



# VAJIRAM & RAVI

Institute for IAS Examination

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## Free All-India Mock Test - 1

*for*

Prelims 2023

Delhi & Chennai | Offline & Online

Answer Key  
&  
Detailed Answer Explanation



Answer Key									
1. (c)	11. (a)	21. (b)	31. (a)	41. (a)	51. (a)	61. (b)	71. (b)	81. (a)	91. (c)
2. (a)	12. (b)	22. (d)	32. (d)	42. (d)	52. (c)	62. (a)	72. (b)	82. (a)	92. (d)
3. (c)	13. (c)	23. (c)	33. (a)	43. (b)	53. (a)	63. (a)	73. (d)	83. (b)	93. (b)
4. (b)	14. (c)	24. (a)	34. (d)	44. (d)	54. (a)	64. (a)	74. (b)	84. (c)	94. (c)
5. (c)	15. (d)	25. (b)	35. (d)	45. (c)	55. (d)	65. (d)	75. (d)	85. (c)	95. (b)
6. (d)	16. (a)	26. (c)	36. (d)	46. (b)	56. (d)	66. (d)	76. (d)	86. (b)	96. (b)
7. (c)	17. (b)	27. (a)	37. (b)	47. (a)	57. (d)	67. (a)	77. (b)	87. (a)	97. (d)
8. (b)	18. (c)	28. (d)	38. (c)	48. (b)	58. (c)	68. (d)	78. (b)	88. (b)	98. (c)
9. (c)	19. (a)	29. (c)	39. (b)	49. (d)	59. (b)	69. (d)	79. (b)	89. (d)	99. (a)
10. (d)	20. (c)	30. (a)	40. (c)	50. (c)	60. (a)	70. (a)	80. (b)	90. (d)	100. (a)

Q1.

Answer: c

Explanation:

- **The Preamble to the Indian Constitution reveals four ingredients or components:**
  - » **Source of authority of the Constitution:** The Preamble states that the Constitution derives its authority from the people of India. The words, “**We, the people of India**” indicate the **ultimate sovereignty of the people of India**. Sovereignty means the independent authority, not being subject to the control of any other external power.
  - » **Nature of Indian State:** It declares India to be of a sovereign, socialist, secular, democratic and republican polity.
  - » **Objectives of the Constitution:** It specifies justice, liberty, equality and fraternity as the objectives.
  - » **Date of adoption of the Constitution:** It stipulates November 26, 1949, as the date of adoption of the Constitution.
- **Article 1** (and not the Preamble) of the Indian Constitution describes India as “Union of States”.

Therefore, option (c) is the correct answer.

**Relevance:** A recent speech made by the Vice-President of India was of the view that ‘We the People’ essentially gives primacy to elected members of Parliament and the State Legislatures.

Q2.

Answer: a

Explanation:

- **The Election Symbols (Reservation and Allotment) Order, 1968** empowers the Election Commission of India (ECI) to recognise political parties and allot symbols.
- ECI can decide on disputes among rival groups or sections of a recognised political party staking claim to its name and symbol. **The ECI is the only authority to decide issues on a dispute or a merger of a party.**
- The ECI **cannot take suo moto cognizance of a dispute** over electoral symbol cases. It can act only when at least one party approaches it with its claim. **So, statement 1 is correct.**
- For allocating symbols, the ECI primarily ascertains the support enjoyed by a claimant within a political party in **both its organisational wing and in its legislative wing.**
  - » For the organisational wing, it examines the party’s constitution and its list of office-bearers submitted when the party was united. It identifies the apex committee(s) in the organisation and finds out how many office-bearers, members or delegates support the rival claimants.
  - » For the legislative wing, the party goes by the number of Members of Parliament (MPs) and Members of the Legislative Assembly (MLAs) in the rival camps. It may consider affidavits filed by these members to ascertain where they stand. So, it is not necessary that in case of a split in a political party, the electoral symbol of the party is granted to the group with the highest number of Members of Parliament. **So, statement 2 is not correct.**
- As per the **Election Symbols (Reservation and Allotment) Order, 1968** the decision of the ECI shall be binding on all such rival sections/groups. This applies to disputes in recognised national and state

political parties. For splits in registered but unrecognised parties, the ECI usually advises the warring factions to resolve their differences internally or to approach the court.

Therefore, option (a) is the correct answer.

Relevance: Recently the Election Commission of India heard the dispute with respect to electoral symbols of the two factions of the Shivsena party.

Q3.

Answer: c

Explanation:

- **Public Interest Litigation (PIL)** is a legal action initiated in a court of law for the **enforcement of public interest** or general interest in which the public or a class of the community have pecuniary interest or some interest by which their legal rights or liabilities are affected. **Both High Courts and the Supreme Court** in India have the power to entertain a PIL. **So, point 1 is correct.**
- **Judicial review** is the **power of the Supreme Court and the High Courts under Article 32 and Article 226** of the Constitution of India respectively to examine the constitutionality of legislative enactments and executive orders of both the Central and State Governments. **So, point 2 is correct.**
- The **Supreme Court** (and not the High Court) decides the disputes regarding the **election of the President and the Vice-President of India**. In this regard, it has the **original, exclusive and final authority**. **So, point 3 is not correct.**
- In case of disputes relating to the **election of Members of Parliament** and State Legislatures, **the High Courts have original jurisdiction**. It means they have the power to hear disputes in the first instance, not by way of appeal. **An appeal against the orders of the High Court lies to the Supreme Court** on any question (whether of law and fact) from every order made by a High Court within a period of thirty days from the date of the order of the High Court. **So, point 4 is correct.**

Therefore, option (c) is the correct answer.

Relevance: Recently, the Supreme Court said that the High Courts are not subordinate to Supreme Court.

Q4.

Answer: b

Explanation:

- The **Doctrine of 'Sovereignty of Parliament'** is associated with the British Parliament. Sovereignty means the supreme power within the State. The Indian Parliament is not a sovereign body as there are 'legal' restrictions on its authority and jurisdiction.
  - » The British Parliament is a sovereign body as the supreme power in Great Britain lies with the Parliament. There are no 'legal' restrictions on its authority and jurisdiction.
- The factors that limit the sovereignty of the Indian Parliament are:
  - » **Written Nature of the Constitution:** The Parliament has to operate within the **limits prescribed by the Constitution**. Also, for certain Amendments to the Constitution the ratification of half of the States is also required. **So, point 1 is correct.**
  - » **Federal System of Government:** India has a federal system of government with a constitutional division of powers between the Union and the States. Both have to operate within the spheres allotted to them. Hence, the law-making authority of the Parliament gets confined to the subjects enumerated in the Union List and Concurrent List and does not extend to the subjects enumerated in the **State List** (except in certain situations). **So, point 2 is correct.**
  - » **System of Judicial Review:** The working of an independent judiciary with the power of judicial review also restricts the supremacy of the Parliament. Both the Supreme Court and High Courts can declare the laws enacted by the Parliament as void and **ultra vires (unconstitutional)**, if they contravene any provision of the Constitution. **So, point 3 is correct.**
  - » **Fundamental Rights:** The authority of the Parliament is also restricted by the incorporation of a code of justiciable Fundamental Rights under Part III of the Constitution. **Article 13 prohibits the State** from making a law that either takes away totally or abrogates in part a Fundamental Right. Hence, a Parliamentary law that contravenes the Fundamental Rights shall be void. In Britain, on the other hand, there is no codification of justiciable Fundamental Rights in the Constitution. **So, point 4 is correct.**
- **Parliamentary Privileges do not limit** the sovereignty of the Indian Parliament. This feature of parliamentary privileges in the Indian Constitution is borrowed from the British Constitution. These are

**exemptions, rights or immunities** provided to the Members of each house of the Parliament and the Parliament committees secure the independence and effectiveness of the actions taken by them. **So, point 5 is not correct.**

**Therefore, option (b) is the correct answer.**

**Relevance:** The Supreme Court rejected a writ petition to bar candidates from contesting from more than one constituency in the general or assembly elections, calling it a matter of 'parliamentary sovereignty' and 'political democracy'.

**Q5.**

**Answer: c**

**Explanation:**

- The **Sixth Schedule** of the Constitution of India deals with the **administration of the tribal areas** in the four north-eastern States of Assam, Meghalaya, Tripura and Mizoram.
- As per this Schedule, there shall be a **District Council for each autonomous district** consisting of not more than thirty members, of whom not more than four persons shall be nominated by the Governor of the State and the rest shall be elected on the basis of adult suffrage. **So, point 1 is correct.**
- The tribal areas in the four states of **Assam, Meghalaya, Tripura and Mizoram** have been constituted as Autonomous Districts. But they **do not fall outside the executive authority** of the State concerned. **So, point 2 is not correct.**
- The district and regional councils administer the areas under their jurisdiction. They can make laws on certain specified matters like land, forests, canal water, shifting cultivation, village administration, inheritance of property, marriage and divorce, social customs and so on. But all such laws require the assent of the Governor.
- As per the provisions of **the Fifth Schedule of the Constitution**, each State having Scheduled areas has to establish a **Tribes Advisory Council** to advise on welfare and advancement of the Scheduled Tribes. **So, point 3 is not correct.**
- The **Acts of Parliament or the State Legislature** do not apply to autonomous districts and autonomous regions or apply with specified modifications and exceptions. The power of direction, in this regard, lies either with the President of India or Governor of the State. Thus, in the case of Assam, it lies with the Governor, both in respect of Acts of Parliament or State Legislature. In the case of Meghalaya, Tripura and Mizoram, it lies with the President in respect of Acts of Parliament and Governor in respect of Acts of State Legislature. **So, statement 4 is correct.**

**Therefore, option (c) is the correct answer.**

**Relevance:** Recently, politicians and leaders from Ladakh have been demanding safeguards for the people of the Ladakh region under the Sixth Schedule of the Indian Constitution.

**Q6.**

**Answer: d**

**Explanation:**

- According to the **Trade Unions (Amendment) Act, 2001**, no Trade Union of workmen shall be registered unless it has on the date of making application **not less than seven persons** as its members, who are workmen engaged or employed in the establishment or industry with which it is connected. **So, statement 1 is not correct.**
- According to the **Trade Unions Act, 1926**, a person shall be disqualified for being chosen as, and for being, a member of the executive or any other **office-bearer** of a registered Trade Union if -
  - » He has not **attained the age of eighteen years**. **So, statement 2 is not correct.**
  - » He has been convicted by a Court in India of any offense involving moral turpitude and sentenced to imprisonment unless a period of five years has elapsed since his/her release.

**Therefore, option (d) is the correct answer.**

**Relevance:** Recently, the Karnataka High Court rejected Trade Unions' plea for holding procession on International Labour Day.

**Q7.**

**Answer: c**

**Explanation:**

- A **Welfare State** is a concept of Government in which the State or a well-established network of social



institutions plays a key role in the **protection and promotion of the economic and social well-being of citizens. So, statement 1 is correct.**

» The Directive Principles of State Policy enshrined in the Indian Constitution aim at establishing India as a Welfare State.

- The underlying assumption behind the Welfare State is that the **State is not a necessary evil, but a desirable institution** capable of promoting positive good. The exponents of the Welfare State argued that 'the State could best promote the general welfare by a positive exercise of its powers'.
- In the **Kesavananda Bharati case (1973)** (popularly known as the Fundamental Rights Case) the Supreme Court declared "**the Mandate to build a Welfare State**" as the Basic Structure of the Constitution. **So, statement 2 is correct.**

**Therefore, option (c) is the correct answer.**

**Q8.**

**Answer: b**

**Explanation:**

- The **President of India** is the head of the Indian State and is also the first citizen of India with the main function to preserve, protect and defend the Constitution. The **Governor of a State** is a titular Head or Constitutional Head and at the same time, s/he is the agent of the Centre as the Union Government nominates the Governor in each State. They both have the status of Constitutional Heads. All **executive decisions are taken in their name**. All ordinary/money bills passed must get their assent before they become an Act. **Both of them have powers to promulgate ordinances.**
- The President of India has exclusive powers with respect to grant of pardon in case of martial law; giving assent to Constitutional Amendment Bill and declaration of national emergency.
- The Chief Justice and Judges of the High Courts are to be appointed by the President under clause (1) of Article 217 of the Constitution of India.
- The President of India is empowered to declare an area to be a Scheduled Area. S/He can also increase or decrease its area, alter its boundary lines, rescind such designation or make fresh orders for such redesignation on an area in consultation with the Governor of the State concerned.

**Therefore, option (b) is the correct answer.**

**Relevance:** Recently, the Supreme Court raised questions on Governor's power in the Shiv Sena case.

**Q9.**

**Answer: c**

**Explanation:**

- The **Representation of the People Act (RPA), 1951** regulates the conduct of elections and sets out the qualifications and disqualifications for membership in Parliament and the State Legislative Assemblies.
- Section 8 of the RPA, 1951, contains provisions aimed at decriminalising electoral politics. There are two categories of criminal cases that attract disqualification upon conviction. In the first category are offences that entail disqualification for a period of six years upon any conviction. If the **punishment is a fine, the six-year period will run from the date of conviction**. If there is a **prison sentence, the disqualification will begin on the date of conviction**, and will continue up to the completion of six years after the date of release from jail. **So, statement 1 is correct.**
- Earlier, under Section 8(4) of the RPA, legislators could avoid immediate disqualification. The provision said that with respect to a Member of Parliament or a State Legislator, the disqualification will not take effect for three months. If within that period, the convicted legislator files an appeal or revision application, it will not take effect until the disposal of the appeal or application. However, in **Lily Thomas vs. Union of India**, the Supreme Court struck down clause (4) as **unconstitutional**, thus removing the protection enjoyed by lawmakers. **So, statement 2 is not correct.**
- Under Section 11 of the Act, the **Election Commission of India (ECI) may record reasons and either remove or reduce the period of a person's disqualification**. The ECI exercised this power for Sikkim Chief Minister P.S. Tamang, who served a one-year sentence for corruption, and reduced his disqualification so as to contest a byelection and remain in office. **So, statement 3 is correct.**
  - » The Supreme Court has the power to stay not only the sentence but also the conviction of a person. In some rare cases, conviction has been stayed to enable the appellant to contest an election.

**Therefore, option (c) is the correct answer.**

**Relevance:** The Representation of People Act 1950 and 1951 is applicable in Jammu and Kashmir after the abrogation of Article 370.

Q10.

Answer: d

Explanation:

**Sealed cover jurisprudence:**

- Courts can ask for information from government agencies in **sealed envelopes** that can only be accessed by judges. The **Constitution of India or a specific law does not define** the doctrine of sealed cover, the Supreme Court derives its power to use it from Rule 7 of Order XIII of the Supreme Court Rules and Section 123 of the **Indian Evidence Act of 1872**.
- It is a practice used by the **Supreme Court, High Courts and sometimes even lower courts**. It is stated under the said rule that the Chief Justice or court can direct certain information to be kept under sealed cover which is confidential in nature.
- No party would be allowed access to the contents of such information, except if the Chief Justice himself orders that the opposite party be allowed to access it. It also mentions that information can be kept confidential if its publication is not considered to be in the interest of the public.

**Therefore, option (d) is the correct answer.**

**Relevance:** The Chief Justice of India (CJI) recently admonished a counsel for submitting a 'sealed cover report' to the court.

Q11.

Answer: a

Explanation:

- The **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)** was passed in 2005 and aimed at enhancing the livelihood security of households in rural areas.
- Under it, the **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** is a demand-driven scheme that guarantees **100 days of unskilled work per year** for every rural household that wants it, covering all districts in the country except those with a 100% urban population.
- The minimum wage rate under MGNREGS is fixed by the Central Government on the basis of the **Consumer Price Index-Agricultural Labourers (CPI-AL)**.
  - » It is an important indicator of the changes in the cost of living for agricultural labourers in India.
  - » The CPI-AL measures the average change over time in the prices paid for the goods and services consumed by agricultural labourers and is used to adjust the minimum wage rate to keep up with inflation and changes in the cost of living.
  - » By using the CPI-AL as a basis for fixing the minimum wage rate, the Central Government can ensure that the *wages provided under the MGNREGS keep up with the changing economic conditions and provide adequate compensation for the work undertaken by agricultural labourers.*

**Therefore, option (a) is the correct answer.**

**Relevance:** There was a major reduction in the allocation of funds towards MGNREGS scheme in the Union Budget 2023-24.

