General Awareness Section Test 1

Q1. Who among the following was the founder of Indian Space Research Organisation (ISRO)?
(a) Vikram Sarabhai
(b) Satish Dhawan
(c) Dr Homi J Bhabha
(d) Dr APJ Abdul Kalam

Q2. Umayalpuram K Sivaraman is an eminent musician associated with which of the following musical instruments?
(a) Sitar
(b) Guitar
(c) Dhol
(d) Mridangam

Q3. When did Michael Faraday discover electromagnetic induction, the principle behind the electric transformer and generator?
(a) 1853
(b) 1820
(c) 1875
(d) 1831

Q4. Which of the following ports was developed as a Satellite port to relieve the pressure at the Mumbai port?
(a) New Mangalore Port
(b) Marmagao Port
(c) Deendayal Port Authority
(d) Jawaharlal Nehru Port

Q5. Correctly match the following Biosphere Reserves to their respective states.

Biosphere Reserves	States
1. Nokrek	a. Meghalaya
2. Panna	b. Madhya Pradesh
3. Manas	c. Assam

(a) 1-a, 2-c, 3-b
(b) 1-b, 2-a, 3-c
(c) 1-c, 2-b, 3-a
(d) 1-a, 2-b, 3-c

Q6. What happens in case of market equilibrium:
(A) Market demand = market supply
(B) There is no excess supply in the market
(a) Neither (A) nor (B)
(b) Only (A)
(c) Both (A) and (B)
(d) Only (B)

Q7. Match the concepts in column A with their respective descriptions in column B.

Column A	Column B
a. Devaluation	1. decline in the market rate of exchange
b. Depreciation	2. contraction of home currency
c. Deflation	3. foreign exchange rationing
d. Exchange control	4. contraction of imports
	5. official reduction in external value of the currency

(a) a-5, b-1, c-2, d-3
(b) a-2, b-3, c-4, d-1
(c) a-2, b-1, c-4, d-3
(d) a-5, b-3, c-2, d-1

Q8. Which of the following is NOT a pillar of strategic framework for achieving the objective of National State Policy 2024?
(a) Technological Intervention
(b) Restriction on Private Sector Engagement
(c) Strong Professional Sports Governance, Implementation and Monitoring
(d) National Framework and Regulatory Bodies

Q9. A car decreases its speed from 40 m/s to 20 m/s in 5 s . Find the acceleration of the car.
(a) $4m/s^2$
(b) $-4m/s^2$
(c) $12m/s^2$
(d) $2m/s^2$

Q10. Tsang Po and Jamuna are other names of which river?
(a) Indus
(b) Ganga
(c) Narmada
(d) Brahmaputra

Q11. Which among the following is not considered a major industry according to the Department of Industrial Policy and Promotion?
(a) Electricity
(b) Jute
(c) Fertilizers
(d) Crude Oil

Q12. Which Articles of the Constitution of India deal with the Union Public Service Commission?
(a) Articles 300 to 320
(b) Articles 330 to 338
(c) Articles 210 to 219
(d) Articles 315 to 323

Q13. Who was appointed as the Viceroy of India in place of Lord Wavell in February 1947?
(a) Lord Willingdon
(b) Lord Linlithgow
(c) Lord Irwin
(d) Lord Mountbatten

Q14. Rottela Panduga or the Roti Festival is celebrated in which Indian state?
(a) Karnataka
(b) Maharashtra
(c) Andhra Pradesh
(d) Tamil Nadu

Q15. Which of the following committees recommended the inclusion of fundamental duties in the Constitution of India?
(a) Balwant Rai Mehta Committee
(b) Sarkaria Committee
(c) Swaran Singh Committee
(d) Raja Mannar Committee

Q16. Where is Birsa Munda International Hockey Stadium located?
(a) Bhubaneswar
(b) Jamshedpur
(c) Ranchi
(d) Rourkela

Q17. Which state in India was the most transformed by the Green Revolution?
(a) Kerala
(b) Maharashtra
(c) West Bengal
(d) Punjab

Q18. Which south-eastern Dravidian language has been approved by Odisha state to be included in the Eighth Schedule of the Constitution of India, on 10th July 2023?
(a) Tulu
(b) Kodagu
(c) Kui
(d) Malto

Q19. Calculate the Body Mass Index (BMI) of a person whose weight is 50 kg and height is 1.5 m.
(a) 25.0 kg/m^2
(b) 22.2 kg/m^2
(c) 16.6 kg/m^2
(d) 18.0 kg/m^2

Q20. The kinetic energy of a moving object is dependent on which of the following quantities:
i) Mass of the body
ii) Square of the velocity
iii) Pressure
(a) Only (iii)
(b) Both (i) and (ii)
(c) Only (i)
(d) Both (ii) and (iii)

Q21. Brahmo Samaj was earlier known as:
(a) Veda Samaj
(b) Prarthana Samaj
(c) Arya Samaj
(d) Bramho Sabha

Q22. Mahavir Jayanti celebrates the birthday of Lord Mahavira who is the _____ Tirthankara of Jainism.
(a) 25th
(b) 26th
(c) 23rd
(d) 24th

Q23. Who was the first to develop a mathematical predictive heliocentric model of the solar system?
(a) Pierre-Simon Laplace
(b) Immanuel Kant
(c) Galileo Galilei
(d) Nicolaus Copernicus

Q24. Who among the following established the Indore gharana?
(a) Bhimsen Joshi
(b) Ustad Amir Khan
(c) Tansen
(d) Ustad Ghaghe Khuda Baksh

Q25. Select the option that is true regarding the following two statements labelled Assertion (A) and Reason (R).
(a) **The first battle of Panipat was one of the decisive battles of India.**
R. It brought into power a new band of invaders called Mughals.
(a) Statements A and R are true, and R is the correct explanation of A.
(b) A is true, but R is false.
(c) R is true, but A is false.
(d) Statements A and R are true, but R is not the correct explanation of A.

