

General Studies

(Paper-I)

1. (b)

Among the given options, 1 and 3 are available to a citizen of the United States living in India.

Fundamental rights available to only citizens of India:

- **Article 15:** Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth (**Hence, 4 is not correct**)
- **Article 16:** Equality of opportunity in matters of public employment
- **Article 19:** Protection of six rights regarding freedom of : (i) speech and expression, (ii) assembly, (iii) association, (iv) movement, (v) residence, and (vi) **profession / occupation (Hence, 2 is not correct)**
- **Article 29:** Protection of language, script and culture of minorities
- **Article 30:** Right of minorities to establish and administer educational institutions

Status of Right to property (Article 300A):

Article 300-A provides that no person shall be deprived of his property save by authority of law. Right to property is a legal right available to any person, whether citizen or non-citizen.

2. (b)

Statement 1 is correct: Chief Election Commissioner and Election Commissioners enjoy the same status and receive salary and perks as available to Judges of the Supreme Court of India.

Statement 2 is correct: All Election Commissioners have equal say in the decision making of the Commission. When there is a disagreement between the Chief Election Commissioner and the two other Election Commissioners, the matter is decided by the Commission by majority.

Statement 3 is not correct: Chief Election Commissioner and other Election Commissioners shall be **appointed by the**

President on the recommendation of a Selection Committee consisting of the Prime Minister, a Union Cabinet Minister, and Leader of Opposition. **The selection committee only recommends, the appointment is done by the President.**

Statement 4 is not correct: President appoints Chief Election Commissioner and Election Commissioners. They have tenure of **six years**, or up to the age of 65 years, whichever is earlier.

3. (a)

Only "Separation of judiciary from executive" is contained in the Part IV of the Constitution of India i.e. Directive Principles of State Policy. Article 50 states that the State shall take steps to separate the judiciary from the executive in the public services of the State. Thus, the CrPC, 1973, was enacted to provide complete separation of the executive functions in the executive magistrate and judicial functions in the Judicial Magistrate under Section 6 of CrPC

4. (c)

"Dissolution" of the House means the end of the life of the Lok Sabha. It puts an end to the representative character of the individuals who at the time composed the Lok Sabha.

Statement 1 is correct: In India, the Lok Sabha has a five-year term, but can be dissolved earlier. According to Article 83(2) of the Constitution, completion of five years from the first day of its meeting amounts to dissolution of the Lower House. The Lower House can also be dissolved earlier by the President on the advice of the Prime Minister. It can also be dissolved if the President feels that no viable government can be formed after the resignation or fall of a regime.

Statement 2 is not correct: As per the Article 94 of the Constitution of India, whenever Lok Sabha is dissolved, the Speaker continues in

office **till immediately before the first meeting of the new Lok Sabha (not till the election of a new speaker)**. The Pro tem Speaker presides over the first sitting of the newly-elected Lok Sabha. Pro tem speaker is appointed by the President to temporarily perform the duties of Speaker. His main duty is to administer oaths to the new members. He also enables the House to elect the new Speaker.

Statement 3 is correct: All bills pending before the Parliamentary Committee of Lok Sabha lapse after dissolution.

5. (b)

Statement 1 is correct: Lok Adalat is one of the alternative dispute redressal mechanisms. It can deal with all types of pending and pre-litigation Civil and Criminal Compoundable cases. However, any matter relating to an offence not compoundable under the law can not be settled in Lok Adalat.

Statement 2 is not correct: It can deal with disputes at pre-litigation stage as well as if they are pending before the courts.

Statement 3 is correct: The award (decision) made by the Lok Adalats is deemed to be a decree of a civil court and is final and binding on all parties and no appeal against such an award lies before any court of law.

6. (d)

Union Minister is not eligible to become a member of the following Parliamentary Committees:

- Public Accounts Committee
- Estimates Committee
- Committee on Public Undertakings
- Committee on Petitions
- Committee on Subordinate Legislation
- Committee on the Welfare of Scheduled Castes and Scheduled Tribes
- Departmentally - Related Standing Committees

7. (c)

Delimitation means the process of fixing the number of seats and boundaries of territorial constituencies in each State for the Lok Sabha and Legislative assemblies.

Statements 1 and 3 are correct: 42nd Amendment Act of 1976 had frozen the total number of Lok Sabha seats allotted to each state as per the 1971 census in order to encourage population control measures. This freeze was to exist until the figures of the first census taken after the year 2000 were published. But the 84th Amendment Act of 2001 extended the freeze on undertaking fresh delimitation till the publishing of the first census after 2026 with the same objective of encouraging population limiting measures.

Statement 2 is correct: 87th Amendment Act of 2003 allowed the rationalization of territorial constituencies in the States, without altering the total number of seats allotted to each State based on the 2001 census. Accordingly, Delimitation Act, 2002 was enacted for the delimitation of Lok Sabha constituencies in the States. This was the last delimitation exercise for Lok Sabha constituencies.

8. (a)

Statement 1 is correct : Section 29C of the Act requires political parties to prepare a report detailing the donations received by them in a financial year. Parties are required to declare all contributions higher than Rs 20,000 in this report, and specify whether they were received from individual persons or from companies.

Statement 2 is not correct: Any company registered under Section 25 of the Companies Act, 1956, can form an electoral trust. Under Section 17CA of the Income-tax Act, 1961, any citizen of India, a company registered in India, or a firm or Hindu Undivided Family or association of persons living in India, can donate to an electoral trust.

Statement 3 is not correct: Section 182(1) of the Companies Act, 2013 places a cap on the amount of money a company could donate in a single financial year, limiting it to 7.5% of the company's average net profits during the previous three financial years.

9. (a)

Statement 1 is correct: The right to be forgotten refers to the right of individuals to limit the disclosure of their personal data on

the internet. It empowers an individual to have information in the form of news, video, or photographs deleted from internet records so it doesn't show up through search engines, like Google in the present case.

Statement 2 is not correct: Digital Personal Data Protection Act 2023 does not expressly provide for the right to data portability and the right to be forgotten. The earlier Personal Data Protection Bill, 2019 provided for these rights.

10. (d)

Option (d) is the correct answer: Central Vigilance Commission (CVC) is the main agency for preventing corruption in the Central government. It was established in 1964 by an executive resolution of the Central government. It was given statutory status in 2003. One of the primary functions of CVC is to inquire or cause an inquiry or investigation to be conducted on a reference made by the Central government wherein it is alleged that a public servant being an employee of the Central government or its authorities, has committed an offence under the Prevention of Corruption Act, 1988.

11. (d)

Option (d) is the correct answer: Nazool land is owned by the government but most often not directly administered as state property. It is escheated to a state government under Section 29 of The Hindu Succession Act 1956. The state generally allots such land to any entity on lease for a fixed period. The government also uses Nazool land for public purposes like building schools, hospitals, Gram Panchayat buildings, etc.

12. (c)

Article 142 of the Constitution of India confers wide-ranging powers on the Supreme Court to pass orders and decrees necessary to ensure 'complete justice' in any case before it.

Statement 1: It falls under the "Judicial review" and not Article 142. Judicial review is the power of the Supreme Court to examine the constitutionality of legislative enactments and executive orders of both the Central and state governments. On examination, if they are

found to be violative of the Constitution, they can be declared as illegal, unconstitutional and invalid.

Statement 2: It is an exercise of the powers under Article 142, as it involves ensuring justice in a specific case by correcting a wrongful detention.

Statement 3: If the Supreme Court finds that an election was conducted in a manner that violates the principles of free and fair elections, it can quash the election results under Article 142 to ensure justice. Recently, the Supreme court had quashed Chandigarh's mayor election using the powers under Article 142.

