombarded the Earth's outermost atmosphere with a tremendous amount of energy.

Statement III: As the Earth's polar ice melts, the water tends to move **towards** the equator.

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

Ans) b

Exp) Option b is the correct answer.

Statement I is correct: Scientific studies confirm that the Earth's rotation and axis are experiencing shifts, primarily influenced by climate change and human activities. These changes include a wobble in the axis of rotation and a slowing of the Earth's spin.

Statement II is correct: Solar flares and coronal mass ejections (CMEs) are powerful bursts of energy and matter released from the sun. They can bombard Earth's atmosphere with energy and most of this energy is reflected back into space by the Earth's magnetic field. However, these energy bursts **do not contribute to shifts in Earth's rotation or axis.**

Statement III is correct: When polar ice caps and glaciers melt, the resulting water redistributes across the planet, primarily moving towards the equator due to gravitational equilibrium and centrifugal forces from Earth's rotation. This redistribution of mass has a measurable effect on the inertia and balance of the planet, which can lead to a shift in the rotation axis. This is much like how a spinning top shifts direction if its internal weight is redistributed.

Statement III is correct and the main explanation for why the Earth's axis is shifting — due to mass redistribution from melting ice moving toward the equator. Therefore, the correct answer is b

Source:

<https://www.indiatoday.in/science/story/climate-change-is-altering-earths-rotation-as-polar-ice-melts-2567942-2024-07-17>

<https://www.climate.gov/news-features/climate-qa/do-solar-storms-cause-heat-waves-earth>

Q.14) Consider the following statements:

Statement I: Article 6 of the Paris Agreement on climate change is frequently discussed in global discussions on sustainable development and climate change.

Statement II: Article 6 of the Paris Agreement on climate change sets out the principles of carbon markets.

Statement III: Article 6 of the Paris Agreement on climate change intends to promote inter-country non-market strategies to reach their climate targets.

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

Ans) a

Exp) Option a is the correct answer.

Statement I is correct: Article 6 of the Paris Agreement is frequently discussed in relation to sustainable development and climate change due to its provisions for international cooperation in the implementation of Nationally Determined Contributions (NDCs). It enables countries to voluntarily cooperate through carbon markets (6.2 and 6.4) and non-market approaches (6.8) to achieve their climate targets, while also promoting sustainable development and environmental integrity.

Statement II is correct: Article 6 of the Paris Agreement on climate change sets out the principles for carbon markets. It provides a framework for international cooperation on emissions reductions, enabling countries to work together through carbon trading and other mechanisms to achieve their climate targets. Article 6 allows countries to transfer emission reductions from one country to another, helping them meet their nationally determined contributions (NDCs).

Statement III is correct: Article 6 of the Paris Agreement facilitates both market-based and non-market-based international cooperation for countries to achieve their climate targets. It's a key mechanism for countries to collaborate in reducing emissions and meeting their Nationally Determined Contributions (NDCs)

- **Article 6.2:** Enables countries to use internationally transferred mitigation outcomes (like carbon credits) towards their NDCs, promoting cooperation and sharing of emissions reduction efforts.

- **Article 6.4:** Establishes a new UNFCCC mechanism for trading high-quality carbon credits, further facilitating international carbon markets.
- **Article 6.8:** Specifically addresses non-market approaches, including finance, technology transfer, and capacity building to enhance climate action. This allows for cooperation without direct trading of emissions reductions, promoting a broader range of collaboration.

Both statement II and III explains statement I

Source:

<https://unfccc.int/node/637805#:~:text=Article%20of%20the%20Paris%20Agreement%20enables%20international%20cooperation%20to,cooperation%20for%20enhancing%20climate%20action.>

<https://unepccc.org/article-6-pipeline/#:~:text=Article%20of%20the%20Paris,on%20cooperation%20under%20Article%206.>

Q.15) Which one of the following launched the 'Nature Solutions Finance Hub for Asia and the Pacific'?

- a) The Asian Development Bank (ADB)
- b) The Asian Infrastructure Investment Bank (AIIB)
- c) The New Development Bank (NDB)
- d) The International Bank for Reconstruction and Development (IBRD)

Ans) a

Exp) Option a is the correct answer.

The organization that launched the "**Nature Solutions Finance Hub for Asia and the Pacific**" is **the Asian Development Bank (ADB)**. The ADB unveiled this hub at COP28 with the goal of attracting significant investments in nature-based solutions projects across the Asia Pacific region. It aims to mobilize funding for projects that incorporate nature-based solutions to address climate change and biodiversity loss. The hub aims to attract at least \$2 billion in investments.

Source:

<https://opecfund.org/operations/list/enhancing-outcomes-of-the-nature-solutions-finance-hub-nsfh-for-asia-and-the-pacific#:~:text=The%20proposed%20TA%20grant%20aims,across%20Asia%20and%20the%20Pacific.>

[https://ndcpartnership.org/knowledge-portal/climate-funds-explorer/nature-solutions-finance-hub-asia-and-pacific#:~:text=The%20Asian%20Development%20Bank%20\(ADB,other%20sources%20of%20private%20capital.](https://ndcpartnership.org/knowledge-portal/climate-funds-explorer/nature-solutions-finance-hub-asia-and-pacific#:~:text=The%20Asian%20Development%20Bank%20(ADB,other%20sources%20of%20private%20capital.)

Q.16) With reference to 'Direct Air Capture', an emerging technology, which of the following statements is/are correct?

I. It can be used as a way of carbon sequestration.

II. It can be a valuable approach for plastic production and in food processing.

III. In aviation, it can be a source of carbon for combining with hydrogen to create synthetic low-carbon fuel.

Select the correct answer using the code given below.

a) I and II only

b) III only

c) I, II and III

d) None of the above statements is correct

Ans) c

Exp) Option c is the correct answer.

Statement I is correct: Direct air capture (DAC) is a method that can be used for carbon sequestration, also known as direct air carbon capture and sequestration (DACCS). DACCS involves extracting carbon dioxide (CO₂) directly from the atmosphere using chemical or physical processes, followed by the long-term storage of that captured CO₂, effectively removing it from the atmosphere.

Statement II is correct: Direct air capture (DAC) can be a valuable approach for certain aspects of plastic production and food processing by utilizing captured CO₂. DAC extracts CO₂ from the atmosphere, which can then be used as a feedstock for producing some types of plastics and in food production processes.

Statement III is correct: Direct air capture (DAC) technology can be used in aviation to create synthetic low-carbon fuels. DAC extracts carbon dioxide (CO₂) from the atmosphere. This captured CO₂ can then be combined with hydrogen, which can be produced through renewable energy sources, to create synthetic fuels like e-fuels

Source:

<https://www.catf.us/resource/decarbonizing-aviation-enabling-technologies-net-zero-future/#:~:text=Clean%20hydrogen%20with%20low%20or,decline%20and%20the%20market%20grow%20s.>

<https://www.iea.org/energy-system/carbon-capture-utilisation-and-storage/direct-air-capture>

[https://www.american.edu/sis/centers/carbon-removal/fact-sheet-direct-air-capture.cfm#:~:text=Direct%20Air%20Capture%20with%20Carbon%20Storage%20\(DACCS\),to%20make%20long%20lasting%20products%2C%20such%20as%20cement](https://www.american.edu/sis/centers/carbon-removal/fact-sheet-direct-air-capture.cfm#:~:text=Direct%20Air%20Capture%20with%20Carbon%20Storage%20(DACCS),to%20make%20long%20lasting%20products%2C%20such%20as%20cement)

Q.17) Regarding Peacock tarantula (Gooty tarantula), consider the following statements:

- I. It is an omnivorous crustacean.
- II. Its natural habitat in India is only limited to some forest areas.
- III. In its natural habitat, it is an arboreal species.

Which of the statements given above is/are correct?

- a) I only
- b) I and III
- c) II only
- d) II and III

Ans) d

Exp) Option d is the correct answer.

Statement I is incorrect: The Peacock tarantula, also known as the Gooty tarantula (*Poecilotheria metallica*), is a spider, not a crustacean. It is an arachnid, specifically a tarantula species belonging to the family Theraphosidae. It's native to deciduous forests in Andhra Pradesh, India, and is known for its vibrant blue color, which is also why it's called the "peacock tarantula".

Statement II is correct: The Gooty (Peacock) Tarantula's natural habitat in India is limited to specific forest areas, primarily in the Eastern Ghats and degraded forests near Nandyal in Andhra Pradesh. This makes it a critically endangered species.

Statement III is correct: The Gooty tarantula is **arboreal**, meaning it lives in **trees**, as opposed to burrowing in the ground like some other tarantulas. In its forest habitat, it makes use of **tree hollows and bark crevices**.



Source:

<https://www.downtoearth.org.in/environment/tracking--the-elusive---metallic-spider-46057>

Q.18) Consider the following statements:

- I. Carbon dioxide (CO₂) emissions in India are less than 0.5 t CO₂/capita.
- II. In terms of CO₂ emissions from fuel combustion, India ranks second in Asia-Pacific region.
- III. Electricity and heat producers are the largest sources of CO₂ emissions in India.

Which of the statements given above is/are correct?

- a) I and III only
- b) II only
- c) II and III only
- d) I, II and III

Ans) c

Exp) Option c is the correct answer.

Statement I is incorrect: In 2022, India's per capita emissions were 1.89 t CO₂ per person. Per capita carbon dioxide (CO₂) emissions in India have soared in recent decades, climbing from 0.4 metric tons per person in 1970 to a **high of 2.07 metric tons per person in 2023**.

Statement II is correct: India ranks second in the Asia-Pacific region in terms of CO₂ emissions from fuel combustion. China ranks first in the region, and India is second with 2,516.967 Mt CO₂ emissions, according to data from the International Energy Agency (IEA).

Statement III is correct: In India, electricity and heat production are the largest source of CO₂ emissions. Specifically, the power sector, which is heavily reliant on coal, contributes significantly to the nation's overall CO₂ emissions, which directly impact climate change. In 2019, the power sector was responsible for about 70% of India's total CO₂ emissions, making it the single largest contributor.

Source: <https://www.iea.org/regions/asia-pacific/emissions>

India's per capita emissions less than half of global average in 2022: Report, ET EnergyWorld

<https://www.iea.org/countries/india/emissions#:~:text=Note%20that%20CO2%20emissions%20generated,Next%20Electricity>

<https://www.ssgaslab.com/emissions-from-india-s-power-sector.html#:~:text=The%20Impact%20of%20India's%20Power%20Sector%20on,responsible%20for%20about%2070%20of%20the%20emissions.>

Q.19) Consider the following pairs:

Plant	Description
I. Cassava	Woody shrub
II. Ginger	Herb with pseudostem
III. Malabar spinach	Herbaceous climber

IV. Mint	Annual shrub
V. Papaya	Woody shrub

How many of the above pairs are correctly matched?

- a) Only two
- b) Only three
- c) Only four
- d) All the five

Ans) b

Exp) Option b is the correct answer.

Pair 1 is correctly matched: Cassava is a perennial woody shrub with an edible root, which grows in tropical and subtropical areas of the world. It is also called yuca, manioc, and mandioca. It is cultivated for its starchy **tuberous roots**, which are a major source of carbohydrates.

Pair 2 is correctly matched: Ginger is an herbaceous perennial plant with a unique structure that includes a rhizome (underground stem) and a pseudostem (false stem). The rhizome, the fleshy underground stem, is the part we commonly consume. The pseudostem, made up of tightly wrapped leaf bases, supports the aerial leaves and flowers. This plant is a member of the Zingiberaceae family, which also includes plants like turmeric and cardamom.

Pair 3 is correctly matched: Malabar spinach (Basella alba) is an herbaceous climber. It is a fast-growing, soft-stemmed, twining vine that can grow up to 10 feet long. It is also known as vine spinach, Indian spinach, and Ceylon spinach.

Pair 4 is incorrectly matched: Mint is not a shrub. It is classified as an aromatic perennial herb. Shrubs are typically woody plants with multiple stems, while herbs have softer, non-woody stems. Mint plants have soft, square stems and spread via underground and overground runners.

Pair 5 is incorrectly matched: The papaya (Carica papaya) is a large, herbaceous perennial, **not a woody shrub**. It has a single, non-woody trunk that is somewhat succulent and soft-wooded. The trunk does not develop true bark and is marked by scars from old leaf bases. The papaya is a tree-like plant, but its trunk is not as woody as a typical tree.

Source: <https://www.nparks.gov.sg/florafaunaweb/flora/2/7/2785>

<https://www.gardeningknowhow.com/ornamental/shrubs/mint-shrub/growing-mint-shrub-plants.htm#:~:text=There%20are%20about%2040%20different,tall.>

<https://hort.extension.wisc.edu/articles/malabar-spinach-basella-alba/>

<http://www.spices.res.in/sites/default/files/Extension%20Pamphlets/ginger.pdf>

<https://www.croptrust.org/knowledge-hub/crops-countries-and-genebanks/crops/cassava/#~:text=Cassava%20is%20a%20perennial%20woody,yuca%2C%20manioc%2C%20and%20mandioca.>

Q.20) With reference to the planet Earth, consider the following statements:

- I.** Rain forests produce more oxygen than that produced by oceans.
- II. Marine phytoplankton and photo synthetic bacteria produce about 50% of world's oxygen.
- III. Well-oxygenated surface water contains several folds higher oxygen than that in atmospheric air.

Which of the statements given above is/are correct?

- a) I and II
- b) II only
- c) I and III
- d) None of the above statements is correct

Ans) b

Exp) Option b is the correct answer.

Statement I is incorrect: Rainforests do not produce more oxygen than oceans. The ocean, particularly through phytoplankton, is estimated to produce a significantly larger portion of Earth's oxygen than land-based ecosystems like rainforests. While estimates vary, the ocean is thought to produce a substantial portion of the world's oxygen, ranging from 50% to 80%, while land-based ecosystems like rainforests contribute around 28%

Statement II is correct: Marine phytoplankton are primarily responsible for a significant portion of Earth's oxygen production, with estimates suggesting they produce between 50% and 80% of the oxygen in the atmosphere. Synthetic bacteria, while involved in oxygen production in some cases, are not the primary source of oxygen for the planet

Statement III is incorrect: The concentration of **dissolved oxygen in surface water** is much **lower than the concentration of oxygen in air**. Air contains about **21% oxygen by volume**, which is significantly higher than dissolved oxygen levels in water (typically around **8–10 mg/L**).

Source:

<https://oceanservice.noaa.gov/facts/ocean-oxygen.html#:~:text=About%20half%20of%20Earth's%20oxygen,%2C%20temperature%2C%20and%20other%20factors.>

<https://onetreepanted.org/blogs/stories/oxygen-tree>

<https://www.globalseafood.org/advocate/dissolved-oxygen-is-a-major-concern-in-aquaculture-heres-why/#:~:text=Water%20holds%20a%20much%20smaller,deplete%20the%20dissolved%20oxygen%20quickly.>

Q.21) Consider the following statements about Raja Ram Mohan Roy:

I. He possessed great love and respect for the traditional philosophical systems of the East.

II. He desired his countrymen to accept the rational and scientific approach and the principle of human dignity and social equality of all men and women.

Which of the statements given above is/are correct?

- a) I only
- b) II only
- c) Both I and II
- d) Neither I and II

Ans) c

Exp) Option c is the correct answer.

Raja Rammohan Roy (1772–1833) was the central figure in the political awakening in India. He is rightly regarded as the father of Indian Renaissance and the maker of Modern India.

Statement I is correct: Raja Rammohan Roy possessed **great love and respect for the traditional philosophical system of the East**; but at the same time, he believed that Western culture alone could help regenerate Indian society. Roy **considered different religions as national embodiments of universal theism**. He defended the basic and universal principles of all religions—such as the monotheism of the Vedas and unitarianism of Christianity—while attacking the polytheism of Hinduism and trinitarianism of Christianity. The outlook of Raja Rammohan Roy was **based on an intellectual synthesis of the best thoughts of the Orient and the Occident**.

Statement II is correct: Raja Rammohan Roy firmly believed in the principle of causality linking the whole phenomenal universe and demonstrability as the sole criterion of truth. In particular, **he wanted his countrymen to accept the scientific and rational approach, the principle of human dignity and social equality of all men and women**. He also wanted the introduction of modern capitalism and industry in the country.

- He believed in the modern scientific approach and principles of human dignity and social equality. He put his faith in monotheism.
- He **wrote Gift to Monotheists (1809)** and translated into Bengali the Vedas and the five Upanishads to prove his conviction that ancient Hindu texts support monotheism.

Source:

A Brief History of Modern India, Spectrum, Chapter - 8, Socio-Religious Reform Movements: General Features, Pg. 192; Chapter - 9, A General Survey of Socio-Cultural Reform Movements, 206-207

<https://tripurauniv.ac.in/site/images/pdf/StudyMaterialsDetail/POLS-702C-Modern%20Indian%20Political%20Thought.pdf> (Pg. 11)

Q.22) Consider the following subjects with regard to Non-Cooperation Programme:

- I. Boycott of law-courts and foreign cloth
 - II. Observance of strict non-violence
 - III. Retention of titles and honours without using them in public
 - IV. Establishment of Panchayats for settling disputes
- How many of the above were parts of the Non-Cooperation Programme?
- a) Only one
 - b) Only two
 - c) Only three
 - d) All the four

Ans) c

Exp) Option c is the correct answer.

The Non-Cooperation Movement was the first nationwide movement led by Mahatma Gandhi in 1920, urging Indians to withdraw support from British institutions and refuse cooperation with colonial rule. In September 1920, at a special session in Calcutta, the Indian National Congress (INC) approved a non-cooperation programme till the Punjab and Khilafat wrongs were removed and swaraj was established. The programme was to include:

Option I is correct: The **Programme of Non-Cooperation included boycotts of law courts, government schools and colleges. It also included the boycott of foreign cloth and use of khadi instead;** also practice of hand-spinning to be done.

- As a reaction to the movement, thousands of students left schools and colleges and joined 800 national schools and colleges that had come up throughout the country.
- Many leading lawyers of the country like C.R. Das, Motilal Nehru, Saifuddin Kitchlew, C. Rajagopalachari, M.R. Jayakar, Vallabhbhai Patel, Asaf Ali and T. Prakasham quit their practice.
- Heaps of foreign cloth were burnt publicly and their imports fell by half.

Option II and IV are correct: As part of the Non-Cooperation Programme, it was decided to set up national schools and colleges, **establish and strengthen the panchayats for settlement of**

disputes, promotion of hand spinning and weaving, condemnation and renunciation of untouchability, **maintenance of communal amity and strict observance of non-violence**.

Option III is incorrect: The Non-Cooperation Programme **involved the renunciation of government titles and honorary positions (not the retention of titles and honours without using them in public)**.

Source:

A Brief History of Modern India, Spectrum, Chapter - 16, Non-Cooperation Movement and Khilafat Andolan, Pg. 332 - 333

<https://egyankosh.ac.in/bitstream/123456789/106107/1/Unit-12.pdf> (Pg. 141 - 142)

Q.23) The irrigation device called 'Arghatta' was

- a) a water bag made of leather pulled over a pulley.
- b) a large wheel with earthen pots tied to the outer ends of its spokes.
- c) a larger earthen pot driven by bullocks.
- d) a large water bucket pulled up **by rope directly by hand**.

Ans) b

Exp) Option b is the correct answer.

Option b is correct: In India, **the irrigation device called araghatta or arahatta was one wheel with pitchers or pots of clay attached around the rim of the wheel**. It was also called 'Ghanti-Yantra'. Araghatta is a Persian wheel, **a mechanical water-lifting device, used in medieval India to lift water from wells for irrigation**.