Q12.

Answer: b

Explanation:

- **Sterilization** is a monetary action used by Central Banks including Reserve Bank of India in order to **stem the negative effects emerging from capital inflows or outflows from a country's economy**. Classical sterilization involves Central Banks conducting buy and sell operations in open markets.
- Usually, Central Banks modify classical sterilization by including fiscal policy measures in order to overcome problems like inflation.
- One result of sterilization has been an increase in the proportion of short-term debt in India's total external debt. Additionally, sterilization has had costs associated with it, including the cost of issuing government securities and the potential impact on exchange rates.

**Therefore, option (b) is the correct answer.**

Q13.

Answer: c

Explanation:

- India's external debt could be classified into Sovereign debt and Non-Sovereign debt. **Sovereign External**

**Debt** comprises of external assistance (from multilateral and bilateral sources) on government account, defence debt, **investment in treasury bills**/government securities by **Foreign Portfolio Investors**, Foreign Central Banks and International institutions. It also includes **Special Drawing Rights (SDR) allocations by the International Monetary Fund (IMF)**. So, points 1 and 5 are correct.

- **Foreign Direct Investment is classified as a non-debt capital receipt.** So, point 2 is not correct.
- **External Commercial Borrowings** and deposits by the **Non-Resident Indians (NRIs)** form a part of the **Non-Sovereign debt.** So, points 3 and 4 are not correct.

Therefore, option (c) is the correct answer.

#### Knowledge Box

##### Special Drawing Rights (SDR)

- It refers to is an interest-bearing international reserve asset created by the IMF in 1969 to supplement other reserve assets of member countries.
- The SDR is based on a basket of international currencies comprising the U.S. Dollar, Japanese Yen, Euro, Pound Sterling and Chinese Renminbi.

**Relevance:** The External Debt Management Unit (EDMU) in the Department of Economic Affairs, Ministry of Finance, had recently released the 28th edition of the Status Report on India's External Debt 2021-22.

Q14.

Answer: c

Explanation:

- **Gross Fixed Capital Formation (GFCF)** is defined as the acquisition of produced assets (including purchases of second-hand assets), including the production of such assets by producers for their own use, minus disposals. The relevant assets relate to assets that are intended for **use in the production of other goods and services** for a period of **more than a year**.
- It is called "gross" because the measure **does not make any adjustments** to deduct the consumption of fixed capital (**depreciation of fixed assets**) from the investment figures. So, point 1 is not correct.
- **Non-produced assets** (e.g. land except the value of land improvements, subsoil assets, mineral reserves, natural resources such as water, primary forests) are **excluded** from the official measure of GFCF. Also, ordinary repair work, purchases of durable household equipment (e.g. private cars and furniture) and animals reared for their meat are not part of GFCF. So, point 2 is not correct.
- GFCF is not a measure of total investment, because only the value of net additions to fixed assets is measured, and all kinds of **financial assets**, as well as stocks of inventories and **other operating costs, are excluded.** So, point 3 is correct.
- In fiscal year 2022, the GFCF as a part of GDP at current prices in India was estimated to be over 68 trillion Indian rupees, a significant increase from the previous year.

Therefore, option (c) is the correct answer.

**Relevance:** According to the Economic Survey 2022-23, a beginning has been made in H1 of FY23, which recorded the highest share of Gross Fixed Capital Formation (GFCF) in GDP among all half-years since FY15.

Q15.

Answer: d

Explanation:

- **Capital Adequacy Ratio (CAR)** is the **ratio of a bank's capital in relation to its risk weighted assets and current liabilities**. It prevents commercial banks from taking excess leverage and becoming insolvent in the process. It is measured as:
  - » Capital Adequacy Ratio = (Tier I Capital + Tier II Capital) / Risk weighted assets
  - » The new Basel III norms have devised a third category of capital, i.e., Tier 3 Capital.
- The risk weighted assets take into account **credit risk, market risk and operational risk**.
- The **Basel III norms** stipulated a capital to **risk weighted assets of 8%**. However, as per the Reserve Bank of India (RBI) norms, **Indian scheduled commercial banks are required to maintain a CAR of 9%** while **Indian public sector banks are emphasised to maintain a CAR of 12%**.
- A higher CAR of a bank indicates that the bank has a **higher level of capital in relation to its risk-weighted assets**. Higher capital adequacy ratios are generally considered to be a **positive indicator**, as they suggest that the bank has a **stronger financial foundation** and is better **able to absorb losses in the event of financial stress** or a downturn in the economy.



Therefore, option (d) is the correct answer.

**Relevance:** The Reserve Bank of India has recently released CAR details in the Report on Trend and Progress of Banking in India 2021-22.

Q16.

Answer: a

Explanation:

- **The economy is divided into the domestic economy and the rest of the world, which are distinguished on the basis of residence.** The domestic economy comprises all resident economic units/entities (Normal Residents). The **concept of a Normal Resident is based on an economic territory and a centre of economic interest.** Normal residents not only cover individuals and institutions but also include both citizens and non-citizens, i.e. foreigners who reside in a country for more than a year and have an economic interest in that country. According to the United Nations, the **economic territory** is the geographical territory administered by a government within which persons, goods, and capital circulate freely (the economic territory may differ from the administrative territory of a country).
- There are a number of criteria to be used for the identification of the normal residents of the economy.
  - » A **non-profit institution** is said to be a resident in the country or economic territory under whose laws or regulations it was created and in which its existence as a legal or social entity is recognized and recorded. **So, point 1 is correct.**
  - » **International organisations like the World Bank, World Health Organisation, etc, are not considered residents of any national economy,** including those in which they are located or conduct their affairs. These organisations are treated as residents of the international territory. **So, point 2 is not correct.**
  - » A **member of a resident household** who leaves the economic territory of the country to return to the same household after a limited period of time (less than one year) continues to be a resident of the country. There are some categories of individuals who leave the economic territory of the country and yet are treated as residents of the country:
    - **Students, who study abroad,** even if the period of their education is more than a year. **So, point 3 is correct.**
    - **Visitors and travellers, i.e.,** individuals who temporarily (less than one year) leave the economic territory of the country for business, health, education, or other purposes are considered as residents of that economy.
    - The **locally recruited staff of foreign embassies, military bases, and other similar representations.** **So, point 4 is correct.**

Therefore, option (a) is the correct answer.

Q17.

Answer: b

Explanation:

- **Recession** can be defined as a sustained period of weak or **negative growth in real Gross Domestic Product (output)** that is accompanied by a significant rise in the **unemployment rate.** Many other indicators of economic activity are also weak during a recession. **So, points 1 and 4 are correct.**
- Technically, a recession means that the total output in the economy, measured by the Gross Domestic Product or GDP, contracts for **two consecutive quarters.**
- With **lower demand** for goods and services, firms start laying off workers and at the same time refrain from raising prices. So, unemployment rises and **inflation falls** during recessions. **So, points 2 is not correct and point 3 is correct.**

Therefore, option (b) is the correct answer.

**Relevance:** The Union Minister for Micro, Small and Medium Enterprises had recently stated that a recession is expected to hit India after June 2023.

Q18.

Answer: c

Explanation:

- **Inflation premium** is the component of a required return that represents **compensation for inflation risk.** It is the chunk of **interest rate which investors demand** in addition to real risk-free rate due to risk

of decrease in **purchasing power** of money.

- » With an inflation premium, investors can earn from these risks of loss of purchasing power or increasing prices. It arises from investors holding nominal assets that suffer due to unanticipated changes in inflation.

- **An inflationary gap** measures the difference between the current level of real gross domestic product (GDP) and the GDP that would exist if an economy was operating at full employment.

Therefore, option (c) is the correct answer.

Relevance: India's Consumer Price Index (CPI) in February 2023 eased to 6.44 per cent.

Q19.

Answer: a

Explanation:

- When the **Goods and Services Tax (GST)** regime was introduced, it was felt that the revenue of the Government would not be the same in comparison with the previous tax structure due to tax credit mechanism or otherwise.
- Consequently, an **adjustment in tax rate** was required to avoid reduction in revenue of the Government. Hence, the rate of tax was to be suitably adjusted to ensure that **tax revenue does not reduce**.
- This rate is termed as '**Revenue Neutral rate**' (RNR). It is the rate at which tax revenue remains the same despite giving credit of duty paid on inputs and other factors. **So, statement 1 is correct.**
- RNR is the rate which is the ratio of **all excise plus value added (sales) taxes** in the numerator, divided by the total taxable **Gross Domestic Product (GDP)** in the denominator. It is **fixed by the GST Council** after analyzing the fiscal position of States in India. **So, statement 2 is correct and statement 3 is not correct.**
- It will **not replace other indirect tax devolutions that the Centre makes to the States.**

Therefore, option (a) is the correct answer.

Relevance: India's GST Council has over the years reduced several tax rates, resulting in the lowering of the average rate to about 11.5 percent from the revenue-neutral rate of 15 percent.

Q20.

Answer: c

Explanation:

- **Supplementary Grant** is granted when the amount authorised by the Parliament through the Appropriation Act for a particular service for the current financial year is found to be **insufficient** for that year.
- **Additional Grant** is granted when a need has arisen during the current financial year for additional expenditure upon some new service not contemplated in the budget for that year.
- **Excess Grant** is granted when money has been spent on any service during a financial year in excess of the amount granted for that service in the budget for that year.
- **Exceptional Grant** is granted for a special purpose and forms no part of the current service of any financial year.

Therefore, option (c) is the correct answer.

Relevance: 45,174 crore supplementary grants were sought for MGNREGA in December 2022.

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Q21.

Answer: b

Explanation:

Competition:

- It is an interaction between two populations in which **both species are harmed to some extent**. Competition occurs when two populations or species, both need a vital resource that is in short supply. The vital resource could be **food, water, shelter, nesting site, mates or space**.
- When resources are limited the **competitively superior species will eventually eliminate the other species**.
- Abingdon tortoises primarily feed on green leaves and grasses. As a result of the introduction of goats **in Galapagos Islands**, the **Abingdon tortoise** became extinct within a decade. This could be due to the **greater browsing efficiency of the goats** as compared to the Abingdon tortoise.

Therefore, option (b) is the correct answer.

Q22.

Answer: d

Explanation:

Short-Lived Climate Pollutants (SLCPs):

- These are a group of greenhouse gases and air pollutants that have a **near-term warming impact** on climate and can affect air quality.
- These remain in the atmosphere for a **much shorter period of time than carbon dioxide (CO<sub>2</sub>)**, yet their potential to warm the atmosphere can be many times greater.
- SLCPs include **black carbon, methane, ground-level ozone, and hydrofluorocarbons (HFCs)**. So, points **1, 2, 3 and 4 are correct**.
- The average atmospheric lifetime of black carbon particles is **4-12 days**. Methane remains in the atmosphere for about **12 years**. HFCs remain in the atmosphere for up to **29 years**. Tropospheric ozone (ground level) has an atmospheric lifetime ranging from a **few hours to a few weeks** in polluted urban regions.
- **Dichloro Diphenyl Trichloroethane (DDT)** was developed as one of the earliest modern synthetic insecticides in the 1940s. It is an example of a **Persistent Organic Pollutant (POP)** and is **banned under the Stockholm Convention** on Persistent Organic Pollutants. It can accumulate in fatty tissues and can travel long distances in the upper atmosphere. So, point 5 is not correct.

Therefore, option (d) is the correct answer.

**Relevance:** Methane emissions will likely increase by 13 per cent by 2030 without the Global Methane Pledge, said John Kerry, the United States Special Presidential Envoy for Climate.

Q23.

Answer: c

Explanation:

Karakoram Anomaly:

- Himalayan glaciers are fast receding under the impacts of global warming, and stifling stress on the water resources is inevitable in the coming decades. In contrast, the glaciers of central Karakoram have **surprisingly remained unchanged or slightly increased** in the last few decades. This phenomenon is referred to as Karakoram Anomaly.
- Researchers have linked the recent resurgence of **western disturbances** to the phenomenon of the Karakoram Anomaly. The recent revival of western disturbance has been instrumental in **triggering and sustaining the Karakoram Anomaly** since the advent of the 21st century.

Therefore, option (c) is the correct answer.

**Relevance:** Researchers have linked the recent resurgence of western disturbances to Karakoram Anomaly.

Q24.

Answer: a

Explanation:

- Scientists working on Australia's Great Barrier Reef have successfully developed a new method **called 'Cryomesh' for freezing and storing coral larvae** they say could eventually help rewild reefs threatened by climate change.
- **Cryomesh** is a specially fabricated mesh used as a substrate in cryopreservation. This is lightweight and

can be manufactured cheaply. It **better preserves coral** and has the properties of cryoplates. The mesh technology will help store coral larvae at  $-196^{\circ}\text{C}$  ( $-320.8^{\circ}\text{F}$ ).

- Cryogenically frozen coral can be stored and later reintroduced to the wild. This could eventually help to rewild reefs threatened by climate change.
- It can build a bigger, more diverse bank of frozen living corals, preserving biodiversity.

Therefore, option (a) is the correct answer.

**Relevance:** Scientists have successfully tried a new method for freezing and storing coral in their first trial.

Q25.

Answer: b

Explanation:

- **Detritivores** are organisms that **consume dead plant and animal material**. They play an important role in the ecosystem by breaking down and recycling dead matter, returning vital nutrients to the soil. They include a wide range of animals such as insects, crustaceans, worms, and some species of mollusks and fish. Detritivores are commonly found in terrestrial and aquatic environments, and can be found in almost every habitat on earth. Some examples of detritivores are millipedes, sow bugs, and many species of beetles.
- **Sea stars (also known as starfish)** are considered detritivores. They **feed on a wide variety of dead plant and animal matter, including mollusks, crustaceans, and other invertebrates**. They are able to do this by using their arms, which are lined with hundreds of tiny tube feet, to pry open the shells of their prey. So, point 1 is correct.
- **Fungi are not considered detritivores, as they are decomposers**, not consumers of dead plant and animal matter. Decomposers are organisms that break down dead plant and animal matter and recycle the nutrients back into the ecosystem. **So, point 2 is not correct.**
- **Cockroaches are considered detritivores**, as they consume a wide variety of dead plant and animal matter, including leaves, wood, and other organic debris. They are known to eat a variety of food sources such as sweets, starches, meats and even other insects. **So, point 3 is correct.**
- **Jellyfish are not detritivores**. They are carnivorous and planktivorous animals. They feed on a variety of live prey, including plankton, small fish, and other small invertebrates, using their tentacles, which are lined with stinging cells called nematocysts, to capture and ingest their prey. **So, point 4 is not correct.**
- **Springtails (Collembola)** are small, wingless insects that are commonly found in soil, leaf litter and other organic debris. They are **considered to be detritivores, as they feed on a wide variety of dead plant and animal matter**, including leaves, wood, moss, and other organic debris. They play an important role in the ecosystem by helping to break down dead plant and animal matter and controlling the population size of fungi and bacteria. **So, point 5 is correct.**

Therefore, option (b) is the correct answer.

Q26.

Answer: c

Explanation:

- **Speciation** is how a new kind of plant or animal species is created.
  - » Speciation occurs **when a group within a species separates from other members of its species** and develops its own unique characteristics. The demands of a different environment or the characteristics of the members of the new group will differentiate the new species from their ancestors.
- **Adaptation** is the biological mechanism by which organisms adjust to new environments or to changes in their current environment.
- **Adaptive radiation** is a rapid increase in the number of species with a common ancestor, characterized by great ecological and morphological diversity. The driving force behind it is the adaptation of organisms to new ecological contexts.
- **Ecological opportunity** occurs when environmental conditions allow both niche availability and niche discordance. Responses of lineages to ecological opportunity are shaped by its spatiotemporal structure and by lineage-specific biological properties, termed diversification potential.