13. (d)

UAPA gives powers to the government to probe and prosecute people for acts of terrorism, and to designate an organisation as an "unlawful association" or a "terrorist organisation", or an individual as a "terrorist".

Option (d) is the correct answer: While protests with property damage might lead to charges under other laws, the UAPA focuses on actions with the intent to threaten the integrity, sovereignty, or security of India. Not all protests fall into this category, even if unlawful by other standards.

14. (c)

Statement 1 is correct: Under Article 293 (3) of the Constitution, state governments are required to take the Centre's permission for fresh borrowing, if they are indebted to the Government of India.

Statement 2 is not correct: "Public debt of the State" is a subject under the State List of the Constitution of India.

15. (b)

Statement 1 is correct: Nataraja Sculpture is a powerful symbol which combines in a single image, Shiva as creator, preserver and destroyer of the universe and conveys the Indian understanding of the dynamic cycle of time.

Statement 2 is correct: In the Chola period bronze sculpture, Nataraja's left foot is raised and his right foot rests on a demon. The demon

is symbolic of pride and ignorance. In His upper right hand, he holds the damaru, from which came the first sounds of creation. In his upper left hand, he holds fire, symbolizing destruction. **The lower right hand is in Abhaya mudra** — indicating that he offers us protection. Thus all three functions of creating, protecting and destroying are shown in the Nataraja icon.

Statement 3 is not correct: The earliest known Nataraja sculpture, which has been excavated at Ravana phadi cave at Aihole, was made during the early Chalukya rule. But the Nataraja sculpture reached its peak under the Cholas.

16. (d)

Statement I is incorrect : The Ilbert Bill was a legislative act introduced in 1883 during the Viceroyship of Lord Ripon. Whereas, the Indian National Congress was founded in 1885.

Statement II is correct: Ilbert Bill provided for the trial of British or European persons by Indians, and sought equality between British and Indian judges in the country. But the white European opposition forced the government to withdraw the bill, thereby enraging Indians.

17. (b)

Recently, Gwalior was declared as the 'Creative City of Music' by the United Nations Educational, Scientific and Cultural Organisation (UNESCO).

Option (b) is correct: The great singer, Tansen, belonged to the Gwalior. He was one of the nine jewels of the court of Mughal emperor Akbar.

Additional information:

Mulla Daud was the first poet in the ideology of Sufism belonging to Dalmau (Raebareli). His famous poem "Laur Chanda" (or Chandayan) was composed in the Avadhi language.

Sri Purandara Dasa was a great devotee of Lord Krishna, a poet and a musician. He is considered as the father of Carnatic Music. Purandaradasa was born in Kshemapura in Shimoga District in Karnataka

Amīr Khusrau was born in 1253 in Patiyali, Kasganj district, in modern-day Uttar Pradesh, India, in what was then the Delhi Sultanate.

Kozhikode in Kerala was added in UNESCO's Creative Cities Network (UCCN) as City of Literature.

18. (c)

Swami Dayanand Saraswati, a prominent figure of the 19th-century Indian socio-religious reform movements, is best known for his foundational role in the Arya Samaj and his approach to Hindu reform.

Emphasis on female education (a), advocacy of the vernacular in religious discourse (b), and opposition to the caste system (d) were not unique to Dayanand Saraswati; many reformers of the time shared these views. Leaders like Raja Ram Mohan Roy and Jyotirao Phule also emphasized female education and social equality, and the use of vernacular languages in religious and educational contexts was a common theme among reform movements to make religious texts accessible to the common people.

What sets Dayanand Saraswati apart is his belief in Vedic infallibility (c). While many reformers sought to modernize Hinduism by questioning traditional scriptures and practices, Dayanand Saraswati advocated for a return to the ancient Vedas, which he considered the ultimate authority and infallible.

Therefore, option (c) is the correct answer.

19. (a)

Statement 1 is not correct: The temple was built by the two brothers, Virupanna and Veeranna, who were initially in the service of the Vijayanagar kings.

Statement 2 is not correct: Sri Veerabhadra Swamy temple, also known as the Lepakshi temple is dedicated to Veerabhadra, the fiery incarnation of Lord Shiva.

Statement 3 is correct: Its roof is painted with panels of murals depicting scenes from Mahabharata, Ramayana and other Pauranic legends.

20. (b)

Only statements 2 and 3 are correct.

Statement 1 is not correct: The Aihole Inscription, also known as the Aihole prashasti, is a Sanskrit inscription at Meguti Jain temple in Aihole, Karnataka, India. An eulogy dated 634–635 CE, it honors the king Pulakesin Satyasraya (Pulakeshin II) of the Badami Chalukya dynasty.

Statement 2 is correct : The Aihole inscription was written by the Ravikirti, court author of Chalukya King, Pulakeshi II

Statement 3 is correct: He authored the Aihole inscription at Meguti Temple which describes the defeat of Harshavardhana by Pulakesin II and the shifting of the capital from Aihole to Badami.”

21. (a)

Statement I is correct: The Kaisar-i-Hind Gold Medal for Public Service in India was awarded directly by the monarch on the recommendation of the Secretary of State for India. Its most famous recipient is Mohandas Gandhi, who was awarded the Kaisar-i-Hind in 1915. Gandhi returned the medal in 1920 after Jallianwala Bagh massacre.

Statement II is correct and correctly explains Statement I : Gandhiji organized the Natal Indian Ambulance Corps during the Second Boer War in 1899. He received the title of Kaiser-i-Hind by the British government for his work during the Boer War.

22. (a)

Option A is correct: Krishnadeva Raya (ruled 1509-29), the most famous ruler of Vijayanagara, composed a work on statecraft in Telugu known as the Amuktamalyada.. Considered a masterpiece in Telugu literature, the epic poem, ‘Amuktamalyada’ tells the well-known story of the daughter of Periazavar, Goda Devi, who used to wear the garlands intended for Lord Ranganatha before they were offered to the deity, and hence the name ‘Amukta Malya Da’ — one who wears and gives away garlands.

23. (c)

Statement 1 is correct : Rani Velu Nachiyar (3 January 1730–25 December 1796) was a queen of Sivaganga estate from c. 1780–1790. Rani Velu Nachiyar was the first ever woman from a royal family to have challenged the mighty British Empire with the support of Hyder Ali’s army, feudal lords, the Maruthu Brothers, Dalit commanders, and Thandavarayan Pillai.

Statement 2 is correct: Rani Durgavati is said to have been born in 1524, in Mahoba’s Chandela dynasty. She was later married to Dalpat Shah, the son of the Gond King Sangram Shah of the kingdom of Garha-Katanga. Durgavati, however, was widowed in 1550, a few years after her marriage. Her young son Bir Narayan presided over the throne in name and she then “ruled the country with great vigor and courage. During her reign, Durgavati fought with Baz Bahadur, the sultan of the neighbouring Malwa who was eventually defeated by Akbar.

Statement 3 is correct: Avantibai Lodhi was an Indian freedom fighter and the queen of Ramgarh (present-day Dindori) in Madhya Pradesh. An opponent of the British East India Company during the Indian Rebellion of 1857, information concerning her mostly comes from folklore. Following the death of her husband, and protesting against the Doctrine of Lapse, she decided to take up her arms.

24. (d)

Option (d) is correct : India has nominated the “Maratha Military Landscapes”, a network of forts that showcase the strategic military powers of Maratha rule, for inclusion in the UNESCO World Heritage list. The 12 components of this nomination are the forts of **Salher**, Shivneri, Lohagad, Khanderi, Raigad, Rajgad, Pratapgad, Suvarnadurg, **Panhala**, Vijaydurg and Sindhudurg in Maharashtra and **Gingee Fort** in Tamil Nadu.