- The **essential part of the araghatta was the ghati-yantra or the device with pitchers, usually mounted on the wheel**, but not attached to its rim. The ghati-yantra as an irrigation device is therefore often held as a pot garland.
- The **araghatta seems to have drawn water from a reservoir which in turn received its water from an irrigation well**. The spokes (arakas) of a wheel was a revolving apparatus though it does not refer to any gearing mechanism enabling the conversion of the horizontal rotary motion into a vertical rotary motion. The latter feature which became visible from the fourteenth century onwards, represented the typical Persian wheel or the saqia.

Source:

<https://www.egyankosh.ac.in/bitstream/123456789/73310/1/Unit-11.pdf> (Pg. 206)

<https://egyankosh.ac.in/bitstream/123456789/73909/1/Unit-17.pdf> (Pg. 288)

Q.24) Who among the following rulers in ancient India had assumed the titles 'Mattavilasa', 'Vichitrachitta' and 'Gunabhara'?

- a) Mahendravarman I
- b) Simhavishnu
- c) Narasimhavarman I
- d) Simhavarman

Ans) a

Exp) Option a is the correct answer.

Option a is correct: Mahendravarman I (600 – 630 A.D.) was the Pallava ruler known for his patronage to arts and literature. During his reign, conflict between the Chalukyas of Badami and the Pallavas heightened and he was defeated by Pulekshin II at Pullalur (near Kanchi) who annexed the northern part of the Pallava kingdom. He **assumed a number of titles like Gunabhara, Satyasandha, Chettakari (builder of temples) Chitrakarapuli, Vichitrachitta and Mattavilasa.** The **Mandagappattu inscription hails him as Vichitrachitta** who constructed a temple for Brahma, Vishnu and Siva without the use of bricks, timber, metal and mortar. **His title Chitrakarapuli reveals his talents in painting.**

- Mahendravarman was a great patron of arts, was himself a poet and musician. He **wrote the Mattavilasa Prahasanna** and initiated the construction of the famous cave temple at Mahabalipuram. He was a follower of Jainism in the early part of his career. He was converted to Saivism by the influence of the Saiva saint, Thirunavukkarasar alias Appar.
- His rock-cut temples are found in a number of places like Vallam, Mahendravadi, Dalavanur, Pallavaram, Mandagappattu and Tiruchirappalli.
- He is also regarded as an expert in music. The **music inscription at Kudumianmalai is ascribed to him.**

History - Tamil Nadu NCERT XI (Old), Chapter - 11, South Indian Kingdoms - I, Pg. 123- 124

Ancient and Medieval History, Poonam Dalal Dahiya, Chapter - 9, Early Medieval India: The Age of Regional Configurations (c. 600 - 1200 CE)

Source: <https://egyankosh.ac.in/bitstream/123456789/61908/1/Unit-5.pdf>

Q.25) Fa-hien (Faxian), the Chinese pilgrim, travelled to India during the reign of

- a) Samudragupta
- b) Chandragupta II
- c) Kumaragupta I
- d) Skandagupta

Ans) b

Exp) Option b is the correct answer.

Option b is correct: Fa-hien (Faxian), the Buddhist scholar from China, **visited India (AD 399–414) during the reign of Chandragupta II**. He records the prosperity of the Gupta Empire. He came to visit various Buddhist monasteries and took copies of religious texts. He visited Peshawar, Taxila, Mathura, Kannauj, Sravasti, Kapilavastu, Sarnath and many other places. He **compiled a travelogue “Record of Buddhistic Kingdoms”**. His book details the religious and social life of Indians at that time.

- Chandragupta II ruled the Gupta empire for 40 years from c. 375 to 415 CE. He came to power after a succession struggle with his brother Rama Gupta. He is also known as Vikramaditya. The reign of Chandragupta II saw the high watermark of the Gupta empire. He extended the limits of the empire by marriage alliances and conquests.

Details of India as per Fa-hien’s Account:

The following aspects of India can also be found from his book:

- Buddhism and Hinduism were the most popular religions at that time. Buddhism was more popular in Punjab, Bengal and the region around Mathura.
- He studied Sanskrit Language in Pataliputra.
- He described internal and foreign trade of India as well as its ports.
- India had trade relations with China, countries of South-East Asia, Western Asia and as well as with Europe.

Source:

History - Tamil Nadu Board SCERT XI (New), Chapter - 7, The Guptas, Pg. 109

Ancient History - NCERT XI, Chapter - 20, Rise and Growth of the Gupta Empire, Pg. 142 - 143

Indian Art & Culture, Nitin Singhania, Chapter - 26, India through the eyes of Foreign Travelers.

Q.26) Who among the following led a successful military campaign against the **kingdom of Srivijaya**, the powerful maritime State, which ruled the Malay Peninsula, Sumatra, Java and the neighbouring islands?

- a) Amoghavarsha (Rashtrakuta)
- b) Prataparudra (Kakatiya)
- c) Rajendra I (Chola)
- d) Vishnuvardhana (Hoysala)

Ans) c

Exp) Option c is the correct answer.

Option c is correct: Rajendra I (c.1014–1044 CE), son of Rajaraja I, was one of the most prominent rulers of the Chola dynasty. He carried forward his father’s expansionist policies and continued the Chola territorial expansion. In 1025 CE, a **successful naval expedition was dispatched**

against the Sri Vijaya empire (which extended over the Malay peninsula, Sumatra, Java and the neighbouring islands and controlled the overseas trade route to China). The **expedition led to the conquest of the kadaram or kedah and a number of other places in the Malay peninsula and Sumatra**. The Chola navy was the strongest in the area, and for some time the Bay of Bengal was converted into a 'Chola lake'.

Srivijaya kingdom:

- The rulers of the Sailendra dynasty of the Srivijaya kingdom were Buddhists and had cordial relations with the Cholas.
- The Sailendra ruler had built a Buddhist monastery at Nagapatnam and, at his instance, Rajendra I had endowed a village for its upkeep. The **cause of the breach between the two apparently was the Chola eagerness to remove obstacles to Indian traders**, and to expand trade with China.

Source:

Medieval History, NCERT XI, Chapter - 3, South India: The Chola Empire (900-1200)

Ancient and Medieval History, Poonam Dalal Dahiya, Chapter - 9, Early Medieval India: The Age of Regional Configurations (c. 600 - 1200 CE)

Q.27) With reference to ancient India (600–322 BC), consider the following pairs:

	Territorial region	River flowing in the region
I.	Asmaka	Godavari
II.	Kamboja	Vipasa
III.	Avanti	Mahanadi
IV.	Kosala	Sarayu

How many of the pairs given above are correctly matched?

- a) Only one
- b) Only two
- c) Only three
- d) All the four

Ans) b

Exp) Option b is the correct answer.

Pair I is correct: Asmaka or Assaka (near Nanded in the Godavari valley in Maharashtra) **is located on the banks of Godavari river** between the rivers Godavari and Manjira. The kingdom of Assaka finds mention in a range of texts such as Panini's Ashtadhyayi, the Markandeya Purana, the Brihatsamhita. **Buddhist texts locate Assaka along the Godavari river in Maharashtra**. Its capital was Potana/Podana, and is identified with modern Bodhan. The Jatakas suggest that

Assaka at some point had come under the sway of Kashi, and that it achieved military victory over Kalinga in eastern India.

Pair II is incorrect: The main river flowing through the Kamboja region is the Jhelum river, also known as Vitasta in ancient texts (and not Vipas river). Kamboja included the present day area of Rajaori, which is in the Hazara district of Pakistan. The Kambojas were a monarchy till about the 6th century BCE, but the later text Arthashastra refers to them as a gana sangha.

- The Vipas river, also known as the Beas River, flows through the northwestern Indian states of Himachal Pradesh and Punjab.

Pair III is incorrect: The mahajanapada of Avanti was located in the Malwa region of central India. **Mahanadi river does not flow through the Avanti region.** Avanti **had two capitals, one at Ujjayini** (near modern Ujjain in Madhya Pradesh) and the **other at Mahishmati** (identified with modern day Mandhata in the western part of Madhya Pradesh). Both the cities were important centres on the trade routes that connected north India with the Deccan and also with the ports on the western coast.

Pair IV is correct: Sarayu was the principal river of the Kosala region (Eastern U.P., included Ayodhya and the tribal republican territory of Shakyas of Kapilavastu). Sarayu river divided the state into two parts: Northern part's capital: Shravasti and Southern part's capital: Kushavati. Kosala was bound by the Sadanira (modern day Gandak) on the east and the Gomati on the west, the Sarpika or Syandika (Sai) on the south, and the Nepal hills to the north.

Source:

Ancient and Medieval History, Poonam Dalal Dahiya, Chapter - 4, The Mahajanapadas of the Indo-Gangetic Plain (c. 600 - 300 BCE)

<https://egyankosh.ac.in/bitstream/123456789/64791/1/Unit13.pdf> (Pg. 233 - 235)

Q.28) The first Gandharva Mahavidyalaya, a music training school, was set up in 1901 by Vishnu Digambar Paluskar in

- a) Delhi
- b) Gwalior
- c) Ujjain
- d) Lahore

Ans) d

Exp) Option d is the correct answer.

Option d is correct: Vishnu Digambar Paluskar founded the Gandharva Mahavidyalaya in Lahore in 1901 with the express purpose of teaching and transmitting the knowledge of Indian classical music and dance to the coming generations. The aim was to teach music to any aspirant without the necessity of being associated with a guru and gharana. Later, Gandharva Mahavidyalaya shifted to Mumbai.

- After his death in 1931, the Delhi branch was inaugurated in 1939 by Pt. Vinay Chandra Maudgalya, who belonged to the same musical tradition.

Source:

Indian Art & Culture, Nitin Singhania, Chapter - 5, Indian Music

<https://www.thehindu.com/incoming/vishnu-digambar-paluskar-gandharva-mahavidyalaya-pt-vinay-chandra-maudgalya-vishnu-digambar-jayanti/article65836482.ece>

Q.29) Ashokan inscriptions suggest that the 'Pradeshika', 'Rajuka' and 'Yukta' were important officers at the

- a) village-level administration
- b) district-level administration
- c) provincial administration
- d) level of the central administration

Ans) b

Exp) Option b is the correct answer.

Option b is correct: Ashokan inscriptions suggest that 'Pradeshika', 'Rajuka' and 'Yukta' were important officers at the district-level administration. At the district level, the officials listed were Pradeshika, Rajuka and Yukta. Pradeshika was the overall in-charge of the district, with no advisory council. The district administration was under the charge of Rajukas, whose position and functions are similar to modern collectors. Rajukas were vested with the authority not only to reward people but also to punish them when necessary. The Yukta was a junior officer giving secretarial kind of assistance to the other two in accounting, secretarial, and other miscellaneous works.

- The officials fulfilled the following duties: survey and assessment of land; tours and inspections; revenue collection; and maintaining law and order.
- Third Edict mentions 'Pradeshikas', Rajukas', and 'Yuktas' and their need for going on tours of inspection every five years as part of their other duties, preaching dhamma, and also adopting liberal attitude towards Brahmanas and Shramanas.

Source:

History - Tamil Nadu SCERT - XI (Old), Chapter - 6, The Mauryan Empire, Pg. 68 - 69

Ancient History, NCERT - XI, Chapter - 14, The Age of Mauryas, Pg. 100 - 101

Ancient and Medieval History, Poonam Dalal Dahiya, Chapter - 6, The Mauryan Empire (c. 324 - 187 BCE)

Source: <https://egyankosh.ac.in/bitstream/123456789/64794/1/Unit16.pdf>

Q.30) Consider the following statements in respect of the Non-Cooperation Movement:

I. The Congress declared the attainment of 'Swaraj' by all legitimate and peaceful means to be its objective.

II. It was to be implemented in stages with civil disobedience and non-payment of taxes for the next stage only if 'Swaraj' did not come within a year and the Government resorted to repression. Which of the statements given above is/are correct?

- a) I only
- b) II only
- c) Both I and II
- d) Neither I nor II

Ans) c

Exp) Option c is the correct answer.

Statement I is correct: The Indian National Congress (INC) endorsed the program of non-cooperation at the Nagpur session in December 1920. At this session, an important change was made in the Congress. Now, instead of having the attainment of self-government through constitutional means as its goal, the **Congress decided to have the attainment of swaraj through peaceful and legitimate means**, thus committing itself to an extra constitutional mass struggle.

Statement II is correct: The **Non-Cooperation movement was planned to be implemented in stages**. The later phase of the movement involved resignation from government service, and non-payment of taxes.

- In the first phase from January to March 1921, the main emphasis was on the boycott of schools, colleges, law courts and the use of Charkha.
- This phase was followed by the **second phase starting from April 1921**. In this phase the basic objectives were the collection of Rs. one crore for the Tilak Swaraj Fund by August 1921, enrolling one crore Congress members and installing 20 lakh Charkhas by 30 June.
- In the third phase, starting from July, the stress was on boycott of foreign cloth, boycott of the forthcoming visit of the Prince of Wales in November, 1921, popularization of Charkha and Khadi, and Jail Bhara by Congress volunteers.

- **In the last phase**, since November 1921, a shift towards radicalism was visible. The Congress volunteers rallied the people and the country was on the verge of a revolt. **Gandhi decided to launch a no-revenue campaign at Bardoli, and also a mass civil disobedience movement for freedom of speech, press and association.**

Source:

A Brief History of Modern India, Spectrum, Chapter - 16, Non-Cooperation Movement and Khilafat Andolan, Pg. 332 - 334

<https://egyankosh.ac.in/bitstream/123456789/89550/3/Unit-7.pdf> (Pg. 95 - 96)

Q.31) With reference to investments, consider the following:

- I. Bonds
- II. Hedge Funds
- III. Stocks
- IV. Venture Capital

How many of the above are treated as Alternative Investment Funds?

- a) Only one
- b) Only two
- c) Only three
- d) All the four

Ans) b

Exp) Option b is the correct answer.

An Alternative Investment Fund (AIF) refers to any fund established or incorporated in India, which is a privately pooled investment vehicle that collects funds from sophisticated investors (Indian or foreign) and invests them according to a defined investment policy for the benefit of its investors. As per SEBI (Alternative Investment Funds) Regulations, 2012 – Regulation 3(4), AIFs are classified into three broad categories i.e. Category I, II and III

Option I is incorrect: Stocks such as equity shares are **traditional investment instrument** representing the ownership of an investor

Option II is correct: Hedge Funds is a **category III AIFs** which employ diverse or complex trading strategies and may employ leverage including through investment in listed or unlisted derivatives

Option III is incorrect: Bonds are a **type of debt instrument** through which an investor lends money to a company or government in exchange for regular interest payments, without receiving any ownership stake in the entity.

Option IV is correct: Venture capital is a **Category I AIFs** which invest in start-up or early stage ventures or social ventures or SMEs or infrastructure or other sectors or areas which the government or regulators consider as socially or economically desirable

Source: https://www.sebi.gov.in/sebi_data/attachdocs/1471519155273.pdf

Q.32) Which of the following are the sources of income for the Reserve Bank of India?

- I. Buying and selling Government bonds
- II. Buying and selling foreign currency
- III. Pension fund management
- IV. Lending to private companies
- V. Printing and distributing currency notes

Select the correct answer using the code given below.

- a) I and II only
- b) II, III and IV
- c) I, III, IV and V
- d) I, II and V

Ans) d

Exp) Option d is the correct answer.

The Reserve Bank of India was established under the RBI Act, 1934, to regulate the issuance of banknotes and maintain monetary stability in India. While its primary goal is public welfare, certain market operations undertaken to ensure financial stability also generate income. This surplus is transferred to the Government of India as per the Bimal Jalan Committee's (2019) recommendations on the economic capital framework.

Option I is correct: Open market operations, through which the **RBI buys or sells government bonds** to regulate the money supply, **serve as a key source of income**. In addition to earning interest on these bonds, the RBI can also gain from favorable movements in bond prices.

Option II is correct: As per Foreign Exchange Management Act, 1999 (FEMA), the RBI is responsible for managing the country's foreign exchange reserves and ensuring external stability. **The RBI's activities in the foreign exchange market also contribute to its profits. For example, it may purchase U.S. dollars at lower rates and sell them at higher rates later.**

Option III is incorrect: The **Reserve Bank of India (RBI) does not manage pension funds**. Pension fund management in India is regulated and overseen by the **Pension Fund Regulatory and Development Authority (PFRDA)**,

Option IV is incorrect: The **RBI does not directly lend to private companies** in India. It lends money mainly to **commercial banks and financial institutions who** in turn lend to private companies and individuals.

Option V is correct: The RBI Act, 1934 designates the Reserve Bank of India as the sole authority to issue banknotes in India. While the RBI bears the printing costs, **it earns seigniorage**—the profit arising from the difference between the face value of the currency and its production cost **which also acts as one of the sources of income of RBI**.

Source: <https://www.rbi.org.in/Scripts/AnnualReportPublications.aspx?Id=1412>
<https://www.thehindu.com/business/Economy/where-do-the-rbis-earnings-come-from/article29310531.ece>
<https://timesofindia.indiatimes.com/business/india-business/how-rbi-earns-profit-decides-dividend-explained/articleshow/121371477.cms>

<https://www.rbi.org.in/commonman/English/scripts/Notification.aspx?Id=905>

Q.33) With reference to the Government of India, consider the following information:

	Organization	Some of its functions	It works under
I.	Directorate of Enforcement	Enforcement of the Fugitive Economic Offenders Act, 2018	Internal Security Division- I, Ministry of Home Affairs
II.	Directorate of Revenue Intelligence	Enforces the Provisions of the Customs Act, 1962	Department of Revenue, Ministry of Finance
III.	Directorate General of Systems and Data Management	Carrying out big data analytics to assist tax officers for better policy and nabbing tax evaders	Department of Revenue, Ministry of Finance

In how many of the above rows is the information correctly matched?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) a

Exp) Option a is the correct answer.

Row I is incorrect: The Directorate of Enforcement is a multi-disciplinary agency tasked with investigating money laundering and violations of foreign exchange laws. Its **statutory functions include enforcing the Fugitive Economic Offenders Act, 2018 (FEOA)**, aimed at preventing economic offenders from evading Indian law by staying outside the country. The Directorate currently operates under the administrative control of the **Department of Revenue, Ministry of Finance(not under Ministry of Home Affairs), Government of India.**

Row II is correct :The Directorate of Revenue Intelligence (DRI) is India's top agency for anti-smuggling intelligence, investigations, and operations. Its mandate includes detecting and preventing the smuggling of contraband such as drugs, illicit wildlife products, and environmentally sensitive items, as well as tackling commercial frauds and **Customs duty evasion under the Customs Act, 1962.** The DRI functions under the **Department of Revenue, Ministry of Finance, Government of India,** and operates as part of the Central Board of Indirect Taxes and Customs (CBIC).

Row III is incorrect : The Directorate General of Systems & Data Management functioning under the CBIC and the **Department of Revenue, Ministry of Finance.** The Directorate General of Systems & Data Management

- is responsible for the design, development, programming, testing, implementation and maintenance of Customs and Central Excise automated systems, and for overseeing and managing the projects sanctioned by CBIC related to IT.
- is responsible for the management of all Centrally deployed Customs and Central Excise computer facilities, hardware, software, data communications
- in the automated environment, acts as a point of reference and validation concerning procedural changes in Customs and Central Excise, in addition to being a resource centre on business process issues.
- is responsible for identifying and evaluating new technologies for application to automated systems within the department.
- is responsible for developing and maintaining all policy and subsequently, on the implementation of centralized systems, the operational aspects of the Department's Computer Security.
- Establishes requirements for computer-to-computer interfaces between the department and various trading partners and government agencies
- Represents Customs and Central Excise on matters related to automated processing and systems development
- Implements information resource and data management

The government has set up a new wing named the Directorate General of Analytics and Risk Management (DGARM) under the indirect taxes body under the Central Board of Excise and Customs (CBEC) to provide intelligence inputs and carry out big data analytics for taxmen for better policy formulation and nabbing evaders.