Q26. Which is the waterbody that separates Andaman Islands and Nicobar Islands?
(a) Eight Degree Channel
(b) Nine Degree Channel
(c) Ten Degree Channel
(d) Eleven Degree Channel

Q27. What percentage of solar energy is captured by green plants in terrestrial ecosystem?
(a) 10 percent
(b) 5 percent
(c) 100 percent
(d) 1 percent

Q28. Which writ is issued by a high court or supreme court when a lower court has considered a case going beyond its jurisdiction?
(a) Quo Warrant
(b) Habeas Corpus
(c) Certiorari
(d) Prohibition

Q29. India's first artificial satellite, _____, was launched in space by Indian Space Research Organisation.
(a) ScatSat
(b) Aryabhatta
(c) Bhaskara
(d) Resourcesat

Q30. What is the IUPAC name of the compound CH_3NH_2?
(a) Propan-1-amine
(b) Methanamine
(c) 2-Methyl propan-l-amine
(d) Ethanamine

Q31. Which of the following is NOT a part of Carnatic music?
(a) Varnam
(b) Dhrupad
(c) Pallavi
(d) Charana

Q32. Who among the following won the Purple cap in the 17th Edition of Indian Premier League in 2024?
(a) T Natarajan
(b) Jasprit Bumrah
(c) Kuldeep Yadav
(d) Harshal Patel

Q33. Which of the following is the roadmap to achieve development and child protection priorities aligned with the Sustainable Development Goals (SDGs)?
(a) Mission Surksha
(b) Mission Vardan
(c) Mission Vatsalya
(d) Mission Arpan

Q34. Which state of India has the maximum number of large dams?
(a) Maharashtra
(b) Madhya Pradesh
(c) Odisha
(d) Rajasthan

Q35. Each of the following statements includes two terms. In three cases, the two terms mean the same as each other. In which of the following cases do the two termsnotmean the same as each other?
(a) Nominal GDP and GDP at current prices
(b) The base period and the reference period
(c) Changes in real GDP and the GDP deflator
(d) Real GDP and GDP at constant prices

Q36. Medini Rai of Chanderi, Hasan Khan of Mewat and Mahmud Lodi joined Rana Sanga with their forces to fight against which of the following Mughal rulers?
(a) Babur
(b) Akbar
(c) Aurangzeb
(d) Humayun

Q37. Which Article provides that all minorities have the right to establish and administer educational institutions of their choice?
(a) Article 26
(b) Article 24
(c) Article 32
(d) Article 30

Q38. The Environment (Protection) Act, 1986 empowers the _____ to establish authorities charged with the mandate of preventing environmental pollution in all its forms.
(a) State Governments
(b) Central Governments
(c) Supreme Court
(d) Local Municipalities

Q39. Match the terms in column A with their respective properties in column B.

Column A	Column B
a. Glucose	Intermediate substance in breakdown of glucose
b. Yeast	Glucose is converted into pyruvic acid
c. Glycolysis	Uses nutrients for fermentation process
d. Glycolysis	Best organic substrate for respiration

(a) i-b, ii-a, iii-d, iv-c.
(b) i-d, ii-c, iii-b, iv-a.
(c) i-a, ii-b, iii-c, iv-d.
(d) i-d, ii-c, iii-a, iv-b

Q40. Why is the six membered cyclic structure of glucose called a pyranose structure?

(a) Pyran is a non-cyclic organic compound, with one oxygen atom and five carbon atoms in the ring
(b) Pyran is a cyclic organic compound, with one oxygen atom and five carbon atoms in the ring
(c) Furan is a five membered non-cyclic compound, with one oxygen and four carbon atoms
(d) Furan is a five membered cyclic compound, with one oxygen and four carbon atoms.

Solutions

S1. (a): The correct answer is option **(A) Vikram Sarabhai**

Vikram Sarabhai is widely regarded as the founder of the Indian Space Research Organisation (ISRO). He was a visionary scientist and played a pivotal role in establishing India's space program.

Information Booster :-

- Satish Dhawan was an important figure in ISRO and served as the chairman of the organization from 1972 to 1984. While he made significant contributions to the development of ISRO and its space missions.
- Dr. Homi J. Bhabha was a prominent physicist and the father of India's nuclear program. While he made significant contributions to science and technology.
- Dr. APJ Abdul Kalam was a key figure in India's space and missile development programs and served as the President of India. While he made significant contributions to ISRO, especially in missile development.

S2. (d): The correct answer is: (d) Mridangam

Explanation:

Umayalpuram K. Sivaraman is a renowned **Mridangam** player and an eminent figure in the world of **Carnatic music**. He is highly respected for his exceptional skills and contributions to the art of playing the **mridangam**, which is a traditional Indian percussion instrument used in classical music. His mastery over the mridangam has earned him various accolades, making him one of the leading percussionists in the world of Carnatic music.

Information Booster:

- He has performed extensively with many prominent Carnatic musicians, contributing to the **rhythmic foundation** of countless performances.
- He was awarded the **Padma Bhushan**, one of India's highest civilian awards, for his outstanding contributions to Indian music.
- His career spans over several decades, and he has performed in prestigious venues around the world, further promoting the **mridangam** globally.

Additional Knowledge:

- **Sitar**: The **sitar** is a stringed instrument, closely associated with musicians like **Ravi Shankar.**
- **Guitar**: The **guitar** is a string instrument widely used in various musical genres.
- **Dhol**: The **dhol** is a percussion instrument popular in Punjabi music.

S3. (d): The correct answer is **(D) 1831**.

Explanation:

- **Michael Faraday** discovered **electromagnetic induction** in **1831**, which is the fundamental principle behind devices such as the **electric transformer** and **generator**.
- His discovery demonstrated that a **changing magnetic field** can induce an **electrical current** in a conductor, laying the foundation for the development of electrical power generation.

Information Booster:

- **Electromagnetic Induction**:
  - The phenomenon of generating electric current through the motion of a conductor within a magnetic field.
  - Faraday's law of induction is the basis for the operation of **transformers**, **electric motors**, and **generators**.
- **Michael Faraday**:
  - A renowned English scientist who made groundbreaking contributions to the fields of **electricity** and **magnetism**.
  - Known for his work on **electromagnetic fields**, **electricity**, and the development of the **electric motor**.
- **Faraday's Discovery**:
  - In **1831**, Faraday demonstrated that a current could be induced in a coil of wire by moving a magnet in and out of the coil, proving the principle of **electromagnetic induction**.

S4. (d):The correct answer is: (d) Jawaharlal Nehru Port

Explanation:

Jawaharlal Nehru Port (JNPT), also known as **Nhava Sheva**, was developed as a **satellite port** to alleviate the pressure on the **Mumbai Port**. Located near Mumbai, JNPT is one of the busiest and most important container ports in India.

The development of JNPT was aimed at improving the handling capacity of India's ports and ensuring smoother logistical operations, especially for containerized cargo, which had been overwhelming Mumbai Port due to its limited capacity.

Information Booster:

- **New Mangalore Port**: This port is located in Karnataka and is an important all-weather port. It is primarily used for the export of iron ore, petroleum products, and other bulk cargo.
- **Marmagao Port**: Located in Goa, Marmagao is an important port, mainly handling iron ore exports.
- **Deendayal Port Authority**: Previously known as **Kandla Port**, it is one of the major ports in India, located in Gujarat.