25. (b)

Statement 1 is correct: Tanjore style of painting is characterized by bold drawing, techniques of shading and the use of pure and brilliant colors flourished at Tanjore in South

India during the late 18th and 19th centuries. A typical example of the Tanjore painting is an illustrated wooden panel of the early 19th century showing the coronation of Rama. The scene is laid under elaborately decorated arches. In the middle Rama and Sita are seated on the throne, attended by his brothers and a lady.

Statement 2 is not correct: Sahibdin (17th century) was an Indian miniature painter of the Mewar school of Rajasthan painting. He was one of the dominant painters of the era, and one of the few whose name is still known today (another being the painter Manohar Das).

Statement 3 is correct: Mewar painting in the eighteenth century increasingly became secular and courtly in ambience. This period was also characterised by the emergence of the genre now known as tamasha paintings which recorded flamboyant court scenes, hunting expeditions, festivals, zenana activities, sports, etc as subjects.

26. (c)

Option (c) is correct : The Battle of Khanwa was fought at Khanwa on March 16, 1527. It was fought between the invading Timurid forces of Babur and the Rajput Confederation led by Rana Sanga for supremacy of Northern India.

27. (b)

Option (b) is not correct: The Wavell Plan (not Cabinet mission) called for a new Executive Council with all Indian members, including equal representation for Muslims and Hindus.

Important Provisions of Cabinet Mission Plan

Rejection of demand for full fledged Pakistan as it was considered politically and economically unviable.

It provided for a three tier government structure consisting of Union of India at 1st tier, Provinces and states at 3rd tier and a group of provinces at intermediate level.

Provinces had the right to opt out of grouping but not the union.

The constituent assembly would consist partly of members elected by provincial assemblies and partly by nominations from the princes.

28. (b)

Option (b) is correct: Skandhavaras refers to military encampments. The term first finds its mention in Satavahana inscription. During the period of Harshavardhana, they gained prominence and grew to the size of contemporary cities.

29. (a)

Option (a) is correct: The architecture of the Qutb Complex, including the famous Qutb Minar and various surrounding structures, primarily reflects a blend of Hindu, Jain, and Islamic styles. This synthesis is evident in the use of Hindu and Jain temples' materials for the construction of Islamic monuments, showcasing a distinctive blend of architectural styles. The Islamic rulers who built the Qutb Complex incorporated elements from conquered Indian temples, including intricate carvings, motifs, and structural designs typical of Hindu and Jain architecture, into the Islamic architectural constructs, such as arches, domes, and minarets.

This fusion created a unique style that characterized the early Islamic architecture in India, distinct from European, Buddhist, Chinese, Chola, Vijayanagara, and Rajput influences.

30. (a)

Statement 1 is not correct: The Mahanadi river basin extends over states of Chhattisgarh and Odisha and comparatively smaller portions of Jharkhand, Maharashtra and Madhya Pradesh. However, West Bengal is not part of the catchment area of Mahanadi river.

Statement 2 is correct: Narmada river basin extends over states of Madhya Pradesh, Gujarat, Maharashtra and Chhattisgarh. The river is bounded by the Vindhyas on the north, by the Maikala range on the east, by the Satpuras on the south and by the Arabian Sea on the west. The hilly regions are in the upper part of the

basin, and lower middle reaches are broad and fertile areas well suited for cultivation.

Statement 3 is not correct: The Godavari basin is bounded on the north by the Satmala hills, on the south by the Ajanta range and the Mahadeo hills, on the east by the Eastern Ghats and on the west by the Western Ghats.

The upper reaches of the Godavari drainage basin are occupied by the Deccan Traps containing minerals, hypersthene, augite, diopside, enstatite, magnetite, epidote, biotite, zircon, rutile, apatite and chlorite.

The middle part of the basin is principally Archean granites and Dharwars composed of phyllites, quartzites, amphiboles and granites.

31. (c)

Neodymium and Praseodymium are sources of Rare earth elements.

More than 80 % of the usage of rare earths in value terms is in Rare earth permanent magnets which require Magnetic Rare Earth Elements (REE) i.e. Neodymium, Praseodymium, Dysprosium and Terbium. These are precious REE since they find use in energy transition initiatives.

High value REE are Dysprosium and Terbium which are not available in extractable quantities in Indian reserves already under exploitation.

In Indian deposits, only Neodymium and Praseodymium are available and are being extracted upto 99.9 % purity level. Neodymium and Praseodymium occur in the Beach Sand Minerals (BSM) ore of Indian deposits

32. (b)

Statement 1 is not correct: The photosphere is the deepest layer of the Sun that we can observe directly. The corona is the outermost layer of the Sun

Statement 2 is correct: Core is the central region where nuclear reactions consume hydrogen to form helium. These reactions release the energy that ultimately leaves the surface as visible light.

Statement 3 is correct: The corona cannot be seen with the naked eye except during a total solar eclipse, or with the use of a coronagraph. The corona does not have an upper limit.

33. (d)

Statement I is incorrect: The temperature depth profile of ocean water shows how the temperature decreases with increasing depth. However, the decline is not uniform as the thermocline layer witnesses a higher lapse rate than the surface layer and deep ocean.

Statement II is correct: Ocean temperature declines with depth due to reduced sunlight penetration and insulation, colder water from polar regions sinking, and pressure compressing deeper water, all affecting heat distribution.

34. (a)

Statement 1 is not correct: Patkai Bum hill merges into Naga Hills, where Saramati (3826 metres) is the highest peak.

Statement 2 is not correct: Jaintia, Khasi and Garo Hills lies to the south-west of the Barail Range

Statement 3 is correct: The Barak river is bounded by the Barail range separating it from the Brahmaputra basin on the north, by the Naga and Lushai hills on the east and by Mizo hills and territory of Bangladesh on the south and west.



35. (c)

The Arctic Warming: It makes the polar jet stream waiver and increases the chance of it merging with the subtropical westerly jet stream in winters. It causes the jet stream to move northwards and reduces precipitation in northwest India.

North Atlantic Oscillation: It is a random fluctuation of air pressure over the North Atlantic Ocean due to a **high-pressure region above the Azores Islands and a low-pressure region over Iceland**. In winter, the negative phase of oscillation reduces the frequency and intensity of western disturbances that causes low rainfall in India.

Subtropical Westerly Jet Stream: It brings **western disturbances to India**, is shifting northwards during winters, that reduces winter precipitation in northwest and central India, and, increasing the chances of extreme rainfall events southwards during summers.

36. (a)

The insolation received at the surface varies from about 320 Watt/m² in the tropics to about 70 Watt/m² in the poles. Maximum insolation is received over the subtropical deserts, where the cloudiness is the least. Equator receives comparatively less insolation than the tropic. This is due to more cloudiness over the equator that causes loss of a sizable portion of incoming solar radiation while passing through the atmosphere. **Hence, Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.**

37. (a)

Nile River is the longest river in the world. It rises south of the Equator and flows northward through northeastern Africa to drain into the Mediterranean Sea. Its basin includes parts of Tanzania, Burundi, Rwanda, the Democratic Republic of the Congo, Kenya, Uganda, South Sudan, Ethiopia, Sudan, and the cultivated part of Egypt. **Zambia and Zimbabwe do not fall under the Nile River Basin.**

38. (c)

Statement 1 is correct: The point where the energy is released is called the focus of an earthquake, alternatively, it is called the hypocentre. It is the point within the Earth where the seismic waves originate.

Statement 2 is correct : The point on the surface, nearest to the focus, is called epicentre. It is the first one to experience the waves. It is a point directly above the focus.

Statement 3 is correct : The earthquake events are scaled either according to the magnitude or intensity of the shock. The magnitude scale is known as the Richter scale. The magnitude relates to the energy released during the quake. The magnitude is expressed in absolute numbers, 0-10.