Source: <https://enforcementdirectorate.gov.in/>
<https://enforcementdirectorate.gov.in/history-ed>
<https://dri.nic.in/main/aboutus>
<https://www.sconline.com/blog/post/2024/11/09/cannon-india-2021-erred-dri-officers-are-not-proper-officers-sc-legal-news/>
<https://dri.nic.in/main/history>
https://old.icegate.gov.in/About_DG_systems.html
<https://cbic-gst.gov.in/aces/Documents/dol-member-IT-06012017-Communication.pdf>
<https://economictimes.indiatimes.com/news/economy/policy/directorate-formed-to-flag-high-risk-areas-in-customs-gst/articleshow/59577530.cms?from=mdr>
https://old.icegate.gov.in/About_DG_systems.html
<https://enforcementdirectorate.gov.in/>
<https://dri.nic.in/main/whatwedo#:~:text=DRI%20enforces%20the%20provisions%20of,Wildlife%20Act%2C%20Antiquities%20Act%20etc.>

Q.34) Consider the following statements:

I. The Reserve Bank of India mandates all the listed companies in India to submit a Business Responsibility and Sustainability Report (BRSR).

II. In India, a company submitting a BRSR makes disclosures in the report that are largely non-financial in nature.

Which of the statements given above is/are correct?

a) I only

b) II only

- c) Both I and II
d) Neither I nor II

Ans) b

Exp) Option b is the correct answer.

The Business Responsibility and Sustainability Report (BRSR) is an Indian reporting framework aimed at improving the disclosure of environmental, social, and governance (ESG) performance by listed companies. It traces its origins to the 'Voluntary Guidelines on Corporate Social Responsibility' introduced by the Ministry of Corporate Affairs in 2009.

Statement I is incorrect: As per SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 (LODR Regulations), **the Securities and Exchange Board of India (SEBI) (not RBI) requires the top 1,000 listed companies in India to submit a Business Responsibility and Sustainability Report (BRSR).** This report includes disclosures on how these companies perform in relation to the nine principles outlined in the National Guidelines on Responsible Business Conduct.

Statement II is correct: The BRSR is a non-financial reporting framework that requires companies to disclose their performance on environmental, social, and governance (ESG) parameters **based on nine principles of the National Guidelines on Responsible Business Conduct (NGRBC).**

Source:

<https://www.ey.com/content/dam/ey-unified-site/ey-com/en-in/insights/climate-change-sustainability-services/documents/ey-business-responsibility-and-sustainability-reporting.pdf>
<https://assets.kpmg.com/content/dam/kpmgsites/in/pdf/2025/01/firstnotes-sebi-introduces-certain-key-changes-in-brsr-reporting.pdf.coredownload.inline.pdf>

Q.35) Consider the following statements:

Statement I: In India, income from allied agricultural activities like poultry farming and wool rearing in rural areas is exempted from any tax.

Statement II: In India, rural agricultural land is not considered a capital asset under the provisions of the Income-tax Act, 1961.

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 not correct
d) Statement I is not correct but Statement II is correct

Ans) d

Exp) Option d is the correct answer.

Statement I is incorrect: Under Section 10(1) of the Income Tax Act, 1961, agricultural income is exempt from tax. This includes income from cultivating and selling agricultural produce, sale of agricultural land, and compensation received from the government for acquisition of agricultural land. However, **income from allied agricultural activities—such as dairy farming,**

poultry, or fisheries—is not treated as agricultural income under the Act and is subject to tax by the central government.

Statement II is correct: According to Section 2(1A) of the Income Tax Act, rural agricultural land is not classified as a capital asset. As a result, any rental income from such land or income earned from growing and selling produce on it is not taxable.

Hence option d is the correct answer: Statement I is not correct but Statement II is correct

Source:

<https://economictimes.indiatimes.com/wealth/tax/what-is-agriculture-income-different-types-of-agriculture-income/articleshow/104818288.cms?from=mdr>

https://cag.gov.in/uploads/download_audit_report/2019/Chapter_5_Assessments_relating_to_Agricultural_Income_of_Report_No_9_of_2019_Compliance_Audit_of_Union_Government_Department_of_Revenue_Direct_Taxes.pdf

https://incometaxindia.gov.in/_layouts/15/dit/Pages/viewer.aspx?grp=Act&cname=CMSID&cv=102120000000090722&searchFilter=%5b%7b%22CrawledPropertyKey%22%3a1%2c%22Value%22%3a%22Act%22%2c%22SearchOperand%22%3a2%7d%2c%7b%22CrawledPropertyKey%22%3a0%2c%22Value%22%3a%22Income-tax+Act%2c+1961%22%2c%22SearchOperand%22%3a2%7d%2c%7b%22CrawledPropertyKey%22%3a29%2c%22Value%22%3a%22025%22%2c%22SearchOperand%22%3a2%7d%5d&filterBy=S&optionalFilter=&k=&IsDlg=0

Q.36) Consider the following statements:

I. India has joined the Minerals Security Partnership as a member.

II. India is a resource-rich country in all the 30 critical minerals that it has identified.

III. The Parliament in 2023 has amended the Mines and Minerals (Development and Regulation) Act, 1957 empowering the Central Government to exclusively auction mining lease and composite license for certain critical minerals.

Which of the statements given above are correct?

- a) I and II only
- b) II and III only
- c) I and III only
- d) I, II and III

Ans) c

Exp) Option c is the correct answer.

Statement I is correct: The Minerals Security Partnership (MSP) is a U.S.-led initiative aimed at strengthening and diversifying global critical mineral supply chains. It seeks to promote strategic projects and attract investments across the value chain through collaboration with industry and partner governments. **In June 2023, India became the 14th member of the MSP.**

Statement II is incorrect: India is not resource-rich in many critical minerals essential for its economic and strategic needs. To address this, the Government released a list of 30 critical minerals in June 2023 and has enhanced exploration efforts through the Geological Survey of

India (GSI) and other agencies. In 2025, the National Critical Mineral Mission (NCMM) was launched to build a robust framework for self-reliance in this sector. Under the mission, GSI will undertake 1,200 exploration projects between 2024–25 and 2030–31.

Statement III is correct: In 2023, the Indian Parliament amended Mines and Minerals (Development and Regulation) Act, 1957 to give the Central Government exclusive powers to auction mining leases and composite licenses for 24 critical minerals listed in the new Part-D of the First Schedule to the said Act which includes the Lithium bearing minerals, Niobium bearing minerals and minerals of the "rare earths" group not containing Uranium and Thorium.

Source:

[https://www.state.gov/minerals-security-partnership#:~:text=Current%20MSP%20partners%20include%20Australia,represented%20by%20the%20European%20Commission\).](https://www.state.gov/minerals-security-partnership#:~:text=Current%20MSP%20partners%20include%20Australia,represented%20by%20the%20European%20Commission).)

<https://www.pib.gov.in/PressReleaseFramePage.aspx?PRID=1946416>

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1942027>

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2120525>

<https://www.pib.gov.in/PressReleaseFramePage.aspx?PRID=2003457>

Q.37) Consider the following statements:

Statement I: As regards returns from an investment in a company, generally, bondholders are considered to be relatively at lower risk than stockholders.

Statement II: Bondholders are lenders to a company whereas stockholders are its owners.

Statement III: For repayment purposes, bond- holders are prioritized over stockholders by a company.

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 I and Statement II are correct and Statement I explains Statement II
- 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

Ans) a

Exp) Option a is the correct answer.

Statement I is correct: Companies raise long-term funds either by issuing bonds or by selling stocks. When a company issues bonds, it is essentially borrowing money from investors, who are known as bondholders. On the other hand, when a company issues stocks, it is selling ownership shares to investors called stockholders (or shareholders). **Regarding returns from an investment in a company, generally, bondholders are considered to be relatively at lower risk than stockholders.**

Statement II is correct: A **stockholder** is considered as the **owner** of the company with equity rights, while a **bondholder** is a **creditor** who lends money and **holds no ownership in the company.**

Statement III is correct: Bondholders are given repayment priority over stockholders because bonds are issued for a fixed term with a predetermined interest rate and are repayable at maturity. In contrast, capital from shares is not typically returned during the company's lifetime, and returns to stockholders vary based on the company's profits.

Thus bondholders are considered as the relatively lower risk than stockholders because bondholders are with no ownership stake, they have a legal right to fixed repayments and are prioritized over stockholders who are the owners of the company and receive returns based on the profit of the company. Hence Option a is correct: Both Statement II and Statement III are correct and both of them explain Statement I

Note: Option b in the official UPSC Paper is incorrectly mentioned.

Source: <https://ncert.nic.in/textbook/pdf/leac202.pdf>

Q.38) Consider the following statements:

I. India accounts for a very large portion of all equity option contracts traded globally thus exhibiting a great boom.

II. India's stock market has grown rapidly in the recent past even overtaking Hong Kong's at some point of time.

III. There is no regulatory body either to warn the small investors about the risks of options trading or to act on unregistered financial advisors in this regard.

Which of the statements given above are correct?

- a) I and II only
- b) II and III only
- c) I and III only
- d) I, II and III

Ans) a

Exp) Option a is the correct answer.

Statement I is correct: As per **NSE data and BIS reports**, India has become a major hub for **equity derivatives**, especially options. In 2023, India accounted for a significant share of global equity option volumes — **more than 80% of global equity index option trades** happened on Indian exchanges like NSE.

Statement II is correct: In **January 2024**, India's stock market **briefly overtook Hong Kong's** to become the **fourth largest** in the world in terms of market capitalization.



Statement III is incorrect: The Securities and Exchange Board of India (SEBI) is the statutory regulatory authority responsible for overseeing the securities market in India. It plays a vital role in regulating stock market operations, **safeguarding investor interests**, taking action against unregistered financial advisors, and issuing guidelines related to derivatives trading. For instance SEBI has actively cracked down on unregistered financial advisors and regularly releases circulars to caution small investors about the risks involved in trading

Source:

<https://indianexpress.com/article/business/equity-options-boom-retail-frenzy-growing-concern-sachetisation-option-plans-draws-younger-investors-small-towns-9337914/>

<https://www.economist.com/finance-and-economics/2024/05/02/hedge-funds-make-billion-s-as-indias-options-market-goes-ballistic>

<https://economictimes.indiatimes.com/markets/stocks/news/india-overtakes-hong-kong-as-worlds-fourth-largest-stock-market/articleshow/107064803.cms?from=mdr>

https://www.business-standard.com/markets/news/sebi-asks-registered-entities-to-end-contracts-with-unregistered-advisors-124102201316_1.html

<https://www.newindianexpress.com/business/2024/Nov/08/sebi-may-take-more-steps-to-dissuade-retail-investors-from-fo-trades>

Q.39) Consider the following statements:

Statement I: Circular economy reduces the emissions of greenhouse gases.

Statement II: Circular economy reduces the use of raw materials as inputs.

Statement III : Circular economy reduces wastage in the production process.

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

- Both Statement II and Statement III are correct and both of them explain Statement I
- Both Statement II and Statement III are correct but only one of them explains Statement I
- Only one of the Statements II and III is correct and that explains Statement I

d) Neither Statement II nor Statement III is correct

Ans) a

Exp) Option a is the correct answer.

The **circular economy** is a model of production and consumption that emphasizes sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products for as long as possible. This approach helps create a closed-loop system that minimizes waste and reduces the need for new resource extraction.

Statement I is correct: According to the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (2023), human activities such as burning fossil fuels, deforestation, and intensive agriculture have contributed significantly to global warming, leading to an estimated 1.1°C increase in average temperature since the early 20th century. **A circular economy mitigates these impacts by reducing waste, lowering resource consumption, and decreasing greenhouse gas emissions through sustainable practices.**

Statement II is correct: With the global population increasing, so does the demand for raw materials. However, many essential natural resources are finite. **The circular economy reduces dependence on virgin materials by promoting the reuse and recycling of products**, conserving resources, and protecting ecosystems, thereby supporting biodiversity.

Statement III is correct: The circular economy also targets waste reduction during production by promoting efficient design and resource reuse. For example, agricultural waste like animal manure is repurposed into organic fertilizer and biogas, which supports sustainable farming and energy use.

As circular economy helps to mitigate greenhouse gas emissions through low raw material consumption and low waste production, **option a is the correct answer: Both Statement II and Statement III are correct and both of them explain Statement I**

Source:

<https://www.europarl.europa.eu/topics/en/article/20151201STO05603/circular-economy-definition-importance-and-benefits>

<https://www.europarl.europa.eu/topics/en/article/20180301STO98928/greenhouse-gas-emissions-by-country-and-sector-infographic>

Q.40) Consider the following statements:

I. Capital receipts create a liability or cause a reduction in the assets of the Government.

II. Borrowings and disinvestment are capital receipts.

III. Interest received on loans creates a liability of the Government.

Which of the statements given above are correct?

a) I and II only

b) II and III only

c) I and III only

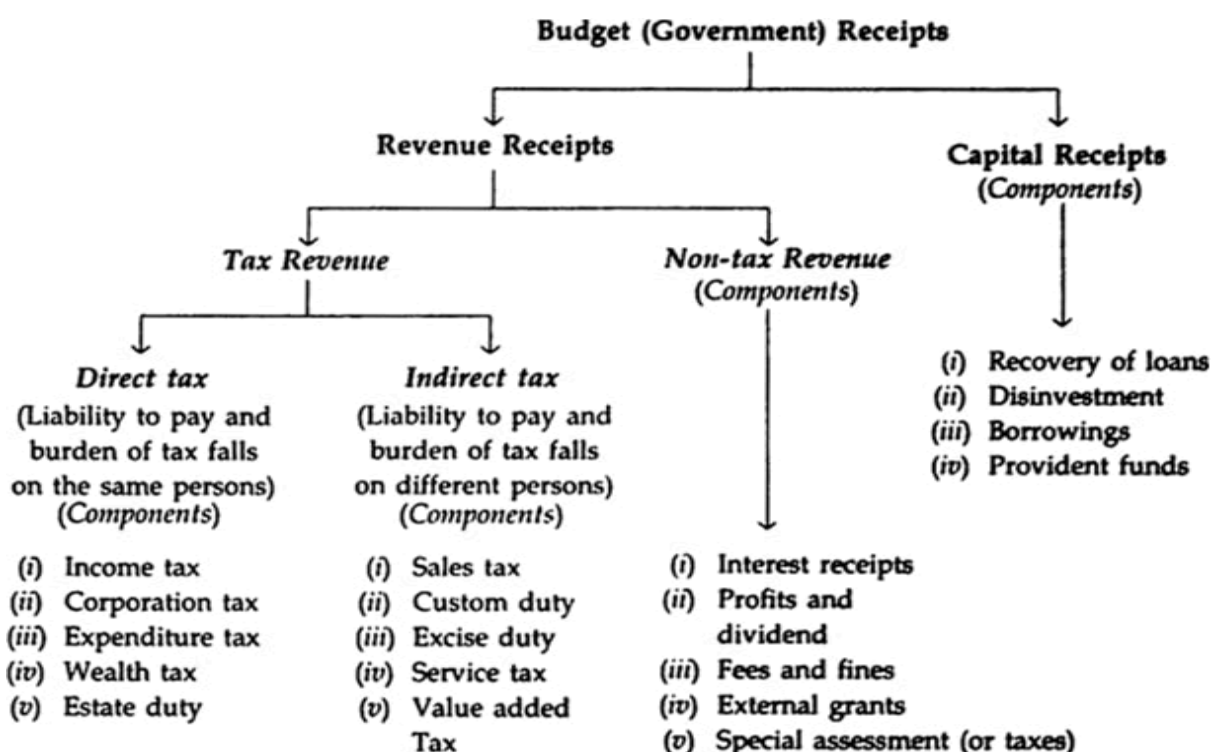
d) I, II and III

Ans) a

Exp) Option a is the correct answer.

Statement I is correct: Capital receipts are those receipts of the government which create liability or reduce financial assets.

Statement II is correct: Borrowings—such as loans from the RBI, foreign governments, or through the issuance of government securities—and disinvestment, which entails selling the government's stake in public sector enterprises, are categorized as capital receipts.



Statement III is incorrect: Interest received on loans given by the Central government to the states or other countries is classified as a revenue receipt since it represents income for the government and **does not result in any liability**.

Source: <https://ncert.nic.in/textbook/pdf/leec105.pdf>

<https://www.indiabudget.gov.in/budget2011-2012/ub2011-12/rec/cr.pdf>

Q.41) Consider the following countries:

- I. Austria
- II. Bulgaria
- III. Croatia
- IV. Serbia
- V. Sweden
- VI. North Macedonia

How many of the above are members of the North Atlantic Treaty Organization?

- a) Only three
- b) Only four

- c) Only five
- d) All the six

Ans) b

Exp) Option b is the correct answer.

The North Atlantic Treaty Organization (NATO) is a political and military alliance established in 1949 to ensure collective defense among member countries. Over time, NATO has expanded to include 32 member countries.

Option 1 is incorrect. Austria is not a NATO member.

Option 2 is correct. Bulgaria became a **NATO member** alongside six other Eastern European countries in 2004.

Option 3 is correct. Albania and Croatia became NATO's members on 1 April 2009, after depositing their instruments of accession.

Option 4 is incorrect. Serbia is not a NATO member.

Option 5 is correct. North Macedonia became NATO's 30th member in 2020 after resolving a long-standing name dispute with Greece, which had previously blocked its accession

Option 6 is correct. Sweden ended its longstanding policy of neutrality in response to regional security concerns, particularly following Russia's invasion of Ukraine, and joined NATO as its 32nd member in 2024.

Source: https://www.nato.int/cps/en/natohq/topics_52044.htm

Q.42) Consider the following countries:

- I. Bolivia
- II. Brazil
- III. Colombia
- IV. Ecuador
- V. Paraguay
- VI. Venezuela

Andes mountains pass through how many of the above countries?

- a) Only two
- b) Only three
- c) Only four
- d) Only five

Ans) c

Exp) Option c is the correct answer.

The Andes Mountains are one of the longest continental mountain ranges in the world, stretching about 7,000 km along the western coast of South America, from Venezuela in the north to Chile and Argentina in the south.



The Andean Mountains, or Andes, passes through

1. Venezuela. Option 6 is correct.
2. Ecuador. Option 4 is correct.
3. Peru
4. Bolivia. Option 1 is correct.
5. Colombia. Option 3 is correct.
6. Chile
7. Argentina.

Option 2 is incorrect. Brazil does not lie within the Andes Mountain range. Brazil is east of the Andes and geographically separated from it.

Option 5 is incorrect. The Andes do not pass through Paraguay. Paraguay lies east of the Andes, on the Paraguayan Plateau

Source: <https://www.worldatlas.com/continents/south-america.html>

Q.43) Consider the following water bodies:

- I. Lake Tanganyika
- II. Lake Tonle Sap
- III. Patos Lagoon

Through how many of them does the equator pass?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) d

Exp) Option d is the correct answer.



Option 1 is incorrect. Lake Tanganyika is located in central Africa. It is one of the deepest and oldest freshwater lakes in the world. Geographically, it lies entirely **south of the Equator**.



Option 2 is incorrect. Lake Tonle Sap is one of the largest freshwater lakes in **Cambodia**. It is located in the central plains of Cambodia and lies at a latitude of approximately **13° north of the Equator**.



Option 3 is incorrect. **Patos Lagoon**, known locally as **Lagoa dos Patos**, is a large coastal lagoon in the southern part of **Brazil**. It is one of the largest lagoons in South America. It lies around **30° south of the Equator**.

