RBE NTPC Graduate Level Tier-2 Live Mock October 05,2025

Q. 1	Blockage of bile duct in a person is most likely to be caused by deficiency of which vitamin? a) Vitamin B12 ✗ b) Vitamin B1 ✗ c) Vitamin A ✓ d) Vitamin D ✗

Explanation:

The correct answer is: **Vitamin A**

✅ **Explanation for Correct Answer: Vitamin A**

- **Vitamin A deficiency** can lead to **epithelial cell dysfunction**, including in the **bile ducts**, where it may cause **keratinization** and narrowing of the duct lumen.
- This abnormal epithelial growth can result in **blockage of bile flow**, contributing to **cholestasis** and liver damage.
- **Scientific Name:** Retinol
- **Sources**:
  - Animal sources: **Liver, egg yolk, butter, fish liver oils**
  - Plant sources (as beta-carotene): **Carrots, spinach, sweet potatoes, mangoes**
- **Deficiency Disease**:
  - **Xerophthalmia** (dryness of eyes)
  - **Keratomalacia** (softening of cornea)
  - **Follicular hyperkeratosis**

❌ **Other Options:**

- **A. Vitamin B12**
  - **Scientific Name**: *Cobalamin*
  - **Sources**: **Meat, fish, eggs, dairy products**
  - **Deficiency Disease**:
    - **Pernicious anemia**
    - **Megaloblastic anemia**
    - **Neurological symptoms** like paresthesia
- **B. Vitamin B1**
  - **Scientific Name**: *Thiamine*
  - **Sources**: **Whole grains, legumes, nuts, pork**
  - **Deficiency Disease**:
    - **Beriberi** (dry and wet types)
    - **Wernicke-Korsakoff syndrome** (in alcoholics)
  - **Affects nervous system**, not bile ducts
- **D. Vitamin D**
  - **Scientific Name**: *Cholecalciferol (D3), Ergocalciferol (D2)*
  - **Sources**:
    - **Sunlight exposure**
    - **Fortified milk, fish, egg yolk**
  - **Deficiency Disease**:
    - **Rickets** in children
    - **Osteomalacia** in adults
  - **Involved in calcium metabolism**, not bile duct health

Q. 2	**Tata Airlines was originally launched in the year _____.** **a)** 1956 ✗ **b)** 1944 ✗ **c)** 1932 ✓ **d)** 1968 ✗
Explanation:	**Tata Airlines was originally launched in the year 1932.** • It was founded by **JRD Tata**, who piloted the first flight himself on **October 15, 1932**, from **Karachi to Bombay**. • Initially known as **Tata Air Services**, it later became **Tata Airlines**, and post-independence, it was **nationalized and renamed Air India**. • This marked the beginning of **civil aviation in India**, making Tata Airlines the **first commercial airline** in the country.

Q. 3	**Geographically, Bhutan is divided into four regions. Which of the following is NOT a name of those divisions?** **a)** Southern ✗ **b)** Western ✗ **c)** Eastern ✗ **d)** Northern ✓
Explanation:	Bhutan is traditionally divided into **four main geographic regions**: • **Western Bhutan** • **Central Bhutan** • **Eastern Bhutan** • **Southern Bhutan** • These divisions are based on **topography, culture, and administrative zones**, but **Northern Bhutan** is not recognized as a separate geographic region. • The **northernmost areas** are largely **uninhabited Himalayan ranges**, bordering **Tibet**, and are not part of Bhutan's formal regional classification.

Q. 4	**Who has been appointed as the 23rd Chairman of Law Commission of India?** **a) Rituraj Awasthi** ✗ **b) Dinesh Maheshwari** ✓ **c) Arvind Shrivastava** ✗ **d) Rajesh Agarwal** ✗
Explanation:	• The **23rd Law Commission** was notified on **September 1, 2024**, with term ending on **August 31, 2027**. • **Justice Dinesh Maheshwari**, a retired Supreme Court judge, is the appointed **Chairperson**, supported by four members. **Extra Info: -** • **Arvind Shrivastava is currently Revenue Secretary.** • **Rituraj Awasthi has been former Chairman of Law Commission.** **Rajesh Agarwal is secretary in Commerce Dept.**

Q. 5	**Which of the following characters is used to create absolute address in MS-Excel?** **a) Hash (#)** ✗ **b) Percent (%)** ✗ **c) Ampersand (&)** ✗ **d) Dollar ($)** ✓
Explanation:	In **Microsoft Excel**, the **dollar sign ($)** is used to create an **absolute cell reference**. • An absolute reference **locks** the row or column (or both) so that it **does not change** when the formula is copied to other cells. • Example: • A1 → Both column A and row 1 are fixed • A$1 → Row is fixed, column can change • $A1 → Column is fixed, row can change This is especially useful in formulas involving **fixed values**, **lookup tables**, or **anchored references**. **Types of Cell reference in MS Excel** **1. Absolute Addressing** **2. Relative Addressing** • Format: A1 • Both **column and row can change** when the formula is copied. • Most commonly used by default in Excel. • Example: =A1+B1 **3. Mixed Addressing** • Format: $A1 or A$1 • Either **column or row is fixed**, not both. • $A1: Column fixed, row changes • A$1: Row fixed, column changes • Example: =$A1+B$2

Q. 6	**The first English factory was set up on the banks of the river Hugli in _____.** **a) 1641 CE** ✗ **b) 1661 CE** ✗ **c) 1671 CE** ✗ **d) 1651 CE** ✓
Explanation:	The **English East India Company** established its **first factory on the banks of the river Hugli (Hooghly)** in **1651 CE**. • This marked the beginning of **British commercial presence in Bengal**, which later expanded into political control. • The factory was set up with permission from the **Mughal Subahdar of Bengal**, and it laid the foundation for future British settlements like **Calcutta (Kolkata)**. 🏛️ **Historical Context:** • The term **"factory"** referred to a **trading post**, not a manufacturing unit. • This move was part of the Company's strategy to **diversify trade beyond Surat**, which was their first base in India (established in 1613). • The Hugli factory became a **gateway for British expansion in eastern India**, eventually leading to the **Battle of Plassey (1757)** and the rise of British rule.

Q. 7	**Which Process is used to synthesize Ammonia (NH3)?** **a) Haber Process** ✔ **b) Contact Process** ✘ **c) Solvay Process** ✘ **d) Ostwald Process** ✘
Explanation:	✅ **Correct Answer: A. Haber-Bosch Process** • **Inventors**: Fritz Haber (1909, Germany) and Carl Bosch (industrial scale, BASF) • **Purpose**: Industrial synthesis of **Ammonia (NH_3)** from atmospheric nitrogen • **Chemical Reaction**: [N_2 (g) + 3H_2 (g) \rightarrow 2NH_3 (g)] ◦ Reversible and exothermic • **Conditions**: ◦ **Temperature**: 450–500°C ◦ **Pressure**: 150–200 atm ◦ **Catalyst**: Finely divided **Iron (Fe)** with **potassium oxide (K_2O)** as promoter • **Significance**: ◦ Foundation of **fertilizer industry** (urea, ammonium nitrate) ◦ Enabled large-scale **nitrogen fixation**, revolutionizing agriculture ◦ Considered one of the most impactful chemical processes of the 20th century ❌ **Other Options:** • **A. Ostwald Process** ◦ Used for **Nitric acid (HNO_3)** production ◦ Converts **ammonia to nitric oxide**, not for ammonia synthesis ◦ Involves catalytic oxidation of NH_3 • **C. Contact Process** ◦ Used for **Sulfuric acid (H_2SO_4)** production ◦ Involves oxidation of **SO_2 to SO_3** using **vanadium pentoxide (V_2O_5)** catalyst • **D. Solvay Process** ◦ Used for manufacturing **Sodium carbonate (Na_2CO_3)** ◦ Involves reaction of **ammonia, carbon dioxide, and brine**

Q. 8	**A consumer's optimal bundle is located at the point of tangency between the budget line and _____.** **a) Law of demand** ✗ **b) Income effect** ✗ **c) Monotonicity** ✗ **d) Indifference curve** ✓
Explanation:	In **consumer theory**, the **optimal bundle** is the combination of goods that gives the **maximum satisfaction** to a consumer within their **budget constraint**. • This occurs at the point where the **budget line** (representing affordability) is **tangent to an indifference curve** (representing equal levels of satisfaction). • At this point, the **Marginal Rate of Substitution (MRS)** equals the **price ratio** of the two goods, ensuring utility maximization. **Other Options:** • **Law of demand**: Describes the inverse relationship between price and quantity demanded, not related to optimal bundle selection. • **Income effect**: Refers to changes in consumption due to changes in income, not the point of tangency. • **Monotonicity**: A property of preferences stating that more is better, but it doesn't define the optimal bundle location.

Q. 9	**According to the Census of India 2011, in which of the following states was Scheduled Caste Population NOT recorded?** **a) Sikkim** ✗ **b) Tripura** ✗ **c) Assam** ✗ **d) Nagaland** ✓
Explanation:	As per **Census of India 2011**, **Nagaland** recorded **zero Scheduled Caste (SC) population**. • This is because the population of Nagaland is **predominantly tribal**, and the concept of Scheduled Castes is **not applicable** in its socio-cultural context. • **Scheduled Tribes** constitute over **89%** of Nagaland's population, making it one of the most tribal-dominated states in India.

Q. 10	**Which of the following is an example of a tertiary activity?** **a) Manufacturing** ✗ **b) Teaching** ✓ **c) Mining** ✗ **d) Farming** ✗
Explanation:	**Teaching** is a **tertiary activity** because it involves the **provision of educational services**, not the production or extraction of goods. • It contributes to the **service sector**, which plays a vital role in modern economies. **Types of Economic Activities** Economic activities are classified into **three main sectors** based on the nature of work: 1. **Primary Activities** ◦ Involve **extraction of natural resources** directly from Earth. ◦ Examples: Farming, Fishing, Mining, Forestry 2. **Secondary Activities** ◦ Involve **processing or manufacturing** of raw materials into finished goods. ◦ Examples: Manufacturing, Construction, Textile production 3. **Tertiary Activities** • Involve **providing services** rather than goods. • Examples: Teaching, Banking, Transport, Healthcare

Q. 11	**Which of the following Element is not the part of the standard Window 7 Desktop?** **a) Notification Area** ✗ **b) Control Panel** ✓ **c) Start Button** ✗ **d) Taskbar** ✗
Explanation:	The **Control Panel** is a **system utility** used to configure settings, but it is **not a direct element of the desktop interface**. • It is accessed via the **Start Menu**, not displayed on the desktop by default. ✅ **Elements that *are* part of the standard Windows 7 desktop:** • **Notification Area**: Located on the **right side of the taskbar**, shows system icons like volume, network, and battery. • **Start Button**: Found on the **left corner of the taskbar**, used to access programs and settings. • **Taskbar**: Horizontal bar at the bottom of the screen that includes the Start Button, open applications, and Notification Area.