39. (a)

Red Sea is red primarily due to a type of blue-green algae called *Trichodesmium erythraeum*. *T. erythraeum* is a type of cyanobacteria (blue-green algae) and is found in much of the world's tropical and subtropical oceans. It grows abundantly in the Red Sea and is subject to periodic blooms, which occur when there is a rapid growth of the population. When the algae die off, the water takes on a reddish-brown color as the dying algae spreads across the sea's surface.

40. (b)

Statement 1 is correct: Atmospheric rivers are relatively long, narrow regions in the atmosphere – like rivers in the sky – that transport most of the water vapor outside of the tropics.

Statement 2 is correct: Not all atmospheric rivers cause damage. In fact, most are weak systems that often provide beneficial rain or snow that is crucial to the water supply. Atmospheric rivers are a key feature in the global water cycle.

Statement 3 is not correct: Atmospheric rivers primarily occur during winter of the respective hemisphere.

Additional information:

A well-known example of atmospheric river is the "Pineapple Express," that brings moisture from the tropics near Hawaii over to the U.S. West Coast.

41. (c)

Option (c) is the correct answer: Recently, Indian Astronomical Observatory (IAO) at Hanle and Merak in Ladakh observed an intense red coloured aurora. It was a type of Stable Auroral Red Arc.

An aurora is a glorious curtain of light that is usually seen from high latitudes like Scandinavia, and they are not expected to occur at lower latitudes. They occur due to the interaction between the Earth's magnetosphere and the incoming solar wind that carries charged particles and magnetic fields.

A Stable Auroral Arc (SAR) is red in colour as opposed to the usual green-blue curtains of light seen from high latitudes.

42. (c)

The Fujiwhara effect describes the interaction between two cyclones that come close to each other. The possible outcomes of this interaction include the cyclones spinning around each other, possibly drawing closer, and in some cases, one cyclone absorbing the other or causing the weaker cyclone to orbit the stronger one. These interactions can lead to changes in the path and intensity of the cyclones involved.

However, option (c) i.e. One cyclone becoming stationary while the other rapidly increases in speed is not a typical outcome of the Fujiwhara effect. The interaction generally involves mutual orbiting around a point between them or the merging of the cyclones. The notion of one cyclone becoming stationary while the other rapidly increases in speed does not align with the dynamics of the Fujiwhara effect, where the movement and intensities of both cyclones are influenced by their mutual interaction.

43. (d)

Context: Recently, Elon Musk announced that the first human has received an implant from his Brain - computer interface company Neuralink.

Option (d) is the correct answer: Brain-computer interface is a technology that allows communication between the brain and an external device using the thoughts. BCI is a system that translates brain signals into commands for an external device, such as a computer, robotic limb, or communication device. The technology is still largely experimental, but its possibilities are vast. For example, it could help people with paralysis regain control of their limbs and enable

servicemembers to operate a drone hands-free on the battlefield.

44. (c)

Nipah virus (NiV) is a zoonotic virus (it is transmitted from animals to humans) and can also be transmitted through contaminated food or directly between people. In infected people, it causes a range of illnesses from asymptomatic (subclinical) infection to acute respiratory illness and fatal encephalitis. Fruit bats of the Pteropodidae family are the natural host of Nipah virus.

Statement 1 is correct: According to the Indian Council of Medical Research, the mortality rate of Nipah is around 60% as compared to that of Covid which was nearly 3% in the country. However, Nipah virus has a lower transmission rate compared to the highly contagious Covid-19 virus.

Statement 2 is incorrect: Nipah virus can be transmitted to humans from animals (such as bats or pigs), or contaminated foods and can also be transmitted directly from human-to-human. There have been cases of human to human transmission too.

45. (a)

Option (a) is the correct answer: Neutrinos are the most common matter particle in the universe, still they are called ghost particles due to their extremely weak interaction with matter, allowing them to pass through most materials unimpeded. Neutrinos have a very small mass (not zero, but close to it for practical purposes in many contexts), and they are neutral particles, meaning they carry no electric charge. These characteristics contribute to the difficulty in detecting them, as they rarely interact with other particles. **Therefore, both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.**

46. (c)

Statement 1 is correct: According to NASA, the highest concentration of water ice is in the south pole's shadowed craters. If water ice exists in sufficient quantities, it could be a

source of drinking water for moon exploration and could help cool equipment. It could also be broken down to produce hydrogen for fuel and oxygen to breathe, supporting missions to Mars or lunar mining.

Statement 2 is correct: Lunar south pole has permanently shadowed regions which have not received direct sunlight in a very long time. Due to this, the South Pole region has craters that are cold traps and contain a fossil record of the early Solar System.

47. (c)

Statement 1 is correct: RFID tags can be embedded in products, allowing for unique identification and tracking throughout the supply chain. This helps detect counterfeit products and ensures authenticity.

Statement 2 is correct: RFID tags can be placed on trains and along tracks for real-time location tracking and communication. This can be used to improve safety and prevent accidents.

Statement 3 is not correct: RFID technology is not used for sending encrypted messages over the internet. It is used for identification and tracking purposes. Internet communication and encryption protocols are distinct from RFID technology.

Statement 4 is correct: RFID tags in vehicles can communicate with toll booths automatically. This streamlines toll payment and reduces traffic congestion.

48. (c)

Context: Recently, Kakrapar Atomic Power Project Unit-4 achieved first criticality.

Statement I is correct and Statement II is not correct: "First criticality" moment of a nuclear power plant signifies the start of a controlled and a sustained nuclear fission reaction. At the point of first criticality, the number of neutrons produced by fission is equal to the number of neutrons lost through leakage and absorption. This balance is what allows the chain reaction to be sustained at a controlled rate without increasing or decreasing in intensity.

Additional information: If the number of neutrons produced by fission becomes greater than the number of neutrons lost due leakage/absorption, this state is called super-criticality.

49. (d)

Working of soap: Soap molecules have a dual nature, with one end being hydrophilic (water-attracting) and the other end being hydrophobic (water-repelling). The hydrophobic end attaches to grease and oil, which do not mix with water, while the hydrophilic end attaches to water. When soap is applied to dirty dishes, the soap molecules surround the grease and oil particles with their hydrophobic ends. This action forms micelles (tiny droplets) with the grease and oil encapsulated in the center, allowing them to be suspended in water. As a result, when the water is rinsed away, it carries the grease, oil, and soap micelles along with it, effectively cleaning the dishes.

Option (d) is the correct answer: Soap does not break down grease molecules chemically; instead, it acts as an emulsifier. An emulsifier is an additive which helps two liquids mix. Soap's function as an emulsifier is crucial for cleaning. It lets water mix with oils and grease, which would normally remain separate, enabling their removal.

50. (d)

The Department of Telecommunications (DoT) has recently developed an artificial-intelligence-based facial recognition tool called ASTR. It has the capability of running checks on subscriber databases of telecom operators to deduce whether it contains multiple connections associated with the same person. Therefore, it is aimed at detecting fraudulent mobile connections.

51. (d)

Statements 1 and 2 are correct: An Electrified Flex Fuel Vehicle has both a Flex Fuel engine and an electric powertrain. This gives it the ability to provide dual benefit of higher ethanol use and much higher fuel efficiency as is in case of a Strong Hybrid Electric Vehicle (SHEV), which can provide 30-50% higher

Fuel Efficiency as it can run 40-60% in EV mode with engine shut off.

Statement 3 is correct: It provides opportunity for greater substitution of petrol by Ethanol as it is capable of using any of the higher blends of ethanol mix beyond 20%.

Statement 4 is correct: These vehicles can operate in full electric mode for short distances, utilizing the battery and motor, leading to further fuel savings and emission reductions.