Source: Orient BlackSwan School Atlas

Q.44) Consider the following statements about turmeric during the year 2022-23:

I. India is the largest producer and exporter of turmeric in the world.

II. More than 30 varieties of turmeric are grown in India.

III. Maharashtra, Telangana, Karnataka and Tamil Nadu are major turmeric producing States in India.

Which of the statements given above are correct?

a) I and II only

b) II and III only

c) I and III only

d) I, II and III

Ans) d

Exp) Option d is the correct answer.

The Government of India in 2023 constituted the National Turmeric Board. This board is designed to coordinate efforts across various ministries and institutions to enhance production, promote exports, encourage value addition, and improve income for turmeric farmers.

Statement 1 is correct. According to official data for the year **2022-23**, India had a turmeric cultivation area of approximately 3.24 lakh hectares, producing 11.61 lakh tonnes of turmeric. India alone accounted for **over 75% of global turmeric production**, making it by far the **largest producer of turmeric in the world**. Furthermore, India is also the **top exporter of turmeric**, **accounting for over 62% of the global turmeric trade**.

Statement 2 is correct. India's diverse soil types and climatic conditions enable the cultivation of **more than 30 known varieties of turmeric across various states**. Each variety differs in aspects such as curcumin content, aroma, colour, and market use.

Statement 3 is correct. **Maharashtra, Telangana, Karnataka, and Tamil Nadu** are consistently among the **top turmeric producers** in India.

Source:<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1964083>

Q.45) Which of the following are the evidences of the phenomenon of continental drift?

I. The belt of ancient rocks from Brazil coast matches with those from Western Africa.

II. The gold deposits of Ghana are derived from the Brazil plateau when the two continents lay side by side.

III. The Gondwana system of sediments from India is known to have its counterparts in six different landmasses of the Southern Hemisphere.

Select the correct answer using the code given below.

a) I and III only

b) I and II only

c) I, II and III

d) II and III only

Ans) c

Exp) Option c is the correct answer.

Statement 1 is correct. Radiometric dating techniques have confirmed that the **rock formations along the eastern coast of South America (Brazil) and the western coast of Africa are similar in age, type, and structure.** This is one of the most compelling geological evidences supporting the theory of continental drift.

Statement 2 is correct. Ghana, located on the west coast of Africa, has rich **gold deposits** along its coast, yet there is no local source rock to account for this mineral wealth. The likely explanation is that these gold deposits **originated from the Brazil Plateau** which, before the continents drifted apart, lay adjacent to what is now Ghana. This is one of the pieces of evidence supporting the theory of continental drift.

Statement 3 is correct. The **Gondwana system of sedimentary rocks**, particularly tillite deposits (sediments formed from glacial activity), found in India, have strikingly similar counterparts in **Africa, Antarctica, Australia, Madagascar, Falkland Islands, and South America.** These similarities provide evidence that these landmasses were once part of a supercontinent called Gondwanaland.

Source: NCERT-class 11-Fundamentals of Physical geography-chapter-4 DISTRIBUTION OF OCEANS AND CONTINENTS-page-30,31

Q.46) Consider the following statements:

Statement I: The amount of dust particles in the atmosphere is more in subtropical and temperate areas than in equatorial and polar regions.

Statement II: Subtropical and temperate areas have less dry winds.

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 not correct
- d) Statement I is not correct but Statement II is correct

Ans) c

Exp) Option c is the correct answer.

The Earth's atmosphere is not just composed of gases but also holds various solid particles such as **dust, sea salt, pollen, etc.** These particles are known as aerosols, and they play an essential role in weather phenomena such as cloud formation, precipitation, and visibility.

Statement I is correct. **Dust particles** are more **concentrated in subtropical and temperate regions** due to the **presence of dry winds.** These regions often experience arid and semi-arid climates, where the lack of vegetation and strong winds promote the suspension of dust particles in the atmosphere. Deserts such as the Sahara, Thar, and Arabian Desert, all located in subtropical zones, are prime examples of major dust sources. In contrast, equatorial regions are humid and vegetated, which suppresses dust through rainfall and plant cover, while polar regions are cold and icy, limiting dust production.

Statement II is incorrect. **Dry winds are prevalent in subtropical and temperate regions,** and these winds are precisely the reason dust concentration is higher in these areas. In the subtropics, for example, descending air from the subtropical high-pressure belts results in dry and stable conditions, which are associated with low humidity and dusty environments.

Source: <https://ncert.nic.in/textbook/pdf/kegy207.pdf>

Q.47) Consider the following statements :

Statement I: In January, in the Northern Hemisphere, the isotherms bend equatorward while crossing the landmasses, and poleward while crossing the oceans.

Statement II: In January, the air over the oceans is warmer than that over the landmasses in the Northern Hemisphere.

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 not correct
- d) Statement I is not correct but Statement II is correct

Ans) a

Exp) Option a is the correct answer.

Statement I is correct. In January, the Northern Hemisphere's large landmasses cool down rapidly, leading to lower temperatures. Isotherms shift southward (towards the equator) over the continents. In contrast, oceans retain heat longer, so the isotherms bend northward (poleward) when passing over oceans like the North Atlantic, where warm currents like the Gulf Stream increase the surrounding air temperature.

Statement II is correct and explains statement I. Due to the high specific heat capacity of water, oceans cool down more slowly than land. Therefore, in winter (January), the marine areas remain warmer than the adjacent continental interiors. Because of this temperature contrast the isotherms bend equatorward while crossing the landmasses and poleward while crossing the oceans in the month of January in the northern hemisphere.

Source: chapter - NCERT-class 11- Fundamentals of Physical geography- chapter -9 SOLAR RADIATION, HEAT BALANCE AND TEMPERATURE- page 79

Q.48) Consider the following statements:

Statement I: In the context of effect of water on rocks, chalk is known as a very permeable rock whereas clay is known as quite an impermeable or least permeable rock.

Statement II: Chalk is porous and hence can absorb water.

Statement III : Clay is not at all porous.

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

Ans) c

Exp) Option c is the correct answer.

Statement 1 is correct. Chalk is a soft, sedimentary rock composed primarily of calcium carbonate and has a structure with large, well-connected pores. These pores allow water to pass through easily, making chalk a highly permeable rock. In contrast, clay is made up of very fine particles that are tightly packed together, with extremely small pores. As a result, water moves

through clay very slowly, making it **one of the least permeable** types of soil or rock. Therefore, in terms of water movement, chalk allows easy water flow, while clay resists it.

Statement 2 is correct. Chalk is not only permeable but also **highly porous**, meaning it has many tiny holes or voids within its structure. These pores can **hold water, allowing chalk to absorb and retain moisture**. This is one of the reasons why chalk feels damp in humid conditions and can crumble easily when wet. Its porous nature is directly responsible for its ability to **absorb water**, which also contributes to its use in agriculture and construction, where water interaction is important.

Statement 3 is incorrect. Clay is **highly porous, as it contains many tiny pores between its fine particles**. However, these pores are so small that water moves through them very slowly, making **clay poorly permeable**. This is why clay retains water and drains slowly, despite having high porosity.

Source:

https://www.deq.louisiana.gov/assets/docs/Water/DWPP_forkidsandeducators/PorosityandPermeability.pdf

<https://learning.southdowns.gov.uk/geology-landscapes/chalk/>

https://taylorandfrancis.com/knowledge/Engineering_and_technology/Materials_science/Chalk/

<https://ncert.nic.in/vocational/pdf/kegr105.pdf>

<https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3824.html>

<https://ncert.nic.in/textbook/pdf/kegy206.pdf>

Q.49) Consider the following statements:

I. Without the atmosphere, temperature would be well below freezing point everywhere on the Earth's surface.

II. Heat absorbed and trapped by the atmosphere maintains our planet's average temperature.

III. Atmosphere's gases, like carbon dioxide, are particularly good at absorbing and trapping radiation.

Which of the statements given above are correct?

- a) I and III only
- b) I and II only
- c) I, II and III
- d) II and III only

Ans) d

Exp) Option d is the correct answer.

Statement 1 is incorrect. Without an atmosphere, there's no air/clouds to scatter or absorb sunlight. So, places in direct sunlight would become extremely hot, especially near the equator. Surface temperatures can exceed 100°C, much like the Moon, which has no atmosphere. Without an atmosphere to trap heat (no greenhouse effect) or distribute it via wind, temperatures would plummet rapidly after sunset. Places in shadow or during nighttime would become extremely cold.

Statement 2 is correct. The atmosphere helps regulate the Earth's temperature by absorbing heat from the Sun during the day and slowing its escape at night. This heat-trapping ability is what keeps the planet's average surface temperature around 15°C (59°F), making it suitable for

life. Without this natural insulation, Earth would experience harsh temperature fluctuations between day and night, similar to what occurs on planets and moons with thin or no atmospheres.

Statement 3 is correct. Certain gases in the Earth's atmosphere, particularly greenhouse gases like **carbon dioxide (CO₂)**, methane, and water vapor, have the **unique ability to absorb and trap radiation**. This property makes them especially effective in trapping heat within the atmosphere, contributing significantly to the greenhouse effect.

Source: <https://ncert.nic.in/textbook/pdf/gess204.pdf>

<https://science.nasa.gov/earth/climate-change/steamy-relationships-how-atmospheric-water-vapor-amplifies-earths-greenhouse-effect/>

Q.50) Consider the following statements about the Rashtriya Gokul Mission:

I. It is important for the upliftment of rural poor as majority of low producing indigenous animals are with small and marginal farmers and landless labourers.

II. It was initiated to promote indigenous cattle and buffalo rearing and conservation in a scientific and holistic manner.

Which of the statements given above is/are correct?

- a) I only
- b) II only
- c) Both I and II
- d) Neither I nor II

Ans) c

Exp) Option c is the correct answer.

The Rashtriya Gokul Mission was initiated by the Government of India under the Department of Animal Husbandry and Dairying, Ministry of Fisheries, Animal Husbandry & Dairying.

Statement 1 is correct. The Rashtriya Gokul Mission (RGM) is crucial for upliftment of rural poor as more than 80% low producing indigenous animals are with small and marginal farmers and landless labourers. The scheme is important in enhancing milk production and productivity of bovines to meet growing demand of milk and making dairying more remunerative to the rural farmers of the country.

Statement 2 is correct. The Rashtriya Gokul Mission was launched to promote the rearing and conservation of indigenous cattle and buffalo breeds in a scientific and holistic manner. The mission aims to enhance the productivity of native breeds, preserve their genetic diversity, and improve rural livelihoods. It focuses on the development of high-genetic merit animals through modern breeding technologies, establishment of Gokul Grams (cattle care centers), and support for traditional animal husbandry practices.

Source: <https://agri.gujarat.gov.in/Home/gldb/RashtriyaGokulMission>
https://dahd.gov.in/schemes/programmes/rashtriya_gokul_mission

Q.51) Consider the following statements :

I. Panchayats at the intermediate level exist in all States.

II. To be eligible to be a Member of a Panchayat at the intermediate level, a person should attain the age of thirty years.

III. The Chief Minister of a State constitutes a commission to review the financial position of Panchayats at the intermediate levels and to make recommendations regarding the distribution of net proceeds of taxes and duties, leviable by the State, between the State and Panchayats at the intermediate level.

Which of the statements given above are not correct?

- a) I and II only
- b) II and III only
- c) I and III only
- d) I, II and III

Ans) d

Exp) Option d is the correct answer.

The 73rd Constitutional Amendment Act of 1992 establishes the panchayati raj system in India. This act has added a new Part-IX to the Constitution of India. This part is entitled as 'The Panchayats' and consists of provisions from Articles 243 to 243 O.

Statement 1 is incorrect. At present, States of **Arunachal Pradesh, Goa, Sikkim and Union Territories of Lakshadweep, Dadra & Nagar Haveli and Daman & Diu have two-tier Panchayati Raj System** while the remaining States & Union Territories have three-tier Panchayati Raj System.

The 73rd Constitutional Amendment Act, **under Article 243B**, provides for a three-tier system of panchayati raj in every state. It says that "there shall be constituted in every State, **Panchayats at the village, intermediate and district levels** in accordance with the provisions of this Part." However, the same article also says that the "**Panchayats at the intermediate level may not be constituted in a State having a population not exceeding twenty lakhs.**" So, the states which have a population below 20 Lakh are given an option to not to have the intermediate level.

Statement 2 is incorrect. Article 243F makes provisions for disqualifications from the membership of Panchayat. Under Article 243F, **the minimum age prescribed to become a member of the Panchayat is 21 years.**

Statement 3 is incorrect. 243I provides for the Constitution of a Finance Commission to review the financial position of the panchayats. Such a Finance Commission is **constituted by the Governor**. Thus, the Governor of a State appoints a Finance Commission every five years, which shall review the financial position of the Panchayats and makes recommendation on the following:

- The Distribution of the taxes, duties, tolls, fees etc. levied by the state which is to be divided between the State and the Panchayats
- Determination of the taxes, duties, tolls and fees which may be assigned to the Panchayats
- The grants-in-aid to the Panchayats from the Consolidated Fund of the State
- The measures needed to improve the financial position of the Panchayats

Source:

<https://secforuts.mha.gov.in/73rd-amendment-of-panchayati-raj-in-india/#:~:text=The%2073rd%20Amendment%201992%20added,the%20functions%20of%20the%20Panchayats.>

https://sansad.in/getFile/annex/266/AU248_KDoJdr.pdf?source=pqars

Indian Polity by M.Laxmikant Chapter 38

Q.52) Consider the following statements in respect of BIMSTEC

- I. It is a regional organization consisting of seven member States till January 2025.
- II. It came into existence with the signing of the Dhaka Declaration, 1999.
- III. Bangladesh, India, Sri Lanka, Thailand and Nepal are founding member States of BIMSTEC.
- IV. In BIMSTEC, the subsector of 'tourism' is being led by India.

Which of the statements given above is/are correct?

- a) I and II
- b) II and III
- c) I and IV
- d) I only

Ans) d

Exp) Option d is the correct answer.

The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a multilateral regional organisation established with the aim of accelerating shared growth and cooperation between littoral and adjacent countries in the Bay of Bengal region.

Statement 1 is correct. Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a regional forum of **seven member countries**.

BIMSTEC forum brings together **five countries in South Asia (Bhutan, Bangladesh, India, Nepal and Sri Lanka) and two in South East Asia (Myanmar and Thailand)**.

BIMSTEC includes countries of the Bay of Bengal region and seeks to act as a bridge between South and Southeast Asia.

Statement 2 is incorrect. BIMSTEC was originally formed as BIST-EC in June 1997. It was founded as BIST-EC, in June 1997, **with the adoption of the Bangkok Declaration**.

Statement 3 is incorrect. Bangladesh, India, Sri Lanka and Thailand are founding members of this organisation. It was originally formed as BIST-EC (Bangladesh, India, Sri Lanka and Thailand Economic Cooperation) in 1997. It became BIMST-EC after Myanmar joined it in 1997 itself. It became BIMSTEC in 2004 with the joining of Nepal and Bhutan. **Nepal joined in 2004.**

Statement 4 is incorrect. BIMSTEC is different from other regional groupings such as SAARC or ASEAN in a sense that **it is a sector-driven organisation**. This means the goals or areas of cooperation are divided between members. At the 5th Summit, the Leaders endorsed reorganization of priority areas/pillars of cooperation into seven priority areas / pillars, with each priority areas led by one Member country. **India is the Lead Country for Security pillar under which there are three sub-sectors - Counter-Terrorism and Transnational Crime (CTTC), Disaster Management and Energy Security.**

The remaining priority areas / pillars and their Lead Countries are – Trade, Investment and Development (Bangladesh); Environment and Climate Change (Bhutan); **People-to-People Contacts- Sub-sectors: Culture; Tourism; People-to-People Contact (Nepal);** Agriculture and Food Security (Myanmar); Science, Technology and Innovation (Sri Lanka) and Connectivity (Thailand).

Source: <https://indianexpress.com/article/explained/this-word-means-bimstec-9923012/>

<https://www.mea.gov.in/Portal/ForeignRelation/India-BIMSTE-2025.pdf>

<https://bimstec.org/history>

<https://www.thehindu.com/news/international/explained-what-is-the-bimstec-grouping-and-how-is-it-significant/article65275690.ece>

<https://indianexpress.com/article/upsc-current-affairs/upsc-essentials/knowledge-nugget-bimstec-saarc-upsc-vietnam-6th-prelims-9922446/>

Q.53) Who amongst the following are members of the Jury to select the recipient of 'Gandhi Peace Prize'?

- I. The President of India
- II. The Prime Minister of India
- III. The Chief Justice of India
- IV. The Leader of Opposition in the Lok Sabha

Select the correct answer using the code given below.

- a) II and IV only
- b) I, II and III
- c) II, III and IV
- d) I and III only

Ans) c

Exp) Option c is the correct answer.

The Gandhi Peace Prize was instituted in 1995 by the Government to mark the 125th birth anniversary of Mahatma Gandhi. The Gandhi Peace Prize is awarded for social, economic and political transformation through non-violence, to any deserving person/s or institution/s. The award comprises a citation and an amount of Rs 1 crore. It is open to all persons regardless of nationality, race, language, caste, creed or gender and any association, institution or organisation.

Options 2, 3 and 4 are correct. The awardee is selected by a five-member jury composed of the Prime Minister of India, Chief Justice of India, Leader of Opposition in Lok Sabha and two eminent personalities. The Prime Minister heads the jury for the prize. The decision of the jury is final and cannot be challenged or appealed.

Nominees must be proposed either by former jury members, former awardees, members of Parliament, Nobel laureates for the last five years, Secretary-General of the United Nations or heads of other international peace organisations, Vice-Chancellors of universities, Chief Ministers, or Governors. Work achieved within the ten years preceding the nomination is considered for the award.

Option 1 is incorrect. The President of India is not a member of the jury.

Knowledge Base:

- Gita Press, Gorakhpur, awarded Gandhi Peace Prize for 2021.
- Previous recipients include eminent personalities such as Nelson Mandela (2000), Coretta Scott King (2004), Qaboos bin Said Al Said (2019) and Sheikh Mujibur Rahman (2020). Several institutions such as Indian Space Research Organisation (2014), Akshaya Patra Foundation (2016) and Ekal Abhiyan Trust (2017) too have been awardees.

Source:

<https://www.thehindu.com/news/national/gita-press-gandhi-peace-prize-explained-what-is-the-row-over-awarding-the-hindu-press-house/article66993513.ece>

<https://indianexpress.com/article/india/kerala-oil-spill-southern-coast-container-ship-cap-sizes-10027671/>

<https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=1566242>

Q.54) GPS-Aided Geo Augmented Navigation (GAGAN) uses a system of ground stations to provide necessary augmentation. Which of the following statements is/are correct in respect of GAGAN?

- I. It is designed to provide additional accuracy and integrity.

II. It will allow more uniform and high quality air traffic management.

III. It will provide benefits only in aviation but not in other modes of transportation.

Select the correct answer using the code given below.

- a) I, II and III
- b) II and III only
- c) I only
- d) I and II only

Ans) d

Exp) Option d is the correct answer.

GAGAN is the acronym for GPS Aided GEO Augmented Navigation. The GAGAN uses a system of ground stations to provide necessary augmentations to the GPS standard positioning service (SPS) navigation signal. GAGAN is jointly developed by the Indian Space Research Organisation (ISRO) and the Airports Authority of India (AAI).

Statement 1 is correct. GAGAN is India's satellite-based augmentation system (SBAS). The SBAS is a navigation system, which builds on the Global Navigation Satellite Systems (GLONASS), and **adds to the accuracy and integrity of these navigation tools.** For aircraft operators, both civilian and military, it means that pilots can land aircraft at smaller airports and airstrips using navigation guidance without expensive instrument-based landing systems being installed on the ground.