Therefore, option (c) is the correct answer.



**Knowledge Box**

**Five types of speciation**

- **Allopatric speciation** occurs when a species separates into two separate groups which are isolated from one another. A physical barrier, such as a mountain range or a waterway, makes it impossible for them to breed with one another. Each species develops differently based on the demands of their unique habitat or the genetic characteristics of the group that are passed on to offspring.
- **Peripatric speciation** occurs when small groups of individuals break off from the larger group and form a new species. As in allopatric speciation, physical barriers make it impossible for members of the groups to interbreed with one another.
- **In parapatric speciation**, a species is spread out over a large geographic area. Although it is possible for any member of the species to mate with another member, individuals only mate with those in their own geographic region. Like allopatric and peripatric speciation, different habitats influence the development of different species in parapatric speciation. Instead of being separated by a physical barrier, the species are separated by differences in the same environment.
- **Sympatric speciation** is controversial. Some scientists don't believe it exists. Sympatric speciation occurs when there are no physical barriers preventing any members of a species from mating with another, and all members are in close proximity to one another. A new species, perhaps based on a different food source or characteristic, seems to develop spontaneously. The theory is that some individuals become dependent on certain aspects of an environment—such as shelter or food sources—while others do not.
- **Artificial speciation** is the creation of new species by people. This is achieved through lab experiments, where scientists mostly research insects like fruit flies.

**Q27.**

**Answer: a**

**Explanation:**

- **Bioluminescence is light** produced by a **chemical reaction** within a **living organism**.
- Bioluminescence is a “**cold light**.” It means less than 20% of the light generates thermal radiation, or heat.
- Most bioluminescent organisms are found in the ocean. These bioluminescent marine species include fish, bacteria, and jellies. Some bioluminescent organisms, including **fireflies and fungi, are found on land**. There are almost no bioluminescent organism's native to freshwater habitats.
- It is used by living things to **hunt prey, defend against predators**, find mates, and execute other vital activities. It is a type of **survival strategy**.
- Organisms can luminesce when they are disturbed. **Changes in the environment**, such as a drop in salinity, can force bioluminescent algae to glow, for instance.
- The chemical reaction that results in bioluminescence requires two unique chemicals: **luciferin and either luciferase or photoprotein**. Luciferin is the compound that actually produces light. In a chemical reaction, luciferin is called the substrate.
- The bioluminescent colour (yellow in fireflies, greenish in lanternfish) is a result of the arrangement of luciferin molecules.

**Therefore, option (a) is the answer.**

**Relevance:** Adequate nutrients brought by substantial rain and a high abundance of the plankton called diatom *Thalassiosira* sp. triggered the (bioluminescent) bloom of *Noctiluca scintillans*.

**Q28.**

**Answer: d**

**Explanation:**

- **Tobacco smoke** contains hundreds of harmful chemicals. There are more than **7,000 chemicals** in tobacco smoke, including hundreds of chemicals that are toxic and about **70 that can cause cancer**.
- There is no safe level of exposure to secondhand smoke; even brief exposure can cause **serious health problems**. Secondhand smoke can cause **coronary heart disease, stroke, and lung cancer** in adults who do not smoke.
- Some of the chemicals and toxins present in commercial tobacco smoke are:
  - » **Benzene. So, point 1 is correct.**
  - » Toluene
  - » Butane



- » Cadmium
- » Hydrogen Cyanide
- » **Nicotine. So, point 2 is correct.**
- » Formaldehyde
- » **Lead. So, point 3 is correct.**
- » **Arsenic. So, point 4 is correct.**
- » **Ammonia. So, point 5 is correct.**
- » Carbon Monoxide
- » Tobacco-specific nitrosamines (TSNAs)
- » Polycyclic aromatic hydrocarbons (PAHs)
- **Radioactive materials** like Polonium-210 and Lead-210 can be present in the **tobacco leaves** used to make cigarettes and cigars. These materials come from the **fertilizer and soil** used to grow the tobacco leaves, so the amount in tobacco depends on the soil the plants were grown in and the type of fertilizers used. These radioactive materials are given off in the smoke when tobacco is burned, which people who smoke take into their lungs as they inhale. **So, point 6 is correct.**

**Therefore, option (d) is the correct answer.**

**Relevance:** A study led by the AIIMS-Gorakhpur has shown a link between secondhand smoke and the severity of COVID-19 in non-smokers.

**Q29.**

**Answer: c**

**Explanation:**

- **Mountain Passes** are also known as gaps, saddles and cols. It is a path through a mountain range or above a ridge.
- India and China are connected through a number of passes. Some of them are:
  - » **Mana Pass** is located in the Greater Himalayas and connects **Tibet (under China) with Uttarakhand. So, point 1 is correct.**
  - » **Chang La** is a high mountain pass in the Greater Himalayas. It connects **Ladakh with Tibet (under China). So, point 2 is correct.**
  - » **Rohtang Pass** is located in the State of **Himachal Pradesh**. It connects Kullu with Lahaul and Spiti. It **does not connect India with China. So, point 3 is not correct.**
  - » **Bomdi-La** pass connects **Arunachal Pradesh with Tibet (under China).** It is located in the east of Bhutan. **So, point 4 is correct.**
  - » The **Shipki La Pass** is located in the Kinnaur district of Himachal Pradesh. It serves as the boundary post on the frontier between **China and India.** The famous Sutlej River penetrates India from the Tibetan territory through this pass. **So, point 5 is correct.**

**Therefore, option (c) is the correct answer.**

**Relevance:** Recently, the Himachal Pradesh Government has sought clearance from the Union Government to resume the business between India and China through Shipki La pass.

**Q30.**

**Answer: a**

**Explanation:**

- **Caucasus**, Russian Kavkaz, mountain system is the region lying between the **Black Sea (west) and the Caspian Sea (east)** and occupied by **Russia, Georgia, Azerbaijan, and Armenia.**
- It forms part of the traditional dividing line between Europe and Asia.

**Therefore, option (a) is the correct answer.**

#### Knowledge Box

##### Caucasus

- It is bisected by the **Caucasus Mountains**. Trending generally from Northwest to Southeast, the mountains consist of two ranges—the **Greater Caucasus** (Russian: Bolshoy Kavkaz) in the north and the **Lesser Caucasus** (Maly Kavkaz) in the South.
- **Mount Elbrus** in the Greater Caucasus range, is the **highest peak**. The area north of the Greater Caucasus range is called **Ciscaucasia** and the **region to the south Transcaucasia.**

- The whole region extends southward from the lowlands of the **Kuma and Manych river basins (the Kuma-Manych Depression)** in the north to the northern frontiers of Turkey and Iran in the south.
- It comprises the southernmost portion of Russia (including Dagestan and several other administrative units constituted on an ethnic basis) and the Transcaucasian republics of Georgia, Armenia, and Azerbaijan.

**Relevance:** The violent border clashes between Armenia and Azerbaijan have raised fears of another war in the Caucasus.



Q31.

Answer: a

Explanation:

- **Packed Cell Volume (PCV)** is a measurement of the **proportion of the volume of blood** that is **made up of Red Blood Cells**. The value is expressed as a percentage or fraction of cells in blood. For example, a PCV of 40% means that there are 40 millilitres of cells in 100 millilitres of blood.
- PCV is used to determine if a person has **anemia** or an overabundance of **Red Blood Cells**.
  - » Red blood cells are the most common type of cell in the body and carry oxygen to all body parts.
- A PCV test's normal range is between 35% - 48%. PCV testing is also used to monitor a cancer patient's response to chemotherapy treatment.

Therefore, option (a) is the correct answer.

## Knowledge Box

- Low PCV can be caused by diseases such as chronic inflammation and infections like Anti-Immuno Deficiency Syndrome (AIDS) and Hepatitis C Virus (HCV). High PCVs are common in people with chronic liver disease due to cirrhosis; however, some other causes are more serious, including leukemia, sickle cell disease, and thalassemia.

Q32.

Answer: d

Explanation:

- **Athlete's foot (tinea pedis)** is an infection of the skin and feet that can be primarily caused by a **ringworm** named **tinea**. It is caused by the same type of fungi (**dermatophytes**) that cause ringworm and jock itch. Although it can affect any portion of the foot, the infection most often affects the space **between the toes**. Athlete's foot is typically characterized by skin fissures or scales that can be red and itchy. **So, point 1 is correct.**
- **Valley fever:** Also called coccidioidomycosis, it is an infection caused by the **fungus Coccidioides**. The fungus is known to live in the soil in the **southwestern United States and parts of Mexico and Central**

and South America. People can get Valley fever by breathing in the microscopic fungal spores from the air, although most people who breathe in the spores don't get sick. **So, point 2 is correct.**

- **Mucormycosis** is a serious but rare **fungal infection** caused by a group of molds called **mucormycetes**. These molds live throughout the environment. Mucormycosis mainly affects people who have health problems or **take medicines that lower the body's immunity**. It most commonly affects the sinuses or the lungs after inhaling fungal spores from the air. **So, point 3 is correct.**
- **Pneumocystis pneumonia (PCP)** is a serious infection caused by the **fungus Pneumocystis jirovecii**. Most people who get PCP have a medical condition that weakens their immune system or take medicines (such as corticosteroids) that lower the body's ability to fight germs and sickness. **So, point 4 is correct.**

**Therefore, option (d) is the correct answer.**

**Relevance:** Assam's Bodoland University is part of collaborative research on fungus-powered biosynthesised nanogold particles that has received an international patent from Germany.

**Q33.**

**Answer: a**

**Explanation:**

**Athlete Biological Passport (ABP):**

- It is a powerful **anti-doping tool** that **monitors selected biological variables** over time to **reveal the effects of doping** rather than attempting to detect the doping substance or method itself. It works against doping through enhanced target testing and analysis, investigations, deterrence, and as indirect evidence for use of prohibited methods or substances.
- The **World Anti-Doping Agency (WADA)** has taken the lead in the development of the ABP.
- Its main function is to **identify athletes** requiring further attention through intelligent and **timely interpretation of Passport data**. The ABP provides valuable information that can be used to direct anti-doping activities such as **Target Testing** or investigations more effectively. It cannot be used in lieu of an international passport for travel purposes.

**Therefore, option (a) is the correct answer.**

#### Knowledge Box

- At present, the ABP is there to detect two main substance classes. The Haematological Module of the ABP is used **to detect blood doping**, whether it is transfusion or whether it is EPO.
- The Steroidal Module helps **to detect steroid doping**, different types of steroids. (Steroidal module includes Isotope Ratio Mass Spectrometry (IRMS) analysis to detect natural endogenous steroids administered exogenously)

**Relevance:** National Anti-Doping Agency (NADA) & National Dope Testing Laboratory (NDTL) India hosted the 3rd edition of the World Anti-Doping Agency (WADA) Athlete Biological Passport (ABP) Symposium.

**Q34.**

**Answer: d**

**Explanation:**

- **Reverse Osmosis (RO)** is a **water purification process** that uses a semi-permeable membrane to separate ions, unwanted molecules and larger particles from drinking water.
- RO systems use a process that reverses the flow of water in a natural process of osmosis so that water passes from a more concentrated solution to a more dilute solution through a semi-permeable membrane. Pre- and post-filters are often incorporated along with the reverse osmosis membrane itself. RO filter has a pore size of approximately **0.0001 micron**.
- RO Systems have a very high effectiveness in:
  - » removing **bacteria** (for example, Campylobacter, Salmonella, Shigella, E. coli). **So, point 1 is correct.**
  - » removing **viruses** (for example, Enteric, Hepatitis A, Norovirus, Rotavirus). **So, point 2 is correct.**
  - » removing **protozoa** (for example, Cryptosporidium, Giardia). **So, point 3 is correct.**
  - » removing common **chemical contaminants (metal ions, aqueous salts)**, including sodium, chloride, copper, chromium, and lead; may reduce arsenic, fluoride, radium, sulfate, calcium, magnesium, potassium, nitrate, and phosphorous. **So, point 4 is correct.**

**Therefore, option (d) is the correct answer.**



Q35.

Answer: d

Explanation:

- **Semi-Automated Offside Technology (SAOT)** was used by Federation Internationale de Football Association (FIFA) **for offside decisions in the Football World Cup**. It is a **support tool** for the video match officials and the on-field officials to help them **make faster, more reproducible and more accurate offside decisions**.
- There are two parts to the technology — a sensor inside the match ball that is held using suspension technology, and existing tracking tools that are part of the Video Assistant Referee (VAR) system.
- Every time the ball is hit, data is sent in real time (at 500 frames per second) to a network of antennae installed around the playing field. Additionally, there are 12 Hawk-Eye cameras set up around the turf that shadow both the ball and the players.
- The coming together of **the ball sensor and the Hawk-Eye cameras is in effect SAOT**. These two data sets are run through artificial intelligence software which generates automated alerts about offsides to the match officials.
- However, it is **only a confirmatory tool** and final decisions rest with the match officials.

Therefore, option (d) is the correct answer.

**Relevance:** Semi-Automated Offside Technology (SAOT) was used in the Football World Cup 2022 as a support tool for match officials.

Q36.

Answer: d

Explanation:

- **Epigenetic Clock Technique** is a technique that measures **Deoxyribonucleic Acid (DNA) methylation profiles** and is used to estimate the biological age of humans and animals. These clocks can provide a better indicator of an **organism's functional capacity** than its actual, chronological age. **So, point 1 is correct.**
- **Ossification Test is the process of bone formation** that occurs in humans from infancy until the end of adolescence. During this time, various bones in the body undergo calcification, or hardening, as minerals such as calcium and phosphorus are deposited in the bone matrix. As a person ages, the **rate of bone formation slows down**, and eventually, the bones become more brittle and prone to fracture. Due to the predictable nature of this process, scientists have been able to develop methods for **estimating a person's age based on the degree of bone ossification** in specific bones. **So, point 2 is correct.**
- Other methods of age estimation include accurate laboratory methods (such as racemization of aspartic acid in dentin or tooth enamel or **radiocarbon dating of tooth enamel**). Atmospheric radiocarbon ( $^{14}\text{C}$ ) analysis of human tooth enamel is useful for estimation of birth year. **So, point 3 is correct.**

Therefore, option (d) is the correct answer.

**Relevance:** Recently, a Supreme Court judge said that the ossification tests are not accurate methods for age determination tests.

Q37.

Answer: b

Explanation:

- Nuclear reactors use uranium fuel rods containing pellets of fissionable material to create energy through fission.
- **Criticality** is the normal operating condition of a nuclear reactor, in which **nuclear fuel sustains a fission chain reaction**.
- A reactor achieves criticality (and is said to be critical) when each fission releases a sufficient number of neutrons to sustain an ongoing series of nuclear reactions.

Therefore, option (b) is the correct answer.

Knowledge Box
<ul style="list-style-type: none"> <li>• <b>Uranium</b> is the main fuel for nuclear reactors, and it can be found in many places around the world. In order to make the fuel, uranium is mined and goes through refining and <b>enrichment</b> before being loaded into a nuclear reactor.</li> </ul>



**Relevance:** The prototype Fast Breeder Reactor (FBR) at the Kalpakkam nuclear power plant in Tamil Nadu is nearly complete.

Q38.