Q. 12	**The world's first sea cucumbers conservation reserve is being set up in _____.** **a) Andaman Islands** ✗ **b) Lakshadweep** ✓ **c) Gulf of Mannar** ✗ **d) Sunderbans** ✗
Explanation:	The **Dr. K.K. Mohammed Koya Sea Cucumber Conservation Reserve** was formally established in **Lakshadweep** on **27 February 2020**, making it the **world's first marine protected area** dedicated to **sea cucumbers**. • Located near **Bitra Island**, it spans **239 sq km** of the **Arabian Sea**, including parts of the **Byramgore (Cheriyapani) Reef**. • Sea cucumbers are listed under **Schedule I of the Wildlife Protection Act, 1972**, granting them the **highest level of legal protection** in India. • This reserve combats illegal poaching and supports marine biodiversity conservation in the fragile coral reef ecosystem.

Q. 13	**Which Act first allowed Indian members to discuss the budget in legislative councils?** **a) Government of India Act, 1858** ✗ **b) Indian Councils Act, 1892** ✓ **c) Indian Councils Act, 1861** ✗ **d) Indian Councils Act, 1909** ✗
Explanation:	The **Indian Councils Act of 1892** was the **first Act** to grant **limited rights to Indian members** in legislative councils to **discuss the budget**. • Though they could **not vote** or **amend** the budget, this marked a **symbolic shift** toward Indian participation in governance. • It also introduced the concept of **indirect nomination** of Indian members to the councils, paving the way for future reforms. **Historical Context:** • **Government of India Act, 1858**: Transferred control from East India Company to the British Crown; no legislative reforms for Indians. • **Indian Councils Act, 1861**: Introduced legislative councils but **no budget discussion rights**. • **Indian Councils Act, 1909 (Morley-Minto Reforms)**: Expanded Indian representation and allowed **limited legislative powers**, but **1892** was the first to allow **budget discussion**.

Q. 14	**Sublimation is the _____.** **a) Transition of a substance directly from the solid to the gas state** ✔ **b) Transition of substance directly from the gas to the solid state** ✘ **c) Transition of substance directly from the liquid to the gas state** ✘ **d) Transition of substance directly from the gas to the liquid state** ✘
Explanation:	**Sublimation** is a **phase transition** in which a substance changes directly from the **solid state to the gaseous state**, **without passing through the liquid phase**. • Common examples include: ◦ **Dry ice (solid CO_2)** sublimating into carbon dioxide gas ◦ **Camphor and naphthalene balls** used in households • This process occurs under specific conditions of **temperature and pressure**, typically **low pressure and high temperature**. • Sublimation is used in **purification techniques**, **freeze-drying**, and **fabric printing**. ❌ **Other Options:** • **B. Transition from gas to solid**: This is called **deposition**, not sublimation. Example: frost formation. • **C. Transition from liquid to gas**: This is **evaporation** or **boiling**, depending on conditions. • **D. Transition from gas to liquid**: This is known as **condensation**.

Q. 15	**Which of the following amendments made education a subject in the Concurrent List?** **a) 52nd Amendment** ✗ **b) 44th Amendment** ✗ **c) 42nd Amendment** ✓ **d) 86th Amendment** ✗
Explanation:	The **42nd Amendment Act, 1976** is known as one of the most comprehensive amendments to the Indian Constitution. • It **transferred education** from the **State List to the Concurrent List**, allowing both the **Centre and States** to legislate on education. • This move aimed to bring **uniformity in educational standards** across the country and strengthen national integration. **Enrichment:** • The **86th Amendment Act, 2002** made **Right to Education** a **Fundamental Right** under **Article 21A**, but did **not shift education to the Concurrent List**. • The **52nd Amendment (1985)** dealt with **anti-defection law**, and the **44th Amendment (1978)** focused on **restoring civil liberties** curtailed during the Emergency.

Q. 16	**Consider the following statements regarding the Bharatiya Vayuyan Adhiniyam (Aviation Act), 2024 and answer which of them are correct-:** **1. The Act replaces the Aircraft Act of 1934.** **2. It explicitly includes provisions for regulating drones, unmanned aircraft systems (UAS), and spaceplanes under a single legal framework.** **a) 1 only** ✗ **b) 2 only** ✗ **c) Both 1&2** ✓ **d) Neither 1&2** ✗
Explanation:	**Statement 1 – Correct**: The Act indeed replaces the **Aircraft Act, 1934**, aiming to **modernize aviation governance** in light of evolving technology and safety norms. **Statement 2 – Correct**: The Act brings **drones, unmanned aircraft, and modern aviation tech** like **UAS** under regulation, reflecting global aviation trends.

Q. 17	**Which of the following year National Seeds Policy was launched?** **a) 2007** ✗ **b) 2002** ✓ **c) 2018** ✗ **d) 2010** ✗
Explanation:	**National Seeds Policy was launched in the year 2002**. • It was notified by the **Department of Agriculture and Cooperation**, Ministry of Agriculture, Government of India. • The policy aimed to ensure **availability of high-quality seeds** to farmers at the right time and place, in adequate quantity, and at affordable prices. • It emphasized: • **Strengthening seed production and distribution systems** • **Encouraging private sector participation** • **Promoting research and development in seed technology** • **Protecting farmers' interests and biodiversity**

Q. 18	**Which country is set to launch the Venera-D mission to revisit Venus before 2036?** **a) Russia** ✔ **b) China** ✘ **c) United States of America** ✘ **d) France** ✘
Explanation:	✅ **Correct Answer: Russia** 1. **Mission Name: Venera-D** 2. **Objective:** Revisit **Venus** for advanced planetary research 3. **Country: Russia** 4. **Timeline:** Launch expected **between 2034 and 2036** 5. **Mission Components:** ◦ **Orbiter** ◦ **Lander** ◦ **Balloon probe** for atmospheric study 6. **Development Partners:** ◦ **Lavochkin Association** (Russian space enterprise) ◦ **IKI** – Space Research Institute of the Russian Academy of Sciences 7. **Historical Context:** ◦ Follows Soviet Union's **Venera series (1961–1983)** ◦ Venera-D = "D" for *Dolgozhivushchaya* (long-lived)

Q. 19	**Which of the following is a non-conventional source of energy?** **a) Wood** ✗ **b) Coal** ✗ **c) Petrol** ✗ **d) Wind** ✓
Explanation:	⚡ **Conventional Sources of Energy** • These are traditional energy sources used for centuries. • They are mostly **non-renewable** and **polluting**. • Once consumed, they **cannot be replenished** easily. • Commonly used in thermal power plants and transportation. **Examples:** • Coal • Petroleum • Natural Gas • Wood 🌱 **Non-Conventional Sources of Energy** • These are **modern or alternative sources** of energy. • They are mostly **renewable** and **environment-friendly**. • They help reduce dependence on fossil fuels. • Widely promoted for sustainable development. **Examples:** • Solar Energy • Wind Energy • Tidal Energy • Geothermal Energy • Biomass

Q. 20	**The Wahabi Movement was started by Syed Ahmad, of _____.** **a) Amritsar** ✗ **b) Jhansi** ✗ **c) Rae Bareli** ✓ **d) Hyderabad** ✗
Explanation:	**The Wahabi Movement was started by Syed Ahmad of Bareilly.** • **Syed Ahmad Barelvi** (1786–1831) was a prominent Islamic reformer and military leader from **Bareilly, Uttar Pradesh**. • He launched the **Wahabi Movement** in India during the early 19th century, inspired by the teachings of **Abdul Wahhab** of Arabia. • The movement aimed to **purify Islam** by eliminating un-Islamic practices and promoting **monotheism (Tauheed)**. • It later evolved into a **militant resistance against British rule**, especially in the **North-West Frontier Province** (now in Pakistan).

Q. 21	**What is the full form of PCB in Operating System?** **a) Process Communication Block** ✗ **b) Program Control Block** ✗ **c) Process Control Block** ✓ **d) Primary Communication Bus** ✗

Explanation:	In Operating Systems, a **Process Control Block (PCB)** is a **data structure** maintained by the OS to **store information about a process**.
	• It contains:
	  ◦ **Process ID**
	  ◦ **Process state** (ready, running, waiting, etc.)
	  ◦ **CPU registers**
	  ◦ **Memory management info**
	  ◦ **Scheduling info**
	  ◦ **I/O status**
	• The PCB is essential for **context switching**, allowing the OS to pause and resume processes efficiently.

Q. 22	**In which location is the 17th edition of the India-Mongolia joint military Exercise NOMADIC ELEPHANT being conducted, as of 29 May 2025?** **a) Leh, Ladakh** ✗ **b) Ulaanbaatar, Mongolia** ✓ **c) Umroi, Meghalaya** ✗ **d) Thimphu, Bhutan** ✗
Explanation:	The 17th edition of the India-Mongolia joint military Exercise NOMADIC ELEPHANT is being conducted in **Ulaanbaatar, Mongolia**, from **31 May to 13 June 2025**. The Indian Army contingent, mainly comprising **Arunachal Scouts**, is participating alongside Mongolia's Special Forces. Held at the **Special Forces Training Centre**, the exercise focuses on **counterterrorism, UN peacekeeping drills, and mountain warfare**. Activities include **reflex shooting, room intervention, rock craft, and cyber warfare training**. This annual bilateral exercise enhances **interoperability and defence cooperation**, reinforcing the strategic partnership between India and Mongolia.