Statement 2 is correct. The GAGAN is designed to provide the **additional accuracy, availability, and integrity necessary to enable users to rely on GPS** for all phases of flight, from en route through approach for all qualified airports within the GAGAN service volume. GAGAN also **provides the capability for increased accuracy in position reporting, allowing for more uniform and high-quality Air Traffic Management (ATM).**

Statement 3 is incorrect. GAGAN **provides benefits beyond aviation to all modes of transportation, including maritime, highways, and railroads.**

Source: <https://www.aai.aero/en/content/what-gagan>

<https://www.thehindu.com/sci-tech/science/global-positioning-system-relativity-gnss-navi-c-explained/article67606417.ece>

<https://indianexpress.com/article/business/aviation/in-a-first-indigo-uses-indian-navigation-system-to-land-aircraft-7892360/>

Q.55) Consider the following statements regarding AI Action Summit held in Grand Palais, Paris in February 2025:

I. Co-chaired with India, the event builds on the advances made at the Bletchley Park Summit held in 2023 and the Seoul Summit held in 2024.

II. Along with other countries, US and UK also signed the declaration on inclusive and sustainable AI.

Which of the statements given above is/are correct?

- a) I only
- b) II only
- c) Both I and II
- d) Neither I nor II

Ans) a

Exp) Option a is the correct answer.

The Paris Artificial Intelligence Action Summit was an initiative of French President Emmanuel Macron. It focused on the broader agenda of global AI governance, innovation, and on ways of serving the larger public interest. This third AI Summit explored how to leverage the power of Artificial Intelligence (AI) while mitigating its risks.

Statement 1 is correct. The Prime Minister of India Shri Narendra Modi co-chaired the AI Action Summit along with the President of France, H.E. Mr. Emmanuel Macron.

The two-day summit **builds on the AI Safety Summit held in Britain in Bletchley Park in 2023 and a smaller meeting in Seoul in 2024.** The Bletchley summit was focused on the debate surrounding the 'doomsday' concerns posed by AI, and eventually resulted in all 25 states, including the US and China, signing the Bletchley Declaration on AI Safety. The Seoul summit saw 16 top AI companies making voluntary commitments to develop AI transparently.

Statement 2 is incorrect. Fifty eight countries, including India, China, Brazil, France and Australia, signed a **joint statement on Inclusive and Sustainable Artificial Intelligence for People and the Planet** at the AI Action Summit in Paris. The statement was **not signed by the United States and the United Kingdom.**

Source: <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2101947>

<https://www.thehindu.com/opinion/op-ed/indias-opportunity-at-the-ai-action-summit/article69199145.ece>

<https://indianexpress.com/article/explained/explained-economics/paris-ai-summit-modi-co-chair-agenda-9802156/>

<https://www.downtoearth.org.in/science-technology/ai-action-summit-india-china-over-50-other-countries-sign-declaration-on-inclusive-sustainable-ai>

Q.56) Consider the following pairs:

I. International Year of the Woman Farmer	2026
II. International Year of Sustainable and Resilient Tourism	2027
III. International Year of Peace and Trust	2025
IV. International Year of Asteroid Awareness and Planetary Defence	2029

How many of the pairs given above are correctly matched?

- a) Only one
- b) Only two
- c) Only three
- d) All the four

Ans) d

Exp) Option d is the correct answer.

Pair 1 is correct. The UN General Assembly has declared **2026 as the International Year of the Woman Farmer.** This initiative aims to highlight the crucial role of women farmers in food security, nutrition, and poverty eradication, and to address the challenges they face.

Pair 2 is correct. The United Nations has proclaimed **2027 as the International Year of Sustainable and Resilient Tourism.** The United Nations General Assembly adopted a resolution on 26 February 2024 to declare 2027 as the International Year of Sustainable and Resilient Tourism. It aims to emphasize the active promotion of sustainable and resilient tourism as a vital tool for poverty eradication, supporting the involvement of women, youth, older persons, and persons with disabilities, expanding economic opportunities, and creating decent jobs and income sources.

Pair 3 is correct. The UN General Assembly has adopted a resolution to declare **2025 as the International Year of Peace and Trust**. It calls on the international community to resolve conflicts through inclusive dialogue and negotiation in order to ensure the strengthening of peace and trust in relations between UN member states as a value that promotes sustainable development, peace and security, and human rights.

2025 has been proclaimed an international year devoted to four different themes: International Year of Glaciers, Peace, Quantum science and Cooperatives.

Pair 4 is correct. In 2024, the UN General Assembly declared **2029 the International Year of Asteroid Awareness and Planetary Defence** to take advantage of the close approach of 99942 Apophis and raise global awareness about asteroids.

On 13 April 2029, the asteroid 99942 Apophis will pass safely at a distance of about 32,000 kilometers above Earth's surface, within the geostationary orbit, posing no threat to the planet. This extremely close approach will make the asteroid visible to billions of people with the naked eye in the clear night sky.

Source:

<https://www.fao.org/family-farming/detail/en/c/1682465/#:~:text=The%20UN%20General%20Assembly%20has.and%20supported%20by%20the%20FAO.>

<https://www.fao.org/mountain-partnership/news/newsroom/news-detail/UN-General-Assembly-declares-2027-the-International-Year-of-Sustainable-and-Resilient-Tourism/en>

<https://www.fao.org/mountain-partnership/news/newsroom/news-detail/UN-General-Assembly-declares-2027-the-International-Year-of-Sustainable-and-Resilient-Tourism/en>

<https://unric.org/en/2025-year-of-glaciers-peace-quantum-science-cooperatives/>

<https://www.un.org/en/observances/asteroid-day>

Q.57) Consider the following statements with regard to BRICS;

I. 16th BRICS Summit was held under the Chairmanship of Russia in Kazan.

II. Indonesia has become a full member of BRICS.

III. The theme of the 16th BRICS Summit was Strengthening Multiculturalism for Just Global Development and Security.

Which of the statements given above is/are correct?

- a) I and II
- b) II and III
- c) I and III
- d) I only

Ans) a

Exp) Option a is the correct answer

The BRICS is a forum for cooperation among a group of leading emerging economies. BRICS stands for Brazil, Russia, India, China, and South Africa, the original five members. The BRICS now includes 10 countries - Brazil, China, Egypt, Ethiopia, India, Indonesia, Iran, Russian Federation, South Africa, United Arab Emirates.

Statement 1 is correct. The 16th BRICS Summit was held under Russia's Chairship, in Kazan. At the conclusion of the Summit, the leaders adopted the 'Kazan Declaration'.

The 17th BRICS Summit will be hosted by Brazil.

Statement 2 is correct. Recently, Indonesia has officially joined the BRICS group as the 10th member, effective from January 2025. Indonesia has been admitted as a full member of the BRICS bloc of developing economies.

Statement 3 is incorrect. The theme of the 16th BRICS Summit was "Strengthening Multilateralism for Just Global Development and Security." While the statement says **Strengthening Multiculturalism**.

Source:

<https://indianexpress.com/article/india/pm-modi-kazan-brics-summit-russia-9632436/>

[https://www.mea.gov.in/press-releases.htm?dtl/38455/Prime Minister participates in the 16th BRICS Summit](https://www.mea.gov.in/press-releases.htm?dtl/38455/Prime_Minister_participates_in_the_16th_BRICS_Summit)

<https://indianexpress.com/article/explained/everyday-explainers/pmwhat-is-brics-its-significance-for-india-9632929/>

<https://www.thehindu.com/news/international/indonesia-is-admitted-to-the-brics-bloc-of-developing-nations-brazil-announces/article69069943.ece>

<https://www.thehindu.com/news/national/brics-2024-kazan-russia-pm-narendra-modi-updates-october-22/article68781547.ece>

Q.58) Consider the following statements about Lokpal:

- I. The power of Lokpal applies to public servants of India, but not to the Indian public servants posted outside India.
 - II. The Chairperson or a Member shall not be a Member of the Parliament or a Member of the Legislature of any State or Union Territory, and only the Chief Justice of India, whether incumbent or retired, has to be its Chairperson.
 - III. The Chairperson or a Member shall not be a person of less than forty-five years of age on the date of assuming office as the Chairperson or Member, as the case may be.
 - IV. Lokpal cannot inquire into the allegations of corruption against a sitting Prime Minister of India.
- Which of the statements given above is/are correct?

- a) III only
- b) II and III
- c) I and IV
- d) None of the above statements is correct

Ans) a

Exp) Option a is the correct answer.

The Lokpal and Lokayuktas Act, 2013 provides for the establishment of a body of Lokpal for the Union. It is envisaged to inquire into allegations of corruption against certain public functionaries.

Statement 1 is incorrect. The Lokpal and Lokayuktas Act, 2013 **shall apply to public servants in and outside India**. Thus, the Lokpal has jurisdiction over all public servants, whether posted in India or abroad.

Statement 2 is incorrect. Section 3 of the Lokpal Act says that the Chairperson or a Member of Lokpal shall not be a member of Parliament or a member of the Legislature of any State or Union territory. It also provides that the Lokpal shall consist of **a Chairperson, who is or has been a Chief Justice of India or is or has been a Judge of the Supreme Court or an eminent person**.

Statement 3 is correct. Section 3 of the Lokpal Act says that **the Chairperson or a Member shall not be a person of less than forty-five years of age**, on the date of assuming office as the Chairperson or Member, as the case may be.

Statement 4 is incorrect. According to Section 14 of the Act, **the jurisdiction of the Lokpal extends to any person who is or has been a Prime Minister**. However, there are exceptions here. There are certain cases in which Lokpal shall not inquire into any matter involving the Prime Minister. For example: relating to international relations, external and internal security,

public order, atomic energy and space. Also, an inquiry can be initiated against the Prime Minister only if a full bench of the Lokpal consisting of its Chairperson and all Members considers the initiation of inquiry and at least two-thirds of its Members approves of such inquiry.

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2093664>

<https://lokpal.gov.in/pdfs/FreqAQs.pdf>

https://dopt.gov.in/sites/default/files/407_06_2013-AVD-IV-09012014_0.pdf

Indian Polity by M.Laxmikant Chapter 61

Q.59) Consider the following statements in respect of the first Kho Kho World Cup:

I. The event was held in Delhi, India.

II. Indian men beat Nepal with a score of 78-40 in the final to become the World Champion in men category.

III. Indian women beat Nepal with a score of 54-36 in the final to become the World Champion in women category.

Which of the statements given above is/are correct?

- a) I only
- b) II and III only
- c) I and III only
- d) I, II and III

Ans) a

Exp) Option a is the correct answer.

Statement 1 is correct. The inaugural Kho Kho World Cup was held in New Delhi in January 2025. India secured the titles in both men's and women's competitions.

Statement 2 is incorrect. The men's team also secured a 54-36 win over Nepal in the title clash.

Statement 3 is incorrect. India's women's team clinched the inaugural Kho Kho World Cup with a commanding 78-40 win over Nepal.

Source:

<https://www.thehindu.com/sport/other-sports/kho-kho-world-cup-after-women-indian-mens-team-also-crowned-champion/article69117372.ece>

Q.60) Consider the following statements :

I. In the finals of the 45th Chess Olympiad held in 2024, Gukesh Dommaraju became the world's youngest winner after defeating the Russian player Ian Nepomniachtchi

II. Abhimanyu Mishra, an American chess player, holds the record of becoming world's youngest ever Grandmaster.

Which of the statements given above is/are correct?

- a) I only
- b) II only
- c) Both I and II
- d) Neither I nor II

Ans) b

Exp) Option b is the correct answer.

Chess Olympiad is a biennial event in which teams representing nations of the world compete. International Chess Federation (FIDE) organises the tournament and selects the host nation. The 45th FIDE Chess Olympiad was held in Budapest, Hungary.

Statement 1 is incorrect. D Gukesh won his second individual gold medal in a row at the 45th Chess Olympiad.

Indian Grandmaster D Gukesh, at 18, became the youngest world chess champion by defeating Ding Liren in the 2024 FIDE World Chess Championship held in Singapore.

Statement 2 is correct. Abhimanyu Mishra, a U.S. player of Indian origin, is the youngest GrandMaster in history, at 12 years, four months and 25 days. He obliterated the long-standing record held by Sergey Karjakin, who was 12 years and seven months old when he attained the title.

Knowledge Base:

- India clinched their first-ever gold medal at the 45th Chess Olympiad.
- India's men and women won the gold at the Chess Olympiad in Budapest.
- The Indian men's team defeated Slovenia with a score of 3.5-0.5 in the 11th and final round of the 45th Chess Olympiad.
- Simultaneously, the Indian women's team dominated Azerbaijan, securing victory with a 3.5-0.5 margin.

Source:

<https://indianexpress.com/article/sports/chess/chess-olympiad-double-delight-for-india-as-t hey-clinch-gold-medals-in-open-and-womens-events-gukesh-arjun-and-divya-star-once-mor e-9582621/>

<https://indianexpress.com/article/sports/chess/indian-origin-american-abhimanyu-mishra-y oungest-ever-chess-grandmaster-7383520/>

Q.61) Consider the following statements:

Statement I: Some rare earth elements are used in the manufacture of flat television. screens and computer monitors.

Statement II: Some rare earth elements have phosphorescent properties.

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

- Both Statement I and Statement II are correct and Statement II explains Statement I
- Both Statement I and Statement II are correct but Statement II does not explain Statement I
- Statement I is correct but Statement II is not correct
- Statement I is not correct but Statement II is correct

Ans) a

Exp) Option a is the correct answer.

Rare earth elements (REEs) are a group of 17 chemically similar elements, including the 15 lanthanides along with scandium and yttrium. These elements possess unique magnetic, luminescent, and electrochemical properties, making them essential in various high-tech applications, including electronics, renewable energy, and defense.

Statement I is correct. Rare earth elements such as europium, terbium, and yttrium are integral in the production of phosphors used in display technologies. These phosphors emit

specific colours when excited by electrons, enabling the vivid displays in flat-screen televisions and computer monitors. For instance, europium is used for red phosphors, terbium for green, and yttrium serves as a host lattice for these phosphors.

Statement II is correct. Certain rare earth elements exhibit phosphorescence, a type of photoluminescence where materials emit light after being energized. Elements like europium and terbium are known for their phosphorescent properties, which are harnessed in various applications, including lighting and display technologies.

Statement II explains Statement I. The phosphorescent properties of rare earth elements are the reason they are used in manufacturing display screens. The ability of these elements to emit light upon excitation is fundamental to the functioning of phosphors in screens, thereby directly linking their phosphorescent nature to their application in display technologies.

Source:

<https://indianexpress.com/article/upsc-current-affairs/upsc-essentials/knowledge-nugget-rare-earth-elements-national-critical-minerals-mission-upsc-prelims-2025-9866124/> ;

<https://www.energy.gov/sites/prod/files/2020/02/f71/Rare%20Earth%20Elements%20Infographic.pdf>

Q.62) Consider the following statements:

I. Indian Railways have prepared a National Rail Plan (NRP) to create a future ready railway system by 2028.

II. 'Kavach' is an Automatic Train Protection system, development in collaboration with Germany.

III. 'Kavach' system consists of RFID tags fitted on track in station section.

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

- a) I and II only
- b) II and III only
- c) I and III only
- d) I, II and III

Ans) a

Exp) option a is the correct answer.

The **Indian Railways** has undertaken two major initiatives: the **National Rail Plan (NRP)** and the **'Kavach' Automatic Train Protection (ATP) system**. Both are designed to modernize and secure the railway infrastructure and operations.

Statement I is incorrect. The National Rail Plan (NRP) has been developed with the aim of creating a 'future ready' railway system by the year 2030, not 2028. The plan intends to meet future demand (both passenger and freight) up to **2050**, and to increase the **modal share of railways in freight transport to 45%**. It includes investment planning, capacity building, and infrastructure upgrades.

Statement II is incorrect. 'Kavach' is an **indigenous** ATP system developed by the **Research Designs and Standards Organisation (RDSO)** under Indian Railways. There is **no German collaboration** involved in its creation.

Statement III is correct. The **Kavach system** uses **Radio Frequency Identification (RFID)** tags placed on the railway tracks, especially in station sections. These tags work in coordination with onboard and trackside equipment to detect train location, and **automatically apply brakes** in case of collision threats, signal violations, or overspeeding.

Source:

[https://indianexpress.com/article/upsc-current-affairs/upsc-essentials/knowledge-nugget-of-the-day-kavach-9674559/#:~:text=Kavach%20is%20India's%20very%20own,2.](https://indianexpress.com/article/upsc-current-affairs/upsc-essentials/knowledge-nugget-of-the-day-kavach-9674559/#:~:text=Kavach%20is%20India's%20very%20own,2.;) ;

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1806617>

<https://www.pib.gov.in/PressReleaseDetailm.aspx?PRID=2082712>

Q.63) Consider the following space missions:

- I. Axiom-4
- II. SpaDeX
- III. Gaganyaan

How many of the space missions given above encourage and support microgravity research?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) c

Exp) Option c is the correct answer.

Microgravity research involves studying the behavior of physical, chemical, and biological systems in environments where gravity is significantly weaker than on Earth. Such research is crucial for advancing our understanding in various fields, including human physiology, material science, and space agriculture.

Option I is correct. The **Axiom-4 (Ax-4)** mission is a collaborative effort involving **Axiom Space, NASA, ESA, and ISRO**. Scheduled for launch in June 2025, this mission will send a crew to the **International Space Station (ISS)**. Notably, **Group Captain Shubhanshu Shukla**, an Indian Air Force test pilot, will be part of this mission. During the mission, the crew will conduct over 25 experiments focusing on various aspects of microgravity, including:

- **Human health:** Studying the effects of microgravity on the human body, such as muscle atrophy and cognitive functions.
- **Space agriculture:** Investigating the growth of crops like green gram (moong) and fenugreek (methi) in microgravity conditions.
- **Biotechnology:** Examining microbial adaptation and other biological processes in space.

These experiments aim to enhance our understanding of living systems in space and support future long-duration missions.

Option II is correct. The **Space Docking Experiment (SpaDeX)** is an initiative by **ISRO** to demonstrate autonomous docking capabilities between two satellites in orbit. While the primary objective is to validate docking technologies, the mission also supports microgravity research through the **PSLV Orbital Experimental Module (POEM-4)**. This module utilizes the spent fourth stage of the PSLV rocket as an orbital platform for conducting experiments in microgravity, including:

- **Plant growth studies:** Observing the germination and growth of seeds in microgravity to understand plant behavior in space.
- **Radiation environment measurements:** Monitoring space radiation levels to assess their impact on biological systems.

These experiments provide valuable insights into conducting scientific research in microgravity environments.

Option III is correct. **Gaganyaan** is India's ambitious human spaceflight program, aiming to send a crew of three astronauts into a 400 km orbit for a three-day mission. As part of this mission, **ISRO** plans to conduct several microgravity experiments, including:

- **Biological experiments:** Studying the effects of microgravity on living organisms, such as fruit flies, to understand physiological changes.
- **Physical science experiments:** Investigating material behavior and fluid dynamics in microgravity conditions.

These experiments are designed to advance our knowledge of how microgravity affects various systems, which is essential for planning future long-duration space missions.

Sources: <https://www.axiomspace.com/missions/ax4> ;
<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2088569> ;
https://www.isro.gov.in/ISRO-ESA_collaboration_in_microgravity_research_in_upcoming_Axiom-4_Mission.html#:~:text=Indian%20Human%20Space%20Program%2C%20Gaganyaan,well%20as%20joint%20international%20efforts. ;

Q.64) With reference to India's defense, consider the following pairs:

Aircraft type	Description
1. Dornier-228	Maritime patrol aircraft
2. IL-76	Supersonic combat aircraft
3. C-17 Globe Master III	Military transport aircraft

How many of the pairs given above are correctly matched?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) b

Exp) option b is the correct answer.