Answer: c

Explanation:

- **Satellites** provide synoptic observations of the natural disasters at regular intervals that help in better planning and management of disasters.
- The data from earth observation and meteorological satellites in conjunction with ground based information, and services derived from communication & navigation satellites are being used towards Disaster Management Support.
- **AstroSat** is the first dedicated Indian astronomy mission aimed at studying celestial sources in X-ray, optical and UV spectral bands simultaneously. Hence it has no application in disaster management. It was developed by the Indian Space Research Organisation (ISRO). **So, point 1 is not correct.**
- **Radar Imaging Satellite-2B (RISAT-2B)** is a radar imaging earth observation satellite developed by ISRO. It was launched in the LEO (Low Earth Orbit) in 2019. Its applications include Disaster Management System and Earth Observation. **So, point 2 is correct.**
- **Earth Observation Satellite-3 (EOS-3)** is ISRO's geo-imaging satellite, capable of **near-real time monitoring of natural disasters like floods and cyclones**. Apart from natural disasters, the satellite which is capable of imaging the country 4 to 5 times a day will be able to monitor water bodies, crops, vegetation condition, and forest cover changes. **So, point 3 is correct.**
- **Indian National Satellite-3D Repeat (INSAT-3DR)**, similar to INSAT-3D, is an advanced meteorological satellite of India configured with an imaging System and an Atmospheric Sounder. It was launched into the Geosynchronous Orbit in 2016. Its applications include Climate & Environment and **Disaster Management System**. **So, point 4 is correct.**

Therefore, option (c) is the correct answer.

**Relevance:** India's AstroSat space telescope has witnessed the birth of a black hole in space for the 500th time.

Q39.

Answer: b

Explanation:

- The **floor test upholds the collective accountability of the elected government to the legislature**.
- When the State Legislative Assembly is not in session, the Governor can call for a floor test. However, **when the House is in session, it is the Speaker who can call for a floor test**. Under Article 175(2) of the Indian Constitution, the Governor can summon the House and call for a floor test to prove whether the government has the numbers. **So, statement 1 is not correct.**
  - » In the Shivraj Chouhan vs Speaker Madhya Pradesh case, the Supreme Court ruled that a Governor can ask for a floor test if he/she believes, based on facts, that the government no longer shares the confidence of the legislature. The apex court has also stated that the Governor, in no way, shall favour any party when it comes to the timing of the trust vote.
- **Composite Floor Test** is conducted **only when more than one person stakes claim to form the Government**. When the majority is not clear, the Governor might call for a special session to see who has the majority. The majority is counted based on those present and voting. Some legislators may be absent or choose not to vote. **So, statement 2 is correct.**
- To ensure presence/voting in the Assembly, **political parties can issue whip**, the non-compliance of which might lead to disqualification.

Therefore, option (b) is the correct answer.

**Relevance:** Recently floor test was in the news due to the Maharashtra political crisis.

Q40.

Answer: c

Explanation:

- **Single-Cell Protein (SCP)** refers to protein derived from cells of **microorganisms** such as **yeast, fungi, algae, and bacteria**, which are grown on various carbon sources for synthesis. It is being hailed as the modern solution to the **protein deficiency problem** which humanity is currently facing. Bacteria, fungi, yeast and algae are examples of microorganisms that have a **high protein content in the biomass they produce**. **So, statement 1 is correct.**
- When the microbes consume the carbon and nitrogen in these materials, they produce **high-quality proteins**. Microorganisms, as they have high protein content, can be used as **supplements for both**



animals and humans. So, statement 2 is correct.

- » Single-cell proteins can be used as fodder for fattening pigs and calves, for fish breeding, and even in animal husbandry i.e cattle farming and poultry – because they are easily digestible.

Therefore, option (c) is the correct answer.

**Relevance:** According to a survey, the global Single Cell Protein Market size is projected to go beyond USD 18.5 billion by 2030.

Q41.

Answer: a

Explanation:

- **Snakes are immune to their own venoms.** If a venomous snake is bitten by another venomous snake of the same species, (for example during a fight or mating), then it will not be affected. However, if a snake is bitten by a venomous snake of another species, it probably will be affected. **So, statement 1 is correct.**
- **Snakebite** envenoming is a **Neglected Tropical Disease (NTD)**. It is a public health problem in India and many other low- and middle-income countries. **So, statement 2 is correct.**
- All snakes are not venomous or poisonous. The best example of a non-poisonous snake is Indian Python. So, statement 3 is not correct

Therefore, option (a) is the correct answer.

#### Knowledge Box

A study published in Nature Communications recently estimated that **80 percent of global snakebite deaths occur in India**. Within India, Uttar Pradesh has the highest number of deaths, followed by Madhya Pradesh and Rajasthan.

**Relevance:** Recently, a study related to snakebites was published in Nature Communication.

Q42.

Answer: d

Explanation:

**Namdapha National Park and Tiger Reserve:**

- It is one of the largest National Parks in India. Namdapha is named after a **river which originates from Daphabum** (Dapha is the name of hill, and Bum means the peak of the hill) and meets **Noa-Dehing river**. This river flows right across in a North-South direction of the National Park.
- It is the **only park** in the World to have the **four feline species of big cat** namely the Tiger, Leopard, Snow Leopard and Clouded Leopard and other lesser cats.
- It lies on the international border between **India and Myanmar** within Changlang District in the state of Arunachal Pradesh in northeast India.
- Namdapha and its adjoining areas are **flanked by the Patkai hills to the south and southeast and by the Himalayas to the north.**

Therefore, option (d) is the correct answer.

**Relevance:** There was a clash between forces of India and China in Tawang region of Arunachal Pradesh.

## Optional Test Series



Agriculture



Philosophy



Mathematics



Geography



Commerce & Accountancy



Public Administration



Political Science & IR



Anthropology



Economics



Psychology



Sociology



History



Trains you to master "The Art of Writing Answers"



Helps you to revise the syllabus comprehensively



Tests followed by Explanation Classes & Model Answer Papers

Q43.

Answer: b

Explanation:

- **Contour farming** or ploughing is the practice of ploughing and planting across the slope (horizontal) rather than up and down (vertical).
- Contour farming tends to be treated as synonymous with terrace farming; however, **contour farming follows the natural shape of the slope without altering it**, whereas terrace farming builds walls and alters the shape of the slope to produce flat areas that provide a catchment for water and to check erosion. **So, statement 1 is not correct.**
- Contour farming is mainly practiced in hilly and sub-tropical areas at variable altitudes where a considerable slope exists. **But it can be undertaken as a soil and water conservation measure in plains at lower altitudes.** This involves creating bunds or ridges to check soil erosion and enhance soil moisture in fields. **So, statement 2 is correct.**



Therefore, option (b) is the correct answer.

Q44.

Answer: d

Explanation:

Community reserve:

- The **State Government** may, where the community or an **individual has volunteered** to conserve wildlife and its habitat, **declare any private or community land** not comprised within a National Park, sanctuary or conservation reserve, as a **Community Reserve**, for protecting fauna, flora and traditional or cultural conservation values and practices.

Conservation reserve:

- The **State Government may declare any area owned by the Government**, particularly the areas adjacent to National Parks and sanctuaries and those areas which link one protected area with another, as a conservation reserve for protecting landscapes, seascapes, flora and fauna and their habitat. **So, statements 1 and 2 are not correct.**
- State government declares Conservation Reserves after having **consultations with the local communities.**

Therefore, option (d) is the correct answer.

**Relevance:** Recently, the Government of Rajasthan has issued a notification declaring Jhalana-Amargarh reserve forest as a conservation reserve (CR).

Q45.

Answer: c

Explanation:

- **State Board for Wildlife:** As per the Wildlife (Protection) Act, 1972, the Central and State governments are responsible for the constitution of National Board for Wildlife and the State Board for Wildlife respectively. **So, point 1 is correct.**
- **Central Zoo Authority:** It is a statutory body under the Ministry of Environment, Forest and Climate Change. It was **established in 1992** through an amendment to the Wildlife (Protection) Act, 1972. This authority oversees the functioning of Indian zoos and complement wildlife conservation strategies through ex-situ measures. **So, point 2 is correct.**
- **Wildlife Crime Control Bureau:** The Bureau was **constituted in 2007** by amendment to the Wildlife (Protection) Act, 1972. It was created to complement the existing State machinery to deal with wildlife crime having ramifications beyond state and national borders. **So, point 3 is correct.**
- **Animal Welfare Board of India:** It is a statutory advisory body on Animal Welfare Laws. It was **established in 1962** under Section 4 of the **Prevention of Cruelty to Animals Act, 1960**. Shrimati Rukmini Devi Arundale pioneered the setting up of the Board, with its Headquarters at Chennai. **So, point 4 is not correct.**

Therefore, option (c) is the correct answer.

**Relevance:** A Bill to amend the Wild Life (Protection) Act, 1972 to strengthen protection for endangered species and enhance punishment for illegal trade in wildlife in Rajya Sabha.

Q46.

**Answer: b**

**Explanation:**

- The fishbone channel plantation method has been **used to revive mangroves in the Krishna Wildlife Sanctuary in Andhra Pradesh.**
- This technique is **used to artificially inundate areas that do not get regular tidal inundation.** By flooding dried-up wetlands near the intertidal zones, new mangroves can be reforested.
- In this model, the water from a creek is diverted to the targeted site through feeder and field channels, converting the barren land with high saline content into fertile land that supports the survival of mangrove plant species.

**Therefore, option (b) is the correct answer.**

**Relevance:** Fishbone Channel Plantation Method is used in Krishna Wildlife Sanctuary in Andhra Pradesh.

**Q47.**

**Answer: a**

**Explanation:**

- **Spatial transcriptomics** is a method for assigning cell types (identified by the mRNA readouts) to their locations in the histological sections. This method can also be used to determine **subcellular localization of mRNA molecules.**
- It has become essential for biomedical research over the past decade, particularly in developmental biology, cancer, immunology, and neuroscience.

**Therefore, option (a) is the correct answer.**

**Q48.**

**Answer: b**

**Explanation:**

- The genetic material of a virus can be either Deoxyribonucleic Acid (DNA) or Ribonucleic Acid (RNA). The main difference between DNA and RNA viruses is that **DNA viruses contain large genomes** due to the accurate replication whereas **RNA viruses contain small genomes** due to the error-prone replication. Other difference are:
  - » **DNA viruses** are mostly **double-stranded** whilst **RNA viruses** are **single-stranded**. So, **statement 1 is not correct.**
  - » **RNA viruses** are characterized by **high mutation rates** compared with most DNA viruses. So, **statement 2 is correct.**
  - » **DNA viruses are stable** while RNA viruses are unstable. So, **statement 3 is not correct.**
  - » In DNA viruses, viral DNA is replicated inside the nucleus of the host cell. In RNA Viruses, viral RNA is first transcribed and then is replicated in the cytoplasm.
  - » Viral DNA is first transcribed into RNA, and then mRNA is translated into viral proteins. RNA viruses can bypass transcription during protein synthesis since they already contain RNA in the genome.
  - » DNA viruses show an accurate replication while RNA viruses show an error-prone replication.

**Therefore, option (b) is the correct answer.**

**Relevance:** There has been a surge in the number of cases related to the H3N2 subtype of the Influenza A virus.

**Q49.**

**Answer: d**

**Explanation:**

- **Deoxyribonucleic Acid (DNA)** is the genomic material in cells that contains the genetic information used in the development and functioning of all known living organisms.
- One copy of the human genome consists of approximately 3 billion base pairs of DNA, which are distributed across 23 chromosomes.
- A base pair consists of two complementary DNA bases that pair together to form a “the DNA ladder.”
  - » DNA is made of two linked strands that wind around each other to resemble a twisted ladder — a shape known as a double helix.
- Each strand has a backbone made of alternating sugar (deoxyribose) and phosphate groups. Attached to each sugar is one of four bases: **adenine (A), cytosine (C), guanine (G) and thymine (T).**
  - » The two strands are held together by hydrogen bonds between pairs of bases. Under normal circumstances, the nitrogen-containing bases adenine (A) and thymine (T) pair together, and cytosine

(C) and guanine (G) pair together. The binding of these base pairs forms the structure of DNA.

Therefore, option (d) is the correct answer.

### Knowledge Box

- Hormones are chemicals that coordinate different functions in your body by carrying messages through your blood to your organs, skin, muscles and other tissues.
- Hormones are chemical messengers that are secreted directly into the blood, which carries them to organs and tissues of the body to exert their functions.
- Hormones are produced by glands that make up the endocrine system. Major hormone-secreting glands in the body include: the pituitary gland, hypothalamus, thymus, adrenal glands, pancreas, thyroid, ovaries, and testes.
- Hormones control many different bodily processes, including:
  - » Metabolism. Homeostasis (constant internal balance), such as blood pressure and blood sugar regulation, fluid (water) and electrolyte balance and body temperature.
  - » Growth and development.
  - » Sexual function.
  - » Reproduction.
  - » Sleep-wake cycle.
  - » Mood.

**Relevance:** Recently, the 100th birth anniversary of Har Gobind Khorana was observed in 2022. He introduced the first synthetic gene using DNA ligase and polymerase enzymes.

Q50.

Answer: c

Explanation:

- The **Dual Government of Bengal (1765-1772)** was a dual system of administration, which was **introduced by Robert Clive**. The Dual System of Government of Bengal was **abolished by Warren Hastings**. So, **statement 1 is not correct**.
- In 1764 after the Battle of Buxar, the British became supreme power in Bengal. The **English East India Company (EIC)** procured an order from the Mughal emperor Shah Alam II granting them the **Diwani rights** (rights to collect land revenue) for Bengal, Bihar and Orissa. The **Nizamat rights** (administrative rights) remained in the hands of the **Nawab of Bengal**. So, **statement 2 is not correct**.
- The Treaty of Allahabad of 1765 was the agreement made following the Battle of Buxar between the Mughal Emperor Shah Alam II and British East India Company officer Robert Clive. It was through this treaty, Dual Government was implemented in Bengal and the EIC got the Diwani rights. So, **statement 3 is correct**.

Therefore, option (c) is the correct answer.

Q51.

Answer: a

Explanation:

- The 36th session of the **Indian National Congress (INC)** was held at **Ahmedabad in 1921**. **Hakim Ajmal Khan** was unanimously elected to preside over the Session in the absence of Chittaranjan Das, who was in jail.
- **Mahatma Gandhi** was appointed as the **sole executive authority** of the Congress and given full control of the **All India Congress Committee (AICC)**.
- Chairs and benches for delegates were eliminated and Khadi tents made their appearance for the first time.

Therefore, option (a) is the correct answer.

### Knowledge Box

Information about some Indian National Congress Sessions:

- **Belgaum session of 1920** was the only session when Mahatma Gandhi became the President.
- At the **Gaya session of 1922**, Chittaranjan Das and Motilal Nehru broke away from the INC and formed the Swaraj Party.
- The resolution against the use of Indian troops in China, Iran and Mesopotamia was passed in the **Madras session of 1927**.

**Relevance:** The Congress Presidential poll was conducted in October 2022.



Q52.

Answer: c

Explanation:

- In November, 1934, the Joint Select Committee of both the Houses of British Parliament in its report recommended the establishment of a Federal Court in India. Thus, the British Parliament passed the **Government of India Act, 1935**. The Section 200 of the said Act provided for the **establishment of a Federal Court in India**. On October 01, 1937, the Federal Court came into being. **So, statement 1 is correct.**
- The **Election Commission of India** is an autonomous constitutional authority responsible for administering Union and State election processes in India. It was established under **Article 324 of the Constitution of India on 25th January, 1950**. Before that, there was no separate body for conducting elections in the country. **So, statement 2 is not correct.**
- Section 96(C) of the **Government of India Act, 1919** provided for the establishment in India of a Public Service Commission which should “discharge, in regard to recruitment and control of the Public Services in India. In 1926, the **Public Service Commission** was set up in India for the first time. **So, statement 3 is correct.**

Therefore, option (c) is the correct answer.

Q53.