Q. 23	**Which of the following is an element of d block in the modern periodic table?** **a) Na** ✗ **b) Fe** ✓ **c) Mg** ✗ **d) Ca** ✗
Explanation:	**Correct Answer: B. Fe (Iron)** • **Block Classification**: **d-block element** • **Atomic Number**: 26 • **Electronic Configuration**: [Ar] $3d^6$ $4s^2$ • **Period & Group**: Period 4, Group 8 • **Category**: **Transition metal** • **Properties**: ◦ Forms **variable oxidation states** (+2, +3) ◦ Exhibits **metallic bonding**, **magnetism**, and **complex formation** ◦ Found in **hemoglobin**, **steel**, and **industrial catalysts** ❌ **Other Options:** • **A. Na (Sodium)** ◦ **Block**: **s-block** ◦ **Atomic Number**: 11 ◦ **Group 1**: Alkali metal ◦ Highly reactive, forms Na^+ ion, not a transition metal • **C. Mg (Magnesium)** ◦ **Block**: **s-block** ◦ **Atomic Number**: 12 ◦ **Group 2**: Alkaline earth metal ◦ Forms Mg^{2+}, used in alloys and biological systems • **D. Ca (Calcium)** ◦ **Block**: **s-block** ◦ **Atomic Number**: 20 ◦ **Group 2**: Alkaline earth metal ◦ Essential for bones and teeth, forms Ca^{2+}

Q. 24	**Who among the following was the first Indian cricketer to receive the Padma Bhushan award?** **a) CK Naydu** ✔ **b) Sachin Tendulkar** ✘ **c) Sunil Gavaskar** ✘ **d) Kapil Dev** ✘
Explanation:	**CK Naydu** (Cottari Kanakaiya Nayudu), India's **first Test captain**, was the **first Indian cricketer** to receive the **Padma Bhushan** in **1956**, recognizing his pioneering role in Indian cricket. • **Sachin Tendulkar**: ◦ Youngest recipient of the **Bharat Ratna**, India's highest civilian award, conferred in **2014**. ◦ First **sportsperson** ever to receive the Bharat Ratna. ◦ His autobiography is titled **"Playing It My Way"** (2014), co-authored with Boria Majumdar. • **Kapil Dev**: ◦ India's 1983 World Cup-winning captain. ◦ His autobiography is titled **"Straight from the Heart"** (2004). • **Sunil Gavaskar**: • Legendary opener and first to score 10,000 Test runs. • His autobiography is titled **"Sunny Days"** (1976), a classic in Indian cricket literature.

Q. 25	**The Purpose of Devaluation is to:** **a) Encourage export** ✔ **b) Discourage export** ✘ **c) Encourage import** ✘ **d) None of these** ✘
Explanation:	**Devaluation** refers to the **deliberate downward adjustment of a country's currency value** relative to another currency or a standard. • When a currency is devalued, **domestic goods become cheaper for foreign buyers**, making **exports more competitive** in international markets. • At the same time, **imports become more expensive**, which helps **reduce trade deficits** and promote **local production**. **Enrichment:** • Devaluation is often used by governments to **boost economic growth**, especially during **balance of payments crises**. • It differs from **depreciation**, which is a **market-driven** fall in currency value.

Q. 26	**The British formally annexed the kingdom of Awadh in the year _____.** **a) 1856** ✔ **b) 1857** ✘ **c) 1858** ✘ **d) 1855** ✘
Explanation:	The famous phrase **"Ek din ye cherry humare muh me giregi"** was reportedly said by **Lord Dalhousie**, the British Governor-General of India (1848–1856), in reference to the kingdom of **Awadh (Oudh)**. • This metaphorical statement reflected his **imperialist ambition** and the British desire to annex Awadh, which was then a prosperous princely state. • Dalhousie believed that Awadh was **strategically and economically valuable**, and he waited for the right moment to justify its annexation. • In **1856**, citing **"misgovernance"**, the British formally annexed Awadh, deposing **Nawab Wajid Ali Shah**. • The annexation deeply angered the local population and was one of the key triggers of the **Revolt of 1857**, especially in regions like Lucknow and Kanpur.

Q. 27	**Pochampad dam is also known as _____.** **a) Bhakra Nagal Dam** ✗ **b) Hirakund Dam** ✗ **c) Shri Ram Sagar Dam** ✓ **d) Nagarjuna Dam** ✗
Explanation:	**Pochampad Dam**, located on the **Godavari River** in **Nizamabad district, Telangana**, is officially known as **Shri Ram Sagar Project (SRSP)**. • It was constructed to provide **irrigation water**, **drinking water**, and support **hydroelectric power generation**. • The dam plays a crucial role in the **agricultural development of northern Telangana**. ❌ Other Options: • **Bhakra Nagal Dam**: Located on the **Sutlej River** in Himachal Pradesh, it is one of the **highest gravity dams** in India. • **Hirakund Dam**: Built on the **Mahanadi River** in Odisha, it is one of the **longest earthen dams** in the world. • **Nagarjuna Dam**: Constructed on the **Krishna River** in Andhra Pradesh, it is known as **Nagarjuna Sagar Dam**.

Q. 28	**ISRO will operate its Chandrayaan-5 mission in collaboration with which space agency?** **a) NASA** ✗ **b) JAXA** ✓ **c) ROSCOS** ✗ **d) Space X** ✗
Explanation:	✅ **Correct Answer: JAXA** (Japan Aerospace Exploration Agency) 1. **Mission Name: Chandrayaan-5 / LUPEX (Lunar Polar Exploration)** 2. **Collaborating Agency:** ◦ **ISRO** is partnering with **JAXA**, the **Japanese space agency**, for this mission. The collaboration includes **Mitsubishi Heavy Industries (MHI)** for rover development. It aims to explore the **lunar south pole**, focusing on **water ice deposits** and **in-situ resource analysis**. • ISRO will develop the **lander**, while JAXA will provide the **rover** and launch the mission aboard its **H3 rocket**. • The mission is expected to launch around **2028**, following Chandrayaan-4's lunar sample return mission. **About ISRO:** • **Full Name**: Indian Space Research Organisation • **Established**: **15 August 1969** • **Current Chairman**: **Dr. V. Narayanan**, appointed on **14 January 2025** • ISRO operates under the **Department of Space**, Government of India, and has its headquarters in **Bengaluru**.

Q. 29	**What are endemic Species?** **a) Species found only in a particular area and nowhere else** ✔ **b) Exotic animals brought from other countries** ✘ **c) Species found in every forest** ✘ **d) Species that have migrated recently** ✘

Explanation:	**Endemic species** are organisms that are **native to a specific geographic location** and are **not naturally found anywhere else in the world**.
	• These species evolve in **isolated ecosystems** such as islands, mountain ranges, or unique habitats.
	• Examples include:
	  ◦ **Lion-tailed macaque** – endemic to the Western Ghats of India
	  ◦ **Kashmir stag (Hangul)** – endemic to Jammu & Kashmir
	  ◦ **Galápagos tortoise** – endemic to the Galápagos Islands
	• Endemic species are often **highly vulnerable to extinction** due to habitat loss, climate change, or invasive species.
	❌ **Other Options:**
	• **B. Exotic animals brought from other countries**:
	These are called **introduced** or **invasive species**, not endemic. Example: **Eucalyptus in India**.
	• **C. Species found in every forest**:
	These are **widely distributed species**, not endemic. They exist across multiple ecosystems.
	• **D. Species that have migrated recently**:
	These are referred to as **migratory species**, not endemic. Example: **Siberian cranes visiting Bharatpur**.

Q. 30	**Which city was declared as the cleanest city in the one-million population category in the Swachh Survekshan 2024-25 Awards?** **a) Gandhinagar** ✗ **b) Ahmedabad** ✓ **c) Indore** ✗ **d) Lucknow** ✗
Explanation:	The city declared as the **cleanest in the one-million population category** in the **Swachh Survekshan 2024–25 Awards** is **Ahmedabad**. This recognition highlights Ahmedabad's consistent efforts in urban sanitation, waste management, and citizen engagement under the Swachh Bharat Mission (Urban). It was followed by **Bhopal**, **Lucknow**, **Raipur**, and **Jabalpur** in the same category. **Confusion between Ahmedabad and Indore:** • **Ahmedabad: One million population category** • **Indore: above one-million population category** This marks **Indore's eighth consecutive win**, showcasing its sustained excellence in **waste segregation**, **door-to-door garbage collection**, **citizen participation**, and **innovative sanitation practices**. The city has become a national model for **zero waste management** and **smart city integration** under the **Swachh Bharat Mission (Urban)**.

Q. 31	**Demonetization had occurred in India in the years 1946 and 1978. On which date did the third demonetization occur?** **a) 8th Nov 2016** ✓ **b) 8th Nov 2015** ✗ **c) 18th Nov 2016** ✗ **d) 28th Nov 2015** ✗
Explanation:	The third demonetization in India occurred on **8 November 2016**. • On this date, **Prime Minister Narendra Modi** announced that **₹500 and ₹1,000 currency notes** would cease to be legal tender. • The move aimed to combat **black money**, **counterfeit currency**, and **terror financing**, and to promote a **digital economy**. • It was a **surprise announcement**, broadcast at **8:00 PM**, with immediate nationwide impact. • **1946** – The British colonial government demonetized **₹1,000 and ₹10,000 notes** to curb black money. • **1978** – Under Prime Minister **Morarji Desai**, the government demonetized **₹1,000, ₹5,000, and ₹10,000 notes** to tackle illicit wealth.

Q. 32	**The IPCC is the United Nations body for assessing the Science related to Climate Change. IPCC is stands for:** **a) International Provision on Climate Change** ✗ **b) International Panel on Climate Change** ✗ **c) Intergovernmental Provision on Climate Change** ✗ **d) Intergovernmental Panel on Climate Change** ✓
Explanation:	The **IPCC (Intergovernmental Panel on Climate Change)** was established in **1988** by the **United Nations Environment Programme (UNEP)** and the **World Meteorological Organization (WMO)**. • Its role is to **assess scientific research** related to **climate change**, its **impacts**, and **potential adaptation and mitigation strategies**. • The IPCC does **not conduct original research**, but it **reviews and synthesizes** existing studies to inform **global policy decisions**. • It has released landmark reports like the **AR6 (Sixth Assessment Report)**, which guide international climate negotiations.

Q. 33	**Where is the HQ of North-west Railway Zone located?** **a) Gorakhpur** ✗ **b) Hajipur** ✗ **c) Jaipur** ✓ **d) Hubli** ✗
Explanation:	The **headquarters of the North Western Railway (NWR) Zone** is located in **Jaipur, Rajasthan**. • It was formed on **1st October 2002** by carving out divisions from Northern and Western Railway Zones. • NWR comprises **four divisions**: Jaipur, Ajmer, Bikaner, and Jodhpur. • The zone plays a key role in connecting **western and northern India**, and is known for handling **passenger and freight traffic** efficiently across desert and border regions. **Indian Railway Zones and Their Headquarters** 1. **Northern Railway (NR)** – **New Delhi** 2. **North Western Railway (NWR)** – **Jaipur, Rajasthan** 3. **North Central Railway (NCR)** – **Prayagraj (Allahabad), Uttar Pradesh** 4. **North Eastern Railway (NER)** – **Gorakhpur, Uttar Pradesh** 5. **Eastern Railway (ER)** – **Kolkata, West Bengal** 6. **East Central Railway (ECR)** – **Hajipur, Bihar** 7. **East Coast Railway (ECoR)** – **Bhubaneswar, Odisha** 8. **Southern Railway (SR)** – **Chennai, Tamil Nadu** 9. **South Central Railway (SCR)** – **Secunderabad, Telangana** 10. **South Eastern Railway (SER)** – **Kolkata, West Bengal** 11. **South East Central Railway (SECR)** – **Bilaspur, Chhattisgarh** 12. **South Western Railway (SWR)** – **Hubballi (Hubli), Karnataka** 13. **Western Railway (WR)** – **Mumbai, Maharashtra** 14. **West Central Railway (WCR)** – **Jabalpur, Madhya Pradesh** 15. **Central Railway (CR)** – **Mumbai, Maharashtra** 16. **Northeast Frontier Railway (NFR)** – **Maligaon, Guwahati, Assam** 17. **Konkan Railway (KRCL)** – **Navi Mumbai, Maharashtra** *(Technically a corporation, but often included)* 18. **Metro Railway (MR)** – **Kolkata, West Bengal** *(Dedicated to metro operations)*

Q. 34	**Where was India's First Vande Bharat Sleeper train unveiled in September 2024?** **a) Rail Coach Factory, Kapurthala** ✗ **b) ICF, Chennai** ✗ **c) Metro Rail Depot, Mumbai** ✗ **d) BEML Complex, Bengaluru** ✓
Explanation:	**India's first Vande Bharat Sleeper train** was unveiled in September 2024 **at BEML's Bangalore** complex by Union Railway **Minister Ashwini Vaishnaw**. The unveiling took place on September 1, 2024, and was a significant milestone for BEML, the company that designed and manufactured the prototype train. The train was manufactured by **BEML (Bharat Earth Movers Limited)** in just **9 months**, showcasing advanced features like **hot-water showers in 1st AC**, **modular pantries**, **USB charging ports**, and **EN45545 HL3 fire safety standards**. It was later moved to **Delhi's Shakur Basti Coaching Depot** for trials and is expected to operate on routes like **Delhi–Patna** and **Delhi–Howrah**.