52. (d)

Option (d) is the correct answer: Kyasanur Forest disease (KFD) is caused by Kyasanur Forest disease virus (KFDV), a member of the virus family Flaviviridae. KFDV was identified in 1957 when it was isolated from a sick monkey from the Kyasanur Forest in Karnataka. Hard ticks (*Hemaphysalis spinigera*) are the reservoir of KFD virus and once infected, remain so for life. Rodents, shrews, and monkeys are common hosts for KFDV after being bitten by an infected tick.

53. (c)

Statement 1 is correct: CAR-T cell therapy involves engineering T cells to express a chimeric antigen receptor (CAR) that specifically targets a tumor antigen. By using CRISPR/Cas9, researchers can modify CAR-T cells to target multiple antigens, potentially increasing the effectiveness of the therapy against tumors that express heterogeneous antigens.

Statement 2 is correct: CRISPR/Cas9 can be used to precisely edit the genome of T cells to enhance the specificity of CAR-T cells, reducing the likelihood of them binding to non-tumor cells.

Statement 3 is correct: CRISPR/Cas9 can be utilized to modify CAR-T cells or the tumor microenvironment in a way that suppresses these immune evasion pathways, enhancing the ability of the immune system to attack cancer cells.

54. (d)

Context: Scientists at the CSIR-National Aerospace Laboratories (NAL) have

successfully tested an unmanned aerial vehicle, called High Altitude Pseudo Satellite (HAPS

Option (d) is the correct answer: High-altitude pseudo-satellite (HAPS) typically operate in the stratosphere, not the troposphere. The stratosphere is above the troposphere and offers more stable conditions for long-duration flights. Operating in the stratosphere allows HAPS to avoid weather conditions and air traffic found in the troposphere, making them suitable for sustained operations.

Additional information:

Compared to satellites, the lower altitude of HAPS allows for higher resolution imagery and data collection.

HAPS tested by NAL runs entirely on solar power, and can remain in the air for months on end.

55. (b)

Context: India has recently decided to formally join the Square Kilometer Array (SKA) project, an international scientific collaboration working to build the world's largest radio telescope.

Option (b) is the correct answer: One of the most important gaps in our understanding of our Universe's history is the "Cosmic Dawn." It is the period from about 50 million years to one billion years after the Big Bang when the first stars, black holes, and galaxies in the Universe formed.

56. (b)

The overarching scheme "PRITHvi Vlgyan (PRITHVI)" of the Ministry of Earth Sciences, was recently approved for implementation during the period from 2021-26. The scheme holistically addresses all the five components of the earth system namely atmosphere, hydrosphere, geosphere, cryosphere and biosphere to improve the understanding of the Earth System Sciences and to provide reliable services for the country.

The PRITHVI scheme encompasses five on-going sub-schemes namely:- i. Atmosphere & Climate Research-Modelling Observing Systems & Services (ACROSS). ii. Ocean

Services, Modelling Application, Resources and Technology (O-SMART). iii. Polar Science and Cryosphere Research (PACER). iv. Seismology and Geosciences (SAGE). v. Research, Education, Training and Outreach (REACHOUT)

57. (c)

Context: A new alloy was recently found that can act as an effective magnetic refrigerant that can be an alternative cooling agent for minimizing greenhouse gas emissions and meet the global demand for higher energy efficiency for tackling global warming.

Working of magnetic refrigeration technology: Magnetic cooling effect (MCE) is defined as the reversible temperature change of a magnetic material when it is subjected to an external applied magnetic field. In the magnetic refrigeration cycle, a magnetic field is applied on the magnetic material under an adiabatic process (no exchange of heat with the surrounding). Initially randomly oriented magnetic moments get aligned along the external magnetic field, resulting in the heating of the magnetic material. This heat is transferred from the material to the ambience. When the magnetic field is removed during adiabatic demagnetization, the magnetic moments of the material become randomized, resulting in a decrease in temperature below the ambient temperature.

Primary advantage of magnetic refrigeration technology: It offers an energy-efficient and environment-friendly cooling technology as an alternative to the vapor-cycle refrigeration technology in use today.

58. (c)

Optical fibres are made of thin cylindrical strands of glass. The diameter of a typical fibre is close to the diameter of a human hair. These fibres can carry information, such as text, images, voices, videos, telephone calls, and anything that can be encoded as digital information, across large distances almost at the speed of light.

Statement 1 is correct: Optical fibers have a much larger bandwidth capacity compared to

traditional copper cables. This enables them to transmit significantly more data at faster speeds.

Statement 2 is correct: Signals traveling through optical fibers experience very low attenuation (loss of strength) over long distances. This means they can be transmitted over vast distances without requiring as many repeaters to amplify the signal.

Statement 3 is correct: Optical fibers are not affected by electromagnetic interference from sources like power lines or radio signals. This ensures a reliable signal transmission, even in noisy environments.

59. (b)

Statement 1 is correct: Green Credits Programme, launched by the Union Ministry of Environment, Forest and Climate Change, is an effort to create a market-based incentive for different kinds of voluntary environment-positive actions, not just for carbon emission reductions.

Statement 2 is correct: Unlike the carbon markets, which are more focused on industry and corporations, green credit programmes can benefit individuals and communities as well. Both individuals and companies can earn carbon credits. To obtain Green Credits, individuals and entities must register their activities through the central government's dedicated app/website.

Statement 3 is not correct: There is no such provision under the Green credit program.

Additional information: Green Credits Programme is part of the 'LiFE' - 'Lifestyle for Environment' movement.

60. (a)

Recently, the Government of India launched 'Urea Gold' fertilizer. Developed by the state-owned Rashtriya Chemicals and Fertilizers Ltd (RCF).

Statement 1 is not correct: Urea Gold is a new variety of Urea that is coated with Sulphur (not Nanoparticles).

Statement 2 is correct and statement 3 is not correct: Normal urea contains 46% of a

single plant nutrient: Nitrogen or N. Urea Gold has 37% N plus 17% sulphur or S and aims at two things. The first is **to address sulfur deficiencies** in the soil. Second is **to improve the nitrogen use efficiency (NUE)** of urea. Coating of S over urea ensures a more gradual release of N. By prolonging the urea action, the plants stay greener for a longer time.

61. (d)

The above paragraph describes the Nagarjunsagar-Srisailem Tiger Reserve.

Additional information:

Nagarjunsagar-Srisailem Tiger Reserve is in the state of Andhra Pradesh.

Among all the tiger reserves in India, Nagarjunsagar-Srisailem Tiger Reserve. has the largest area under the “critical tiger habitat”.

62. (c)

Both statements are correct: First ever Snow Leopard Population Assessment in India (SPAI) has estimated a population of 718 in Ladakh, Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh. The highest number of snow leopards were recorded in Ladakh, followed by Uttarakhand.

Additional information:

Out of the total surveyed snow leopards, most of them live in unprotected areas. Only a third of their habitat is under legal protection.

Snow leopards are in the “vulnerable” category of the International Union for Conservation of Nature or IUCN “Red List of Threatened Species”.

Padmaja Naidu Himalayan Zoological Park (PNHZZP), also known as the Darjeeling Zoo has the only conservative breeding programme for snow leopards in the entire country.

63. (c)

Statement I is correct and statement II is not correct: Lichens are considered as a good indicator of air pollution, as they are sensitive to atmospheric pollution such as nitrogen. Sensitive lichen species thrive in clean air and their abundance indicates healthy ecosystems.

Additional information: Lichen is not a single organism; it is a stable symbiotic association between a fungus and algae and/or cyanobacteria. Like all fungi, lichen fungi require carbon as a food source; this is provided by their symbiotic algae and/or cyanobacteria, that are photosynthetic.