Answer: a

Explanation:

India Gate:

- It is located in New Delhi. It is an archway **similar in design with the ‘Arc-de-Triomphe’ in Paris**. It is in the middle of a crossroad.
- The foundation stone of India Gate was laid by His Royal Highness, the **Duke of Connaught in 1921** and it was **designed by Edwin Lutyens**. The monument was dedicated to the nation 10 years later by the then **Viceroy, Lord Irwin**. **So, statement 1 is correct and statement 2 is not correct.**
- The entire arch stands on a low base of **red Bharatpur stone** and rises in stages to a huge moulding. The cornice is inscribed with the Imperial suns while both sides of the arch have **INDIA**, flanked by the dates **MCMXIV (1914 left) and MCMXIX (1919 right)**.
- It commemorates the contribution of Indian soldiers who lost their lives fighting for the **British Army during World War I**. The memorial bears the names of many British and Indian soldiers killed in the Northwestern Frontier in the Afghan war of 1919.
- In **1936**, a **canopy** designed by Edwin Lutyens, was added to the India Gate complex as a tribute to the then recently **deceased** Emperor of India, King **George V**, and housed his **50-foot marble statue**. It was inspired by a sixth-century pavilion from **Mahabalipuram**. After independence, there was widespread opposition to the statue. Ultimately, it was moved to Coronation Park in North Delhi in 1968.
- Amar Jawan Jyoti was added much later, after India got its independence. The eternal flame used to burn day and night under the arch in memory of soldiers who laid down their lives in the **Indo-Pakistan War of 1971**. Recently, it was merged with the National War Memorial near the India Gate in Delhi as part of the Central Vista Redevelopment Project. **So, statement 3 is not correct.**

Therefore, option (a) is the correct answer.

**Relevance:** Recently, a statue of Subhash Chandra Bose was installed at the Indian Gate.

Q54.

Answer: a

Explanation:

- **Jawaharlal Nehru** formed the first human rights organisation in India, the **Indian Civil Liberties Union (ICLU)**, in Bombay on August 24, 1936. The idea behind its formation was to have the **right to oppose the government**.
- This was followed by the formation of Unions at Bombay, Madras, Calcutta, and in Punjab as its units.
- **Rabindranath Tagore** was the first Honorary President of the ICLU and **Sarojini Naidu** was the President. **KB Menon** of the present-day Kerala was appointed as the General Secretary.
- **Rammanohar Lohia, M Venkatarangaiah and S Pratap Reddy** made important contributions to popularise the concepts of civil liberties by writing booklets, articles, and pamphlets.

Therefore, option (a) is the correct answer.



Q55.

Answer: d

Explanation:

- The '**Jajmani System**' was a **non-market exchange of agricultural products**, other goods, and services in Indian villages, **without the use of money**, based on the caste system and customary practices. **So, statement 1 is correct.**
- In this system of distribution, **high caste land-owning families (Zamindars)** were provided products and services of various **lower castes (occupational castes)** such as Khati (Carpenter), Nai (Barber), Kumhars (Potters), etc. **So, statement 2 is correct.**
- So, it is the durable, close, and intimate relationship between food-producing families and the families that supply them with other goods and services.
- The servicing castes were called **Kamins** while the castes served were called **Jajmans (patron)**.  
» The Kamins were paid mainly in the kind (like food grains, fodder, clothes, milk, butter, etc.).
- Every caste in the village did not follow the Jajmani system hence it can be defined as a **patron-client relationship**.
- This system maintained and regulated the division of labour, and economic interdependence of castes and served to maintain the Indian village as a self-sufficient community.
- The **Jajmani relationships were permanent and hereditary**. It helped in providing security of occupation and economic security to Kamins as Jajmans looked after all of their needs. These service relations governed by a hereditary tenure were called Jajman-Praja relations. So, statement 3 is correct.

Therefore, option (d) is the correct answer.

Q56.

Answer: d

Explanation:

- **Parsvanatha** was the **23rd Tirthankara** of the present age, according to Jainism. He is said to have preceded Mahavira by about 250 years.
- He established the '**fourfold restraint**,' the four vows taken by his followers:  
» Ahimsa (non-violence)  
» Satya (truthfulness)  
» Asteya (not stealing)  
» Aparigraha (non-acquisition)
- Mahavira (24th Tirthankara) added the vow of **Brahmacharya (celibacy)**.
- While Parsvanatha allowed monks to wear an upper and lower garment, Mahavira gave up on clothing altogether.

Therefore, option (d) is the correct answer.



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Q57.

Answer: d

Explanation:

Disciples of Buddha:

- **Asvajit, Upali, Mogallana, Sariputta and Ananda** were the first five disciples of the Buddha.
- Prominent Disciples of Buddha in the ancient period were:
  - » **Sariputta** – Chief Disciple
  - » Mahamoggallana – Chief Disciple
  - » **Ananda**
  - » Mahakasyapa
  - » Purna Maitrayani-putra
  - » Anuruddha
  - » Rahul
  - » Katyayana
  - » **Upali**
  - » Anathapindika
  - » Subhuti
  - » Jivaka

Therefore, option (d) is the correct answer.

Q58.

Answer: c

Explanation:

- The **Mughal Gardens** are heavily influenced by the gardens of Persia (now Iran).
- A definitive feature of these gardens is the **charbagh or chaharbagh layout** – the division of the garden space into four parts by walkways and water channels.
- **Babur**, the founder of the Mughal dynasty, was the **first to conceive this idea** of a **symmetrical** Mughal-style Garden. According to an excerpt from his memoir Baburnama, the gardens were to be “laid out with order and symmetry, with suitable borders and parterres in every corner, and in every border rose and narcissus in perfect arrangement.”
- Most of these gardens are terraced. The style can be found throughout the lands ruled by the Mughals – including the Taj Mahal in Agra, Humayun’s Tomb in Delhi, and Nishat Bagh in Kashmir.
- In the gardens surrounding a mausoleum, the walkways intersect at the centre where the building or tomb is usually located.

Therefore, option (c) is the correct answer.

**Relevance:** The Rashtrapati Bhavan gardens, popularly called the Mughal Gardens, were renamed Amrit Udyan recently.

Q59.

Answer: b

Explanation:

- The hike in interest rate by the Federal Reserve of the United States (US) would most likely have negative consequences for emerging economies like India.
- The interest rate hike by the Federal Reserve will put pressure on the Indian stock markets. When the interest rate is increased in the US, **the investors pull capital away from emerging economies like India and invest it more in the American economy. So, point 1 is not correct.**
- A currency carry trade means **borrowing in low-yielding currencies (US Dollars) and investing in high-yielding currencies (Indian Rupees)** where the interest rate is higher. When the US Federal Reserve raises its policy rates, **the difference between the interest rates of the two countries narrows**, thus making India less attractive for the currency carry trade. Hence, there will be a **decline in currency carry trade** in Indian rupees. **So, point 2 is correct.**
- As the US Central Bank raises its policy rates, there is a risk that Indian markets will become less attractive to foreign investors. There will be an increase in capital outflows from the Indian bond and equity market. With the **rising trade deficit and outflow of foreign investment** (in Dollars), the pressure on the Indian rupee will increase, leading to the **depreciation of Indian Currency** as against the US dollar.
- **India’s inflation rate accelerates (increases)** as a result of the Fed rate hike. Depreciation of the rupee will **increase the rupee cost of imported goods** such as crude oil, chemicals and fertilizers, active pharmaceutical ingredients and electronics. This will **result in an increase in inflation** and worsen the

management of fiscal deficit due to increased subsidy bills. So, point 3 is correct.

Therefore, option (b) is the correct answer.

**Relevance:** Recently, the US Federal Reserve has hiked interest rates which will likely have negative impacts on the Indian economy.

Q60.

Answer: a

Explanation:

- The tropics account for greater biological diversity because of following reasons:
  - » Speciation is generally a function of time. Unlike temperate regions subjected to frequent glaciations in the past, **tropical latitudes have remained relatively undisturbed for millions of years** and thus, had a long evolutionary time for species diversification.
  - » Tropical environments, unlike temperate ones, **are less seasonal, relatively more constant and predictable**. Such constant environments promote niche specialisation and lead to a greater species diversity.
  - » There is **more solar energy available in the tropics**, which contributes to higher productivity; this in turn might contribute indirectly to greater diversity.

So statements 1 and 2 are correct and statement 2 is the correct explanation of statement 1.

Therefore, option (a) is the correct answer.

Q61.

Answer: b

Explanation:

- **Eco-Sensitive Zones (ESZs)** are areas notified by the Union Ministry of Environment Forest and Climate Change, around **Protected Areas, National Parks and Wildlife Sanctuaries**.
  - » The purpose of declaring ESZs is to create some kind of “shock absorbers” to the protected areas by regulating and managing the activities around such areas.
- **Activities permitted** in the areas include ongoing agriculture and horticulture practices by local communities, rainwater harvesting, organic farming, adoption of green technology and use of renewable energy sources.
- **Felling of trees**, drastic change in agriculture systems and commercial use of natural water resources, including groundwater harvesting, **setting up of hotels and resorts, erection of electric cables and movement of vehicular traffic at night for commercial purposes** are the activities **regulated (not prohibited)** in the areas. So, points 1, 5, 6 and 7 are not correct.
- The **prohibited activities** in the zones include commercial mining, illegal tree felling, setting up of **major hydroelectric projects** and saw mills, **commercial use of firewood** and use or production of hazardous substances. Tourism related activities like **over-flying the National parks by aircrafts and hot air balloons** and discharge of effluents and solid waste have also been prohibited. So, points 2, 3 and 4 are correct.

Therefore, option (b) is the correct answer.

**Relevance:** Prohibited activities and the resultant environmental damages in the Eco-Sensitive Zones (ESZ) of Kerala are being scientifically identified with the State Government.

Q62.

Answer: a

Explanation:

- The forest dwellers are legally empowered with the ownership and governance of the Minor Forest Produce (MFP) through PESA (Panchayat Extension to Scheduled Areas) Act, 1996, and the Forest Rights Act, 2006.
- The Central Government had introduced a scheme named “**Mechanism for Marketing of Minor Forest Produce through Minimum Support price and development of Value Chain of MFP**”. The Scheme includes proposals for procurement, infrastructure development, training, value addition and marketing (setting up of Van Dhan Vikas Kendras).
- The **Ministry of Tribal Affairs is the nodal Ministry** and is the Central Apex Committee responsible for policy, oversight and obtaining and providing budgetary resources for the Scheme.
- The Minimum Support Price for minor forest produce is **recommended by the Pricing Cell setup in Tribal Cooperative Marketing Development Federation of India (TRIFED)**. TRIFED functions as the technical support unit for the Ministry of Tribal Affairs and coordinates the implementation and flow of funds of the

Scheme through the designated State and other agencies including District.

**Therefore, option (a) is the correct answer.**

**Relevance:** Recently, the Aadi Mahotsav was organized by the Tribal Cooperative Marketing Development Federation (TRIFED).

**Q63.**

**Answer: a**

**Explanation:**

- **Tax Base** refers to the total amount of income, property, assets, consumption, transactions, or other economic activity **subject to taxation** by a tax authority. Tax Liability is the product of the Tax Base and Tax Rate. **So, statement 1 is correct.**
- A narrow tax base is non-neutral and inefficient. A broad tax base reduces tax administration costs and allows more revenue to be raised at lower rates.
- India's tax base is **very low** at less than 6%. Only 1% of people in the country pay income taxes. **So, statement 2 is not correct.**
  - » Some of the reasons for this are:
    - The large informal sector and agricultural sector are largely outside the tax net.
    - The widespread tax evasion and avoidance by wealthy individuals and businesses, who use various loopholes and deductions to reduce their tax liability.

**Therefore, option (a) is the correct answer.**

**Relevance:** Recently, there was a revision in income tax slabs in Union Budget 2023-24.

**Q64.**

**Answer: a**

**Explanation:**

- **Multi Tranche Financing Facility** is a longer-term partnership between **Asian Development Bank (ADB)** and client country. It provides funds for complex projects which would need a longer commitment than a typical ADB investment loan could offer. It can finance multiple projects under investment programs in a sector or in various sectors.
- It has features of a standby letter of credit, and can be used to extend debt finance and advice for
  - » large stand-alone projects with interrelated components
  - » investment programs with interconnected components in a sector or sectors
  - » credit lines for small and medium-sized enterprises and local governments
  - » A multi-tranche financing facility is a type of financing arrangement in which a lender **provides a borrower with a series of loans over a period of time, rather than a single loan.** This type of financing can be used to fund a variety of projects or investments, such as infrastructure projects, real estate developments, or capital expenditures.

**Therefore, option (a) is the correct answer.**

**Relevance:** Asian Development Bank has approved a USD 780 million multi-tranche financing facility to improve the connectivity of the metro rail system in Chennai.

**Q65.**

**Answer: d**

**Explanation:**

- The **Reserve Bank of India (RBI)** is required to maintain a reserve equivalent of **₹200 crores in gold and foreign currency** with itself, of which ₹115 crores should be in gold.
- Against this reserve, the RBI is empowered to issue currency to any extent. This is being followed since 1957 and is known as the **Minimum Reserve System (MRS).**
- A **Reserve Tranche** is a portion of the required quota of currency each member country must provide to the **International Monetary Fund (IMF)** that can be utilized for its own purposes—without a service fee or economic reform conditions.
- **Bank reserves** are the minimal amounts of cash that banks are required to keep on hand in case of unexpected demand.
- The **margin requirement** refers to the difference between the current value of the security offered for loan (called collateral) and the value of loan granted.

**Therefore, option (d) is the correct answer.**



Q66.

Answer: d

Explanation:

- **Government Securities (G-Sec)** are bonds issued by the Central and State Governments as a source of borrowings. Since these are issued by Governments, they carry no credit risk. These are one of the **safest types of investment** options in India to earn periodic interest and principal on maturity. In India, the Central Government issues both, treasury bills and bonds or dated securities while the State Governments issue only bonds or dated securities, which are called the State Development Loans (SDLs).
- Investing in G-Secs has the following advantages:
  - » Besides providing a return in the form of coupons (interest), G-Secs offer the maximum safety as they carry the Sovereign's commitment for payment of interest and repayment of principal.
  - » They can be held in book entry, i.e., dematerialized/ scripless form, thus, obviating the need for safekeeping. They can also be held in physical form.
  - » To meet cash needs, G-Secs can be **easily sold** on the secondary market. **So, statement 1 is correct.**
    - The secondary market is the financial market in which previously issued financial instruments such as stock, bonds, options, and futures are bought and sold.
  - » G-Secs may also be **pledged as security** for a loan in the repo (money) market. **So, statement 2 is correct.**
  - » G-Secs are available in a **wide range of maturities** from 91 days to as long as 40 years to suit the duration of varied liability structure of various institutions. **So, statement 3 is correct.**
  - » Securities such as State Development Loans (SDLs) and Special Securities (Oil bonds, UDAY bonds etc) provide attractive yields.
  - » The settlement system for trading in G-Secs is a very simple, safe and efficient system of settlement.
  - » G-Sec prices are readily available due to a liquid and active secondary market and a transparent price dissemination mechanism.

Therefore, option (d) is the correct answer.

**Relevance:** Recently, the Reserve Bank of India issued Draft Norms for lending and borrowing of Government Securities.

Q67.

Answer: a

Explanation:

- **Zombie lending** refers to the practice of providing credit to entities that **do not have the capability to repay**.
- A zombie bank is an insolvent financial institution that is able to continue operating due to explicit or implicit support from the government. Zombie banks are kept afloat to prevent panic from spreading to healthier banks.

Therefore, option (a) is the correct answer.

**Relevance:** A report published by the Reserve Bank of India (RBI) has said that Zombie companies account for about 10% of the total debt of the non-financial corporates.

Q68.

Answer: d

Explanation:

- **Structural unemployment** exists when shifts occur in the economy that create a **mismatch between the skills workers have and the skills** needed by employers. A long recession often creates structural unemployment. If workers stay unemployed for too long, their skills have likely become outdated. Unless they are willing and able to take a lower-level, unskilled job, they may stay unemployed even when the economy recovers. If this happens, structural unemployment leads to a higher rate of natural unemployment.