Q. 35	**The Parthians originated from which of the following countries?** **a) Turkey** ✗ **b) Iran** ✓ **c) Iraq** ✗ **d) Saudi Arabia** ✗
Explanation:	The **Parthians** were an ancient Iranian people who established the **Parthian Empire** (247 BCE – 224 CE), also known as the **Arsacid Empire**. • They originated from the region of **Parthia**, located in **northeastern Iran**, near modern-day **Khorasan**. • The Parthian Empire was a major political and cultural power, often in conflict with the **Roman Empire**. • Known for their **cavalry warfare**, especially the famous **"Parthian shot"**, they played a key role in shaping Persian imperial traditions.

Q. 36	**In which of the following years was the Right to Information Act passed?** **a) 1999** ✗ **b) 2005** ✓ **c) 2007** ✗ **d) 2008** ✗
Explanation:	The **Right to Information (RTI) Act** was passed by the **Parliament of India** in **2005** and came into force on **12 October 2005**. • It empowers Indian citizens to **seek information from public authorities**, promoting **transparency and accountability** in governance. • The Act replaced the earlier **Freedom of Information Act, 2002**, which was never effectively implemented.

Q. 37	**Consider the following statements about India's position in the Global Peace Index 2025:** **1- India holds the 115th position among 163 countries, with a score of approximately 2.229 in the Global Peace Index.** **2- Within the South Asia region, India ranks more peacefully than Pakistan, Bangladesh, and Afghanistan.** **3- India's peacefulness deteriorated in 2025 compared to 2024, showing a rise of about 0.58% in its GPI score.** **Which of them are correct?** **a) 1 & 2 only** ✓ **b) 2 & 3 only** ✗ **c) 1 & 3 only** ✗ **d) 1, 2 & 3 All** ✗
Explanation:	The correct answer is: Only 1 & 2 • **Statement 1 – Correct.** In 2025, India is ranked **115th** out of 163 countries on the GPI, with a GPI score of approximately **2.229**. • **Statement 2 – Correct.** Among South Asian countries, India stands ahead of **Bangladesh (123), Pakistan (144), and Afghanistan (158)** in the 2025 ranking. • **Statement 3 – Incorrect.** India's GPI performance **improved**, not deteriorated—its score declined (which is better), representing a **0.58% improvement**, not an increase in score

Q. 38	**An object is placed 20 cm from a concave mirror with a focal length of 10 cm. What is the nature and position of the image?** **a) Virtual and erect, 20 cm in front** ✗ **b) Real and inverted, 20 cm in front** ✓ **c) Real and inverted, at 10 cm** ✗ **d) Virtual and erect, at 10 cm** ✗
Explanation:	✅ **Correct Answer: B. Real and inverted, 20 cm in front** • **Mirror Type**: Concave mirror • **Object Distance (u)**: −20 cm (negative as per sign convention) • **Focal Length (f)**: −10 cm (negative for concave mirror) • **Image Distance (v)**: −20 cm → **in front of mirror** • **Nature of Image**: ◦ **Real** (since image is formed in front of mirror) ◦ **Inverted** ◦ **Same size as object** (object at 2f = 20 cm) ❌ **Other Options:** • **A. Virtual and erect, 20 cm in front**: Virtual images in concave mirrors form only when the object is **within the focal length**. This is incorrect. • **C. Real and inverted, at 10 cm**: This would occur only if the object were placed at infinity. Not applicable here. • **D. Virtual and erect, at 10 cm**: Again, virtual images form **behind the mirror**, not at 10 cm in front.

Q. 39	**Padma Shri Minati Mishra was an Indian Classical dancer and actress, known for her expertise in which of the following dance forms?** **a) Odissi** ✔ **b) Kathak** ✘ **c) Kathakali** ✘ **d) Kuchipudi** ✘
Explanation:	**Minati Mishra** was a legendary exponent of **Odissi**, one of the eight classical dance forms of India. • Born in **Cuttack, Odisha**, she trained under **Guru Kelucharan Mohapatra**, a pioneer of Odissi revival. • She played a key role in **popularizing Odissi internationally**, performing across Europe and Asia. • Honoured with the **Padma Shri in 2012**, she also served as **Principal of Utkal Sangeet Mahavidyalaya**, contributing to dance education. • Her performances were known for **grace, precision, and deep emotional expression**, rooted in **Jagannath culture and temple traditions**.

Q. 40	**India has recently signed the Comprehensive Economic and Trade Agreement (CETA) with which country?** **a) United Kingdom** ✔ **b) United States** ✘ **c) Japan** ✘ **d) Australia** ✘
Explanation:	The **India–UK CETA** was signed in **July 2025** by **Commerce Minister Piyush Goyal** and **UK Secretary of State Jonathan Reynolds**, in the presence of **Prime Minister Narendra Modi** and **UK PM Sir Keir Starmer**. • **CETA provides nearly 99%** tariff-free access to Indian exports to the UK, covering about **10 billion British pounds worth of goods annually.** • It addresses key sectors such as textiles, leather, marine products, gems and jewellery, engineering goods, auto components, and chemicals. • The bilateral trade is approximately **USD 56 billion** currently, with a vision to **double this by 2030.** • The agreement includes provisions from the **Double Contribution Convention** to ease social security costs for Indian workers and companies operating in the UK. • CETA aims **to boost job creation, investments, professional mobility, and economic cooperation between the two nations.**

Q. 41	**Which of the following is/are true about Vasco Da Gama?** **1. Zamorin was the ruler of Calicut during Gama's trip to India in 1498.** **2. Vasco Da Gama revisited India in 1502.** **3. Abdul Majid piloted Vasco da Gama's ship to Calicut during his first successful voyage to India in 1498.** **a) Only 1 & 3** ✗ **b) Only 1 & 2** ✗ **c) All of these** ✓ **d) Only 2 & 3** ✗
Explanation:	✅ **Correct Answer: All three statements are true.** 1 **. Zamorin was the ruler of Calicut during Gama's trip to India in 1498 – ✅ True** • When **Vasco da Gama** arrived at **Calicut (Kozhikode)** on the **Malabar Coast** in **May 1498**, the region was ruled by the **Zamorin**, a hereditary monarch. • The Zamorin initially welcomed the Portuguese, but tensions later arose due to trade disputes and cultural misunderstandings. 2 **. Vasco Da Gama revisited India in 1502 – ✅ True** • After his successful first voyage, Vasco da Gama returned to India in **1502 (some sources given 1501)** with a **larger fleet**. • This second expedition was more aggressive, aiming to establish **Portuguese dominance over spice trade**. • He returned to Portugal in 1503, having laid the groundwork for future Portuguese colonial expansion. 3 **. Abdul Majid piloted Vasco da Gama's ship to Calicut during his first successful voyage to India in 1498 – ✅ True** • On reaching the East African coast, Vasco da Gama met **Abdul Majid**, a **Gujarati Muslim navigator** (sometimes referred to as **Ibn Majid**, though this is debated). • Abdul Majid helped guide the Portuguese fleet across the **Arabian Sea** to **Calicut**, using his knowledge of **monsoon winds and navigation routes**.

Q. 42	**Which of the following is a standard internet protocol used for transmitting the files from one computer to another computer connected to the Internet?** **a) TELNET** ✗ **b) SMTP** ✗ **c) FTP** ✓ **d) HTTP** ✗
Explanation:	**FTP** is a standard network protocol used to **transfer files** between a **client and server** over the Internet. • It allows users to **upload, download, rename, delete, and manage files** on remote servers. • FTP operates over **TCP/IP** and typically uses **port 21**. • It can be accessed via command-line tools, web browsers, or dedicated FTP clients like **FileZilla**. ❌ Other Options: • **TELNET**: Used for **remote login** to another computer, not for file transfer. • **SMTP (Simple Mail Transfer Protocol)**: Used to **send emails**, not files. • **HTTP (Hypertext Transfer Protocol)**: Used to **access web pages**, not specifically designed for file transfer between computers.

Q. 43	**Bodo language is spoken mainly in which of the following states of India?** **a) Assam** ✔ **b) Manipur** ✘ **c) Meghalaya** ✘ **d) Arunachal Pradesh** ✘
Explanation:	**Bodo** is a **Tibeto-Burman language** primarily spoken in **Assam**, especially in the **Bodoland Territorial Region (BTR)**. • It is one of the **22 scheduled languages** of India under the **Eighth Schedule of the Constitution**. • Bodo has a rich literary tradition and is used in **education, administration, and media** within BTR. • The language gained national recognition after the **Bodo Accord (2003)** and subsequent cultural revival efforts. ❌ **Other Options:** • **B. Manipur**: Dominated by **Meitei (Manipuri)** and tribal languages; Bodo is not native here. • **C. Meghalaya**: Predominantly **Khasi, Garo, and Jaintia** languages; Bodo is not commonly spoken. • **D. Arunachal Pradesh**: Home to many tribal languages, but **Bodo is not among the major ones**.

Q. 44	**Which Indian Prime Minister is closely associated with initiating the 1991 LPG reforms?** **a) PV Narsimha Rao** ✔ **b) Raji Gandhi** ✘ **c) Indira Gandhi** ✘ **d) Atal Bihari Vajpayee** ✘
Explanation:	The **1991 LPG reforms** refer to India's shift towards **Liberalization, Privatization, and Globalization**, marking a major transformation in its economic policy. • These reforms were initiated under the leadership of **Prime Minister P.V. Narasimha Rao**, with **Dr. Manmohan Singh** as the **Finance Minister**. • Facing a **balance of payments crisis**, the government dismantled the **License Raj**, opened up the economy to **foreign investment**, and reduced **state control** over industries. • The reforms laid the foundation for **India's economic growth** in the decades that followed.