64. (c)

All of the given choices, Sugarcane juice, B-heavy Molasses and C- heavy Molasses are permitted for production of ethanol as per the National Biofuel Policy 2018.

65. (c)

Statement 1 is correct and Statement 2 is not correct : Coal gasification is the process of converting coal into synthesis gas (also called syngas), which is **mainly a mixture of hydrogen (H₂), carbon monoxide (CO) and carbon dioxide (CO₂)**. The syngas can be used in a variety of applications such as in the production of electricity and making chemical products, such as fertilizers.

Statement 3 is correct: According to the Ministry of Chemicals and Fertilisers, urea is currently produced using pooled natural gas, which comprises both domestic natural gas and imported LNG. The usage of locally available coal for making fertilizers would help reduce the import of LNG.

Statement 4 is correct: Government of India has launched National Coal Gasification Mission to achieve coal gasification and liquefaction of 100 MT of coal by 2030. In order to promote coal gasification, Ministry of Coal has formulated a policy wherein, a provision has been made for 50% rebate in revenue share for all future commercial coal block auctions for the coal used in gasification purpose provided the coal quantity used for gasification is at least 10% of total coal production.

66. (a)

Statement 1 is correct: The saltwater crocodile is the largest of all crocodilians, and the largest reptile in the world.

Statement 2 is not correct: Apart from the eastern coast of India, the saltwater crocodile is extremely rare on the Indian subcontinent. A large population is present within the Bhitarkanika Wildlife Sanctuary of Odisha while smaller populations occur throughout the Sundarbans. Populations are also present within the mangrove forests and other coastal areas of the Andaman and Nicobar Islands in India.

Statement 3 is not correct: Saltwater crocodile is listed as “Least Concern” on the IUCN Red List.

Additional information: As their name suggests, saltwater crocodiles are able to live in coastal habitats, but they are comfortable in freshwater rivers as well.

67. (a)

The black-spotted croaker, or the Ghol fish — considered a fisherman’s lottery — was recently declared the state fish of Gujarat. The Gujarat government chose the Ghol because of its economic value and its uniqueness. The fish is valuable because of its meat and air bladder. Ghol fish is used to make beer and wine and its air bladder is used in pharmaceuticals.

The fish is usually found in the Indo-Pacific region that stretches from the Persian Gulf to the Pacific Ocean. In India, the Ghol fish is found in the marine areas of Gujarat and Maharashtra in a golden-brown color.

68. (a)

Statement 1 is correct: Under the Act, the chairman of a State Pollution Control Board is nominated by the State government. The amended act provides that the central government will prescribe the manner of nomination and the terms and conditions of service of the chairman.

Statement 2 is not correct: On the contrary, the amended act removes the provisions of imprisonment for several violations, deemed “minor”, and replaces them with fines, to the tune of ₹10,000 extending up to ₹15 lakh.

Statement 3 is not correct: It will initially apply to Himachal Pradesh, Rajasthan, and

the Union Territories. Other states may pass resolutions to extend its applicability to their states.

69. (a)

Statement I is correct: According to Bergmann’s Rule, animal species and populations of larger size are found in colder environments, while species of smaller size are found in warmer regions.

Statement II is correct: As an organism’s size increases, its surface area increases more slowly compared to its volume. This means larger organisms have a smaller surface area relative to their volume.

Statement II correctly explains Statement I:

Animals lose heat through their skin, and since larger animals have a lower surface area-to-volume ratio, they lose heat more slowly.

This is a significant advantage for survival in a cold climate.

70. (c)

Context: Recently, the United Nations named seven initiatives from across Africa, Latin America, the Mediterranean and Southeast Asia as the World Restoration Flagships.

Option (c) is correct: The UN World Restoration Flagships are the most ambitious, promising or successful examples of large-scale ecosystem restoration. They offer an opportunity for initiatives and countries to be globally recognized and celebrated for their restoration success stories. It’s a key component of the UN Decade on Ecosystem Restoration.

Additional information:

Ecosystem restoration: It means assisting in the recovery of ecosystems that have been degraded or destroyed, as well as conserving the ecosystems that are still intact.

UN Decade on Ecosystem Restoration: It aims to halt the degradation of ecosystems, and restore them to achieve global goals. The UN Decade runs from 2021 through 2030. It is led by the UN Environment Programme (UNEP) and the Food and Agriculture Organization.

71. (b)

Convention on Migratory Species (CMS) is an environmental treaty of the UN that provides a global platform for the conservation and sustainable use of migratory animals and their habitats.

Option (b) is correct:

CMS has extensively recognized the importance of identifying and protecting ecological networks for CMS species throughout their ranges.

The ecological network approach emphasizes connectivity across landscapes beyond designated sites. This is important for migratory species that move across vast distances and require a network of habitats for their survival.

Ecologically connected networks can facilitate the movements of migratory species between habitat patches and geographically link individuals and populations throughout their migratory cycles.

Additional information:

CMS is the only global convention specializing in the conservation of migratory species.

The CMS pact was signed in 1979 in Germany and is known as the Bonn Convention.

India has been a party to the CMS since 1983.

72. (a)

A golden tiger, also called tabby tiger or strawberry tiger, is a tiger with blonde or pale-golden color and reddish stripes in place of black stripes like in normal tigers.

They aren't a separate subspecies of the tiger family as they look different only due to genetic reasons. Their color variation is the result of a recessive gene that appears as a mutation in color-creating genes. The yellow skin of tigers is controlled by a set of 'agouti genes' while the black stripes are controlled by 'tabby genes' and their alleles. Suppression of any of these genes may lead to color variation in a tiger. **Therefore, Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I**

Additional information:

Inbreeding among tigers increases the chances of offspring being affected by recessive traits.

Kaziranga National Park has the only available evidence of golden tigers in the wild.

73. (a)

Among the given options, only Exports from Exclusive Economic Zones are included in the GDP.

Gross Domestic Product measures the aggregate production of final goods and services taking place within the domestic economy during a year.

Resale of goods: The resale of goods doesn't add new production to the economy, therefore it is not included in the GDP.

Social security benefits: These are transfer payments from the government and don't represent the production of goods or services. Hence, it is not included in the GDP.

Exports from Exclusive Economic Zones: An "exclusive economic zone," or "EEZ" is an area of the ocean, generally extending 200 nautical miles (230 miles) beyond a nation's territorial sea, within which a coastal nation has jurisdiction over both living and nonliving resources.

74. (a)

Context: Reserve Bank of India (RBI) has allowed default loss guarantee (DLG), a safety-net arrangement among banks, non-banking finance companies, and lending service providers (LSPs, popularly known as fintech players) in the digital lending space. DLG is also known as First Loss Default Guarantee (FLDG).

Option (a) is the correct answer: FLDG is an arrangement whereby a third party such as a financial technology (fintech) player (LSP) compensates lenders if the borrower defaults. The LSP provides certain credit enhancement features such as first loss guarantee up to a pre-decided percentage of loans generated by it. From the perspective of the fintechs, offering FLDG acts as a demonstration of its underwriting skills. From the perspective of the lender, it ensures the platform's skin in the

business. The step is expected to boost fintech activity in the financial sector.

75. (b)

Foreign Investors can be classified majorly as Foreign Direct Investments (FDIs) and Foreign Portfolio Investments (FPIs).

Statement 1 is not correct: FIIs are generally big investor institutions: Pension Funds, Mutual Funds, Insurance Companies, etc. They come under the Foreign Portfolio Investments (FPIs). FPIs are investments by non-residents in Indian financial assets **shares, government bonds, corporate bonds, convertible securities, and infrastructure securities**. Therefore, FIIs can invest in both equity and debt markets.

Statement 2 is correct: FDIs are investments to acquire a substantial ownership stake in a company or project by an investor, company, or government from another country that directly augments the production of goods and services in an economy. A foreign company forming a joint venture with an Indian company is an example of FDI.