S5. (d):The correct answer is: (D) 1-a, 2-b, 3-c

The correct matching of Biosphere Reserves to their respective states is:

- **Nokrek Biosphere Reserve → Meghalaya**
  - Located in the Garo Hills of Meghalaya, Nokrek is a UNESCO Biosphere Reserve known for its rich biodiversity.
  - including the rare Red Panda and the endemic Citrus indica (considered the wild ancestor of modern oranges).
- **Panna Biosphere Reserve → Madhya Pradesh**
  - Located in Madhya Pradesh, Panna is famous for its tiger reserve and is an important habitat for diverse flora and fauna.
  - It is also known for its diamond mines.
- **Manas Biosphere Reserve → Assam**
  - Manas is a UNESCO World Heritage Site and a Biosphere Reserve in Assam, located along the Himalayan foothills.
  - It is home to several endangered species, including the Assam Roofed Turtle, Hispid Hare, and Golden Langur.

S6. (c): The correct answer is (c) Both (A) and (B).

- Market Equilibrium occurs when the quantity of a good or service demanded by consumers equals the quantity supplied by producers. This is represented by the equation: Market Demand = Market Supply (Statement A).
- At this equilibrium point, there are no shortages or surpluses in the market. This means that there is no excess supply (Statement B), as the amount that producers want to sell is equal to the amount consumers want to buy.

Additional Information:

- Market Demand = Market Supply (A): This is the fundamental condition for achieving market equilibrium. When the market is in equilibrium, the price remains stable because the forces of supply and demand are balanced.
- No Excess Supply (B): This implies that all goods produced are sold, and there are no goods left over in the market, reinforcing the notion of balance.
- If either condition is not met (for example, if there is excess supply), the market will adjust, either through price changes or shifts in demand/supply, until equilibrium is restored.

Thus, both statements (A) and (B) accurately describe the state of the market at equilibrium.

S7. (a): Correct Answer is (A) a-5, b-1, c-2, d-3.

Here is the correct matching of concepts in **Column A** with their respective descriptions in **Column B**:

Column A	Column B
a. Devaluation	**5. Official reduction in external value of the currency**
b. Depreciation	**1. Decline in the market rate of exchange**
c. Deflation	**2. Contraction of home currency**
d. Exchange control	**3. Foreign exchange rationing**

Explanation:

- **Devaluation** refers to a deliberate downward adjustment of a country's currency value relative to another currency or standard (e.g., gold). It is an official reduction in the currency's external value.
- **Depreciation** occurs when the value of a currency declines in the foreign exchange market due to supply and demand fluctuations. It is not controlled by the government.
- **Deflation** is a general decrease in the price levels, often caused by a contraction of the home currency supply.
- **Exchange control** refers to government-imposed restrictions on the purchase/sale of foreign currencies, often leading to **foreign exchange rationing**.

S8. (b): The correct answer is **(b) Restriction on Private Sector Engagement**

Explanation:

- The **National State Policy 2024** focuses on a strategic framework encouraging technological advancements, strong governance, and regulatory frameworks to promote national objectives.
- However, **restriction on private sector engagement contradicts the core principles of policy formulation**, as most national policies, especially in sports and governance, aim to **foster private sector participation** rather than restrict it.
- The government actively collaborates with private entities to enhance infrastructure, funding, and training facilities, making **Option B the correct answer**.

Information Booster:

The **National State Policy 2024** is designed to strengthen various sectors by implementing a well-structured strategic framework. The key pillars of this framework include:

1. **Technological Intervention:** Leveraging advanced technology for efficiency, transparency, and improved performance in governance and administration.
2. **Strong Professional Sports Governance, Implementation, and Monitoring:** Establishing institutions and regulatory bodies to ensure effective policy implementation.
3. **National Framework and Regulatory Bodies:** Creating structured guidelines and monitoring mechanisms to regulate and oversee national objectives.
4. **Public-Private Partnerships (PPP):** Encouraging private sector investment and involvement to improve infrastructure, research, and service delivery.

S9. (b): The correct answer is **(b) -4 m/s²**

Explanation:

Acceleration (a) is calculated using the formula:

$$a = \frac{v_f - v_i}{t}$$

Where:

- v_f = Final velocity = **20 m/s**
- v_i = Initial velocity = **40 m/s**
- t = Time = **5 s**

Substituting the values:

$$a = \frac{20 - 40}{5} = \frac{-20}{5} = -4 \text{ m/s}^2$$

The negative sign indicates that the car is **decelerating**.

Information Booster:

- **Acceleration** is the rate of change of velocity with respect to time. If acceleration is **negative**, it is called **deceleration** (or retardation).
- The SI unit of acceleration is **m/s²**.
- **Uniform acceleration** occurs when an object changes velocity by an equal amount in every second.

S10. (d): **The correct answer is: (d) Brahmaputra**

Explanation:

Tsang Po and **Jamuna** are alternative names for the **Brahmaputra River**. The river originates in the **Tibetan Plateau**, where it is called **Tsang Po**.

As it enters India through Arunachal Pradesh, it is known as the **Brahmaputra**, and when it flows through Bangladesh, it is called the **Jamuna**.

Information Booster:

- When the river enters India through Arunachal Pradesh, it is called **Brahmaputra**, meaning "Son of Brahma."
- The Brahmaputra is known for its vast **tributaries** and **delta formation**, especially in the region of **Bangladesh**.
- The river plays an essential role in the **economy, culture, and agriculture** of the northeastern states of India, as well as Bangladesh.

Additional Knowledge:

- **Indus**: The **Indus River** originates in Tibet and flows through Pakistan.
- **Ganga**: The **Ganga River**, one of the holiest rivers in India.
- **Narmada**: The **Narmada River** flows through central India.

S11. (b):Correct Answer:B. Jute

Explanation:

The **Department for Promotion of Industry and Internal Trade (DPIIT)** classifies **major industries** under various **core sectors** such as **Electricity, Crude Oil, Fertilizers, Steel, and Cement**. However, **Jute is not considered a major industry under the core sectors**, as it falls under the **textile industry**, which is not included in the **eight core industries** list.

Information Booster:

- **The Eight Core Industries** (as per DPIIT):
  1. **Electricity**
  2. **Crude Oil**
  3. **Coal**
  4. **Natural Gas**
  5. **Refinery Products**
  6. **Fertilizers**
  7. **Steel**
  8. **Cement**
- **Jute industry** is significant in **West Bengal, Assam, and Bihar**, but it is categorized under **Textile and Handloom Industries**, **not as a core sector**.
- The **Jute Corporation of India (JCI)** regulates the jute industry and ensures **Minimum Support Price (MSP)** for farmers.
- The **National Jute Board (NJB)** promotes jute and jute-based products.

S12. (d): The correct answer is **(D) Articles 315 to 323**.

Explanation:

The **Union Public Service Commission (UPSC)** is established under **Articles 315 to 323** of the **Constitution of India**. These articles provide for the formation, powers, and functions of the UPSC, which is responsible for conducting examinations for appointments to the Union and All India Services.