Q. 45	**In March 2025, the Gujarat government launched which scheme to uplift 50,000 Antyodaya families through economic development and women empowerment programmes?** **a) G-SAFAL** ✔ **b) G-SHAKTI** ✘ **c) G-SWARUPA** ✘ **d) G-SAMRIDHI** ✘
Explanation:	**Antyodaya Anna Yojana (AAY)**, launched in **2000**, provides **highly subsidized food grains** to the **poorest families** under the **Public Distribution System**, ensuring food security for vulnerable households. **G-SAFAL (Gujarat Scheme for Antyodaya Families for Augmenting Livelihoods)** In **March 2025**, the **Gujarat government** launched the **G-SAFAL scheme** to uplift **50,000 Antyodaya Anna Yojana (AAY) cardholder families** through targeted **economic development** and **women empowerment** initiatives. • **Launched by**: Chief Minister **Bhupendra Patel** • **Implementing Agency**: Gujarat Livelihood Promotion Company Ltd. (GLPC) • **Coverage**: 25 talukas across 10 districts • **Grant Support**: ₹80,000 per family for income generation • **Digital Innovation**: Ring-Fencing Digital Wallet Transfer System for secure fund usage • **Focus Areas**: ◦ Skill training and livelihood creation ◦ Financial inclusion and social security ◦ Women's empowerment through field coaches and SHGs

Q. 46	**Rajendra Chola I is known for his naval expeditions on the revived Sri Vijaya empire of:** **a) Cambodia** ✗ **b) Myanmar** ✗ **c) Indonesia** ✓ **d) Sri Lanka** ✗
Explanation:	**Rajendra Chola I is known for his naval expeditions on the revived Sri Vijaya empire of Sumatra.** • The **Sri Vijaya Empire**, based in **Sumatra (modern-day Indonesia)**, was a powerful maritime kingdom that dominated Southeast Asian trade routes. • In **1025 CE**, **Rajendra Chola I**, one of the greatest rulers of the **Chola dynasty**, launched a **naval campaign** against Sri Vijaya to assert **Chola supremacy over maritime trade** in the Indian Ocean. • His fleet attacked key ports like **Kedah, Srivijaya (Palembang), and Tambralinga**, disrupting the empire's control over the **Malacca Strait**. • This expedition showcased the **Cholas' naval strength**, making them one of the few Indian empires to project power beyond the subcontinent.

Q. 47	**Litmus solution is extracted from which organism?** **a) Hydrangea** ✗ **b) Geranium** ✗ **c) Petunia** ✗ **d) Lichen** ✓

Explanation:	**Litmus** is a natural pH indicator extracted from certain species of **Lichens**, especially those belonging to the genus **Roccella**.
	• It is used to detect **acidity or alkalinity** of a solution:
	  ◦ Turns **red in acidic** conditions
	  ◦ Turns **blue in basic** conditions
	• Lichens are **symbiotic organisms** composed of **fungus and algae or cyanobacteria**, and they produce complex organic compounds like **litmus dye**.
	• Litmus is commonly used in **laboratories and educational settings** for quick pH testing.
	❌ **Other Options:**
	• **Hydrangea**: Known for flowers that change color based on soil pH, but **not used to extract litmus**.
	• **Geranium**: A flowering plant with no role in **pH indicators or dye extraction**.
	• **Petunia**: Ornamental plant, not associated with **litmus or chemical indicators**.

Q. 48	**In May 2025, China announced visa-free entry for all member countries of which regional organisation?** **a) SAARC** ✗ **b) EU** ✗ **c) GCC** ✓ **d) ASEAN** ✗
Explanation:	The **Gulf Cooperation Council (GCC)** includes: **Saudi Arabia, UAE, Oman, Kuwait, Bahrain, and Qatar**. • China's move aims to **boost tourism, trade, and diplomatic ties** with the Gulf region. • This is part of China's broader strategy to expand **unilateral visa-free access**, which now covers **43 countries**, including several in **Latin America and Southeast Asia**.

Q. 49	**In Vaishnavism, how many avatars or incarnation of deity were recognized?** **a)** 9 ✗ **b)** 7 ✗ **c)** 5 ✗ **d)** 10 ✓
Explanation:	In **Vaishnavism**, the tradition recognizes **ten principal avatars** of Lord Vishnu, collectively known as the **Dashavatara** (दशावतार). ✅ **The Ten Avatars of Vishnu (Dashavatara):** 1. **Matsya** – The fish incarnation 2. **Kurma** – The tortoise incarnation 3. **Varaha** – The boar incarnation 4. **Narasimha** – The half-man, half-lion incarnation 5. **Vamana** – The dwarf Brahmin incarnation 6. **Parashurama** – The warrior with an axe 7. **Rama** – The prince of Ayodhya, hero of Ramayana 8. **Krishna** – The divine cowherd, central figure of Mahabharata and Bhagavad Gita 9. **Buddha** – The enlightened one (accepted in many Vaishnava traditions) 10. **Kalki** – The future incarnation, yet to appear, who will end the age of darkness (Kali Yuga) These avatars are believed to descend in different **Yugas (ages)** to restore **dharma (cosmic order)** and protect the righteous. Some texts and traditions also mention **additional or partial incarnations**, but the Dashavatara remains the most widely accepted list.

Q. 50	**Article 239 deals with the:** **a) Administration of union territories by Prime Minister** ✗ **b) Administration of union territories by President** ✓ **c) Administration of union territories by Lt. Governor** ✗ **d) Administration of union territories by Cabinet Ministers** ✗
Explanation:	**Article 239** of the **Indian Constitution** provides that **Union Territories** shall be administered by the **President of India**, through an **administrator** appointed by him. • This administrator may be designated as a **Lieutenant Governor**, **Chief Commissioner**, or **Administrator**, depending on the UT. • The President exercises executive power over UTs **indirectly**, via these appointed officials. **Enrichment:** • **Delhi and Puducherry** have **Legislative Assemblies**, but their administration still falls under Article 239, with special provisions under **Articles 239AA and 239A** respectively. • The role of the **Lt. Governor** is prominent in UTs like **Delhi**, where constitutional debates often arise over the extent of his powers.

Q. 51	**Select the number from the given options, that has the same relation to the fifth number as the second and fourth numbers have with the first and third numbers respectively.** **24 : 2364 :: 38 : 31218 :: 56 : ?** **a) 51216** ✓ **b) 51126** ✗ **c) 23116** ✗ **d) 49160** ✗
Explanation:	Just as, • 2 4 → $(2+4)^2 = 36$ → 2 **36** 4 • 3 8 → $(3+8)^2 = 121$ → 3 **121** 8 Similarly, • 5 6 → $(5+6)^2 = 121$ → 5 **121** 6

Q. 52	**Select the option that is related to the third number in the same way as the second number is related to the first number.** **15 : 8 :: 25 : ?** **a)** 9 ✗ **b)** 15 ✗ **c)** 25 ✗ **d)** 10 ✓
Explanation:	Logic: Divide by 5, and then +5 $15 \rightarrow 15 \div 5 + 5 = 3 + 5 = 8$ $25 \rightarrow 25 \div 5 + 5 = 5 + 5 = 10$

Q. 53	**Select the term that can replace the question mark (?) in the following analogy.** **PEAR : 40 :: NOTE : 54 :: LAMP : ?** **a)** 43 ✗ **b)** 42 ✓ **c)** 41 ✗ **d)** 40 ✗
Explanation:	$\text{PEAR} = 16 + 5 + 1 + 18 = \mathbf{40}$ $\text{NOTE} = 14 + 15 + 20 + 5 = \mathbf{54}$ $\text{LAMP} = 12 + 1 + 13 + 16 = \mathbf{42}$

Q. 54	**In a certain code language, ROBIN is written as TRFNT and MANGO is written as ODRLU. How will CLOUD be written in that language?** **a) EQSYJ** ✗ **b) EQSWJ** ✗ **c) EQSXJ** ✗ **d) EOSZJ** ✓
Explanation:	Just as, • ROBIN → R(+2)=T, O(+3)=R, B(+4)=F, I(+5)=N, N(+6)=T → **TRFNT** • MANGO → M(+2)=O, A(+3)=D, N(+4)=R, G(+5)=L, O(+6)=U → **ODRLU** Similarly, • CLOUD → C(+2)=E, L(+3)=O, O(+4)=S, U(+5)=Z, D(+6)=J → **EOSZJ**

Q. 55	**In a certain code language, "PARAMETER" is written as "APRMAEETR". How will "DEVELOPER" be written in that language?** **a) EVDLEOPRS** ✗ **b) EDVELOEPR** ✗ **c) EDVLEOEPR** ✓ **d) EDDELPOER** ✗
Explanation:	

Q. 56

In this question, a group of numbers/symbols is coded using letters as per the table given below and the conditions which follow. The correct combination of codes following the condition is your answer.

Number/Symbol	2	6	%	@	?	4	<	3	7	=	!	&	9	8
Code	K	S	R	T	U	M	W	Y	A	V	C	X	E	B

Conditions:
(i) If the first element is a number and the last a symbol, the codes for these two are to be interchanged.
(ii) If the first element is an even number and the last an odd number, the first and the last elements are to be coded as Ø.
(iii) If both the second and third elements are perfect squares, the third element is to be coded as the code for the second element.

How will 3 = 7 4 % be coded?

a) RVAMY ✔

b) MVSBY ✘

c) XCRBY ✘

d) SVYBR ✘

Explanation:

According to the question,
From condition (i) –
3 = 7 4 % → **R V A M Y**

Hence, option (a) is correct.