Statement 3 is correct: Global Depository Receipts (GDR) issues based on shares of a company are considered as part of Foreign Direct Investment (FDI) in India, though it is an indirect way of holding shares.

76. (c)

Option (c) is the correct answer: Angel Tax refers to the income tax payable on capital raised by unlisted companies via the issue of shares where the share price is seen as exceeding the fair market value of the shares. The excess realization is treated as income and taxed accordingly. This tax was introduced to combat money laundering through the transfer of shares of unlisted companies at exorbitantly high prices, but it also impacts genuine investments in startups.

77. (a)

Purchasing Power Parity (PPP) exchange rate compares different countries' currencies through a "basket of goods" approach. That is, the PPP exchange rate is the exchange rate at

which the currency of one country would have to be converted into that of another country to buy the same amount of goods and services in each country.

Statement I is correct: PPP exchange rates offer a more accurate reflection of the purchasing power of different currencies, which is essential for comparing living standards between countries.

Statement II is correct and correctly explains the Statement I: PPP takes into account the relative prices of goods and services in different countries. The core concept of PPP is to factor in the cost of a comparable "basket of goods" in different countries to determine the exchange rate that equates purchasing power. This helps policymakers and economists make better comparisons of economic output and living standards between countries.

78. (b)

Statement 1 is correct: Legal tender is a form of money that cannot be refused by any citizen of the country for settlement of any kind of transaction. The e₹ is in the form of a digital token that represents legal tender issued by a central bank. It is being issued in the same denominations as the paper currency and coins. Whereas, UPI is not a legal tender but simply a platform through which transactions happen digitally.

Statement 2 is not correct: e₹ is a digital currency issued by the RBI, and hence is the liability of RBI. Whereas, UPI being a payment medium is not a liability of RBI.

Statement 3 is correct: The bank acts as an intermediary in every UPI transaction. As a result, in the UPI transaction, the bank account is debited and money is sent to the bank of the recipient. Whereas, in the case of Digital rupee, if an individual makes a payment to another individual, it will move from one digital wallet to another digital wallet. There is no routing or intermediation of the bank.

79. (a)

World Trade Organization (WTO)'s Agreement on Agriculture (AoA) includes commitments to reduce and limit subsidies in agriculture to ensure fair competition and market access.

Statement 1 is correct: Replacing MSP with a deficiency payment scheme based on market prices could be more aligned with WTO commitments compared to traditional MSP systems. By basing payments on market prices rather than guaranteeing prices for actual production, it can potentially minimize market distortions. It shifts support from price support to income support, which may be less trade-distorting and thus more acceptable under WTO rules. The focus on minimizing adverse impacts on farmers remains through direct income support, which compensates for low market prices without encouraging overproduction.

Statement 2 is not correct: Linking MSP calculations solely to domestic input costs without considering global prices aims at covering farmers' production costs, but it does not necessarily reduce the trade-distorting nature of MSPs. Without considering global prices, there's a risk of encouraging production that is not market-responsive, potentially leading to surpluses and affecting global trade dynamics. Thus, it might not effectively align with WTO's concerns about minimizing trade distortions.

Statement 3 is not correct: Its direct impact on aligning with WTO commitments might be limited if the reduced procurement still leads to significant market distortions.

Statement 4 is not correct: Expanding MSP to include export-oriented crops could indeed exacerbate concerns regarding trade distortions, as it might encourage production for export markets in ways that are artificially supported by government subsidies. This is likely to be problematic with respect to WTO rules, which aim to prevent trade-distorting practices.

80. (a)

Interim Budget for 2024-25 announced implementation of three Economic Railway Corridors identified under the PM GatiShakti for enabling multi-modal connectivity, which includes: (i) energy, mineral, and cement corridors, (ii) port connectivity corridors, and (iii) high traffic density corridors.

81. (b)

Statement 1 is not correct: Depreciation of the Rupee can actually lead to an increase in inflation, rather than a reduction. This is because the cost of importing goods becomes more expensive, which can raise the overall price level of goods and services in the economy, especially if the imports include essential items like crude oil, which has a broad impact on the cost structure of various sectors.

Statement 2 is correct: This is likely to occur, especially for industries that rely on imported raw materials and components. As the Rupee depreciates, the cost of importing these inputs increases, which in turn can raise the production costs for companies that depend on such imports.

Statement 3 is correct: A weaker Rupee makes Indian goods and services cheaper for foreign buyers, which can potentially boost exports as Indian products can become more competitively priced on the global market.

82. (b)

Payment Banks are a type of differentiated banks and registered as a public limited company under the Companies Act, 2013.

Payment banks can undertake the following activities:

- Acceptance of demand deposits, i.e., current deposits, and savings bank deposits
(Therefore, 1 is correct)
- Issuance of ATM / Debit Cards
- Payments and remittance services through various channels including branches, Automated Teller Machines (ATMs),

Business Correspondents (BCs) and mobile banking

- Issuance of PPIs as per instructions
- Functioning as Business Correspondent (BC) of another bank
- Providing non-risk sharing simple financial services activities, not requiring any commitment of their own funds, such as distribution of mutual fund units, insurance products, pension products, etc.

(Therefore, 4 is correct)

Payment banks can not perform following activities:

- Acceptance of fixed deposits (Therefore, 2 is not correct)
- Issue of credit cards (Therefore, 3 is not correct)
- Setting up subsidiaries to undertake non-banking financial services activities

83. (b)

A Goldilocks economy describes an ideal state for an economy whereby the economy is not expanding or contracting by too much. It has the following characteristics:

Moderate growth and low inflation: The economic growth is neither too high to trigger inflation and nor too low for a slowdown. In simple terms, in a goldilocks scenario, the economy is not expanding by a huge margin with inflation or shrinking into recession.

Low unemployment: The unemployment rate in the economy is low.

84. (b)

Fiscal deficit is the difference between the government's total expenditure and its total receipts excluding borrowing. The fiscal deficit indicates the total borrowing requirements of the government in a year. Reduced fiscal deficit means that the borrowing requirements of the government is less.

1 is correct: When the government borrows less, the demand for credit in the economy

can decrease, potentially leading to lower interest rates. Moreover, a lower fiscal deficit can improve the government's credit rating, which can also reduce the cost of borrowing by making government bonds more attractive to investors.

2 is correct: When the government borrows less, there may be more capital available for private sector borrowing. This, along with potentially lower interest rates, can encourage more private investment. Moreover, Lower fiscal deficits can create a signal of fiscal stability and improve investor confidence.

3 is not correct: When fiscal deficits are reduced, there's less competition for funds in the market, which typically leads to lower interest rates, not higher.

85. (a)

Option (a) is the correct answer: The repo rate is the interest rate at which the RBI lends to commercial banks. The increase in the repo rate by a central bank makes borrowing more expensive for banks. Consequently, banks may increase the interest rates for their customers to maintain their profit margins. This can lead to higher costs of borrowing for businesses and consumers, which might reduce spending and investment due to the higher cost of financing.

Note: While a repo rate hike and declining Wholesale Price Index (WPI) might lead to lower Consumer Price Index (CPI), it is not the most likely economic consequence. CPI is influenced by a wide range of factors including but not limited to monetary policy.

86. (b)

Statement 1 is correct: Off-budget borrowings are loans that are taken not by the Centre directly, but by another public institution which borrows on the directions of the central government. Therefore, Off-budget borrowings are not directly reflected in the government's budget documents.

Statement 2 is correct: Since the liability of the loan is not formally on the Centre, the loan is not included in the fiscal deficit.

Statement 3 is not correct: While they might not directly be reflected in the fiscal deficit, off-budget borrowings still add to the overall debt burden of the country.