Information Booster:

- **Article 315**: Establishes the Union Public Service Commission.
- **Article 316**: Deals with the appointment of the chairman and members of the UPSC.
- **Article 317**: Provides for the removal and suspension of the chairman or members of the UPSC.
- **Article 318**: Allows the President to determine the procedure for the selection of members of the UPSC.
- **Article 319**: Ensures that no member of the UPSC can be reappointed for the same commission after a certain period.
- **Article 320**: Defines the functions of the UPSC, such as advising the President on matters related to recruitment to services and disciplinary actions.
- **Article 323**: Deals with the power to extend the functions of the UPSC to the states as per the needs of the nation.
- The **UPSC** is the central agency responsible for conducting competitive exams, including the **Civil Services Examination**, for recruitment to various central government positions.
- **State Public Service Commissions (SPSCs)** are established by similar provisions in the Constitution for each state to handle recruitment to state-level posts.

S13. (d): The correct answer is **(d) Lord Mountbatten**

Explanation:

- **Lord Louis Mountbatten** was appointed as the **Viceroy of India in February 1947**, replacing **Lord Wavell**. He was the **last British Viceroy** and later became the **first Governor-General of independent India**.
- His primary task was to **oversee the transfer of power** and manage India's independence process. Under his tenure, the **Mountbatten Plan** (June 3, 1947) was implemented, leading to the **partition of India and Pakistan on August 15, 1947**.

Information Booster:

- After independence, he served as **India's first Governor-General from August 15, 1947, to June 21, 1948**.

Key Provisions of Mountbatten Plan:

- **Partition of India:** India and Pakistan to be created; Bengal's independence and Hyderabad's accession to Pakistan rejected.
- **Autonomy & Sovereignty:** Both dominions to draft their own constitutions.
- **Princely States:** Given the option to join India or Pakistan based on contiguity and people's wishes.
- **Constituent Assemblies:** Separate assemblies for India and Pakistan.
- **Boundary Commissions:** Demarcation of Punjab and Bengal borders.
- **Legislative Assemblies:** Punjab and Bengal legislatures voted on partition by religious groups.
- **Sindh's Decision:** Taken by its legislative assembly.
- **Referendums:** Held in **NWFP & Sylhet** to decide their fate.
- **Independence Date:** August 15, 1947.

Additional Knowledge:

- **Lord Willingdon** – Served as Viceroy of India **(1931-1936)** and was known for suppressing the **Civil Disobedience Movement**.
- **Lord Linlithgow** – Served as Viceroy **(1936-1943)** and was responsible for the **Government of India Act, 1935**, and handling **World War II policies** in India.
- **Lord Irwin** – Served as Viceroy **(1926-1931)** and negotiated the **Gandhi-Irwin Pact (1931)**.

S14. (c): The correct answer is: (c) Andhra Pradesh

Explanation:

Rottela Panduga, also known as the **Roti Festival**, is celebrated in the **Andhra Pradesh** state of India. It is a traditional festival celebrated in some parts of Andhra Pradesh, particularly by the **Reddy community**.

The festival is marked by the preparation of **rotis** (flatbreads), which are offered to deities, followed by community feasts. This festival usually takes place in the month of **February or March** and is celebrated with much enthusiasm, symbolizing **good harvest** and **community unity**.

Information Booster:

- **Karnataka**: Karnataka celebrates numerous festivals like **Ugadi** and **Makar Sankranti.**
- **Maharashtra**: Maharashtra has unique festivals like **Gudi Padwa** and **Makar Sankranti.**
- **Tamil Nadu**: **Tamil Nadu** celebrates several festivals like **Pongal.**

S15. (c): The correct answer is (c) Swaran Singh Committee.

- The Swaran Singh Committee, established in 1976 during the Emergency period, was tasked with reviewing the Constitution and recommending amendments. One of its significant recommendations was the inclusion of fundamental duties for citizens.
- As a result of the committee's recommendations, Article 51A was added to the Constitution through the 42nd Amendment in 1976, which enumerates the fundamental duties of Indian citizens.

Additional Information:

- **Fundamental Duties:** These are a set of moral obligations aimed at promoting patriotism and upholding the spirit of the Constitution. There are currently 11 fundamental duties listed under Article 51A.
- **Balwant Rai Mehta Committee:** Primarily focused on the Panchayati Raj system and did not deal with fundamental duties.
- **Sarkaria Committee:** Was primarily concerned with the Centre-State relations and governance issues, without a focus on fundamental duties.
- **Raja Mannar Committee:** Was related to the issue of state autonomy and did not recommend fundamental duties.

S16. (d): The correct answer is (d) Rourkela.

- Birsa Munda International Hockey Stadium is located in Rourkela, Odisha.
- It is one of the prominent hockey stadiums in India, named after the tribal leader Birsa Munda.
- The stadium is known for hosting national and international hockey matches.
- It was constructed to provide world-class facilities and promote the sport of hockey in the region.

Information Booster:

- **Bhubaneswar:** The Kalinga Stadium is a notable hockey venue in Bhubaneswar, Odisha.
- **Jamshedpur:** Known for Tata Steel Hockey Stadium, which hosts various sports events.
- **Ranchi:** Ranchi has the Ranchi Hockey Stadium, also known for its hockey events and local sports activities.

S17. (d): The correct answer is: (d) Punjab

Explanation:

Punjab was the state in India that was most significantly transformed by the **Green Revolution**. The Green Revolution, which began in the 1960s, involved the introduction of high-yielding variety seeds, chemical fertilizers, and advanced irrigation techniques.

Punjab, with its fertile soil and favorable climate, became the epicenter of this agricultural transformation, especially in the production of **wheat** and **rice**.

Information Booster:

- The state saw a **dramatic increase in crop yields**, making it a major contributor to India's food security.
- The state's agricultural productivity increased dramatically, making India self-sufficient in food grains and reducing the dependency on food imports.
- The **use of chemical fertilizers** and **pesticides** was widely adopted in Punjab, contributing to the significant increase in agricultural output.
- **Irrigation systems** such as canal irrigation were expanded to support the increased demand for water in farming.
- Punjab's **economy** became heavily dependent on agriculture due to the Green Revolution, although it led to challenges such as **soil degradation** and **water table depletion**.

Additional Knowledge:

- **Kerala**: While Kerala made strides in other sectors, especially in **healthcare** and **education.**
- **Maharashtra**: Maharashtra did see some benefits of the Green Revolution, particularly in **cotton** and **sugarcane** cultivation.
- **West Bengal**: West Bengal, despite its agricultural importance, did not see the same level of transformation as Punjab due to different geographical and socio-economic conditions.