Therefore, option (d) is the correct answer.

#### Knowledge Box

- **Cyclical unemployment** is caused by the contraction phase of the business cycle. This is when the demand for goods and services falls dramatically. It forces businesses to lay off large numbers of workers to cut costs.



- **Frictional unemployment** occurs when workers leave their old jobs but haven't yet found new ones.
- **Seasonal unemployment** describes a situation where workers are unemployed at certain times of the year when demand has decreased.

**Relevance:** India's unemployment rate increased to 7.45% in February 2023.

**Q69.**

**Answer: d**

**Explanation:**

- Under the Reserve Bank of India (RBI) Act, 1934, RBI is entrusted with the responsibility of conducting monetary policy in India with the primary objective of maintaining price stability while keeping in mind the objective of growth.
- **Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR)** helps in **controlling inflation**. In a high inflation environment, RBI can **increase CRR and SLR to prevent banks from lending more**. Since banks have less funds to lend, it will lead to less money in circulation and help in lowering overall demand. Decrease in demand leads to fall in prices and helps in controlling inflation. **So, statement 1 is correct.**
- All Commercial Banks are required to maintain a **CRR** with the **Reserve Bank of India (RBI)**. **SLR** is not reserved with the RBI, but with **banks themselves**. **So, statement 2 is correct.**
- The Reserve Bank of India **does not pay any interest on the CRR** balances maintained by Commercial Banks. However, banks can earn interest on the investment made in securities under the SLR. **So, statement 3 is correct.**

**Therefore, option (d) is the correct answer.**

#### Knowledge Box

- **Cash Reserve Ratio (CRR):** It is the percentage of total deposits a bank must have in cash to operate risk-free. The Reserve Bank of India decides the amount and is kept with them for financial security. If the RBI cuts CRR, banks will be left with more money to lend or invest. On the other hand, if the CRR is raised, banks will have lesser money to lend.
- **Statutory Liquidity Ratio (SLR):** It is a minimum percentage of deposits that a commercial bank has to maintain in the form of **liquid cash, gold or other securities**. It is basically the reserve requirement that banks are expected to keep before offering credit to customers.

**Relevance:** In February 2023, the Reserve Bank of India's Monetary Policy Committee (MPC) increased the policy Repo Rate by 25 basis points to 6.5%, with immediate effect.

**Q70.**

**Answer: a**

**Explanation:**

- The **Minimum Support Price (MSP)** for **raw jute** is announced by the Cabinet Committee on Economic Affairs (CCEA) based on the recommendations of the Commission for Agricultural Costs and Prices. **So, statement 1 is correct.**
- Under the **Jute Packaging Materials (Compulsory use in Packing Commodities) Act, 1987**, the Government is required to consider and provide for the compulsory use of jute packaging material in the supply and distribution of certain commodities in the interest of production of raw jute and jute packaging material and of persons engaged in the production thereof.
  - » In October 2020, the Cabinet Committee on Economic Affairs chaired by the Prime Minister had approved that **100% of the food grains and 20% of the sugar** shall be mandatorily packed in diversified jute bags. **So, statement 2 is not correct.**
- The **National Jute Board** is a **statutory body** set up by the National Jute Board Act, 2008 under the administrative control of the **Union Ministry of Textiles**, Government of India. The **Secretary to the Union Ministry of Textiles** is the ex-officio Chairperson of the Board. **So, statement 3 is not correct.**

**Therefore, option (a) is the correct answer.**

**Relevance:** The Cabinet Committee on Economic Affairs recently approved the Minimum Support Price (MSP) for raw jute for the 2022-2023 season.

Q71.

Answer: b

Explanation:

- The **International Court of Justice (ICJ)** is the principal judicial organ of the **United Nations (UN)**.
- The ICJ is not a Supreme Court to which National Courts can turn, it **does not act as a court of last resort for individuals**. It is an appeal court for any international tribunal. It can, however, rule on the validity of arbitral awards. ICJ has no jurisdiction to try individuals accused of war crimes or crimes against humanity. **So, statement 1 is not correct.**
  - » The ICJ hears disputes between States whereas the **International Criminal Court (ICC)** handles prosecutions of individuals.
  - » As ICJ is not a criminal court, it does not have a prosecutor able to initiate proceedings.
- **The ICC investigates and tries individuals charged with the gravest crimes** of concern to the international community namely genocide, war crimes, crimes against humanity and the crime of aggression. The ICC was established as a **court of last resort** to prosecute the most heinous offenses in cases where national courts fail to act.
- ICC was established by the Rome Statute. This treaty was negotiated within the UN, however, it created an **independent judicial body** distinct from the UN. **So, statement 2 is not correct.**
- Both ICJ and ICC are headquartered in the **Netherlands at The Hague**. **So, statement 3 is correct.**

Therefore, option (b) is the correct answer.

**Relevance:** The International Criminal Court is planning to open two war crimes cases tied to the Russian invasion of Ukraine.

Q72.

Answer: b

Explanation:

- The **Group of 4 (G4)** is primarily focused on United Nations Security Council (UNSC) reform, and permanent membership of the body for G4 members. **Brazil (a South American Country)**, Germany, India and Japan are members of the G4 grouping. These countries support each other's bids for permanent seats on the UNSC. **So, statement 1 is not correct.**
- The **Group of 7 (G7)** is an informal grouping of seven of the world's advanced economies, including Canada, France, **Germany, Italy, Japan**, the United Kingdom, and the United States of America, as well as the European Union. No African or South American country is a member of G7. **So, statement 2 is not correct.**
- The **Group of 20 (G20)** comprises 19 countries (Argentina, Australia, Brazil, **Canada**, China, **France**, **Germany**, India, Indonesia, **Italy, Japan**, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the **United Kingdom and the United States of America** and the **European Union**. All the members of G7 are members of G20 as well. **So, statement 3 is correct.**

Therefore, option (b) is the correct answer.

**Relevance:** India is holding the Presidency of the G20 from 1 December 2022 to 30 November 2023.

Q73.

Answer: d

Explanation:

- **Bali Process** is a forum for **policy dialogue**, information sharing and practical cooperation to help the region address the challenges of **people smuggling, trafficking in persons and related transnational crime**. Since its inception in 2002, the Bali Process has effectively raised regional awareness of the consequences of people smuggling, trafficking in persons and related transnational crime.
- The Bali Process, **co-chaired by Indonesia and Australia**, has 49 members, including the United Nations High Commissioner for Refugees (UNHCR), the International Organization for Migration (IOM), the United Nations Office of Drugs and Crime (UNODC) and the International Labour Organization (ILO), as well as a number of observer countries and international agencies. It also includes the Ad Hoc Group, bringing together those most-affected member countries, and relevant international organizations, to address specific irregular migration issues in the region.
- The **Regional Support Office (RSO)** of the Bali Process was also established to support and strengthen practical **cooperation on refugee protection and international migration**, including human trafficking and smuggling and other components of migration management in the region.

Therefore, option (d) is the correct answer.

Q74.

Answer: b

Explanation:

- Under **Article 87(1) of the Constitution of India**, the **President of India provides a Special Address to both Houses of Parliament assembled together**, at the commencement of the first session after each general election to the House of the People (Lok Sabha) and at the commencement of the first session of each year.
  - » This address is usually delivered at the commencement of the Budget Session every year, reviews the important happenings during the preceding year, and also gives a broad indication of the government's policies and programs for the current year.
- The discussion takes place on the President's Address **in both Rajya Sabha and Lok Sabha** on a Motion of Thanks. It is **moved by a member and seconded by another member in each house of Parliament**. Members who are to move and second the Motion are selected by the Prime Minister and the notice of such a motion is received through the **Ministry of Parliamentary Affairs**. The scope of discussion on the address is very wide and the functioning of the entire administration is open for discussion. **So, statement 1 is correct.**
- Notices of amendments to the Motion of Thanks **can be tabled in both houses of Parliament after the President has delivered his Address**. Amendments can be moved to the Motion of Thanks in such form as may be considered appropriate by the presiding officer of the respective House. Then both motion and amendments become open for discussion. Hence, **Rajya Sabha can discuss and suggest amendments to the Motion of Thanks. So, statement 2 is correct.**
- Notices of amendments to the Motion of Thanks on the President's Address can be tabled after the President has delivered his Address. Amendments may refer to **matters contained in the Address** as well as to matters which, in the opinion of the member, **the Address has failed to mention. So, statement 3 is not correct.**
- At the end of the discussion, the Prime Minister replies to the debate. Thereafter, the amendments are disposed of, and then the Motion of Thanks is put to vote in the House. If any of the amendments are accepted then the Motion of Thanks is adopted in the amended form. **The defeat of this motion in Lok Sabha is amounted to the defeat of the government.**

Therefore, option (b) is the correct answer.

**Relevance:** Recently, the Prime Minister addressed both Houses during the discussion on the Motion of Thanks to the President's address.

Q75.

Answer: d

Explanation:

- **The Lokpal and Lokayukta Act, 2013**, often known as the Lokpal Act, aims to establish a Lokpal for the Union and a **Lokayukta for each State. It is not a Constitutional body. So, statement 1 is not correct.**
- The Lokayukta is an anti-corruption authority constituted at the **State level** and it investigates **allegations of corruption** and maladministration in contradiction of public servants and is tasked with speedy redressal of public grievances. **So, statement 2 is correct.**
- Maharashtra was the first State to establish its Lokayukta body in 1971 under the Maharashtra Lokayukta and Upayukta Act. **So, statement 3 is correct.**
- The Lokayukta is created as a **statutory authority** with a **fixed tenure** to qualify it to discharge its functions independently and impartially and the person appointed is usually a former High Court Chief Justice or former Supreme Court judge. Members of the public **can directly approach the Lokayukta** with complaints of corruption, nepotism or any other form of maladministration against any government official.

Therefore, option (d) is the correct answer.

**Relevance:** Recently, the High Court of Karnataka restored the power to probe corruption cases to the Lokayukta Police, and abolished the Anti-Corruption Bureau (ACB).

Q76.

Answer: d

Explanation:

- **The Scheduled Tribes And Other Traditional Forest Dwellers (Recognition Of Forest Rights) Act,**



**2006 (FRA)** recognizes the rights of the forest-dwelling tribal communities and other traditional forest dwellers to forest resources, on which these communities were dependent for a variety of needs, including livelihood, habitation and other socio-cultural needs.

- The Act gives Forest Dwelling Scheduled Tribes (FDST) and Other Traditional Forest Dwellers (OTFD) the **right to ownership of land that is actually being cultivated by the tribals or forest dwellers** subject to a maximum of 4 hectares. The title is non-transferable and non-saleable. **So, point 1 is correct.**
- The Act encompasses **Rights of Self-cultivation** and Habitation which are usually regarded as Individual rights; and Community Rights as Grazing, Fishing and access to Water bodies in forests, **Habitat Rights for Particularly Vulnerable Tribal Groups (PVTGs)**, Traditional Seasonal Resource access of Nomadic and Pastoral community, access to biodiversity, **community right to intellectual property** and traditional knowledge, recognition of traditional customary rights and right to protect, regenerate or conserve or manage any community forest resource for sustainable use. **So, points 2 and 3 are correct.**
- It also provides **rights to allocation of forest land for developmental purposes** to fulfil the basic infrastructural needs of the community. In conjunction with the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Settlement Act, 2013, FRA protects the tribal population from eviction without rehabilitation and settlement.

**Therefore, option (d) is the correct answer.**

**Relevance:** Recently, the Centre told Lok Sabha that over 38% FRA claims for land rejected till November 2022.

**Q77.**

**Answer: b**

**Explanation:**

- Budget** was first introduced in India in **1860**, when Scottish economist and politician James Wilson from the East India Company presented it to the British Crown. **So, statement 1 is not correct.**
- Former Prime Minister Moraraji Desai** holds the record of presenting the greatest number of budgets in the history of the country. He had presented **10 budgets** during his stint as Finance Minister during 1962-69, followed by P Chidambaram (9), Pranab Mukherjee (8), Yashwant Sinha (8) and Manmohan Singh (6). **So, statement 2 is correct.**
- Indira Gandhi**, a former Prime Minister, was the first woman to deliver the Union Budget. She gave it to the board during the 1970-1971 fiscal year. The second woman to give the Union Budget was Nirmala Sitharaman. **So, statement 3 is correct.**

**Therefore, option (b) is the correct answer.**

**Relevance:** The Union Finance Minister presented the Union Budget 2023-24 on 1st February, 2023.

**Q78.**

**Answer: b**

**Explanation:**

Devolution of power:

- It is a form of **decentralization** that seeks to **create an independent level of authority of government with functions and responsibilities.**
- It is an arrangement for Central or State Governments to **relinquish some of its functions to the new units of government** that are outside their control.
- This can be achieved by providing for it in the Constitution itself or by ordinary law of the land
- Devolution usually occurs through conventional statutes rather than through a change in a country's Constitution; thus, unitary systems of government that have devolved powers in this manner are still considered unitary rather than federal systems, because the powers of the subnational authorities can be withdrawn by the Central Government at any time.

What the Forest Rights Act, 2006, entails

- Tenurial security over the forestland under occupation prior to December 13, 2005
- Recognition of community right over forest and forest products
- Protection and conservation of community forest resources
- Conversion of all forest villages and habitation located inside the forestland into revenue villages
- In situ rehabilitation of displaced persons evicted without compensation prior to December 13, 2005



Residents of Gunduribadi village in Odisha's Nayagarh district get ready for mapping their land boundaries for the Forest Rights Act implementation. • SPECIAL ARRANGEMENT

Particularly Vulnerable Tribal Groups

- Seasonal access to nomadic
- Conversion of all leases granted by erstwhile governments, zamindars and



Therefore, option (b) is the correct answer.

#### Knowledge Box

- **Federalism:** It is the mode of political organization that unites separate states or other polities within an overarching political system in a way that allows each to maintain its own integrity.
- **Centralization:** It is the process in which activities involving planning and decision-making within an organization are concentrated to a specific leader or location.
- **Balkanization:** It is the division of a multinational state into smaller ethnically homogeneous entities.

Q79.

Answer: b

Explanation:

- **Cabinet Secretariat** is a staff agency to the Union Cabinet. It operates under the direction and leadership of the **Prime Minister of India**. It has an important coordinating role in the process of policy-making at the highest level in the Central Government.
- The administrative head of the Secretariat is the **Cabinet Secretary** who is also the ex-officio Chairman of the Civil Services Board. The Cabinet Secretariat enjoys the status of a **department of the Government of India** under the Allocation of Business Rules, 1961.
- **ORIGIN OF THE CABINET SECRETARIAT:**
  - » The **portfolio system was legalized by the Indian Councils Act, 1861** during the time of **Lord Canning** leading to the inception of the Executive Council of the Governor-General.
  - » Later, this practice continued and in 1935, the Viceroy's Private Secretary was given the additional designation of Secretary to the Executive Council.
  - » The Constitution of the Interim Government in September 1946 brought a change in the name of this Office.
  - » On **5th September, 1946, the Secretariat of the Executive Council was designated as Cabinet Secretariat** and the Secretary to the Executive Council as Cabinet Secretary. So, statement 1 is not correct.
- **Direct Benefit Transfer (DBT)** is a major reform initiative where benefits, cash or in-kind, are delivered directly to identified beneficiaries using Aadhaar. DBT Mission was created in the Planning Commission to act as a **nodal point for the implementation of DBT**. The Mission was transferred to the Department of Expenditure in 2013 and shifted to Cabinet Secretariat with effect from 2015. **So, statement 2 is correct.**
- The Cabinet Secretariat is responsible for the administration of the **Government of India (Transaction of Business) Rules, 1961** and **Government of India (Allocation of Business) Rules, 1961** facilitating smooth transaction of business in Ministries/ Departments. The Secretariat assists in decision-making in Government by ensuring Inter-Ministerial coordination, ironing out differences amongst Ministries/ Departments and evolving consensus through the instrumentality of the standing/adhoc Committees of Secretaries. Management of major crisis situations in the country and coordinating activities of various ministries in such a situation is also one of the functions of the Cabinet Secretariat.