87. (a)

Current Account Deficit (or Surplus) measures the gap between the money received into and sent out of the country on the trade of goods and services and also the transfer of money from domestically-owned factors of production abroad. CAD is expressed as a percentage of Total size of the Indian economy (GDP). Expressing the CAD as a percentage of GDP provides a standardized way to compare it across different economies and over time. It shows the relative scale of the deficit compared to the country's economic output.

88. (d)

Virtual Digital Assets (VDAs) encompass a range of digital assets including cryptocurrencies, tokens, and other types of digital assets which can be stored, traded, or transferred electronically.

According to the Income tax act of India, a 'virtual digital asset' refers to **any information or code or number or token (not being Indian currency or foreign currency), generated through cryptographic means or otherwise**, by whatever name called, providing a digital representation of value exchanged with or without consideration, with the promise or representation of having inherent value, or functions as a store of value or a unit of account including its use in any financial transaction or investment, but not limited to investment scheme; **and can be transferred, stored or traded electronically**

Option (d) is the correct answer: Digital coupons issued by retailers are typically meant for single-use and are tied to obtaining goods

or services directly from the issuer. They do not generally represent ownership or investment in a digital asset, nor are they traded or transferred in the same way as cryptocurrencies or tokens. Therefore, under the current Indian regulatory framework, a digital coupon is less likely to be classified as a VDA because it doesn't embody the characteristics of tradable or transferable digital assets.

89. (b)

UPI is India's mobile-based fast payment system, allowing customers to make instant payments round-the-clock using a Virtual Payment Address (VPA). List of countries where Unified Payments Interface can be used: Sri Lanka, Mauritius, **France**, UAE, Singapore, Bhutan, and Nepal.

90. (b)

In 2006, Brazil, Russia, India and China created the "Bric" group. BRIC group was renamed as BRICS (Brazil, Russia, India, China, South Africa) after South Africa was accepted as a full member in 2010. Recently, five countries officially joined the BRICS group Egypt, Ethiopia, Iran, Saudi Arabia, and the United Arab Emirates

91. (a)

Statement 1 is correct: The stop clock will restrict the amount of time taken between overs, meaning that the bowling team will need to be ready to bowl the first ball of their next over within 60 seconds of the previous over being completed.

Statement 2 is not correct: It was not first implemented in the ICC Men's Cricket World Cup 2023. The Stop Clock rule is currently being tested on a "trial basis" for six months between December 2023 and April 2024.

92. (c)

About the Essequibo River: It is the largest river in Guyana, and the largest river between the Orinoco and Amazon. Rising in the Acarai

Mountains near the Brazil–Guyana border, the Essequibo flows to the north for 1,014 km (630 mi) through forest and savanna into the Atlantic Ocean.

About the dispute: Historically, Essequibo was part of Venezuela during the Spanish Colonisation, which changed when this region was awarded to Guyana in 1899 by an International Arbitral Award. In 1841 the Venezuelan government alleged that, in its acquisition of British Guiana (now Guyana) from the Netherlands, the British had encroached on Venezuelan territory. Venezuelan claim is based on the fact that the Essequibo River to the region's east forms a natural border, and the artificially created border was distorted.

93. (c)

Digital Public Infrastructure (DPI) is an evolving concept, but there is growing consensus on it being a combination of (i) networked open technology standards built for public interest, (ii) enabling governance, and (iii) a community of innovative and competitive market players working to drive innovation, especially across public programmes

Statement 1, 2 and 4 are correct: India's DPI includes Ayushman Bharat Digital Mission, CoWIN portal, Government-e-Marketplace, AADHAAR, UPI, e-Sanjeevani, Digilocker, API Setu, DIKSHA portal etc.

3 is not correct: Bharat Pe is a privately owned fintech company offering payment services and merchant solutions. It does not fall under the India's Digital public infrastructure

94. (b)

Statement 1 is not correct: In FY23, foreign direct investment (FDI) from the UAE to India surged over three-fold to US\$ 3.35 billion from US\$ 1.03 billion in 2021-22. UAE was the fourth largest investor in India in 2022-23 compared to the seventh in 2021-22.

Statement 2 is correct: I2U2 grouping comprises India, Israel, the UAE and the US.

Statement 3 is correct: India has signed both a Bilateral Investment Treaty and a Comprehensive Economic Partnership Agreement with UAE

95. (d)

'Bharat Ratna', the highest civilian Award of the country, was instituted in the year 1954. The recommendations for Bharat Ratna are made by the Prime Minister himself to the President. No formal recommendations for this are necessary. On conferment of the award, the recipient receives a Sanad (certificate) signed by the President and a medallion. The Award does not carry any monetary grant.

Statement 1 is correct: The Bharat Ratna award was originally confined to recognizing achievements in the arts, literature, science, and public services, as per the 1954 regulations. But currently it is awarded in recognition of exceptional service/performance of the highest order in any field of human endeavor.

Statement 2 is correct: Bharat Ratna Awardees have the same rank as the Union Cabinet Minister in the Table of precedence.

Statement 3 is correct: Conventionally, the number of annual awards is restricted to a maximum of three in a particular year. But in 1999, it was awarded to four individuals. This convention was again broken in 2024.

Statement 4 is correct: Abdul Ghaffar Khan was the first non-Indian to be awarded Bharat Ratna in 1987.

96. (c)

Statement 1 is correct: APAAR, which stands for Automated Permanent Academic Account Registry, is a specialized 12-digit identification system designed for all students in India. This initiative is part of the 'One Nation, One Student ID' program launched by the Union government, aligning with the new National Education Policy of 2020.

Statement 2 is correct: APAAR ID acts as a link to DigiLocker, an online repository, where students securely store essential documents like exam results.

Statement 3 is correct: Registration for creating APAAR ID is voluntary.

97. (d)

Statement 1 is not correct: The Maldives are formed not on a submerged volcanic plateau but rather on a chain of atolls on the Chagos-Laccadive Ridge, which is of volcanic origin. This is supported by the theory that as India moved northward after the volcanic activity that produced the Deccan Traps, the hotspot that created the traps continued to generate a chain of islands in the Indian Ocean, which includes the Maldives.

Statement 2 is not correct: Both the Maldives and Lakshadweep do not experience frequent significant earthquakes as they are not located near the edges of tectonic plates where such activity is common.

Statement 3 is not correct: Both the Maldives and Lakshadweep experience a tropical climate. The Maldives' climate is characterized by temperatures ranging from 24 to 33 degrees Celsius throughout the year and a high level of humidity, with a distinct dry and rainy season associated with monsoons.

98. (b)

Option (b) is the correct answer: National Investigation Agency was established in 2008 and its core purpose is to serve as the Central Counter Terrorism Law Enforcement Agency in India. It is a specialized agency for investigation and prosecution of offences under Unlawful Activities (Prevention) Act and other terrorism-related laws.

99. (c)

Both 1 and 2 are correct: UNAIDS Programme Coordinating Board (PCB) is the governing body of the Joint United Nations Programme on HIV/AIDS (UNAIDS). UNAIDS was established by the UN Economic and Social Council (ECOSOC) and remains the only cosponsored joint programme of the United Nations system.

100.(b)

Statement 1 is correct: They are known as one of the smallest breeds of cattle in the world.

Statement 2 is correct: Punganur is an indigenous breed native to the Punganoor, Vayalpadu, Madanapalli, and Palamaneer talukas of Chittoor district in the Rayalaseema region of southern Andhra Pradesh. They are known for their adaptability to arid conditions.

Statement 3 is not correct: Punganur cows have a moderate milk yield (around 3-5 liters per day), not the highest among Indian breeds. Breeds like Sahiwal and Gir are known for higher milk production.