S18. (c): The correct answer is (c) Kui.

- The Odisha state government approved the inclusion of the Kui language in the Eighth Schedule of the Indian Constitution on 10th July 2023.
- Kui is a Dravidian language predominantly spoken by the Kui-speaking tribal communities in the state of Odisha, particularly in the Kalahandi, Rayagada, and Ganjam districts.
- The inclusion in the Eighth Schedule will recognize the language's significance and help in the preservation and promotion of the cultural and linguistic heritage of the Kui-speaking communities.

Additional Information:

- **Eighth Schedule of the Constitution:** This schedule contains a list of recognized languages in India and is significant for promoting linguistic diversity and cultural heritage. Inclusion in this schedule often leads to the availability of official government support for education, literature, and cultural activities in that language.

- **Other Dravidian Languages:** Dravidian languages include Tamil, Telugu, Kannada, and Malayalam, among others. Kui is notable for its distinctiveness among these languages, contributing to the linguistic tapestry of India.
- **Cultural Impact:** The recognition of Kui can lead to more resources for education and literature in the language, helping to strengthen the identity of the Kui-speaking community and promote linguistic diversity in India.

S19. (b):The Correct Answer is: (b) 22.2 kg/m²

Explanation:

The **Body Mass Index (BMI)** is calculated using the formula: $\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$

Substituting the given values: $BMI = \frac{50kg}{1.5m^2} = \frac{50}{2.25} = 22.2kg/m2$

Therefore, the BMI of the person is **22.2 kg/m²**.

Information Booster:

- A BMI between **18.5 and 24.9 kg/m²** is generally considered to be within the **normal weight range**.
- BMI does not directly measure body fat, but it is widely used due to its simplicity and ease of calculation.
- **BMI = weight (kg) / height² (m²)** is the standard formula used worldwide.
- If the BMI is below 18.5, it is considered **underweight**, and if it exceeds 30, it indicates **obesity**.

S20. (b): The correct answer is **(b) Both (i) and (ii)**

Explanation:

The **kinetic energy (KE)** of a moving object is given by the formula:

$KE=1/2\ mv^2$

where:

- m = Mass of the object
- v = Velocity of the object

From this formula, we observe that:

- **Kinetic energy is directly proportional to the mass** of the object (**I**)
- **Kinetic energy is directly proportional to the square of the velocity** (**ii**)
- **Pressure does not affect kinetic energy**, so (**iii**) is incorrect

Information Booster:

Key Insights on Kinetic Energy:

- If **mass doubles**, KE also **doubles**.
- If **velocity doubles**, KE becomes **four times** larger (**since KE ∝ v²**).
- KE is always **positive** since mass and squared velocity are always positive.

Real-Life Applications of Kinetic Energy:

- **Moving vehicles** → Faster speed means greater kinetic energy, leading to higher impact during collisions.
- **Sports (cricket, football, etc.)** → Heavier and faster-moving balls have more kinetic energy.
- **Hydroelectric power generation** → Flowing water has kinetic energy that turns turbines to produce electricity.

S21. (d): The correct answer is (d) Bramho Sabha.

- Brahmo Samaj was founded in 1828 by Rammohun Roy and is a reformist movement within Hinduism that promotes monotheism and emphasizes the importance of reason and ethics in religious practices.
- The movement was initially called Bramho Sabha, which translates to "the Assembly of Brahma" (Brahma referring to the Supreme God in Hindu philosophy). The term "Brahmo" was later adopted to represent the followers of this movement.
- The Brahmo Samaj aimed to reform society by opposing practices such as idol worship and superstitions prevalent in contemporary Hinduism and sought to promote a rational and spiritual understanding of religion.

Additional Information: ·

Veda Samaj: This was another reformist group that sought to return to the teachings of the Vedas but is distinct from the Brahmo Samaj.

- **Prarthana Samaj:** Founded later in 1867 in Maharashtra, it shares some ideals with the Brahmo Samaj but focuses more on social reforms.
- **Arya Samaj:** Founded by Swami Dayananda Saraswati in 1875, it also aimed to reform Hindu society but has different tenets, primarily centered around the Vedas.

S22. (d): The correct answer is (d) 24th.

- Lord Mahavira is regarded as the 24th Tirthankara in Jainism. Tirthankaras are spiritual teachers who have attained liberation and help others achieve it as well.
- Mahavir was born in 599 BCE in a royal family in what is now Bihar, India, and he played a crucial role in the propagation of Jain philosophy, emphasizing non-violence (ahimsa), truth (satya), and asceticism.
- His teachings laid the foundation for Jainism, which focuses on the path of liberation and enlightenment through ethical living, meditation, and non-attachment.

Additional Information:

- **Tirthankaras:** There are 24 Tirthankaras in Jainism, and each is considered a liberator who shows the path to spiritual liberation.
- **Mahavir Jayanti:** This festival is celebrated with great fervor by Jains around the world, featuring processions, prayers, and charitable acts in honor of Lord Mahavira's teachings and life.
- Other notable Tirthankaras include Rishabhadeva (the 1st Tirthankara) and Parshva (the 23rd Tirthankara), both of whom are also revered figures in Jainism.

S23. (d): The correct answer is (d) Nicolaus Copernicus.

- Nicolaus Copernicus (1473–1543) was the first astronomer to formulate a comprehensive heliocentric model of the solar system, which positioned the Sun at the center rather than the Earth. His work, particularly in the book De revolutionibus orbium coelestium *(*On the Revolutions of the Celestial Spheres), proposed that the planets, including Earth, revolve around the Sun.
- Copernicus's model was groundbreaking and marked a significant departure from the long-held geocentric model, which placed Earth at the center of the universe, as advocated by earlier thinkers like Ptolemy.
- While Copernicus provided the heliocentric theory and its mathematical foundations, subsequent astronomers, such as Johannes Kepler, built on his work to develop more accurate models of planetary motion.

Additional Information:

- **Pierre-Simon Laplace:** A French mathematician and astronomer who contributed significantly to celestial mechanics and formulated the Laplace equation, but he did not originate the heliocentric model.
- **Immanuel Kant:** A philosopher who discussed cosmology and the nature of the universe but was not directly involved in the development of the heliocentric model.
- **Galileo Galilei:** An Italian astronomer and physicist who supported Copernican heliocentrism through his observations of celestial bodies using a telescope, but he did not develop the original model.

S24. (b): The Correct Answer Is**: (b) Ustad Amir Khan**

Explanation: Ustad Amir Khan, a legendary figure in Indian classical music, is credited with establishing the Indore gharana, a prominent school of the Hindustani classical tradition. Known for his deep and serious approach to music, Ustad Amir Khan developed a unique style of singing that emphasized emotion, tonal quality, and a slow, meditative approach to ragas. His innovations helped shape the direction of Indian classical music in the 20th century.