India's defence forces operate a diverse fleet of aircraft, each serving specific roles such as surveillance, combat, and transportation

Pair 1 is correct. The **Dornier 228** is a twin-engine turboprop aircraft utilized by the Indian Navy and Coast Guard for **maritime patrol, surveillance, search and rescue**, and **pollution control** missions. Manufactured under license by Hindustan Aeronautics Limited (HAL), it is equipped with advanced sensors and communication systems tailored for maritime operations.

Pair 2 is incorrect. The **Ilyushin Il-76** is a **strategic airlifter**, not a supersonic combat aircraft. Designed by the Soviet Union's Ilyushin design bureau, it serves roles such as **transporting heavy machinery, aerial refueling**, and **emergency response**. It is a four-engine turboprop aircraft capable of operating in rugged environments but lacks the speed and agility characteristic of supersonic combat aircraft.

Pair 3 is correct. The **C-17 Globemaster III** is a large military transport aircraft developed by McDonnell Douglas (now Boeing) for the United States Air Force and also operated by the Indian Air Force. It is designed for **rapid strategic airlift** of troops and cargo to main operating bases or

forward bases in the deployment area. The aircraft is capable of performing **tactical airlift**, **medical evacuation**, and **airdrops**, making it a versatile asset in military logistics.

Source:

[https://indiancoastguard.gov.in/air-craft#:~:text=Dornier%20228%20is%20a%20twin,speeds%20and%20fuel%20efficient%20uniqueness.](https://indiancoastguard.gov.in/air-craft#:~:text=Dornier%20228%20is%20a%20twin,speeds%20and%20fuel%20efficient%20uniqueness.;) ;

<https://www.aircharterservice.co.in/aircraft-guide/cargo/ilyushin-russia/ilyushinil-76tandil76-td> ; <https://www.boeing.com/defense/c-17-globemaster-iii>

Q.65) Artificial way of causing rainfall to reduce air pollution makes use of

- a) silver iodide and potassium iodide
- b) silver nitrate and potassium iodide
- c) silver iodide and potassium nitrate
- d) silver nitrate and potassium chloride

Ans) a

Exp) Option a is the correct answer.

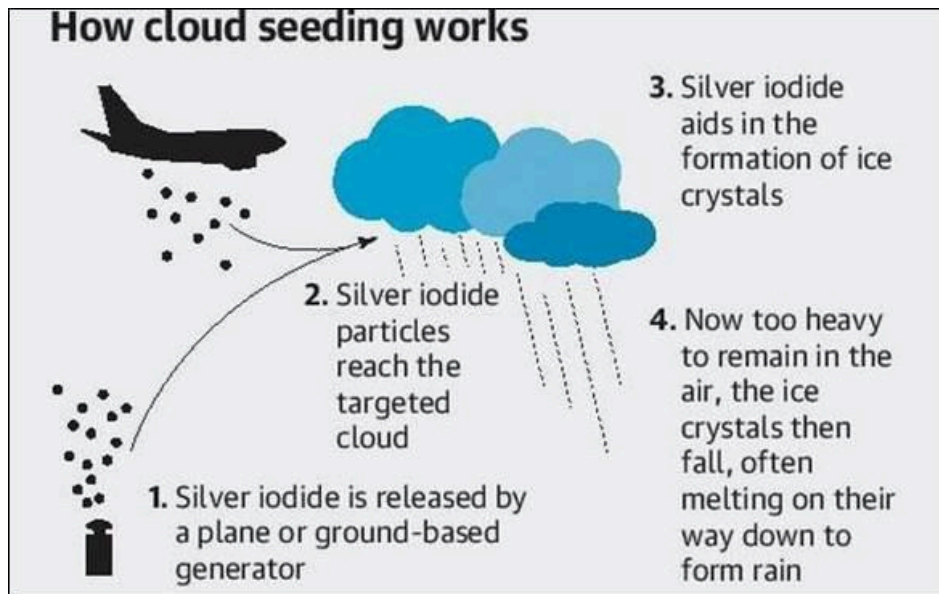
Artificial rainfall, more commonly known as **cloud seeding**, is a technique used to induce or enhance precipitation from clouds. It is increasingly being explored in India as a way to combat severe **air pollution**, particularly in cities like Delhi where high levels of particulate matter and smog make air quality dangerous.

The process of cloud seeding involves dispersing certain substances into the atmosphere that serve as **cloud condensation or ice nuclei**. These particles encourage water vapor in the atmosphere to condense into water droplets or ice crystals. When these droplets become heavy enough, they fall as rain.

One of the most commonly used chemicals for this purpose is **silver iodide (AgI)**. This compound has a **crystalline structure similar to ice**, which makes it effective in stimulating the formation of ice crystals within cold clouds. Once seeded, the silver iodide helps initiate the process of condensation and precipitation.

In addition to silver iodide, **potassium iodide (KI)** is also used. It can serve a similar function by acting as a condensation nucleus, though it is less commonly used than silver iodide. Together, these chemicals can enhance the cloud's ability to produce rainfall, helping to **clear out pollutants from the air** by washing them down to the ground.

This method has been considered by Indian authorities during peak pollution seasons as a way to create artificial rain and thereby **reduce the concentration of pollutants** in the lower atmosphere.



Source:

[https://www.hindustantimes.com/india-news/what-is-cloud-seeding-all-about-artificial-rain-used-when-aqi-is-high-101732095089202.html#:~:text=is%20cloud%20seeding?-.Cloud%2Dseeding%20is%20a%20technique%20used%20to%20modify%20weather%20by.ice%20nucleation%20and%20subsequent%20precipitation.](https://www.hindustantimes.com/india-news/what-is-cloud-seeding-all-about-artificial-rain-used-when-aqi-is-high-101732095089202.html#:~:text=is%20cloud%20seeding?-.Cloud%2Dseeding%20is%20a%20technique%20used%20to%20modify%20weather%20by.ice%20nucleation%20and%20subsequent%20precipitation.;) ;

<https://www.timesnownews.com/mirror-now/in-focus/article/what-is-artificial-rain-will-it-solve-delhis-air-pollution-woes/317375>

https://www.business-standard.com/india-news/combating-air-pollution-with-artificial-rain-cloud-seeding-explained-123111000854_1.html

Q.66) Consider the following statements with regard to pardoning power of the President of India:

- I. The exercise of this power by the President can be subjected to limited judicial review.
- II. The President can exercise this power without the advice of the Central Government.

Which of the statements given above is/are correct?

- a) I only
- b) II only
- c) Both I and II
- d) Neither I nor II

Ans) a

Exp) Option a is the correct answer.

Under Article 72 of the Indian Constitution, the President of India has the power to grant pardons, reprieves, respites, remissions of punishment, or to suspend, remit or commute the sentence of any person convicted of an offence.

This includes:

1. Punishment by a Court Martial,
2. Offences under Union law, and
3. Death sentences.

Statement I is correct. The Supreme Court in the **Maru Ram v. Union of India (1980)** case held that the President's power under Article 72 is subject to judicial review. Further, in **Shatrughan Chauhan v. Union of India (2014)**, the court ruled that this power is not absolute. **Judicial review can be exercised to ensure that the power is not used arbitrarily, or in bad faith, or based on extraneous considerations.**

Statement II is incorrect. As per **Article 74** of the Constitution, the President is bound to act on the aid and advice of the Council of Ministers. This includes the exercise of clemency powers under Article 72. **The President cannot exercise this power independently or without the advice of the government.**

Type of Clemency	Meaning	Effect / Example
1. Pardon	It removes both the sentence and the conviction.	The convict is fully absolved from all punishments and disqualifications.
2. Commutation	Substitution of one form of punishment for a lighter one.	Death sentence → Rigorous imprisonment → Simple imprisonment.
3. Remission	Reduction in the period of sentence without changing its nature.	Rigorous imprisonment for 2 years → Reduced to 1 year.
4. Respite	Awarding a lesser sentence due to special circumstances.	A pregnant woman given life imprisonment instead of death.

5. Reprieve	Temporary stay on the execution of a sentence (especially death).	Delay in execution to allow the convict to seek pardon or commutation.
--------------------	---	--

Source: Mastering Indian Polity- 10 th Edition - Forum IAS

Q.67) Consider the following statements:

- I. On the dissolution of the House of the People, the Speaker shall not vacate his/her office until immediately before the first meeting of the House of the People after the dissolution.
- II. According to the provisions of the Constitution of India, a Member of the House of the People on being elected as Speaker shall resign from his/her political party immediately.
- III. The Speaker of the House of the People may be removed from his/her office by a resolution of the House of the People passed by a majority of all the then Members of the House, provided that no resolution shall be moved unless at least fourteen days' notice has been given of the intention to move the resolution.

Which of the statements given above are correct?

- a) I and II only
b) II and III only
c) I and III only
d) I, II and III

Ans) c

Exp) Option c is the correct answer.

The Speaker of the Lok Sabha plays a crucial role in maintaining the decorum of the House and in presiding over the proceedings. His/her powers and conditions of office are derived from **Article 93** and related provisions of the Constitution.

Statement I is correct. As per Article 94 of the Constitution, the Speaker does not vacate office on the dissolution of the Lok Sabha. He/she continues until just before the first meeting of the newly constituted Lok Sabha. This is to ensure continuity and proper transition

Statement II is incorrect. The Constitution does not require the Speaker to resign from his/her political party after being elected. However, the Speaker is expected to act in a non-partisan manner. Disqualification under the Tenth Schedule (anti-defection) does not apply merely because the Speaker remains a party member. However, in Britain, the Speaker is strictly a non-party man. There is a convention that the Speaker has to resign from his party and remain politically neutral

Statement III is correct. As per Article 94, the Speaker can be removed by a resolution passed by a majority of all the then members of the House. Fourteen days' notice is mandatory before such a resolution is moved. This ensures a fair opportunity for the Speaker to defend himself/herself.

Source:

<https://cdnbbsr.s3waas.gov.in/s380537a945c7aaa788ccfcd1b99b5d8f/uploads/2024/07/20240716890312078.pdf>

Mastering Indian Polity- 10 th Edition - Forum IAS

Q.68) Consider the following statements:

I. If any question arises as to whether a Member of the House of the People has become subject to disqualification under the 10th Schedule, the President's decision in accordance with the opinion of the Council of Union Ministers shall be final.

II. There is no mention of the word 'political party' in the Constitution of India.

Which of the statements given above is/are correct?

- a) I only
- b) II only
- c) Both I and II
- d) Neither I nor II

Ans) d

Exp) Option d is the correct answer.

The **Tenth Schedule** of the Constitution, also known as the **Anti-Defection Law**, was added by the 52nd Amendment in 1985. It lays down the grounds for disqualification of MPs and MLAs on the basis of defection.

Statement I is incorrect. The Tenth Schedule **clearly states** that in case of any question on disqualification under it, the decision is to be made by the **Speaker or the Chairman** of the House, **not the President**. This is clearly provided under the Tenth Schedule. The President has no role in disqualification under the anti-defection law, unlike disqualification under **Articles 102 and 191 which are decided by the President/Governor after consulting the Election Commission**.

Statement II is incorrect. The term “**political party**” is mentioned in the Constitution. It appears in the **Tenth Schedule** which refers to the role of political parties in determining defection. For

example, a member is disqualified if they **voluntarily give up membership of the political party** on whose ticket they were elected.

Source:

<https://cdnbbsr.s3waas.gov.in/s380537a945c7aaa788ccfcdf1b99b5d8f/uploads/2024/07/20240716890312078.pdf>

Mastering Indian Polity-10th Edition- Forum IAS

Q.69) Consider the following statements:

Statement I: In India, State Governments have no power for making rules for grant of concessions in respect of extraction of minor minerals even though such minerals are located in their territories.

Statement II: In India, the Central Government has the power to notify minor minerals under the relevant law.

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 not correct
- d) Statement I is not correct but Statement II is correct

Ans) d

Exp) Option d is the correct answer.

The regulation of **mines and minerals** is governed by the **Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)**. This law distinguishes between **major** and **minor minerals**.

Statement I is incorrect. As per the MMDR Act, the **state governments are empowered** to make rules for **granting concessions** (like leases, licenses) and for **regulating mining operations** of **minor minerals**. This power is granted under **Section 15** of the Act. Hence, states have both administrative and rule-making powers concerning minor minerals within their territories.

Statement II is correct. The **central government** has the power to **declare a mineral as a minor mineral** by **notification** in the Official Gazette. This power flows from **Section 3(e)** of the MMDR Act. So, what is classified as a minor mineral is decided centrally, but regulation of its extraction is done by the states.

Source:

<https://www.indiacode.nic.in/bitstream/123456789/1421/3/A1957-67.pdf>

http://arthapedia.in/index.php/Minor_Minerals

Q.70) Which organization has enacted the Nature Restoration Law (NRL) to tackle climate change and biodiversity loss?

- a) The European Union
- b) The World Bank
- c) The Organization for Economic Cooperation and Development
- d) The Food and Agriculture Organization

Ans) a

Exp) option a is the correct answer.

The **Nature Restoration Law (NRL)** is a landmark environmental regulation enacted by the **European Union (EU)**. It aims to halt and reverse the degradation of ecosystems across the EU, addressing both climate change and biodiversity loss.

Key Features of the NRL:

- **Legally Binding Targets:** The law sets binding targets to restore degraded ecosystems, particularly those with high potential to capture and store carbon and to prevent and reduce the impact of natural disasters.
- **Restoration Goals:** Member States are required to implement restoration measures covering at least 20% of the EU's land and sea areas by 2030.
- **Ecosystem Focus:** The law emphasizes restoring wetlands, rivers, forests, grasslands, marine ecosystems, and the species they host to increase biodiversity and secure ecosystem services like water and air purification, crop pollination, and flood protection.
- **Climate and Biodiversity Commitments:** The NRL supports the EU's commitment to climate neutrality by 2050 and aligns with international biodiversity commitments under the Kunming-Montreal Global Biodiversity Framework.

Source:

<https://www.thehindu.com/opinion/op-ed/the-case-for-a-nature-restoration-law-in-india/article68780219.ece#:~:text=The%20degradation%20of%20natural%20ecosystems,restoration%20fully%20restored%20by%202050.>

Q.71) Suppose the revenue expenditure is ₹ 80,000 crores and the revenue receipts of the Government are ₹ 60,000 crores. The Government budget also shows borrowings of ₹ 10,000 crores and interest payments of ₹ 6,000 crores. Which of the following statements are correct?

I. Revenue deficit is ₹ 20,000 crores.

II. Fiscal deficit is ₹ 10,000 crores.

III. Primary deficit is ₹ 4,000 crores.

Select the correct answer using the code given below.

a) I and II only

b) II and III only

c) I and III only

d) I, II and III

Ans) d

Exp) Option d is the correct answer.

Given Data:

- **Revenue Expenditure = ₹80,000 crores**
- **Revenue Receipts = ₹60,000 crores**
- **Borrowings (Fiscal Deficit) = ₹10,000 crores**
- **Interest Payments = ₹6,000 crores**

Statement I is correct: Revenue Deficit

Definition:

$$\text{Revenue Deficit} = \text{Revenue Expenditure} - \text{Revenue Receipts}$$

Calculation:

Revenue Expenditure = ₹80,000 crores

Revenue Receipts = ₹60,000 crores

So,

$$\text{Revenue Deficit} = ₹80,000 - ₹60,000 = ₹20,000 \text{ crores}$$

Statement II is correct: Fiscal Deficit

Definition:

- **Fiscal Deficit = Total Expenditure – Total Receipts (excluding borrowings)**

In this question, total borrowings by the government are ₹10,000 crores, which means the gap between the government's total expenditure and its non-borrowed receipts is being met by borrowing ₹10,000 crores.

Fiscal Deficit is the total borrowing requirement of the government. In the given scenario, the borrowings directly represent the fiscal deficit.

$$\text{Fiscal Deficit} = \text{Borrowings} = 10,000 \text{ crores}$$

Statement III is correct: Primary Deficit

Definition:

$$\text{Primary Deficit} = \text{Fiscal Deficit} - \text{Interest Payments}$$

Calculation:

Fiscal Deficit = ₹10,000 crores

Interest Payments = ₹6,000 crores

Primary Deficit = ₹10,000 – ₹6,000 = ₹4,000 crores

Hence, All three statements are correct.

Source:

https://nios.ac.in/media/documents/SrSec318NEW/318_Economics_Eng/318_Economics_Eng_Lesson29.pdf

<https://www.egyankosh.ac.in/bitstream/123456789/59908/3/Unit-15.pdf>

Q.72) India is one of the founding members of the International North-South Transport Corridor (INSTC), a multimodal transportation corridor, which will connect

- a) India to Central Asia to Europe via Iran
- b) India to Central Asia via China
- c) India to South-East Asia through Bangladesh and Myanmar
- d) India to Europe through Azerbaijan

Ans) a

Exp) Option a is the correct answer.

The **International North-South Transport Corridor (INSTC)** is a 7,200-kilometer-long **multimodal transportation network** (including ship, rail, and road routes) that **connects India, Iran, Russia, Central Asia, and Europe**. It was initiated by India, Iran, and Russia in 2000 and aims to improve trade connectivity by reducing the time and cost of transport.

- The corridor starts in India, passes through Iran, and proceeds to Russia and Europe via Azerbaijan and Central Asia.
- It offers a shorter and more economical alternative to the traditional sea route via the Suez Canal.
- Russia, India and Iran signed preliminary agreements to develop the INSTC in 2002. Three years later, Azerbaijan signed up for the project. This agreement was eventually ratified by 13 countries – India, Russia, Iran, Azerbaijan, Belarus, Bulgaria, Armenia, Kazakhstan, Kyrgyzstan, Oman, Tajikistan, Turkey and Ukraine.



Source:

<https://www.thehindu.com/news/international/north-south-transport-corridor-connecting-continents/article66875206.ece>

Q.73) Consider the following statements:

Statement I: Of the two major ethanol producers in the world, i.e., Brazil and the United States of America, the former produces more ethanol than the latter.

Statement II: Unlike in the United States of America where corn is the principal feedstock for ethanol production, sugarcane is the principal feedstock for ethanol production in Brazil.

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 not correct
- d) Statement I is not correct but Statement II is correct

Ans) d

Exp) Option d is the correct answer.

Statement I is incorrect: The United States is the largest producer of ethanol in the world, consistently accounting for over 50% of global ethanol production in recent years.

For example, In 2024, the U.S. produced approximately 16.2 billion gallons of ethanol, accounting for about 52% of global production. In contrast, Brazil produced around 8.78 billion gallons, representing 28% of global output. Thus, the United States produces nearly twice as much ethanol as Brazil.

Statement II is correct: In the United States, ethanol is primarily produced from corn, which is abundantly cultivated in the Midwest and forms the backbone of the American ethanol industry. In contrast, **Brazil produces most of its ethanol from sugarcane**, which is well-suited to its tropical climate. Sugarcane-based ethanol is considered more energy-efficient and has a lower carbon footprint compared to corn-based ethanol.

Hence, **Statement I is not correct but Statement II is correct**

Source: <https://ethanolrfa.org/markets-and-statistics/annual-ethanol-production>

Q.74) The World Bank warned that India could become one of the first places where wet-bulb temperatures routinely exceed 35 degree Celsius Which of the following statements best reflect(s) the implication of the above-said report?

I. Peninsular India will most likely suffer from flooding, tropical cyclones and droughts.

II. The survival of animals including humans will be affected as shedding of their body heat through perspiration becomes difficult.

Select the correct answer using the code given below.

- a) I only
- b) II only
- c) Both I and II
- d) Neither I nor II

Ans) c

Exp) Option c is the correct answer.