Q. 57

If the sum of number-clusters 395 and 727 is represented as 101112; and by the same code, the sum of number clusters 276 and 957 is represented as 111213, then which of the following will be the code for sum of number clusters 689 and 877?

a) 141517 ✘

b) 141617 ✘

c) 151312 ✘

d) 141516 ✔

Explanation:

Solution:

- 395 + 727 → (3+7=10, 9+2=11, 5+7=12) → **101112**
- 276 + 957 → (2+9=11, 7+5=12, 6+7=13) → **111213**
- 689 + 877 → (6+8=14, 8+7=15, 9+7=16) → **141516**

Q. 58	**If 45 C 15 D 36 = 108 and 64 C 16 D 4 = 16, then 84 C 12 D 14 =?** **a)** 92 ✗ **b)** 98 ✓ **c)** 86 ✗ **d)** 88 ✗
Explanation:	Rule: X C Y D Z = (X ÷ Y) × Z • 45 C 15 D 36 = (45 ÷ 15) × 36 = 3 × 36 = **108** • 64 C 16 D 4 = (64 ÷ 16) × 4 = 4 × 4 = **16** Similarly, • 84 C 12 D 14 = (84 ÷ 12) × 14 = 7 × 14 = **98**

Q. 59	**If Book = CqrO, and Page = QcjI, then "Word" will be equal to:** **a)** Xquh ✗ **b)** XqvH ✗ **c)** XruH ✗ **d)** XquH ✓
Explanation:	**Solution** Rule: Each letter is shifted forward sequentially: **+1, +2, +3, +4** • Book → B(+1)=C, o(+2)=q, o(+3)=r, k(+4)=O → **CqqO** • Page → P(+1)=Q, a(+2)=c, g(+3)=j, e(+4)=I → **QcjI** Similarly, • Word → W(+1)=X, o(+2)=q, r(+3)=u, d(+4)=H → **XquH**

Q. 60	**Pick the odd one out.** **3-6, 4-8, 6-18, 8-32, 10-50** **a) 8-32** ✗ **b) 6-18** ✗ **c) 4-8** ✗ **d) 3-6** ✓
Explanation:	**Solution:** From the given options, (a) $32 - 8 = 24$ (Even) (b) $18 - 6 = 12$ (Even) (c) $8 - 4 = 4$ (Even) (d) $6 - 3 = 3$ (Odd) The difference of all the digits is an even number, whereas the difference of 3-6 is an odd number. Logic: II To find the pattern, divide the first number by 2 and multiply the result with the first number: • 4-8 → $(4 \div 2) \times 4 = 2 \times 4 = 8$ ✔ • 6-18 → $(6 \div 2) \times 6 = 3 \times 6 = 18$ ✔ • 8-32 → $(8 \div 2) \times 8 = 4 \times 8 = 32$ ✔ • 10-50 → $(10 \div 2) \times 10 = 5 \times 10 = 50$ ✔ • 3-6 → $(3 \div 2) \times 3 = 1.5 \times 3 = 4.5$ ❌ So, 3-6 is the odd one out because it does not follow the pattern.

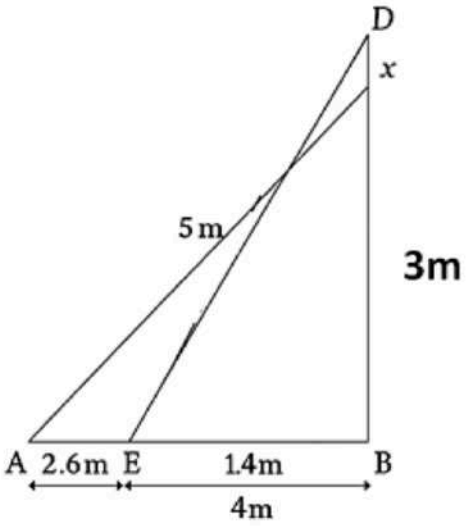
Q. 61	**Rearrange the cluttered letters to form a meaningful word and find the odd one out.** **a) OLENV** ✗ **b) EISTSH** ✓ **c) AGZEANIM** ✗ **d) TCAYRIDION** ✗
Explanation:	**Solution:** On rearranging the letters: (a) OLENV ⇒ NOVEL (b) EISTSH ⇒ THESIS (c) AGZEANIM ⇒ MAGAZINE (d) TCAYRIDION ⇒ DICTIONARY Except option (b), all others are general printed material that is sold in the market, while **thesis** is written by students. Hence, option (b) is the odd one.

Q. 62	**Which of the following numbers will replace the question mark (?) in the given series?** **4, 5, 9, 18, ?, 59, 95** **a) 34** ✓ **b) 24** ✗ **c) 33** ✗ **d) 35** ✗
Explanation:	**Solution:** The given series follows the pattern: • First term + $1^2 \rightarrow 4 + 1 = 5$ • Second term + $2^2 \rightarrow 5 + 4 = 9$ • Third term + $3^2 \rightarrow 9 + 9 = 18$ • Fourth term + $4^2 \rightarrow 18 + 16 = 34$ • Fifth term + $5^2 \rightarrow 34 + 25 = 59$ • Sixth term + $6^2 \rightarrow 59 + 36 = 95$ Hence, $? = 18 + 16 = 34$

Q. 63	**Select the number from among the given options that can replace the question mark (?) in the following series:** **47, 64, 448, ?, 2315, 2328, 6984** **a) 459** ✗ **b) 463** ✓ **c) 461** ✗ **d) 465** ✗
Explanation:	**Solution:** The given series follows the pattern: • 47 → 64 → 448 → 463 → 2315 → 2328 → 6984 • Pattern of operations: +17, ×7, +15, ×5, +13, ×3 • Adjustments: Each addition is decreased by 2 in subsequent steps: 17, 15, 13... Hence, ? = 463

Q. 64	**Select the option that represents the letters that, when placed from left to right in the same sequence in the blanks below, will complete the letter series.** **H J D _ K _ R _ QH _ D P _ DR H _** **a) PDHJKQ** ✓ **b) PDHJLQ** ✗ **c) PEHJKQ** ✗ **d) PDIJKQ** ✗
Explanation:	H J D P K D R H Q/ H J D P K D R H Q

Q. 65	From point P, facing towards north, a person travels 3 km to reach point A, then turns left and travels 5 km to reach point B, then turns right and travels 3 km to reach point C, then turns right and travels 7 km to reach point D, then turns right and travels 7 km to reach point E, then turns right and travels 5 km to reach point F. In which direction is the person facing at point F? a) West ✔ b) North ✘ c) South ✘ d) East ✘
Explanation:	**Solution:** 1. Start at point **P**, facing **north**. 2. Travels **3 km north** to reach point **A**. 3. Turns **left** → now facing **west** → travels **5 km** to reach point **B**. 4. Turns **right** → now facing **north** → travels **3 km** to reach point **C**. 5. Turns **right** → now facing **east** → travels **7 km** to reach point **D**. 6. Turns **right** → now facing **south** → travels **7 km** to reach point **E**. 7. Turns **right** → now facing **west** → travels **5 km** to reach point **F**. **Direction in front of F:** • At **F**, the person is facing **west**, so the direction **in front** is **west**.

Q. 66	A 5 m long ladder is leaning against a wall and it reaches the wall at a height of 3 m. If the foot of the ladder is moved 2.6 m towards the wall, then the distance by which the top of the ladder slides upwards on the wall is: a) 1.08 m ✗ b) 5.6 m ✗ c) 1.8 m ✓ d) 4.8 m ✗
Explanation:	 Solution: • Let the top slide upwards by x m. • Consider the right triangle formed after moving the ladder: $ED^2 = EB^2 + DB^2$ $5^2 = (1.4)^2 + (3 + x)^2$ $25 = 1.96 + (3 + x)^2$ $23.04 = (3 + x)^2$ $3 + x = 4.8$ $x = 4.8 - 3 = 1.8$ m Hence, the top of the ladder slides 1.8 m upward.

Q. 67	**If '+' means 'division', '-' means 'addition', '×' means 'subtraction', and '÷' means 'multiplication', then what will be the value of the following expression?** $\left[(20 \times 18) - \left(\frac{6}{2}\right) + (5 - 2)\right]$ **a)** 26/7 ✔ **b)** 5/7 ✘ **c)** 12/7 ✘ **d)** 9/7 ✘
Explanation:	$\left[(20 \times 18) - \left(\frac{6}{2}\right) + (5 - 2)\right]$ $(20 - 18) + (6 \times 2)/(5 + 2)$ $= \frac{26}{7}$

Q. 68	**If '>' means '+', '<' means '-', '+' means '÷', '^' means '×' and '-' means '=', then find the true given equation:** **a)** 6 < 18 + 3 > 10 ^ 3 - 32 ✘ **b)** 10 < 9 + 3 ^ 6 > 5 - 47 ✘ **c)** 6 < 18 + 3 > 12 ^ 3 - 48 ✘ **d)** 7 < 18 + 2 ^ 12 > 3 - 2 < 100 ✔
Explanation:	**7 < 18 + 2 ^ 12 > 3 - 2 < 100** → Replace symbols: **7 - 18 ÷ 2 × 12 + 3 = 2 - 100** Now solve left to right with correct precedence: • 18 ÷ 2 = 9 • 9 × 12 = 108 • 7 - 108 = -101 • -101 + 3 = -98 • So, LHS = -98 • RHS = 2 - 100 = -98 ✔ ✅ Both sides equal −98, so **option 4 is the correct and true equation**.

Q. 69

Seven friends A, B, C, D, E, F and G belong to seven cities namely Shimla, Manali, Agra, Jaipur, Goa, Guwahati and Darjeeling but not necessarily in the same order. Each one of them belongs to only one city. D belongs to Darjeeling, F and G belong to Manali and Shimla respectively, B belongs to Agra. One among C and E belongs to Guwahati, A does not belong to Goa. Who belongs to Jaipur?

a) A ✔

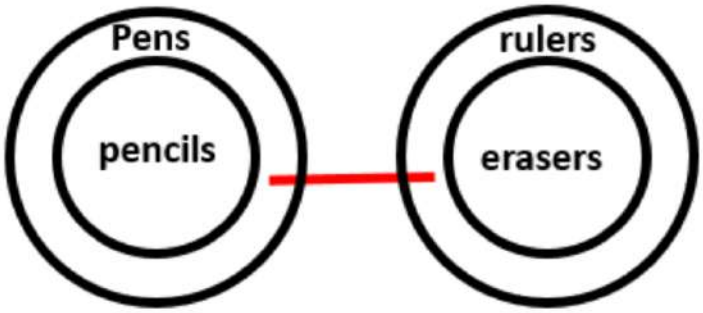
b) B ✘

c) C ✘

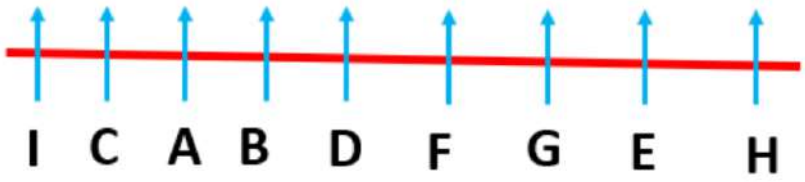
d) E ✘

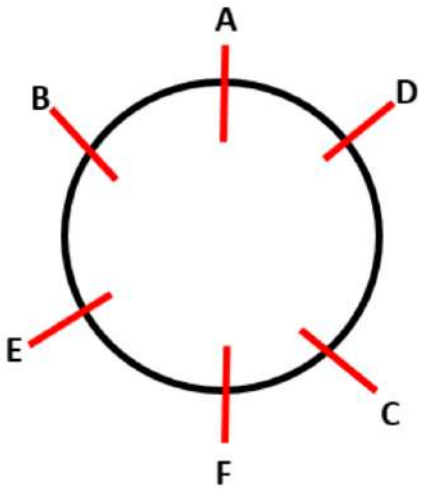
Explanation:

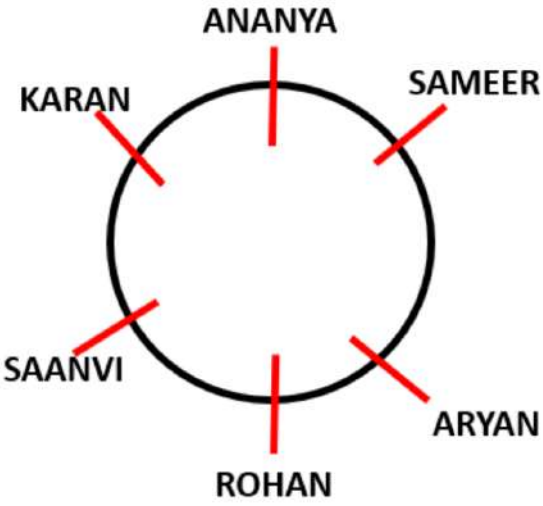
Friend	City
A	Jaipur
B	Agra
C	Guwahati/Goa
D	Darjeeling
E	Guwahati/Goa
F	Manali
G	Shimla

Q. 70	**Statements:** **All pencils are pens.** **No pen is a ruler.** **All erasers are rulers.** **Conclusions:** **I. No pencil is a ruler.** **II. No eraser is a pen.** **a) Neither conclusion I nor II follows** ✗ **b) Both conclusions I and II follow** ✓ **c) Only conclusion II follows** ✗ **d) Only conclusion I follows** ✗
Explanation:	 From the diagram: • Conclusion I: No pencil is a ruler → True • Conclusion II: No eraser is a pen → True Hence, **both conclusion I and II follow**.

Q. 71	**Statement:** **Anika studies in class 10. Is Anika older than her classmate Meera in age?** **Conclusions:** **I. Yes, because Meera is a classmate of Anika, Meera is younger than her.** **II. No, because Meera is a classmate of Anika, Meera is older than her.** **a) Only conclusion I follows** ✗ **b) Only conclusion II follows** ✗ **c) Neither conclusion I nor II follows** ✓ **d) Either conclusion I or II follows** ✗
Explanation:	**Solution:** • The statement only tells us that Anika and Meera are classmates. • There is **no information about their ages**. • Hence, **neither conclusion I nor II logically follows**.

Q. 72	**Nine friends A to I are sitting in a straight row, facing north. D is sitting in the middle of the row and his immediate left and right neighbours are B and F, respectively. I is sitting at one of the extreme ends and his immediate right neighbour is C. Only five people are there between C and E. E is sitting between G and H. F and G are immediate neighbours. How many people are there between F and H?** **a) Four** ✗ **b) Five** ✗ **c) Two** ✓ **d) One** ✗
Explanation:	 Hence, there are **two people** between F and H.

Q. 73	Six friends A, B, C, D, E and F are sitting around a circular table facing the center, discussing the outcome of a cricket match. C is an immediate neighbour of both D and F. E is not the immediate neighbour of D. B is seated second to the left of F. Which of the following options represents C's position from A? a) Third to the left ✗ b) Second to the right ✗ c) Second to the left ✓ d) Immediate right ✗
Explanation:	 From the arrangement, **C is second to the left of A**.

Q. 74	Six persons are sitting around a circular table facing the center. Aryan is an immediate neighbour of both Rohan and Sameer. Karan sits second to the left of Rohan. Ananya sits second to the right of Aryan. Karan is an immediate neighbour of both Saanvi and Ananya. Who is an immediate neighbour of both Rohan and Karan? **a)** Saanvi ✔ **b)** Ananya ✘ **c)** Rohan ✘ **d)** Aryan ✘
Explanation:	

Q. 75	**Refer to the following letter arrangement and answer the question that follows:** **Series:** **A W S X Z E C D R V F T B H N M H Y J K I O L** **Question:** **How many letters are there in the given series between the letter that is third from the left end and the second vowel from the right end of the given series?** **a)** 17 ✓ **b)** 16 ✗ **c)** 19 ✗ **d)** 15 ✗
Explanation:	A W S X Z E C D R V F T B H N M H Y J K I O L • Third letter from the left end = **S** • Second vowel from the right end =(checking vowels from right: O, I → second vowel = I) • Letters between **S** and **I** in the series: • X Z E C D R V F T B H N M H Y J K • Total letters = **17** Hence, the answer is **17**.

Q. 76	**1, 2, 3, 4, 5 and 6 are six cakes with different weights in a bakery. Only two cakes are heavier than 4. 2 is heavier than 1 but lighter than 6. 6 is lighter than 4. 3 is not the heaviest cake. Which of the following cakes is the heaviest?** **a)** 1 ✗ **b)** 2 ✗ **c)** 3 ✗ **d)** 5 ✓
Explanation:	Arrange the cakes according to weight in decreasing order: $5 > 3 > 4 > 6 > 2 > 1$

Q. 77	**It was Thursday, February 1, 2007. What was the day of the week on February 2, 2006?** **a) Wednesday** ✗ **b) Thursday** ✓ **c) Saturday** ✗ **d) Friday** ✗
Explanation:	**Solution:** • Both 2006 and 2007 are **not leap years**, so February has 28 days in both years. • 1 February 2007 → Thursday • Move back **1 year**: 1 February 2006 → Wednesday • 2 February 2006 → **Thursday** Hence, the day of the week on 2 February 2006 is **Thursday**.

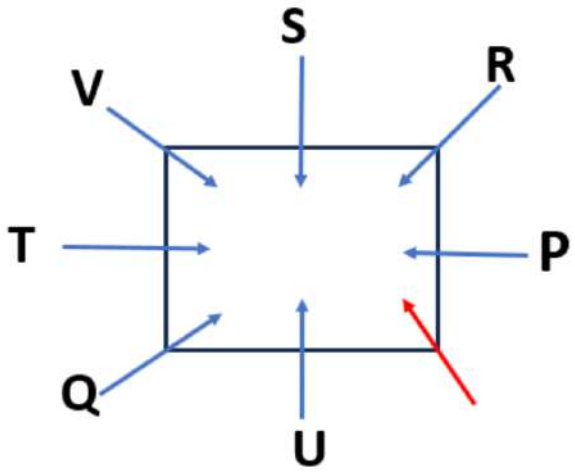
Q. 78	**A watch loses 5 minutes every hour and was set right at 6 a.m. on a Monday. When will it show the correct time again?** **a) 6 a.m. on next Sunday** ✓ **b) 3 a.m. on next Monday** ✗ **c) 3 a.m. on next Sunday** ✗ **d) 6 a.m. on next Monday** ✗
Explanation:	**Solution:** • Watch loses **5 minutes per hour**. • In 24 hours → 24 × 5 = 120 minutes = **2 hours** behind in 1 day. • To be exactly 12 hours behind → 12 ÷ 2 = 6 days. • Therefore, after **6 days**, the watch will show the correct time again. • Set at **6 a.m. Monday** → 6 days later → **6 a.m. Sunday** Hence, the watch will show the correct time at **6 a.m. on next Sunday**.

Q. 79	**Among the following words, which one will come third if they are arranged as per their order in an English dictionary?** **Words: Sententious, Sentimentally, Sentinel, Sentence** **a) Sententious** ✗ **b) Sentimentally** ✓ **c) Sentinel** ✗ **d) Sentence** ✗
Explanation:	Arrange the words in dictionary order: Sentence → Sententious → Sentimentally → Sentinel

Q. 80	**What would be the highest value of X in the given equation?** **5X1 + 6Y7 + 3Z3 = 1471** **a) 5** ✗ **b) 6** ✓ **c) 7** ✗ **d) 3** ✗
Explanation:	**Solution:** • For the highest value of **X**, take the **lowest value of Y and Z**. • So, let Y = Z = 0 $$5X1 + 607 + 303 = 1471$$ $$5X1 = 1471 - 910 = 561$$ $$X = 6$$ Hence, the **maximum possible value of X = 6**.

Q. 81	**Out of the four given equations, the first three are solved on the basis of a certain system, where the function of the ✦ remains the same. Find the correct answer for the unsolved fourth equation on the same basis.** **I. $6 ✦ 2 = 9$** **II. $4 ✦ 5 = 12$** **III. $7 ✦ 3 = 14$** **IV. $3 ✦ 3 = ?$** **a) 6** ✔ **b) 8** ✘ **c) 3** ✘ **d) 12** ✘
Explanation:	I. $6 ✦ 2 = ((6 \times 2) + 6) \div 2 = (12 + 6) \div 2 = 18 \div 2 = 9$ II. $4 ✦ 5 = ((4 \times 5) + 4) \div 2 = (20 + 4) \div 2 = 24 \div 2 = 12$ III. $7 ✦ 3 = ((7 \times 3) + 7) \div 2 = (21 + 7) \div 2 = 28 \div 2 = 14$ IV. $3 ✦ 3 = ((3 \times 3) + 3) \div 2 = (9 + 3) \div 2 = 12 \div 2 = 6$

Q. 82	**If $8 + 5 = 1340$ is true, then find the value of $4 + 6$.** **a) 1024** ✔ **b) 1304** ✘ **c) 1414** ✘ **d) 1012** ✘
Explanation:	$8 + 5 \rightarrow 13\ 40$ $(8 + 5 = 13)$ and $(8 \times 5 = 40)$ Similarly, $4 + 6 \rightarrow 10\ 24$ $(4 + 6 = 10)$ and $(4 \times 6 = 24)$

Q. 83	P, Q, R, S, T, U and V were seven kids sitting around a square table, facing the centre. Three of them were sitting at the corners while four others were sitting at the exact centre of the sides. One of the corners was empty. U, sitting at one of the centre of the sides, was second to the right of T. There was one empty chair between P and U. R and Q were diagonally opposite to each other. T was at the immediate left of Q. S was to the immediate left of V. Who among the following was the kid at a corner position? a) T ✗ b) S ✗ c) U ✗ d) V ✓
Explanation:	

Q. 84

Letters are coded as numbers/symbols as per the table given below and the conditions which follow. Refer to the codes and conditions and then select the correct code for SQUARE.