Information Booster:
Ustad Amir Khan's rendition of ragas often involved a slow, deliberate exploration of the melodic structures.
The gharana is also known for its distinctive approach to taan (fast melodic runs) and its emphasis on the emotional content of music.
Ustad Amir Khan was highly influential in shaping modern Hindustani classical music, particularly in the genres of khayal and thumri.
He was a pioneer in integrating the classical tradition with more personal, emotionally expressive elements.
His contribution to Indian classical music was immense, and he is remembered for his mastery of voice culture and classical repertoire.
Additional Information:
Bhimsen Joshi: A celebrated figure in the **Kirana gharana**. He is known for his powerful voice and contributions to the Khayal style.
Tansen: Tansen is one of the most legendary figures in **Hindustani classical** music. He is often considered one of the greatest musicians in Indian history.
Ustad Ghaghe Khuda Baksh: Ustad Ghaghe Khuda Baksh was a prominent musician. He is known for his contributions to other schools of music.

S25. (a): Correct Answer:A. Statements A and R are true, and R is the correct explanation of A.
Explanation:
The **First Battle of Panipat (1526)** was indeed **one of the most decisive battles in Indian history**. It was fought between **Babur** (founder of the Mughal Empire) and **Ibrahim Lodi** (the last Sultan of the Delhi Sultanate).
Babur's victory:
- **Marked the beginning of the Mughal Empire in India**.
- Introduced **new warfare techniques**, especially the use of **gunpowder and field artillery**.
- Resulted in the **end of the Lodi dynasty** and Delhi Sultanate rule.

Hence, both the **Assertion (A)** and **Reason (R)** are **true**, and **R correctly explains A** — because the battle's decisiveness lies in the **establishment of Mughal power**.
Information Booster:
- Date of the battle: **21 April 1526**.
- Location: **Panipat (Haryana)**.
- Babur's forces (~12,000) defeated Ibrahim Lodi's massive army (~1 lakh soldiers).
- The battle laid the foundation of over **300 years of Mughal rule** in India.
- It was the **first time gunpowder firearms** were used effectively in Indian warfare.

Additional Information:
- **Second Battle of Panipat (1556)**: Fought between **Akbar** and **Hemu**.
- **Third Battle of Panipat (1761)**: Fought between **Ahmad Shah Abdali** and **Marathas**.

S26. (c): The correct answer is (c) **Ten Degree Channel**
- It separates the Andaman Islands and the Nicobar Islands from each other in the Bay of Bengal and forms the Indian Union Territory of Andaman and Nicobar Islands.
- It is 150km wide from north to south and 10km long from east to west with a minimum depth of 7.3 metres.
- It is so named as it lies on the 10-degree line of latitude, north of the equator

Eight Degree Channel
- The maritime boundary between the Maldives and India runs through the Eight Degree Channel. It separates the islands of Minicoy and Maldives.
- It is so named as it lies on the 8-degree line of Latitude, north of the equator.

Nine Degree Channel
- It separates the island of Minicoy from the main Lakshadweep archipelago.
- It is 200 km wide with a depth of 2597 metres.
- It is strategically important as it is the passage of nearly all merchant shipping between Europe, the Middle-East and Western Asia with South-East Asia and the far-East.

11-degree channel divides Amindivi and Cannanore.

S27. (d): The correct answer is (d) 1 percent

Green plants, through the process of photosynthesis, capture a small fraction of the solar energy that reaches the Earth.

Of the total solar energy incident on Earth's surface, only about 1% is absorbed and converted into chemical energy by green plants.

The majority of solar energy is either reflected back into space or absorbed by other components of the Earth's surface, such as oceans, land, and atmosphere.

Information Booster:

- **Photosynthesis** is the process by which green plants, algae, and some bacteria convert light energy, typically from the sun, into chemical energy stored in glucose. This process is vital for producing the energy required for the growth and functioning of plants, and it also forms the base of the food chain for most living organisms on Earth.

Key Components:

- **Light Energy**: Primarily sunlight, which is absorbed by chlorophyll in plant cells.
- **Chlorophyll**: A green pigment in plant cells that captures light energy.
- **Carbon Dioxide (CO_2)**: Absorbed from the air through the stomata (pores) in the leaves.
- **Water (H_2O)**: Taken up by the roots from the soil.
- **General Equation:**

$$6CO_2 + 6H_2O + \text{light energy} \rightarrow C_6H_{12}O_6 + 6O_2$$

S28. (d): The correct answer is: (d) Prohibition

Explanation:

The **writ of Prohibition** is issued by a higher court, such as the **High Court** or the **Supreme Court**, to prevent a lower court or tribunal from hearing a case that exceeds its jurisdiction. The purpose of this writ is to ensure that a court or authority does not act beyond its legal powers. Unlike **Certiorari**, which is issued to quash a decision made by a lower court, **Prohibition** is issued before the lower court makes a decision, preventing it from proceeding with a case it has no jurisdiction over.

Information Booster:

- It is preventive in nature, aiming to stop the lower court from proceeding with a matter that it is not competent to hear.
- The writ is a vital aspect of **judicial control** and ensures that courts function within their legal bounds.

Additional Knowledge:

- **Certiorari**: A writ used to quash the decision of a lower court or tribunal that has acted beyond its jurisdiction or made an erroneous decision.
- **Quo Warranto**: A writ used to inquire into the legality of a person holding a public office, ensuring that they are not holding the office without proper authority.
- **Habeas Corpus**: A writ issued to ensure the protection of an individual's right to personal liberty by requiring the production of a person who has been unlawfully detained.

S29. (b): The correct answer is option **(B) Aryabhatta**

India's first artificial satellite, Aryabhatta, was launched into space by the Indian Space Research Organisation (ISRO) on April 19, 1975. It marked a significant milestone in India's space exploration journey. Aryabhatta was named after the ancient Indian mathematician and astronomer Aryabhata.

Information Booster :-

- ScatSat-1 is an Indian satellite launched in 2016 to provide real-time data on the Earth's surface and ocean, specifically for weather forecasting and cyclone prediction.
- Bhaskara-I and Bhaskara-II were remote sensing satellites launched in the 1980s and 2000s.
- Resourcesat satellites are a series of Earth observation satellites launched by ISRO, starting in 2003, for resource monitoring and management.

S30. (b):Correct Answer:B. Methanamine

Explanation:

The **IUPAC name** of **CH_3NH_2** is **Methanamine**. It is derived from **methane (CH_4)** by replacing one **hydrogen atom with an amine (-NH_2) functional group**. This makes it the **simplest primary amine**.