Wet-bulb temperature is a measure that **combines dry air temperature and humidity to indicate to reflect the lowest temperature to which air can be cooled by the evaporation of water**. In essence, it is a measure of heat-stress conditions on humans.

When the wet-bulb temperature reaches 35 °C, it becomes extremely dangerous for humans and animals because sweat can no longer evaporate to cool the body. The World Bank has warned that parts of India, due to rising global temperatures and increasing humidity, could be among the first regions in the world where wet-bulb temperatures routinely exceed 35 °C, posing a grave risk to life.

Statement I is correct: This statement accurately **reflects the broader climatic risks that Peninsular India faces due to climate change, which are interconnected with the rise in wet-bulb temperatures**.

The region's tropical location makes it particularly **vulnerable to intensified monsoon variability, resulting in both extreme rainfall events causing floods and cyclones, as well as periods of inadequate rainfall leading to droughts**.

Therefore, while the World Bank's warning emphasizes the health hazards of extreme heat and humidity, it also implicitly highlights that the same underlying climate shifts will exacerbate Peninsular India's susceptibility to these damaging hydrometeorological events.

Statement II is correct: This statement accurately captures the core implication of the World Bank's warning.

When wet-bulb temperatures exceed 35 °C, the human body can no longer effectively cool itself through sweating and evaporation, which are essential to regulate internal body temperature. This creates life-threatening conditions even for healthy individuals, and especially for vulnerable populations such as the elderly, outdoor workers, or those without access to cooling.

The same threat applies to many animal species, which also rely on various forms of heat dissipation.

Hence, this statement directly addresses the health and survival risks associated with extreme wet-bulb temperatures and correctly reflects the report's concern.

Source:

<https://www.theguardian.com/science/2022/jul/31/why-you-need-to-worry-about-the-wet-bulb-temperature>

<https://www.downtoearth.org.in/climate-change/how-a-massive-anticyclone-caused-floods-in-dubai-and-humid-heat-in-mumbai-on-the-other-side-of-the-arabian-sea-95613>

Q.75) A country's fiscal deficit stands at ₹ 50,000 crores. It is receiving ₹ 10,000 crores through non-debt creating capital receipts. The country's interest liabilities are ₹ 1,500 crores. What is the gross primary deficit?

- a) ₹ 48,500 crores
- b) ₹ 51,500 crores
- c) ₹ 58,500 crores
- d) None of the above

Ans) a

Exp) Option a is the correct answer.

To find the Gross Primary Deficit, we need to use the following formula:

Gross Primary Deficit = Fiscal Deficit – Interest Payments

Given:

- Fiscal Deficit = ₹50,000 crores
- Interest Liabilities = ₹1,500 crores
- Non-debt creating capital receipts are not needed to calculate the Primary Deficit directly. They are part of the financing of the fiscal deficit but do not affect the primary deficit calculation.

Gross Primary Deficit = 50,000 – 1,500 = 48,500 crores

Source: Class 12 macroeconomy NCERT

https://nios.ac.in/media/documents/SrSec318NEW/318_Economics_Eng/318_Economics_Eng_Lesson29.pdf

Q.76) Which of the following statements with regard to recommendations of the 15th Finance Commission of India are correct?

- I. It has recommended grants of ₹ 4,800 crores from the year 2022-23 to the year 2025-26 for incentivizing States to enhance educational outcomes.
- II. 45% of the net proceeds of Union taxes are to be shared with States.
- III. ₹ 45,000 crores are to be kept as performance-based incentive for all States for carrying out agricultural reforms.
- IV. Its reintroduced tax effort criteria to reward fiscal performance.

Select the correct answer using the code given below.

- a) I, II and III
- b) I, II and IV
- c) I, III and IV
- d) II, III and IV

Ans) c

Exp) Option c is the correct answer.

Statement I is correct: The 15th Finance Commission **recommended grants of Rs. 4,800 crore (Rs. 1,200 crore each year) from 2022-23 to 2025-26 for incentivizing states to enhance educational outcomes.**

Statement II is incorrect: The 15th Finance Commission recommended that **41% of the divisible pool of Central taxes be shared with the States for the period 2021-26**. This is a 1% adjustment from the 42% recommended by the 14th Finance Commission, to account for the newly formed Union Territories of Jammu and Kashmir and Ladakh.

Statement III is correct: The 15th Finance Commission **recommended Rs. 45,000 crore as a performance-based incentive for all states for carrying out agricultural reforms.**

Statement IV is correct: The 15th Finance Commission **reintroduced 'Tax and Fiscal Efforts' as a criterion for horizontal devolution with a weightage of 2.5%**. This criterion aims to reward states with higher tax collection efficiency. This criterion was previously used by the 11th and 12th Finance Commissions.

Source: <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1693868>
<https://fincomindia.nic.in/asset/doc/commission-reports/XVFC-Complete-Report-1.pdf>

Q.77) Consider the following statements in respect of the International Bank for Reconstruction and Development (IBRD):

- I. It provides loans and guarantees to middle income countries.
- II. It works single-handedly to help developing countries to reduce poverty.
- III. It was established to help Europe rebuild after the World War II.

Which of the statements given above are correct?

- a) I and II only

- b) II and III only
- c) I and III only
- d) I, II and III

Ans) c

Exp) Option c is the correct answer.

The International Bank for Reconstruction and Development (IBRD) is a global development cooperative owned by 189 member countries and is also the largest development bank in the world

Statement I is correct: The IBRD primarily lends to middle-income countries and some creditworthy low-income countries.

It offers financial products such as loans, guarantees, risk management products, and advisory services to support development programs, infrastructure projects, and economic reforms. The goal is to reduce poverty and promote sustainable development in these countries.

Statement II is incorrect: The IBRD is not the only institution working on poverty reduction. It is one of five institutions that make up the World Bank Group, which includes:

- IDA (International Development Association) – for the poorest countries
- IFC (International Finance Corporation) – for private sector development
- MIGA (Multilateral Investment Guarantee Agency) – for political risk insurance
- ICSID (International Centre for Settlement of Investment Disputes) – for arbitration

Together, these institutions work collaboratively, not "single-handedly," to reduce poverty and promote development.

Statement III is correct: The IBRD was indeed established in 1944 at the Bretton Woods Conference with the primary goal of financing the reconstruction of European nations devastated by World War II. After the post-war reconstruction, its mandate expanded to global economic development and poverty eradication.

Source: <https://www.worldbank.org/en/who-we-are/ibrd>

Q.78) Consider the following statements in respect of RTGS and NEFT:

- I. In RTGS, the settlement time is instantaneous while in case of NEFT, it takes some time to settle payments.
 - II. In RTGS, the customer is charged for inward transactions while that is not the case for NEFT.
 - III. Operating hours for RTGS are restricted on certain days while this is not true for NEFT.
- Which of the statements given above is/are correct?

- a) I only
- b) I and II
- c) I and III
- d) III only

Ans) a

Exp) option a is the correct answer.

Statement I is correct:

RTGS (Real Time Gross Settlement): As the name suggests, RTGS transactions are processed in "real-time" and on a "gross" basis. This means each transaction is settled individually as it is

received, with virtually no waiting period. The beneficiary bank typically receives the funds in real-time, and the beneficiary's account is credited within a short time (usually within 30 minutes of receiving the transfer message).

NEFT (National Electronic Funds Transfer): NEFT operates on a "Deferred Net Settlement" (DNS) basis. This means **transactions are collected and processed in batches at specific intervals**. While NEFT is now available 24x7, the **actual settlement still happens in half-hourly batches**. So, it takes some time for the payment to be settled.

Statement II is incorrect: According to RBI guidelines, **inward RTGS transactions** (receiving money) **are free of charge**. Banks are not permitted to levy any charges on the beneficiary for receiving funds via RTGS. Similarly, **inward NEFT transactions are also free of charge**.

Statement III is incorrect: Previously, both RTGS and NEFT operated only during specific hours on working days. However, major reforms by the Reserve Bank of India have now made **both services available 24x7, 365 days a year**.

NEFT became a round-the-clock service in 2019, followed by RTGS in 2020. This means that customers can now transfer funds using either system at any time of the day, on any day of the year, including weekends and bank holidays.

Source: <https://www.federalbank.co.in/difference-between-neft-and-rtgs>

Q.79) Consider the following countries:

- I. United Arab Emirates
- II. France
- III. Germany
- IV. Singapore
- V. Bangladesh

How many countries amongst the above are there other than India where international merchant payments are accepted under UPI?

- a) Only two
- b) Only three
- c) Only four
- d) All the five

Ans) b

Exp) Option b is the correct answer.

As of now, UPI (Unified Payments Interface) is accepted for international merchant payments in the following countries other than India:

1. United Arab Emirates (UAE)
2. France
3. Singapore
4. Sri Lanka
5. Mauritius
6. Bhutan
7. Nepal

Hence, among the countries mentioned in the question, **only three—United Arab Emirates, France, and Singapore—officially support UPI for international merchant payments. Germany and Bangladesh do not currently have UPI integration.**

Source:

<https://www.npci.org.in/what-we-do/upi-global/upi-global-acceptance/live-members>

<https://indianexpress.com/article/technology/tech-news-technology/upi-goes-global-supported-countries-9164907/>

Q.80) Consider the following statements about 'PM Surya Ghar Muft Bijli Yojana':

- I. It targets installation of one crore solar rooftop panels in the residential sector.
- II. The Ministry of New and Renewable Energy aims to impart training on installation, operation, maintenance and repairs of solar rooftop systems at grassroot levels.
- III. It aims to create more than three lakhs skilled manpower through fresh skilling, and upskilling, under scheme component of capacity building.

Which of the statements given above are correct?

- a) I and II only
- b) I and III only
- c) II and III only
- d) I, II and III

Ans) d

Exp) Option d is the correct answer.

Statement I is correct: The **PM Surya Ghar: Muft Bijli Yojana**, launched in February 2024, is an ambitious initiative by the Government of India **aiming to install rooftop solar panels in one crore (10 million) households in the residential sector by March 2027.** This large-scale adoption of solar energy is a significant step towards achieving energy self-reliance and promoting sustainable energy practices across the nation.

Statement II is correct: The **Ministry of New and Renewable Energy (MNRE)** has emphasized the importance of capacity building under this scheme.

It plans to **provide training at the grassroots level on the installation, operation, maintenance, and repair of solar rooftop systems.** This initiative ensures that there is adequate skilled manpower to support the widespread adoption of solar energy.

Statement III is correct: A critical component of the scheme is the development of a skilled workforce to support the solar energy sector. **The objectives include:**

1. **Training Over 3 Lakh Individuals:** Through a combination of **fresh skilling and up-skilling programs.**
2. **Specialized Roles:** Out of these, **at least 1 lakh individuals will be trained as Solar PV Technicians**, specializing in photovoltaic systems.

These initiatives are part of the scheme's capacity building component, aiming to empower individuals with the necessary skills to contribute to the solar energy ecosystem.

Source:

<https://cdnbbsr.s3waas.gov.in/s3716e1b8c6cd17b771da77391355749f3/uploads/2024/07/202407181728251154.pdf>

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2081250>

Q.81) With Reference to the Indian polity, consider the following statements:

- I. An Ordinance can amend any central Act.
- II. An Ordinance can abridge a Fundamental Right.
- III. An Ordinance can come into effect from a back date.

Which of the statements given above are correct?

- a) I and II only
- b) II and III only
- c) I and III only
- d) I, II and III

Ans) c

Exp) Option c is the correct answer.

Statement I is correct: As per **Article 123** of the Constitution, the President can promulgate an ordinance when Parliament is not in session. **An ordinance has the same force and effect as an Act of Parliament, and thus, it can amend or repeal any existing Central Act.**

Statement II is incorrect: An ordinance is subject to the same constitutional limitation as an act of Parliament. Hence, **an ordinance cannot abridge or take away any of the fundamental rights**

Statement III is correct: As an ordinance has the same force and effect as an Act of Parliament, ordinance can come into effect from a back date as the retrospective law.

Source: Indian Polity Laxmikanth- Chapter 17- President

<https://timesofindia.indiatimes.com/india/legislature-can-bring-laws-with-retrospective-effect-sc/articleshow/83972431.cms>

Q.82) Consider the following pairs :

State	Description
1. Arunachal Pradesh	The capital is named after a fort, and the state has two National Parks
2. Nagaland	The State came into Existence on the basis of a Constitutional Amendment Act.
3. Tripura	Initially a Part 'C' State, it became a centrally administered territory with the reorganization of State in 1956 and later attained the status of a full-fledged State

How many of the above pairs are correctly matched?

- a) Only one
- b) Only two
- c) All the three

d) None

Ans) b

Exp) Option b is the correct answer.

Pair I is correct: The capital of Arunachal Pradesh is **Itanagar**, located in the **Papumpare district**. The city derives its name from the historic **Ita Fort**, meaning "Fort of Bricks," which was built in the **14th century AD**. Arunachal Pradesh finds mention in ancient Indian texts such as the Kalika Purana and the Mahabharata, where it is referred to as the Prabhu Mountains in the Puranas.

Pair II is correct: **Nagaland** was given statehood in 1963 through the State of Nagaland Act, 1962. In July, 1960, an agreement was reached by the Government of India with the leaders of the Naga Peoples Convention under which it was decided that Naga Hills-Tuensang Area (Nagaland), which is at present a Part 'B' tribal area within the State of Assam, will be formed into a separate State in the Union of India. Thus, two motions were introduced together i.e. motions regarding the Constitution (Thirteenth Amendment) Bill, 1962, and the State of Nagaland Bill, 1962. 13th Constitutional amendment Act was introduced to amend Article 371 and insertion of Article 371 A. While State of Nagaland bill passage led to the formation of state of Nagaland.

Pair III is correct: Based on the four-fold classification of the states and territories of the Indian Union in Indian Constitution in 1950, **Tripura was categorised as Part C state**, and later became the **Union territory based on State Reorganisation Act of 1956** and finally **became the 20th state of India in 1972**

Source:

<https://arunachalgovernor.gov.in/html/history.htm#:~:text=Capital%20of%20the%20State%20is,the%20Prabhu%20Mountains%20of%20Puranas>.

Laxmikant- Indian Polity- Appendix IV Constitutional Amendments at a Glance

Laxmikant- Indian Polity -EVOLUTION OF STATES AND UNION TERRITORIES

Q.83) With reference to India, consider the following :

- I. The Inter –State Council
- II. The National Security Council
- III. Zonal Councils

How many of the above were established as per the provisions of the Constitution of India?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) a

Exp) Option a is the correct answer.

Option I is correct: **Article 263 of Constitution of India provides for the establishment of Inter State Council of India** to promote coordination and cooperation between the Centre and the States. It serves as a forum for discussing and resolving issues of common interest among the Union and State governments.

Option II is incorrect: The idea of establishing a **National Security Council (NSC)** in India was first proposed during a 1968 seminar at the Institute for Defence Studies and Analyses (IDSA),

which later submitted a formal proposal to the Administrative Reforms Commission (ARC). The concept gained momentum in 1990 when Prime Minister V.P. Singh, amid rising concerns over a possible Pakistani nuclear test. Eventually, the **NSC was formally established in 1999** by an **executive order** of the Government of India for national security and strategic affairs.

Option III is incorrect: **Zonal Councils** are statutory bodies **established under States Reorganisation Act, 1956** to promote cooperative federalism by facilitating dialogue and coordination between states and the central government on key inter-state issues such as border disputes, inter-state transport, river water sharing, economic and social planning, and matters related to security and law and order.

Source: <https://interstatecouncil.gov.in/isc-genesis/>

<https://orfamerica.org/newresearch/the-evolution-and-roles-of-indias-national-security-council>

<https://www.mha.gov.in/en/page/zonal-council>

<https://orfamerica.org/newresearch/the-evolution-and-roles-of-indias-national-security-council>

Q.84) Consider the following statements :

I. The Constitution of India explicitly mentions that in certain spheres the Governor of a State acts in his/her own discretion.

II. The President of India can, of his/her own, reserve a bill passed by a State Legislature for his/her consideration without it being forwarded by the Governor of the State concerned.

Which of the statements given above is/are correct?

- a) I Only
- b) II Only
- c) Both I and II
- d) Neither I nor II

Ans) a

Exp) Option a is the correct answer.

Statement I is correct: The Constitution of India explicitly mentions that in certain matters, the Governor acts in his/her discretion under **Article 163**. Article 163(1) of the Indian Constitution states that the Governor is to act on the aid and advice of the Council of Ministers, **except in matters where the Constitution requires him to act in his discretion**. Furthermore, Article 163(2) clarifies that if any question arises regarding whether a matter falls within the Governor's discretionary powers, the Governor's decision shall be final, and the validity of any action taken by the Governor cannot be challenged on the grounds that he should or should not have exercised his discretion.

Statement II is incorrect: According to **Article 200 of Indian constitution**, the Governor has the power to reserve certain bills passed by the State Legislature for the **President's consideration**. The President acts only when a bill is forwarded to him by the Governor and cannot reserve a state bill for consideration on his own.

Source: http://constitutionofindia.etal.in/article_163/

http://constitutionofindia.etal.in/article_200/

Q.85) Consider the following pairs:

Provision in the Constitution of India	State under
I. Separation of Judiciary from the Executive in the Public services of the State	The Directive principles of the State policy
II. Valuing and preserving of the rich Heritage of our composite culture	The Fundamental Duties
III. Prohibition of employment of children below the age of 14 years in factories	The Fundamental Rights

How many of the above pairs are correctly matched?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) c

Exp) Option c is the correct answer.

Pair I is correct: Article 50 of the Constitution of India under **Part IV** (Directive Principles of State Policy) states that the State shall take steps to **separate the judiciary from the executive in the public services of the State**.

Pair II is correct: Article 51(f) of Indian Constitution provides that It shall be the **duty of every citizen of India to value and preserve the rich heritage of our composite culture**.

Pair III is correct: Article 24 under **Part III (Fundamental Rights)** prohibits the employment of **children below the age of 14 years in factories**, mines or any other hazardous employment.

Source: <https://www.mea.gov.in/images/pdf1/part3.pdf>

<https://www.mea.gov.in/images/pdf1/part4.pdf>

<https://dsel.education.gov.in/sites/default/files/Fundamental-Duties-English.pdf>

Q.86) Consider the following statements:

With reference to the Constitution of India, if an area in a State is declared as Scheduled Area under the Fifth Schedule

- I. the State Government loses its executive power in such areas and local body assumes total administration
- II. the Union Government can take over the total administration of such areas under certain circumstances on the recommendations of the Governor

Which of the statements given above is/are correct?

- a) I only
- b) II only
- c) Both I and II
- d) Neither I nor II

Ans) d

Exp) Option d is the correct answer.

The Fifth Schedule of the Constitution deals with the administration and control of scheduled areas and scheduled tribes in states except the four states of Assam, Meghalaya, Tripura and Mizoram. The President of India is empowered to declare an area to be a Fifth Scheduled Area.

Statement 1 is incorrect. The executive power of a State extends to the Fifth Scheduled Areas.

But the Governor has a special responsibility regarding such areas. He has to submit a report to the President regarding the administration of such areas, annually or whenever so required by the President. The executive power of the Centre extends to giving directions to the States regarding the administration of such areas. Each state having scheduled areas has to establish a tribes advisory council to advise on welfare and advancement of the scheduled tribes.

Statement 2 is incorrect. There is no provision under the Fifth Schedule that allows the Union Government to take over the total administration of Scheduled Areas.

Instead, the Governor is empowered to direct that any particular act of Parliament or the state legislature does not apply to a scheduled area or apply with specified modifications and exceptions.