Therefore, option (b) is the correct answer.

**Relevance:** Delhi government clears way for Executive Enclave (which will include Cabinet Secretariat).

## Optional Enrichment Courses



Mathematics



Sociology



Political  
Science & IR



Geography



Anthropology



History



Medical Science  
Crash Course



Value Addition  
Lectures



Targeted Study Material  
& Handouts



Course based on PYQs  
and Current Development



Answer Writing Practice  
with Detailed Discussions

Q80.

Answer: b

Explanation:

- The **Indian Civil Service (ICS)** was the steel frame of British rule in India. It was started in 1855 in London.
- Following **Lord Macaulay's Report** of the Select Committee of the British Parliament, the concept of a merit-based **modern Civil Service** in India was introduced in 1854. The Report recommended that the patronage based system of East India Company should be replaced by a permanent Civil Service based on a merit based system with entry through competitive examinations. **So, statement 1 is not correct.**
- In 1887, the **Aitchison Commission** recommended the reorganization of the services on a new pattern and divided the services into three groups-Imperial, Provincial and Subordinate.
- **From 1922** onwards the Indian Civil Service Examination began to be held in India also, first in **Allahabad and later in Delhi** with the setting up of the Federal Public Service Commission. The Examination in London continued to be conducted by the Civil Service Commission. **So, statement 2 is not correct.**
- The **Lee Commission**, in their report in the year 1924, **recommended the setting up of a statutory Public Service Commission**. Subsequent to this, the Public Service Commission was set up in India for the first time on October 1, 1926. **So, statement 3 is correct.**

Therefore, option (b) is the correct answer.

Q81.

Answer: a

Explanation:

- The **Fundamental Duties are dealt under Article 51A under Part-IVA** of the Indian Constitution. They are inspired by the Constitution of erstwhile Union of Soviet Socialist Republics (USSR).
- They were **not present in the original Constitution** and were added by the 42nd Constitutional Amendment Act of 1976.
- They are **non-enforceable and non-justiciable in nature**. The Constitution does not provide for their direct enforcement by the courts. Moreover, there is no legal sanction against their violation.

Therefore, option (a) is the correct answer.

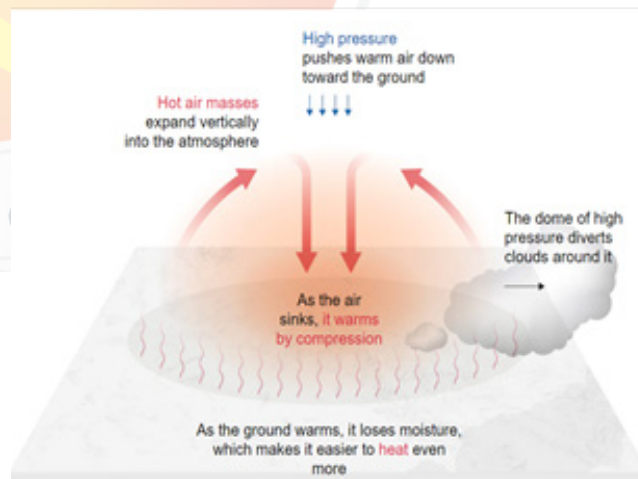
Relevance: Recently, the Supreme Court expressed displeasure over States not filing affidavit on time to plea seeking enforcing Fundamental Duties.

Q82.

Answer: a

Explanation:

- A **heat dome is a high-pressure weather system** that can trap hot, stagnant air over a large area.
- It is characterised by a region of **high pressure that sits over a region and acts like a dome, trapping hot air underneath**. This can lead to a prolonged period of hot, dry weather with high temperatures and little or no rainfall. There are several conditions that can contribute to the formation of a heat dome:
  - » **Low humidity:** Dry air is less effective at trapping heat, so if a heat dome is present in a region with **low humidity, the heat will be able to build up more easily**. High humidity can trap heat and make it feel warmer, but it can also make the air feel more oppressive and uncomfortable. This may prevent the formation of a heat dome.
  - » **Warm surface temperatures:** If the surface temperatures in a region are already warm, it will be **easier for a heat dome to form as there is less heat that needs to be trapped**. If the surface temperatures in a region are already cold, it will be more difficult for a heat dome to form as there is more heat that needs to be trapped. **So, point 1 is correct.**
  - » **Clear skies:** Clear skies allow the **sun's heat to build up more easily**, which can contribute to the formation of a heat dome. Cloud cover can block the sun's heat and prevent it from building up, which can make it more difficult for a heat dome to form. **So, point 2 is correct.**



- » **Light winds:** If the winds are light, they will be **less effective at mixing the air and distributing the heat**, which can allow it to build up and create a heat dome. Strong winds can mix the air and distribute heat more effectively, which can prevent the build-up of hot, stagnant air that is characteristic of a heat dome. **So, point 3 is not correct.**

**Therefore, option (a) is the correct answer.**

**Relevance:** Several parts of Europe witnessed an unprecedented winter heat wave because of the formation of a heat dome over the region.

**Q83.**

**Answer: b**

**Explanation:**

- A **Great Circle** is the **intersection of a sphere and a plane that passes through the center of the sphere**. They are also known as the “**shortest distance**” between two points on the surface of a sphere, as they represent the largest possible circle that can be drawn on the sphere.
- Flight routes between two cities are often curved rather than straight because **planes travel along the shortest route in a 3-dimensional space**. This route is called a **geodesic or great circle route**. The Great Circle is an important part of navigation because the shortest distance between two points on the earth’s surface is the shortest arc of a great circle, joining two points.
- If a straight line is made between two locations, such as **New York City and Paris**, on a spherical, three-dimensional globe and then flattened the globe into a two-dimensional map, the once-straight route would then be an arc. As a result, the shortest path between two locations is in fact an arc, thus the reason airlines prefer this trajectory.



**Therefore, option (b) is the correct answer.**

**Q84.**

**Answer: c**

**Explanation:**

- **Frost** is formed when cool air condenses water vapour, which in turn forms droplets on the ground, and when the surface temperature drops below zero, the moisture on ground freezes into **ice crystals**.
- Air frost occurs when ground-level air temperature is below zero degrees Celsius.
- Ground frost refers to icy deposits on the ground formed when soil moisture freezes.
- A combination of **low moisture (dry weather) and clear skies**, along with **calm winds**, creates ideal conditions for the ground temperature to fall sharply overnight, increasing chances of frost. **So, statement 1 is correct.**
- Low temperature may impose stress on a plant in at least two-fold manner:
  - » By the effects of low temperature alone, and
  - » By **dehydration of the cells and tissues when cellular water freezes**. **So, statement 2 is correct.**
- There are various measures to protect crops from frost—from **watering the fields in the evening**, to shielding the plants with straw, polythene or gunny bags etc. **So, statement 3 is correct.**
- Frost is most prevalent during December and January when minimum temperatures across the Indo-Gangetic Plains as well as parts of Rajasthan and Madhya Pradesh drop to 4°C or less. Similar conditions are reported in **Tamil Nadu and Kerala in the higher reaches of Nilgiris hills**. **So, statement 4 is not correct.**

**Therefore, option (c) is the correct answer.**

#### Knowledge Box

- Frost can affect crops in various ways. It can form a layer on stems, leaves and fruits, causing the plant cells to rupture.
- Similarly, ground frost limits the availability of soil oxygen and moisture to plants.
- When plants cannot access soil nutrients in this way, it is called a physiological drought.

**Relevance:** Potato farmers in the northern parts of the country have suffered heavy crop losses due to ground frost



owing to the fall in temperatures.

Q85.

Answer: c

Explanation:

Makhana (Foxnut):

- It is also known as Gorgon Nut, it is grown in **India, Korea, Japan and Russia**. It comes from the **seeds of lotus** and is a high-value commodity. **So, statement 1 is correct.**
- In India, it is **commercially cultivated only in Bihar** and certain parts of eastern India. Besides this, it is grown as a natural crop in Madhya Pradesh, Rajasthan, Jammu & Kashmir, Tripura and Manipur. It has been adapted to the tropical climate of India and is found in natural, wild forms in various parts of north-east India and scattered pockets of central and northern India. **So, statement 2 is not correct.**
- Makhana is grown in the **stagnant water of wetlands, tanks, ponds, lakes and ditches** in the northern parts of Bihar. Besides stagnant water bodies, it is also cultivated in paddy fields and low-lying areas. **So, statement 3 is correct.**

Therefore, option (c) is the correct answer.

#### Knowledge Box

- The nutritional value of Makhana is attributed to its **high fiber content, low glycemic index and phytochemical constituents**. It is low in calories. Its fiber content acts as an absorbent. Because of this property, it is commonly used for treating diarrhea.
- **Bihar produces 90 percent** of the world's production of fox nut. **Mithila Makhana** is cultivated in the Mithila region of Bihar and some parts of Nepal. It is believed that the food is famously consumed during Kojagara Puja by the **newly-married couples**. It was recently awarded the **Geographical Indication (GI) Tag**.

**Relevance:** Makhana (fox nut) growers in north Bihar's Mithila region are reeling under losses from an unexpected price crash this year.

Q86.

Answer: b

Explanation:

- The **Lameta Formation (Infratrappean Beds)** is a sedimentary rock formation that happened during the Maastrichtian age (Late Cretaceous) and is found in Madhya Pradesh, Gujarat and Maharashtra.
- It is **associated with the Deccan Traps** and is **notable for fossils of several genera of Dinosaurs found in these rocks**, including the Titanosaur, Sauropoda, Isisaurus, etc. It also contains fossils of mammals, snakes, etc.
- **The surfacing of these sedimentary rocks with fossils is known as Lameta exposure** which happened along the Narmada Valley. This region falls between the easternmost Lameta exposures at Jabalpur in the upper Narmada Valley (central India) and Balasinor in the lower Narmada Valley (western central India). These fossil records here are protected by Deccan volcanic flows, preventing their removal by erosion.
  - » The fossils of eggs belonged to six species found here, suggesting a higher diversity of these extinct giants in India.
  - » Further, fossils show that Titanosaurs buried their eggs in shallow pits, a behaviour seen in modern-day crocodiles. They nested in colonies which is a feature found in modern-day birds.

Therefore, option (b) is the correct answer.

**Relevance:** A group of Indian researchers found rare cases of fossilised dinosaur from the Narmada Valley.

Q87.

Answer: a

Explanation:

- **Drina River** flows in the **Central Balkans, Southeastern Europe**. It originates with the confluence of the **Tara and Piva rivers** and follows a northerly course 215 miles (346 km) to enter the **Sava River**. The Drina constitutes a large part of the boundary that separates Bosnia and Herzegovina to the West from Serbia to the East. **So, pair 1 is not correctly matched.**
- **Colorado River** is a major river of **North America**, rising in the Rocky Mountains of Colorado, U.S.,



and flowing generally west and south for 1,450 miles (2,330 kilometres) into the **Gulf of California in northwestern Mexico**. For 17 miles the river forms the international boundary between the U.S. state of Arizona and Mexico. **So, pair 2 is correctly matched.**

- **Euphrates River** is one of the longest river in Asia and is one of the two main constituents of the Tigris-Euphrates river system. The river rises in Turkey and flows southeast across Syria and through Iraq. It unites with Tigris and drains into the **Persian Gulf**. **So, pair 3 is not correctly matched.**
- **Amu Darya:** The river is formed by the confluence of the **Vakhsh and Panj rivers** and flows west-northwest. In its upper course the Amu Darya forms part of **Afghanistan's northern border with Tajikistan, Uzbekistan, and Turkmenistan**. It then flows across the desert of eastern Turkmenistan and in its lower course forms part of the boundary between Uzbekistan to the northeast and Turkmenistan to the southwest. In the past, Amu Darya discharged into the Aral Sea, but the diversion of river water for agriculture in the 20th and 21st centuries has contributed to the shrinking of the Aral. **So, pair 4 is not correctly matched.**

**So, only one pair is correctly matched.**

**Therefore, option (a) is the correct answer.**

**Relevance:** The low levels of the Euphrates River have reached record and unprecedented levels. The Karakalpak people who originally settled around the Amu Darya have been protesting in the Uzbekistan's autonomous province of Karakalpakstan.

**Q88.**

**Answer: b**

**Explanation:**

- **Climate reparations** refer to a call for money to be paid by the **Global North to the Global South** as a means of addressing the historical contributions that the Global North has made toward climate change. It is also about the need for acknowledgment and accountability for the loss of land and culture and how that has affected the Global South. **So, statement 1 is correct.**
- The concept of **Common But Differentiated Responsibilities (CBDR)** was enshrined as Principle 7 of the Rio Declaration at the **first Rio Earth Summit in 1992**. The United Nations Framework Convention on Climate Change (UNFCCC), 1994 explicitly acknowledged this differentiated responsibility of nations. **So, statement 2 is correct.**
- The 19th Conference of Parties (COP 19) to the UNFCCC established the **Warsaw International Mechanism for Loss and Damage** associated with Climate Change Impacts (Loss and Damage Mechanism), to address **loss and damage associated with impacts of climate change**, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change in Warsaw, Poland. It **did not provide for a fund for reducing Green House Gas Emissions in developing countries**. **So, statement 3 is not correct.**
  - » **Loss and Damage** normally refers to the destructive impacts of climate change that **cannot be or have not been avoided by what is known as 'mitigation'** (reducing greenhouse gas emissions) or **'adaptation'** (adjusting to and building resilience against current and future climate change impacts).

Therefore, option (b) is the correct answer.

**Relevance:** Recently, the COP27 to the UNFCCC included 'loss and damage' in the main agenda.

**Q89.**

**Answer: d**

**Explanation:**

- **Comets** are **frozen leftovers** from the formation of the **solar system** composed of **dust, rock, and ices**. When frozen, they are the size of a small town.
- When comets become large enough to be pulled by the sun's gravity, they begin to travel towards the sun. When it comes close to the Sun, it heats up and spews dust and gases into a giant glowing head larger than most planets. The dust and gases form a tail that stretches away from the Sun for millions of miles.
- There are likely billions of comets orbiting our Sun in the **Kuiper Belt** and even more distant **Oort Cloud**.

**Therefore, option (d) is the correct answer.**

#### Knowledge Box

- **Dwarf Planets** are celestial bodies that orbit the Sun, have enough mass to assume a nearly round shape, have not cleared the neighbourhood around its orbit and are not a moon.

- **Asteroids** are rocky, airless remnants left over from the early formation of our solar system about 4.6 billion years ago.
- **Meteors** are meteoroids that enter earth's atmosphere (or that of another planet) at high speed and burn up.
- The **Kuiper Belt** is a **flat ring of icy small bodies** that revolve around the Sun **beyond the orbit of the planet Neptune**. It comprises hundreds of millions of objects which are presumed to be leftovers from the formation of the outer planets—whose orbits lie close to the plane of the solar system. The Kuiper Belt is thought to be the source of most of the observed **short-period comets**.
- The **Oort Cloud** is a **theoretical spherical cloud** of predominantly icy planetesimals that is believed to surround the Sun at a distance of up to around 100,000 Astronomical Units. This places it in **interstellar space**, beyond the Sun's Heliosphere where it defines the cosmological boundary between the solar system and the region of the Sun's gravitational dominance.

**Relevance:** In February, Comet C/2022 E3 (ZTF), popularly named the Green Comet, reached its closest point to the earth's surface in 50,000 years.