Information Booster:

- **Methanamine (Methylamine)** is a **colorless gas** with a **strong ammonia-like odor**.
- It is used in **pharmaceuticals, dyes, pesticides, and solvents**.
- The **general formula** of amines is **R-NH_2** for **primary amines**.
- It is **highly soluble in water and ethanol**.
- Industrially produced by **reaction of methanol with ammonia**.

Additional Information:

- **(A) Propan-1-amine** – Incorrect; it has **three carbon atoms ($C_3H_7NH_2$)**.
- **(C) 2-Methyl propan-1-amine** – Incorrect; it refers to **a branched-chain amine ($C_4H_{11}N$)**.
- **(D) Ethanamine** – Incorrect; it refers to **$C_2H_5NH_2$ (ethylamine)**.

S31. (b): The correct answer is (b) Dhrupad.

- Dhrupad: This is a form of Hindustani classical music, not Carnatic music. It is one of the oldest forms of classical music in India and is characterized by its serious and meditative style, often performed in a slow tempo.
- Varnam: This is a significant aspect of Carnatic music. It serves as a warm-up piece and is performed at the beginning of concerts, showcasing the raga (melody) and the rhythmic patterns.
- Pallavi: In Carnatic music, this term refers to the thematic phrase or the main motif of a song, typically used in a structured format. It is a crucial part of the concert structure in the form of a raga rendition.
- Charana: This is a section of a Carnatic composition, usually following the pallavi and anupallavi. It is an integral part of many Carnatic songs, providing lyrical depth and elaboration.

Additional Information:

- The distinction between Carnatic and Hindustani music is fundamental in Indian classical music, with each having its own unique compositions, forms, and traditions.
- Other forms of Carnatic music include Keertana, Tillana, and Javali, none of which are found in the Dhrupad genre.

In summary, Dhrupad is the option that is NOT part of Carnatic music

S32. (d): The correct answer **is (d) Harshal Patel**

Explanation:

In the 17th edition of the Indian Premier League (IPL) in 2024, Harshal Patel, representing the Punjab Kings, secured the Purple Cap by taking the highest number of wickets in the tournament. He claimed a total of 24 wickets over 14 matches, with an average of 19.88.

Information Booster:

India Premier League 2024:

Kolkata Knight Riders, led by Shreyas Iyer, won the IPL 2024 by beating Sunrisers Hyderabad in the final at the M.A. Chidambaram Stadium in Chennai, Tamil Nadu.

IPL 2024 Award Winners:

- **Emerging player of the season:** Nitish Reddy (Sunrisers Hyderabad)
- **Electric striker of the season:** Jake Fraser-McGurk (Delhi Capitals)
- **Game changer of the season:** Sunil Narine (Kolkata Knight Riders)
- **Perfect catch of the season:** Ramandeep Singh (KKR)
- **Orange Cap:** Virat Kohli (731 Runs, Royal Challengers Banglore)
- **Most valuable player of the season:** Sunil Narine (482 runs and 17 wickets, KKR)
- **Fairplay Award:** Sunrisers Hyderabad

Indian Premier League:

- The Indian Premier League (IPL) is a professional Twenty20 (T20) cricket league in India, which was started by the Board of Control for Cricket in India (BCCI) in 2008.
- Initially, there were eight teams, but now ten teams are featured in the tournament.
- **Inaugural Edition Winner:** Rajasthan Royals, **Runners-up:** Chennai Super Kings.
- **Most successful Team:** Chennai Superkings and Mumbai Indians (Both won 5 IPL Titles)

S33. (c): The correct answer is (c) Mission Vatsalya

Mission Vatsalya is the **roadmap to achieve development and child protection priorities** in India, aligning with the **Sustainable Development Goals (SDGs)**.

- It is a **centrally sponsored scheme** under the **Ministry of Women and Child Development (MWCD)**.
- It **focuses on the welfare and protection of children**, ensuring that they receive **care, support, and rehabilitation** in vulnerable situations.
- The mission aims to **strengthen child protection systems** through various initiatives such as **foster care, sponsorship, and institutional support**.

Information Booster:

Mission Vatsalya

- **Objective:** Strengthening child protection and development, aligned with Sustainable Development Goals (SDGs).
- **Focus Areas:** Child rights, advocacy, awareness, and juvenile justice care under the motto "Leave No Child Behind."

Background

- **Legal Framework:** Based on the Juvenile Justice (Care and Protection of Children) Act, 2015 and the Protection of Children from Sexual Offences Act, 2012.

Key Components

- Enhancing statutory bodies' functioning.
- Strengthening service delivery structures.
- Expanding institutional care/services.
- Promoting non-institutional community-based care.
- Providing emergency outreach services.
- Training and capacity building.

Implementation

- **Centrally Sponsored Scheme (since 2021-22).**
- **Nodal Ministry:** Ministry of Women and Child Development.

S34. (a): The correct answer **is (a) Maharashtra**

Explanation:

Maharashtra has the maximum number of large dams in India.

- The state has a large number of dams due to its topographical features, including several rivers and mountain ranges that make it ideal for water storage and irrigation purposes.
- Maharashtra has about 1,821 large dams. This makes it the state with the most large dams in India.
- Some of the well-known dams in Maharashtra include the Koyna Dam, Tungabhadra Dam, Jayakwadi Dam, and Ujjani Dam.

Information Booster:

Dams in Maharashtra:

- **Koyna Dam:** Located in Western Maharashtra, it is a major hydroelectric dam and one of the largest in India.
- **Tungabhadra Dam:** Located on the Tungabhadra River, it serves as a key source for irrigation.
- **Jayakwadi Dam:** Situated on the Godavari River, it is the largest earthen dam in Maharashtra.
- **Ujjani Dam:** Built on the Bhima River, it provides water for irrigation and drinking purposes.

Additional Knowledge:

Important Dams in Madhya Pradesh, Odisha, and Rajasthan

State	Dam Name	River	Purpose
Madhya Pradesh	**Rajghat Dam**	**Betwa**	Irrigation, water supply
	Indira Sagar Dam	**Narmada**	Hydroelectric power generation, irrigation
	Sardar Sarovar Dam	**Narmada**	Irrigation, power generation, water supply
	Bargi Dam	**Narmada**	Irrigation, hydroelectric power generation
	Tawa Dam	**Tawa**	Irrigation, flood control
Odisha	**Hirakud Dam**	**Mahanadi**	Flood control, irrigation, power generation
	Rengali Dam	**Brahmani**	Irrigation, power generation
	Kolab Dam	**Kolab**	Irrigation, water supply
	Maidan Dam	**Mahanadi**	Irrigation, flood control
Rajasthan	**Rana Pratap Sagar Dam**	**Chambal**	Irrigation, water supply, flood control
	Indira Gandhi Canal Dam	**Saraswati**	Irrigation, water supply
	Jawai Dam	**Jawai**	Irrigation, water supply
	Kalisindh Dam	**Kalisindh**	Irrigation, flood control
	Chambal Dam	**Chambal**	Irrigation, power generation

S35. (c): The correct answer is (c) **Changes in real GDP and the GDP deflator**.