Source: Indian Polity by M.Laxmikant Chapter 41

Subject: Polity

Q.87) With reference to India, consider the following pairs:

Organization	Union Ministry
1. The National Automotive Board	Ministry of Commerce and Industry
2. The Coir Board	Ministry of Heavy Industries
3. The National Centre for Trade Information	Ministry of Micro, Small and Medium Enterprises

How many of the above pairs are correctly matched?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) d

Exp) Option d is the correct answer.

Pair 1 is incorrect. The National Automotive Board (NAB) functions under the Ministry of Heavy Industries. The National Automotive Board was constituted in October 2012 and was registered under the Registration of Societies Act in August 2013. This organisation provides a single platform for dealing with all matters relating to the automotive sector especially on matters pertaining to testing, certification, homologation, administering the automotive labs etc. being set up under NATRIP. It aims to steer, coordinate and synergize all efforts of the government in the automotive sector.

Pair 2 is incorrect. The Coir Board comes under the Ministry of Micro, Small & Medium Enterprises (MSME). The Coir Board was set up under the Coir Industry Act, 1953 by the Government of India for the overall sustainable development of coir industry in the Country. The functions of the Board as laid down under the Act include undertaking, assisting and encouraging scientific, technological and economic research, modernization, quality improvement, human resource development, market promotion and welfare of all those who are engaged in this industry.

Pair 3 is incorrect. The National Centre for Trade Information (NCTI) has been set up by the Ministry of Commerce and Industry. It has been set up to create institutional mechanisms for collection and dissemination of trade data and for improvement of business information services.

Source:

<https://heavyindustries.gov.in/national-automotive-board#:~:text=This%20organisation%20will%20provide%20a,being%20set%20up%20under%20NATRIP.>

<https://msme.gov.in/>

<https://www.india.gov.in/information-national-centre-trade-information>

Subject: Polity

Q.88) Consider the following subjects under the Constitution of India :

- I. List I-Union List, in the Seventh Schedule
- II. Extent of the executive power of a State
- III. Conditions of the Governor's office

For a constitutional amendment with respect to which of the above, ratification by the Legislatures of not less than one-half of the States is required before presenting the bill to the President of India for assent?

- a) I and II only
- b) II and III only
- c) I and III only
- d) I, II and III

Ans) a

Exp) Option a is the correct answer.

Article 368 of the Constitution of India determines the procedure for the amendment of the provisions of the Constitution.

Article 368 of the Constitution says that a Constitutional amendment bill must be passed in each House by a majority of the total membership of that House and by a majority of not less than two-thirds of the members of that House present and voting.

It further says that **if the bill seeks to amend the federal provisions of the Constitution, it must also be ratified by the legislatures of half of the states by a simple majority.**

Option 1 is correct. Article 368 says that an amendment also require to be ratified by the Legislatures of not less than one-half of the States if it make changes to:

- (a) article 54, article 55, article 73, **article 162**, article 241 or article 279A; or
- (b) Chapter IV of Part V, Chapter V of Part VI, or Chapter I of Part XI; or
- (c) **any of the Lists in the Seventh Schedule; or**
- (d) the representation of States in Parliament; or
- (e) the provisions of this article i.e. article 368

Option 2 is correct. Article 162 says that the executive power of a State shall extend to the matters with respect to which the Legislature of the State has power to make laws. To amend this, **ratification by the legislatures of at least half of the States is required.**

Option 3 is incorrect. Article 158 relates to the conditions of the Governor's office. An amendment to Article 158 can be made by Parliament alone using the special majority procedure and does not require ratification by states.

Source: Indian Polity by M.Laxmikant Chapter 10

<https://www.mea.gov.in/images/pdf1/part20.pdf>

Q.89) With reference to the Indian polity, consider the following statements:

- I. The Governor of a State is not answerable to any court for the exercise and performance of the powers and duties of his/her office.
- II. No criminal proceedings shall be instituted or continued against the Governor during his/her term of office.
- III. Members of a State Legislature are not liable to any proceedings in any court in respect of anything said within the House.

Which of the statements given above are correct?

- a) I and II only
- b) II and III only
- c) I and III only
- d) I, II and III

Ans) d

Exp) Option d is the correct answer.

Statement 1 is correct. Article 361 of Indian Constitution provides that the President, or the Governor of a State, shall not be answerable to any court for the exercise and performance of the powers and duties of his office or for any act done or purporting to be done by him in the exercise and performance of those powers and duties.

Statement 2 is correct. Article 361 (2) says that no criminal proceedings shall be instituted or continued against the President, or the Governor of a State, in any court during his term of office.

Statement 3 is correct. The Constitution of India provides immunity to a member of Parliament/State Legislature from any proceedings in any court in respect of anything said or any vote given by him in the legislature or any committee thereof. Article 194 of the Constitution says that "No member of the Legislature of a State shall be liable to any proceedings in any court in respect of anything said or any vote given by him in the Legislature or any committee thereof."

Source: <https://www.mea.gov.in/Images/pdf1/Part19.pdf>

<https://cms.rajyasabha.nic.in/UploadedFiles/Procedure/RajyaSabhaAtWork/English/244-310/CHAPTER8.pdf>

Q.90) Consider the following activities:

- I. Production of crude oil
- II. Refining, storage and distribution of petroleum
- III. Marketing and sale of petroleum products
- IV. Production of natural gas

How many of the above activities are regulated by the Petroleum and Natural Gas Regulatory Board in our country?

- a) Only one
- b) Only two
- c) Only three
- d) All the four

Ans) b

Exp) Option b is the correct answer.

The Petroleum and Natural Gas Regulatory Board (PNGRB) was constituted under the Petroleum and Natural Gas Regulatory Board Act, 2006. The Act provides for the establishment of a Petroleum and Natural Gas Regulatory Board to protect the interests of consumers and entities engaged in specified activities relating to petroleum, petroleum products and natural gas and to promote competitive markets.

Only options 2 and 3 are correct. As per the Petroleum and Natural Gas Regulatory Board Act, the board has been mandated **to regulate the refining, processing, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas excluding production of crude oil and natural gas**. It thus aims to ensure uninterrupted and adequate supply of petroleum, petroleum products and natural gas in all parts of the country.

Source:

<https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2108953>

<https://pngrb.gov.in/eng-web/function.html>

<https://pngrb.gov.in/eng-web/story.html>

Subject: Polity

Q.91 "Sedition has become my religion" was the famous statement given by Gandhiji at the time of

- a) the Champaran Satyagraha
- b) publicly violating Salt Law at Dandi
- c) attending the Second Round Table Conference in London
- d) the launch of the Quit India Movement

Ans) b

Exp) Option b is the correct answer.

The famous statement "**Sedition has become my religion**" was made by **Mahatma Gandhi on 6th April 1930** at **Dandi**, when he **broke the Salt Law** as part of the **Civil Disobedience Movement**. This act marked a **symbolic rejection of British authority** and galvanized nationwide protests.

On 6th April, Gandhi Ji reached Dandi, picked up a handful of salt and broke the salt law as a symbol of the Indian People's refusal to live under British-made laws and therefore under British rule. Gandhi Ji declared :

"The British rule in India has brought about moral, material, cultural and spiritual ruination of this great country. I regard this rule as a curse. I am ought to destroy this system of Government. ... Sedition has become my religion. Ours is a non-violent battle. We are not to kill anybody but it is our dharma to see that the curse of this Government is blotted out.

Source: <https://twse.edu.in/blog/the-civil-disobedience-movement-of-1930/>

Q.92) The famous female figurine known as 'Dancing Girl', found at Mohenjo-daro, is made of

- a) carnelian

- b) clay
- c) bronze
- d) gold

Ans) c

Exp) Option c is the correct answer.

The "Dancing Girl" figurine, a famous artifact from the Indus Valley Civilization, was discovered in 1926 by archaeologist Ernest Mackay at Mohenjo-daro. This **bronze** statuette, depicting a nude young woman or girl, is 10.5 cm tall and is notable for its confident, naturalistic pose.

- It depicts a young girl in a pose suggestive of dance, with one hand on her hip and a confident stance, showcasing both artistic sensibility and casting skill.
- The **material** used to make the figurine is **bronze**, and it was created using the **lost-wax casting technique**, which was highly advanced for that era.

This artifact is considered a **masterpiece of Harappan craftsmanship** and a symbol of the cultural sophistication of the Indus Valley people.



Source:

<https://indianculture.gov.in/artefacts-museums/dancing-girl#:~:text=dc.description-,This%20mesmerizing%20sculpture%2C%20famously%20known%20as%20'The%20Dancing%20Girl%2C,site%20came%20to%20be%20unearthed.>

Q.93) Who provided legal defence to the people arrested in the aftermath of Chauri Chaura incident?

- a) C. R. Das
- b) Madan Mohan Malaviya and Krishna Kant
- c) Dr. Saifuddin Kitchlew and Khwaja Hasan Nizami
- d) M. A. Jinnah

Ans) b

Exp) Option b is the correct answer.

Madan Mohan Malaviya earned his law degree from Allahabad University in 1891 and practiced law at the Allahabad High Court. He was known as a brilliant Civil Lawyer and was highly respected by his peers. When he appeared in the High Court in 1923 after an interval of ten years, **it was to support the appeal of the 170 persons sentenced to death by the Session judge of Gorakhpur in the Chauri Chaura case.** In this case 225 persons had been tried for setting fire to the police station of Chauri Chaura (in Deoria district) and causing the death of one Sub-Inspector and 21 constables trapped in it.

Source: Mahamana Madan Mohan Malaviya

Q.94) Subsequent to which one of the following events, Gandhiji, who consistently opposed untouchability and appealed for its eradication from all spheres, decided to include the upliftment of 'Harijans' in his political and social programme?

- a) The Poona Pact
- b) The Gandhi-Irwin Agreement (Delhi Pact)
- c) Arrest of Congress leadership at the time of the Quit India Movement
- d) Promulgation of the Government of India Act, 1935

Ans) a

Exp) Option a is the correct answer.

Mahatma Gandhi had always opposed **untouchability** and advocated for the upliftment of the **Depressed Classes**, whom he later referred to as **Harijans** (meaning "Children of God"). However, it was **after the Poona Pact of 1932** that the **upliftment of Harijans became a central focus** of his social and political programme.

Following this event, Gandhi **intensified his efforts to abolish untouchability**. He started a nationwide campaign for **Harijan welfare**, including setting up the **Harijan Sevak Sangh**, writing in **Harijan journals**, and engaging in public efforts to open temples and wells to the so-called untouchables.

Source: Unit-10.pdf

Q.95) Consider the following fruits:

- I. Papaya
- II. Pineapple
- III. Guava

How many of the above were introduced in India by the Portuguese in the sixteenth and seventeenth centuries?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) c

Exp) Option c is the correct answer.

In the early 1600s, during the period of Portuguese exploration and colonial expansion, a significant number of new crops were introduced to India from Europe, the Americas and other parts of the world. The Portuguese, through their maritime trade routes and settlements, brought various plants that transformed Indian agriculture, cuisine, and economy.

It includes the introduction of several crops in India from Portugal like sweet potato, arrowroot, cassava, tomato, chillies, pumpkin, **papaya, pineapple, guava**, custard apple, groundnut, cashew nut, tobacco, American cotton, rubber.

Source: [Unit-1.pdf](#)

Q.96) Consider the following countries:

- I. United Kingdom
- II. Denmark
- III. New Zealand
- IV. Australia
- V. Brazil

How many of the above-countries have more than four time zones?

- a) All the five
- b) Only four
- c) Only three
- d) Only two

Ans) b

Exp) Option b is the correct answer.

Different countries may span multiple time zones due to their wide east-west geographical extent or because of overseas territories. However, not all large countries have more than four **actual operating** time zones.

Option 1 is correct. UK has 9 time zones

The UK spans nine time zones—from the Pitcairn Islands (UTC−08:00) to the British Indian Ocean Territory (UTC+06:00)—including places like the Cayman Islands, Bermuda, and Gibraltar. The main UK region, around London, is in the UTC±00:00 time zone, showing the lasting impact of GMT/UTC in global navigation

Option 2 is correct. Denmark has 5 time zones.

Denmark spans five time zones, including Greenland, which operates at UTC−04:00, while the main territory operates at UTC+01:00. Greenland itself has three additional time zones, mostly at UTC−03:00. Near the Arctic Circle, time becomes fluid, with summers of perpetual daylight and winters of prolonged darkness, making time zones crucial for communication and balance.

Option 3 is correct. New Zealand has 5 time zones.

The UTC line between New Zealand's islands of Niue and Tokelau seems arbitrary given their proximity. Despite a 24-hour difference justified by 700 miles of longitude separation, inhabitants practically experience the 'same day.' This Pacific location was chosen in 1884 to avoid global frustration, although the line could have been drawn elsewhere, such as between Colorado and Kansas or Austria and Hungary. New Zealand's three other time zones cover its main territory, the Cook Islands, and the Chatham Islands.

Option 4 is correct. – Australia has 9 time zones.

Australia's expansive territory includes its mainland and nearby islands. Settlement on the mainland dates back thousands of years, with British control established in 1788 through convict colonisation. Australia claims islands like Heard and McDonald Islands (UTC+05:00), Christmas Island (UTC+07:00), and Norfolk Island (UTC+11:00), while its mainland operates within time zones ranging from UTC+08:00 to UTC+10:00.

Option 5 is incorrect. Brazil has 4 time zones.

Brazil spans four time zones due to its immense size and inclusion of adjacent islands. The easternmost zone, UTC-02:00, covers the Rocas Atoll and Saint Peter and Saint Paul Archipelago. Moving west, the Amazonas territory falls under UTC-05:00, known for its vast jungle. This extends to the segment governed by UTC-04:00, while the southeastern region follows UTC-03:00.

Source:

<https://timesofindia.indiatimes.com/travel/destinations/countries-with-highest-number-of-time-zones/photostory/109942778.cms?picid=109942873>

<https://www.worldatlas.com/time-zones/10-countries-with-the-most-time-zones.html>

Q.97) Consider the following statements:

I. Anadyr in Siberia and Nome in Alaska are a few kilometers from each other, but when people are waking up and getting set for breakfast in these cities, it would be different days.

II. When it is Monday in Anadyr, it is Tuesday in Nome.

Which of the statements given above is/are correct?

- a) I only
- b) II only
- c) Both I and II
- d) Neither I nor II

Ans) a

Exp) option a is the correct answer.

Anadyr is a town located in the far eastern part of Russia in the region of **Chukotka**, and Nome is a town in **western Alaska, USA**. Although they are geographically close – separated only by the Bering Strait – they lie on **opposite sides of the International Date Line (IDL)**. The IDL is an

imaginary line, roughly along the 180° longitude, where the calendar date changes by one day when crossed.

Statement I is correct. Anadyr in Russia and Nome in Alaska are geographically close and separated only by the **Bering Strait**. However, they lie on **opposite sides of the International Date Line (IDL)**. This means that although it may be the same clock time, say, 8:00 AM in both places, the **calendar date would be different**. For example, if it's **Monday morning in Anadyr**, it would still be **Sunday morning in Nome**. The IDL causes this one-day difference despite the small distance between the two locations.

Statement II is incorrect. When it is Monday in Anadyr, it cannot be Tuesday in Nome. In fact, it's the reverse. Nome lags behind Anadyr by a day. So if it is Monday in Anadyr, it is still Sunday in Nome. The International Date Line adds a day as one travels **westward**, and subtracts a day as one travels **eastward** — which makes Russia (west of the IDL) ahead of the U.S. (east of the IDL).

Source:

<https://www.worldatlas.com/geography/international-date-line.html>

<https://www.ottsworld.com/blogs/anadyr-russia-travel/>

Q.98) Who among the following was the founder of the 'Self-Respect Movement'?

- a) Periyar' E. V. Ramaswamy Naicker
- b) Dr. B. R. Ambedkar
- c) Bhaskarrao Jadhav
- d) Dinkarrao Javalkar

Ans) a

Exp) Option a is the correct answer.

The Self-Respect Movement was founded in 1925 by E.V. Ramasamy, popularly known as 'Periyar', in the Madras Presidency. The objective of the movement was to establish a society where lower castes, especially the non-Brahmins, could live with dignity and without social discrimination. **Periyar was deeply influenced by the principles of rationalism, anti-caste ideology, and social justice. He launched the movement as a direct attack on Brahmanical dominance, the caste system, and orthodox Hindu rituals.** The movement encouraged people to abandon blind faith, promote women's rights, support inter-caste marriages, and reject the authority of the Vedas. It laid the ideological foundation for the later **Dravidian movement**, which significantly reshaped Tamil Nadu's political and social landscape.

Source:

<https://ncert.nic.in/textbook/pdf/hess207.pdf>

<https://indianexpress.com/article/explained/explained-history-periyar-9572605/>

Q.99) Consider the following pairs :

Country	Resource -Rich in
I. Botswana	Diamond
II. Chile	Lithium
III. Indonesia	Nickel

In how many of the above rows is the given information correctly matched?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) c

Exp) option c is the correct answer.

Pair 1 is correct. Botswana is one of the **world's largest producers of diamonds by value**. The discovery of diamonds in the 1960s transformed its economy. The country has maintained stable governance and efficient management of its diamond resources, especially through its partnership with De Beers.

Pair 2 is correct. Chile forms part of the "**Lithium Triangle**" along with Argentina and Bolivia. It has some of the **largest lithium reserves in the world**, primarily extracted from salt flats (like Salar de Atacama). Lithium is vital for batteries in electric vehicles and electronics.



Pair 3 is correct. Indonesia is the **world's largest producer of nickel**. It holds vast reserves and has become a major player in the global nickel supply chain, crucial for **stainless steel production and electric vehicle batteries**. The country has also imposed export bans to encourage domestic processing.

Source:

[https://www.thehindu.com/business/botswana-the-country-with-the-biggest-diamonds-gets-an-improved-10-year-deal-with-miner-de-beers/article69265986.ece#:~:text=Botswana%2C%20a%20sparsely%20populated%20and,to%20the%20International%20Monetary%20Fund.](https://www.thehindu.com/business/botswana-the-country-with-the-biggest-diamonds-gets-an-improved-10-year-deal-with-miner-de-beers/article69265986.ece#:~:text=Botswana%2C%20a%20sparsely%20populated%20and,to%20the%20International%20Monetary%20Fund.;) ;

<https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=1996380#:~:text=Argentina%20is%20the%20part%20of,th%20largest%20production%20in%20world.>

<https://www.downtoearth.org.in/mining/booming-indonesian-nickel-industry-faces-challenges-ahead>

Q.100) Consider the Following pairs:

Region	Country
I. Mallorca	Italy
II. Normandy	Spain
III. Sardinia	France

In how many of the above rows is the given information correctly matched?

- a) Only one
- b) Only two
- c) All the three
- d) None

Ans) d

Exp) option d is the correct answer.

Pair 1 is incorrect. Mallorca is the largest island in the **Balearic Islands archipelago**, located in the **Mediterranean Sea**. It belongs to **Spain**, not Italy. The island is a popular tourist destination, known for its beaches, limestone mountains, and historic architecture.



Pair 2 is incorrect. Normandy is located in **northern France**, along the English Channel. It is historically significant for the **D-Day landings during World War II**. It is not a part of Spain.



Pair 3 is incorrect. Sardinia is the **second-largest island in the Mediterranean**, after Sicily. It is an **autonomous region of Italy**, not France. It lies to the west of the Italian Peninsula and south of the French island of Corsica.



Source: <https://www.mallorca.es/en/about-mallorca> ;
<https://en.normandie-tourisme.fr/about-normandy/some-landmarks/where-is-normandy/#:~:text=Where%20is%20Normandy%3F,beautiful%20landscapes%20and%20picturesque%20towns>
 . ; <https://www.history.com/articles/d-day> ;
<https://www.italia.it/en/sardinia/guide-history-facts#origins-and-history-of-sardinia>