**Q90.**

**Answer: d**

**Explanation:**

- **Nanotechnology** refers to the branch of science and engineering devoted to designing, producing, and using structures, devices and systems by manipulating atoms and molecules at nanoscale, i.e. having one or more dimensions of the order of 100 nanometres (100 millionth of a millimetre) or less.
- **Gold nanoparticle** conjugates can be used for multimodal imaging and synergistic phototherapy to **destroy cancer cells** effectively at power densities below the skin tolerance threshold. **So, point 1 is correct.**
- **Water purification using nanotechnology** exploits nanoscopic materials such as **carbon nanotubes and alumina fibers for nanofiltration**. It also utilizes the existence of nanoscopic pores in zeolite filtration membranes, as well as nanocatalysts and magnetic nanoparticles. **Nanosensors**, such as those based on titanium oxide nanowires or palladium nanoparticles are used for analytical detection of contaminants in water samples. **So, point 2 is correct.**
- **Electrospinning** is a new technique of manufacturing nanomaterials, to produce a novel fabric that offers high performance protection against electromagnetic interference. **So, point 3 is correct.**

**Therefore, option (d) is the correct answer.**

**Relevance:** Assam's Bodoland University is part of collaborative research on fungus-powered biosynthesised nanogold particles that has received an international patent from Germany.

**Q91.**

**Answer: c**

**Explanation:**

- **William Jones** founded the **Asiatic Society of Bengal in 1784**. In 1789, he completed his translation of 'Shakuntala', a famous drama, and the 'Hitopadesa', a collection of fables in English. In 1792, he translated the Ritusamhara into the original Sanskrit. **So, pair 1 is correctly matched.**
- **F. Max Muller** was a German philologist and Orientalist. Muller started by translating the Sanskrit text of 'Hitopadesa' into German. Later, he compiled and **translated the Rigveda into the German language**, and had it published in 6 volumes. **Charles Wilkins** was the first to translate the Bhagavad Gita into English. **So, pair 2 is not correctly matched.**
- **Alexander Cunningham** founded the **Archaeological Survey of India** and also served as its first Director. He excavated Sarnath and Sanchi which are prominent Buddhist sites. **So, pair 3 is correctly matched.**
- **James Prinsep**, an officer in the mint of the East India Company, **deciphered Brahmi and Kharosthi scripts** which were used in the earliest inscriptions and coins. He was the first to decipher Ashoka's edicts inscription in 1837. **So, pair 4 is correctly matched.**

**Therefore, option (c) is the correct answer.**

**Relevance:** 2023 marked the 240th anniversary of the foundation of the Asiatic Society of Bengal, which was initiated by William Jones on 15 January 1784.

Q92.

Answer: d

Explanation:

- The song **Jana-gana-mana**, composed originally in Bangla by Rabindranath Tagore, was adopted in its Hindi version by the Constituent Assembly as the National Anthem of India on January 24, 1950.
- The lines of India's National Anthem are taken from **Rabindranath Tagore's song, 'Bharoto Bhagyo Bidhata'**. The original was written in **Bengali** and the full song has 5 stanzas. The text was first published in 1905, in an issue of **Tatwabodhini Patrika**.
- In 1911, the session held by Indian National Congress, in Calcutta, on 27th December, became the first location where the song was sung publicly and Tagore sang it himself.

Therefore, option (d) is the correct answer.

Q93.

Answer: b

Explanation:

- **Basaveshwara or Basavanna** born in Bijapur district in Karnataka, was a 12th century Indian philosopher and social reformer who attempted to create a **casteless society** and fought against caste and **religious discrimination**.
- The tradition of **Lingayatism** is known to have been founded by him.
  - » **Basava Jayanthi** is an annual event celebrated in honour of the birth of Vishwaguru Basaveshwara.
- His **spiritual** discipline was based on the principles of **Arivu** (true knowledge), **Acharya** (right conduct), and **Anubhava (divine experience)**. This path advocates a holistic approach to Lingangayoga (union with the divine). This comprehensive discipline encompasses bhakti (devotion), jnana (knowledge), and kriya (action) in a well-balanced manner.
- He established the **Anubhava Mantapa, Hall of Spiritual Experience**, a common forum for all men and women to discuss the prevailing problems of socio, economic and political strata including religious and spiritual principles **along with personal problems**.
- He spread social awareness through his poetry, popularly known as Vachanaas. He rejected gender or social discrimination, superstitions and rituals.

Therefore, option (b) is the correct answer.

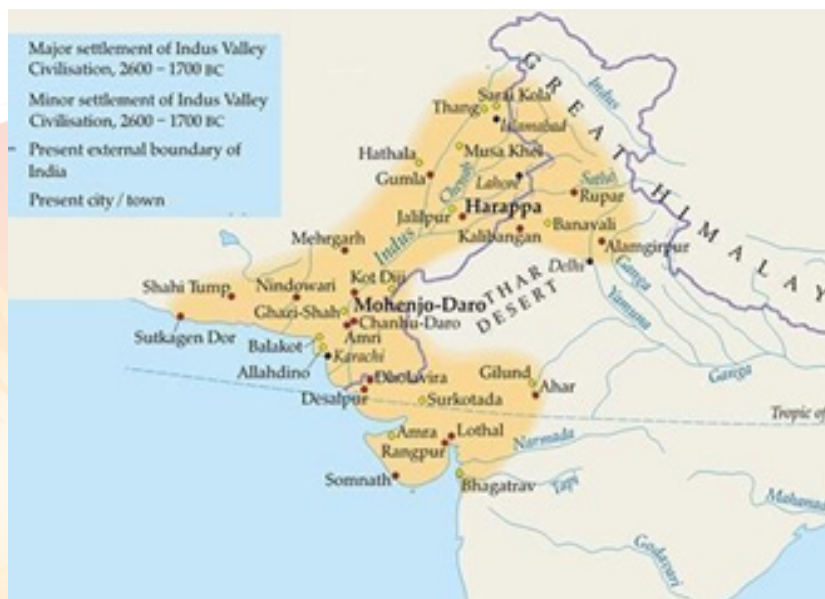
**Relevance:** The Karnataka State Government has started work on the Rs 600 crore 'Anubhava Mantapa' project in Bidar.

Q94.

Answer: c

Explanation:

- **Sarvodaya** is a term meaning 'Universal Uplift' or 'Progress of All'. The term was first coined by Mahatma Gandhi as the title of his 1908 translation of John Ruskin's tract on political economy, "Unto This Last". He used the term for the ideal of his own political philosophy.
- Following are the Principles of Sarvodaya:
  - » There is **no centralized authority**, and there is a political and economic atmosphere in the villages. **So, point 1 is not correct.**
  - » There will be **no private property**, the instrument of exploitation and the source of social distinctions and hatred. **So, point 2 is correct.**
  - » The Sarvodaya Movement is based on Truth, **Non-violence and Self-denial**. Self-denial means restricting one's own wants for the sake of others. **So, point 3 is correct.**





- » There will be **no party system and no majority rule**. The society will be free from the evil of the tyranny of the majority. So, point 4 is correct.
- » All people will be imbued with the spirit of love, fraternity, truth, non-violence and self-sacrifices.
- » The Sarvodaya society is based on equality, liberty and progress of all.

**Therefore, option (c) is the correct answer.**

**Relevance:** The year 2023 marks the 75th death anniversary of Mahatma Gandhi.

**Q95.**

**Answer: b**

**Explanation:**

- The **Indus Valley Civilization**, also known as the Harappan Civilization, was an ancient civilization that flourished along the Indus River and its tributaries in present-day Pakistan and northwest India from about 3300 BCE to 1300 BCE. Some of the major port cities of this civilization were:
- **Surkotada** is a Harappan site located in Rapar Taluka of Kutch district, Gujarat, India. It was known for its fortifications and well-planned architecture. It was a port city that played a significant role in the maritime trade network of the Harappan Civilization and helped the civilization to establish trade and cultural contacts with other ancient civilizations. **So, point 1 is correct.**
- **Dholavira** in Gujarat was the fifth largest city of Harappan Civilisation. The site has a fortified citadel, a middle town and a lower town with walls made of sandstone or limestone instead of mud bricks in many other Harappan sites. It was among the largest port towns of the region. **So, point 2 is correct.**
- **Lothal** is located in Saragwala village on the bank of Sabarmati in Dholka taluka of Ahmedabad district. It was the most prominent site of IVC in Gujarat. It was excavated between 1955 and 1960 and was discovered to be an important port city of ancient civilisation, with structures made of mud bricks. **So, point 3 is correct.**
- **Kot Diji** is an Indus Valley Site located south of Khairpur in the province of Sindh, Pakistan. It is situated on the east bank of the Indus opposite Mohenjodaro. It was not the port town of Harappan Civilisation. **So, point 4 is not correct.**

**Therefore, option (b) is the correct answer.**

**Relevance:** The Prime Minister reviewed the construction of the National Maritime Heritage Complex (NMHC) site at Gujarat's Lothal via video conferencing.

**Q96.**

**Answer: b**

**Explanation:**

- **Civil Disobedience Movement** was launched by **Mahatma Gandhi** on March 12, 1930, with the **Dandi Salt March**. He broke the Salt Laws imposed by the British Government.
- The **Gandhi-Irwin Pact** was signed on March 5, 1931. The two main clauses of the pact were to ensure Congress participation in the Round Table Conference and the end of the Civil Disobedience Movement.
- The Second Round Table Conference in London which Mahatma Gandhi attended with Sarojini Naidu, proved to be futile as the British did not honour their demands.
- Gandhiji resumed the movement in January 1932 and appealed to the country to join in. However, Mahatma Gandhi realised that the second phase of the Civil Disobedience Movement lacked the organisation that marked its first phase, even though the entire nation put up a tough fight.
- The movement continued for six months. He withdrew the mass Satyagraha on July 14, 1933, but the movement ceased completely on April 7, 1934.

**Therefore, option (b) is the correct answer.**

**Relevance:** Recently, Guntur Municipal Corporation had installed Andhra Pradesh's first Dandi March statue on the eve of Republic Day in the district.

**Q97.**

**Answer: d**

**Explanation:**

- Most of the **Indus Valley seals** have inscriptions in a pictographic script which is yet to be deciphered. Animal impressions were also there which were carved intaglio on the surfaces. The common animal motifs were unicorn, humped bull, rhinoceros, tiger, elephant, buffalo, bison, goat, ibex, crocodile, etc. However, no evidence of cow has been found on any seal. **So, point 1 is correct.**



- The **Mauryan pillar capital** found at Sarnath popularly known as the Lion Capital is the finest example of Mauryan sculptural tradition. It is also the national emblem. It is carved with considerable care—voluminous roaring lion figures firmly standing on a circular abacus which is carved with the figures of a horse, a bull, a lion and an elephant in vigorous movement, executed with precision, showing considerable mastery in the sculptural techniques. This pillar capital symbolises **Dharmachakrapravartana** (the first sermon by the Buddha). **So, point 2 is correct.**
- The Great Stupa at Sanchi in Madhya Pradesh was originally built in the 3rd century BCE by the Mauryan emperor Ashoka and is believed to house ashes of the Buddha. It depicts the triple elephant capital on the gateway, with bull-riders above. **So, point 3 is correct.**
- The first Indian punch marked coins called Puranas, Karshapanas or Pana were minted in the **6th century BCE** by the various Janapadas and Mahajanapadas of the Indo- Gangetic Plain. These coins had irregular shapes, standard weight and were made up of silver with different markings like Saurashtra had a humped bull, Dakshin Panchala had a Swastika and Magadha had generally five symbols. Magadhan punch-marked coins became the most circulated coins in South Asia. **So, point 4 is correct.**

**Therefore, option (d) is the correct answer.**

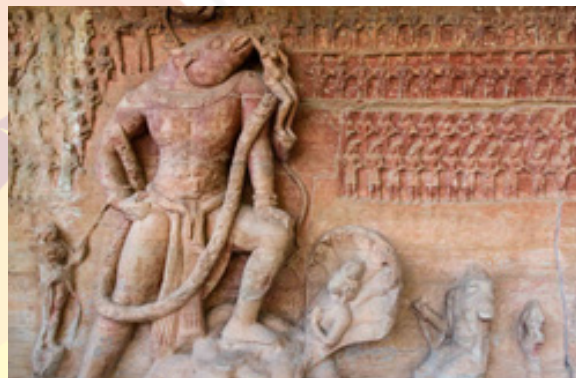
**Relevance:** Recently, few United Nations ambassadors paid a visit to Sanchi Stupa.

**Q98.**

**Answer: c**

**Explanation:**

- **Udayagiri Caves** in Vidisha (Madhya Pradesh) are a group of **20 Gupta-era temples** and monasteries carved out of a rocky hill, out of which **one is dedicated to Jainism and rest to Hinduism.**
- Brahmi inscriptions on the caves indicate that the site was excavated during the rule of Gupta King, **Chandragupta II.**
- The **Varaha cave number 5** depicts the **third incarnation of Lord Vishnu in the form of a boar (varah)** rescuing the Earth Goddess from chaos in the presence of adoring gods and saints.
- Here Vishnu is represented as a man with a boars head, placing his left foot on the coils of the Naga king who has a canopy of thirteen snake's heads.



**Therefore, option (c) is the correct answer.**

**Q99.**

**Answer: a**

**Explanation:**

- **Harshavardhana** was one of the most important Indian emperors of the 7th Century. He ruled from 606 to 647 CE. He became the most successful emperor of the Pushyabhuti dynasty.
- He was a great lover of education and learning. He authored 'Ratnavali', 'Priyadarshika' and 'Nagananda'. **So, points 1, 2 and 5 are correct.**
- **Ratnavali** is a Sanskrit drama about Ratnavali, a beautiful princess, and Udayana, a king. It's a four-act Natika. This text contains one of the earliest textual references to the celebration of Holi, the festival of colours.
- **Nagananda** is among the most acclaimed Sanskrit dramas. The unique characteristic of this drama is the invocation to Buddha in the Nandi verse, which is considered one of the best examples of dramatic compositions.
- Priyadarshika is a Sanskrit play and a constructive prelude to a drama.
- **Harshacharita** is the biography of Harshavardhana by Banabhatta, also known as Bana, who was a Sanskrit writer of seventh-century CE India. He was the court poet of Harsha. **So, point 3 is not correct.**
- **Kumarasambhava** is an epic poem by Kalidasa. It is widely regarded as the finest work of Kalidasa as well as the greatest kavya poem in classical Sanskrit. **So, point 4 is not correct.**

**Therefore, option (a) is the correct answer.**

**Relevance:** Archeological Survey of India (ASI) has discovered two 1200-year-old miniature votive stupas on Nalanda Mahavihara patronized by various rulers including King Harshavardhana of Kannauj.

Q100.

Answer: a

Explanation:

- **Wangala Festival of Meghalaya** is a popular festival among the Garos of Meghalaya, India. It is a harvest festival held in honour of Saljong, the Sun-god of fertility. The celebration of the Wangala Festival marks the end of a period of toil, which brings the good output of the fields. It also signifies the onset of winter. **So, pair 1 is not correctly matched.**
- The **Cher Chera festival of Chhattisgarh** is dedicated to reaping the paddy harvest. Grains and fruits are also offered to ancestors as a mark of gratitude for watching over them for a good harvest. In this festival, grains are donated in the belief that sharing part of the produce would help in overcoming the problem of hunger. **So, pair 2 is correctly matched.**
- **Bathukamma** is a colourful floral festival of **Telangana** and is celebrated by women with exotic flowers of the region. The festival has over the years become a symbol of Telangana culture and identity. Bathukamma comes during the latter half of monsoon, before the onset of winter. **So, pair 3 is not correctly matched.**
- **Nuakhai** is a Sambalpuri festival that is highly popular in **Western Odisha**. The literal meaning of Nuakhai is 'Nua' means New and 'khai' means eating. The new harvest crops are worshipped and people celebrate it by eating the first rice of the harvest together with their families. **So, pair 4 is not correctly matched.**

So, only one pair is correctly matched.

Therefore, option (a) is the correct answer.

**Relevance:** Recently, the Bathukamma festival was celebrated in Telangana.

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