Explanation:

The terms **real GDP** and **GDP deflator** are distinct from one another. Real GDP represents the total value of goods and services produced within a country, adjusted for inflation (constant prices). It measures the actual volume of output, excluding the effect of price changes. On the other hand, the **GDP deflator** is a price index that adjusts nominal GDP to obtain real GDP, reflecting the change in price levels. The GDP deflator itself is not a direct measure of output but instead reflects the overall price level changes.

Information Booster:

- **Real GDP**: This is GDP measured at constant prices, which excludes inflationary effects. It provides a more accurate reflection of the country's economic growth.
- **GDP Deflator**: A price index that measures the average level of prices of all goods and services included in GDP. It is used to convert nominal GDP into real GDP.
- The **GDP deflator** adjusts the nominal GDP to account for inflation, unlike real GDP, which measures the output in constant prices.
- **Changes in real GDP** represent actual growth in the economy, while the **GDP deflator** helps measure how much of the change in GDP is due to price changes.

Additional Knowledge:

- **Nominal GDP and GDP at current prices**: These terms mean the same as they both refer to the total market value of all final goods and services produced in a country, without adjusting for inflation.
- **The base period and the reference period**: Both terms refer to a specific period in time used for comparison in index numbers or economic data. They are used interchangeably in this context.
- **Real GDP and GDP at constant prices**: These terms are used interchangeably to represent the measure of GDP that has been adjusted for inflation.

S36. (a): The correct answer is: (a) Babur

Explanation:

Medini Rai of Chanderi, **Hasan Khan of Mewat**, and **Mahmud Lodi** joined forces with **Rana Sanga** to fight against **Babur**, the founder of the Mughal Empire, at the **Battle of Khanwa** in 1527.

The battle was a significant conflict in the early years of the Mughal Empire in India. Rana Sanga, who led a coalition of Rajput rulers, opposed Babur's invasion, but Babur's forces ultimately defeated them, solidifying his control over northern India.

Information Booster:

- Babur's victory at Khanwa was crucial in establishing the **Mughal rule** in India, marking the beginning of a new era in Indian history.
- The **coalition of Rajput rulers**, including **Medini Rai**, **Hasan Khan**, and **Mahmud Lodi**, tried to resist Babur's advances but were defeated by his well-equipped and strategically superior army.
- This battle is considered one of the key moments in Babur's conquest of India, following his earlier victory at the **Battle of Panipat** in 1526.

Additional Knowledge:

- **Akbar**: Akbar, the third Mughal Emperor, fought many battles during his reign, one of the most notable being the **Battle of Panipat** (1556), where he defeated the forces of Hemu, a Rajput ruler, and consolidated Mughal control over northern India.
- **Aurangzeb:** the sixth Mughal Emperor, was known for his military campaigns, including the **Battle of Samugarh** (1658), where he defeated his brother Dara Shikoh and secured the Mughal throne.
- **Humayun**: the second Mughal Emperor, is known for his defeat at the **Battle of Kanauj** (1540) against Sher Shah Suri, which led to his exile. However, Humayun regained the Mughal throne after defeating the Suri Empire in the **Battle of Surajgarh** (1555).

S37. (d): The correct answer is (d) Article 30.

- Article 30 of the Constitution of India specifically states that minorities, whether based on religion or language, have the right to establish and administer educational institutions of their choice.
- This provision is aimed at protecting the educational rights of minorities, allowing them to preserve their culture and identity through education.

Additional Information:

- **Article 26** grants the freedom to manage religious affairs but does not specifically pertain to educational institutions.
- **Article 24** prohibits the employment of children below the age of 14 in hazardous jobs and is not related to educational rights.
- **Article 32** provides the right to constitutional remedies, allowing individuals to approach the Supreme Court for the enforcement of fundamental rights.

S38. (b):The correct answer is (b) Central Government

Explanation:

The **Environment (Protection) Act, of 1986** empowers the **Central Government** to take necessary steps to protect and improve the environment. This includes:

1. **Establishing authorities** to prevent and control **environmental pollution** in all its forms.
2. Setting **standards** for the emission or discharge of environmental pollutants.
3. **Restricting industrial operations** in certain locations to reduce environmental harm.
4. **Coordinating environmental policies** across different government agencies and states.

This Act was enacted in response to the **Bhopal Gas Tragedy (1984)** to strengthen environmental laws in India.

Information Booster:

- **The Environment (Protection) Act, 1986** provides a legal framework for protecting **air, water, and land** from pollution.
- It gives the **Ministry of Environment, Forest and Climate Change (MoEF&CC)** the power to issue **rules and notifications** regarding environmental conservation.
- It also allows for **punitive action** against those violating environmental laws.

S39. (b):The correct answer is (b) i-d, ii-c, iii-b, iv-a.

Explanation:

Column A	Column B
i. Glucose	Best organic substrate for respiration
ii. Yeast	Uses nutrients for fermentation
iii. Glycolysis	Glucose is converted into pyruvic acid
iv. Pyruvic acid	Intermediate substance in the breakdown of glucose

Additional Knowledge:

- **Glucose**: Apart from glycolysis, glucose can also undergo processes like the **pentose phosphate pathway** for cellular biosynthesis.
- **Yeast**: Yeast fermentation is used in various industrial processes, including alcohol production and leavening bread.
- **Glycolysis**: This process is universal across nearly all living organisms, indicating its essential role in energy production.
- **Pyruvic acid**: In the presence of oxygen, pyruvic acid enters the **Krebs cycle** for further energy production.

S40. (b):The correct answer is: (b) Pyran is a cyclic organic compound, with one oxygen atom and five carbon atoms in the ring.

Explanation:

The **six-membered cyclic structure of glucose** is called a **pyranose structure** because it resembles the structure of **pyran**, which is a **six-membered heterocyclic ring** containing **one oxygen atom and five carbon atoms**.

During **ring formation**, the **aldehyde group** at C1 of glucose reacts with the hydroxyl group at C5, forming a **hemiacetal**, which results in a six-membered **pyranose ring structure**.

Information Booster:

- **Pyranose Structure:** A six-membered ring containing **five carbon atoms and one oxygen atom**, similar to the structure of pyran.
- **Furanose Structure:** A five-membered ring (four carbon atoms and one oxygen atom) derived from furan.
- **Glucose in Solution:** In aqueous solution, glucose mainly exists in **pyranose** form (about 99%), while the furanose form is rare.
- **Haworth Projection:** The **pyranose** form of glucose is represented using the Haworth projection as a **six-membered ring**.