Letters	T	P	J	Q	S	U	E	R	H	A
Number/Symbol	-	6	8	%	7	@	3	9	#	1

Conditions:
(i) If there is more than 1 vowel in the word, the vowels will be coded as 4.
(ii) If a word has consonants at both ends, both the consonants will be coded as 2.

a) 7%4493 ✗

b) 7%@193 ✗

c) 7%9493 ✗

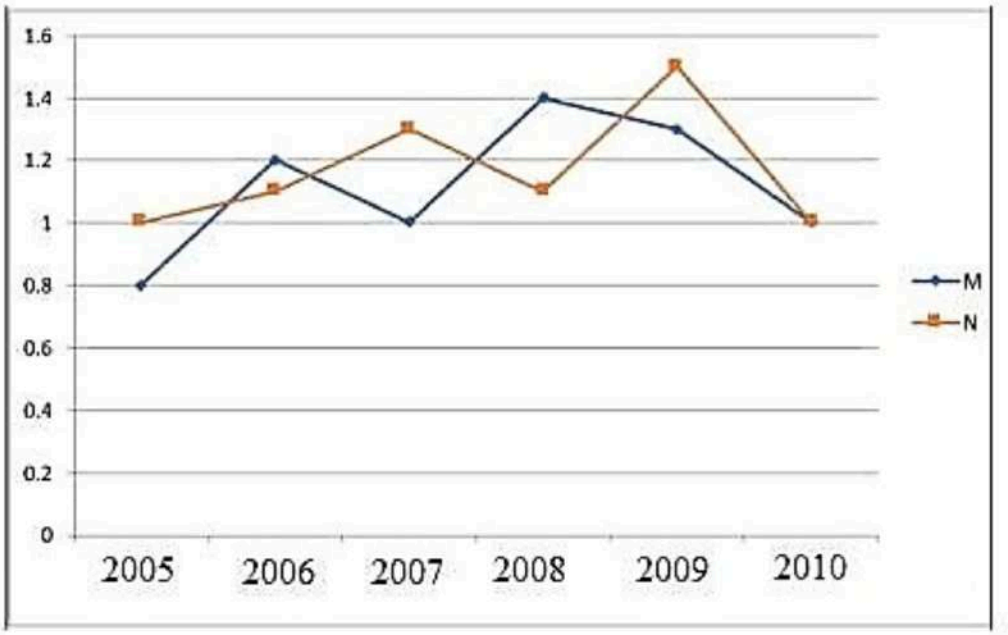
d) 7%4494 ✓

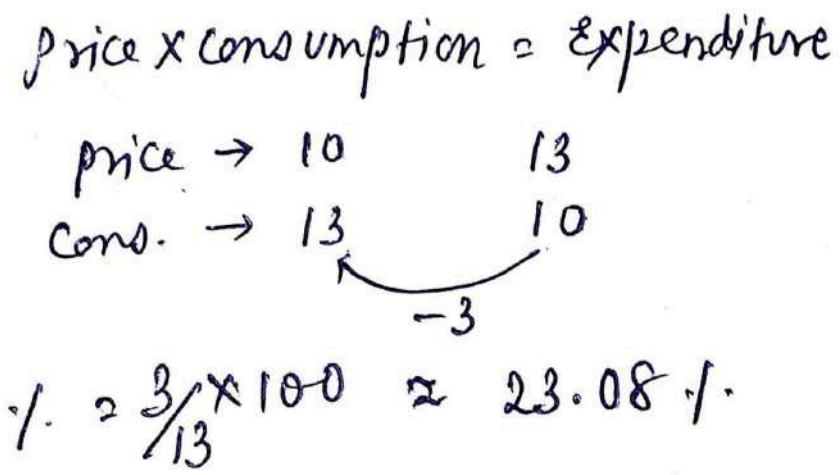
Explanation:

According to the question,
From condition (i) –

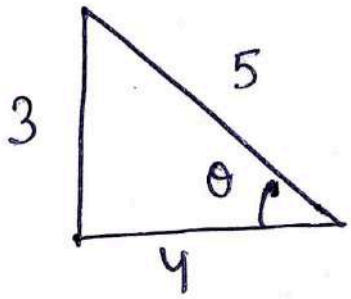
S Q U A R E → 7 % 4 4 9 4

Hence, option (d) is correct.

Q. 85	**Study the given graph and answer the question that follows.** **Ratio of imports to exports from two companies over the years.** **In how many of the given years were the imports more than the exports of Company N?**  **a)** 2 ✗ **b)** 3 ✗ **c)** 1 ✗ **d)** 4 ✓
Explanation:	For company N => 2005 => Ratio is 1 : 1, it means import and export are same. 2006 => Ratio is 11 : 10, it means import is greater than the export. 2007 => Ration is 13: 10, it means import is greater than the export. 2008 => Ration is 11 : 10, it means import is greater than the export. 2009 => Ratio is 3 : 2, it means import is greater than the export. 2010 => Ration is 1 :1, it means import and export are same. Therefore, in four years that is in 2006, 2007, 2008 and 2009 the import is greater than the export.

Q. 86	**The price of a commodity increases by 30%. By what percent should the consumption be reduced so that the expenditure remains the same?** **a)** 18.42% ✗ **b)** 21.23% ✗ **c)** 23.08% ✓ **d)** 25.12% ✗
Explanation:	

Q. 87	For a group of 10 items, $\sum X = 235$ and $\sum X^2 = 6750$. Find the standard deviation. a) 11.08 ✔ b) 28 ✘ c) 35.73 ✘ d) 20.79 ✘
Explanation:	$$S.D = \sqrt{\frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2}$$ $$= \sqrt{\frac{6750}{10} - \left(\frac{235}{10}\right)^2}$$ $$= \sqrt{675 - 552.25}$$ $$= 11.08$$

Q. 88	If $\sin\theta = 3/5$, and θ is acute, find the value of $\tan\theta + \cot\theta$. **a)** 17/12 ✗ **b)** 25/12 ✓ **c)** 29/12 ✗ **d)** 23/12 ✗
Explanation:	 $\tan\theta + \cot\theta$ $\Rightarrow 3/4 + 4/3 \Rightarrow \frac{9+16}{12}$ $\Rightarrow 25/12$ (Ans)

Q. 89	**In an election between two candidates, 15% of the total voters of a city did not vote. Of the votes cast, 10% were declared invalid. The winning candidate secured 65% of the valid votes and won with a majority of 1,29,438 votes. Find the number of registered voters.** **a)** 552000 ✗ **b)** 564000 ✓ **c)** 573000 ✗ **d)** 542000 ✗
Explanation:	winning margin = 65% − 35% = 30% 30% → 1,29,438 100% → $\frac{129438}{30} \times 100$ 4,31,460 $x \times \frac{85}{100} \times \frac{90}{100} = 431460$ $x \times \frac{17}{20} \times \frac{9}{10} = 431460$ $x = 2820 \times 200$ $x = 5,64,000$ (Ans)

Q. 90

Find the Value:

$$\frac{(p-q)^3+(q-r)^3+(r-p)^3}{9(p-q)(q-r)(r-p)}$$

a) 3 ✗

b) 1 ✗

c) 1/3 ✓

d) 2 ✗

Explanation:

If $a+b+c=0$

$a^3+b^3+c^3=3abc$

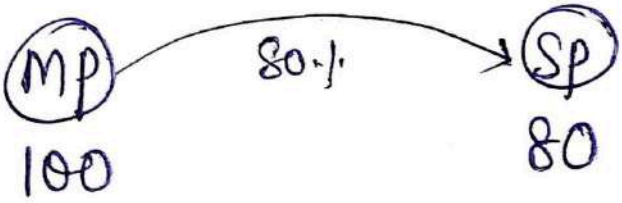
$$\Rightarrow \frac{(p-q)^3+(q-r)^3+(r-p)^3}{9(p-q)(q-p)(r-p)}$$

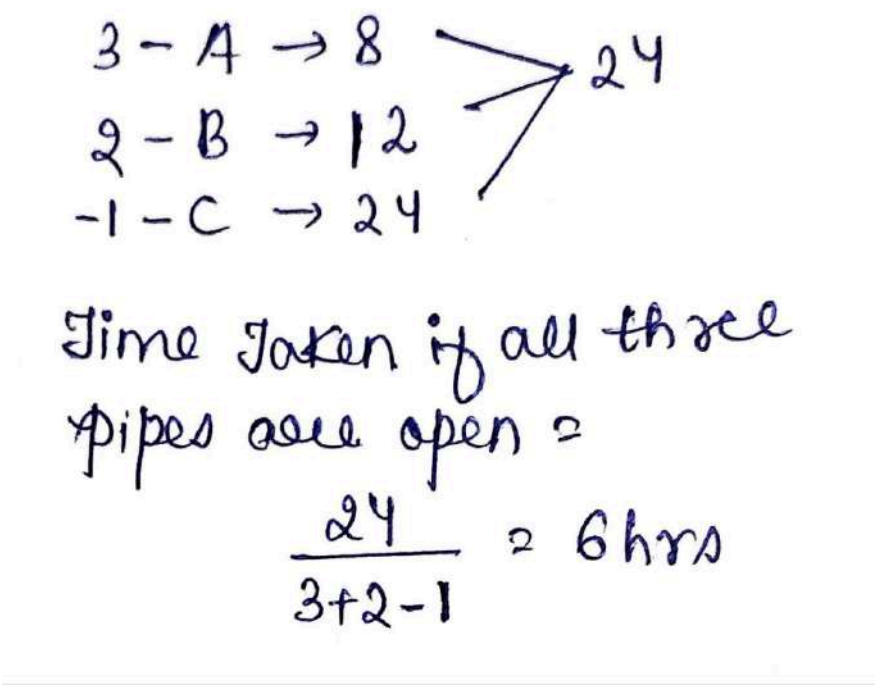
$$\Rightarrow \frac{3(p-q)(q-r)(r-p)}{9(p-q)(q-r)(r-p)}$$

$\Rightarrow 1/3$ (Ans)

Q. 91	**Two wheels are connected by a belt. The radius of the larger wheel is 42 cm, and that of the smaller wheel is 28 cm. If the larger wheel makes 20 revolutions, how many revolutions will the smaller wheel make?** **a)** 25 ✗ **b)** 30 ✓ **c)** 20 ✗ **d)** 15 ✗
Explanation:	Larger wheel circumference = $2\pi \times 42 = 84\pi$ cm Smaller wheel circumference = $2\pi \times 28 = 56\pi$ cm Distance covered by larger wheel (belt) $\Rightarrow 84\pi \times 20 \Rightarrow 1680\pi$ Revolution of small wheel = $\frac{1680\pi}{56\pi} = 30$ ∴ Smaller wheel makes 30 revolutions.

Q. 92	**Find the value:** $3\frac{2}{3} \div \frac{11}{15} of \frac{2}{3} \times \frac{1}{10} + 2\frac{1}{2}$ **a)** 11/4 ✗ **b)** 13/4 ✓ **c)** 9/4 ✗ **d)** 7/4 ✗
Explanation:	$3\frac{2}{3} \div 11/15$ of $2/3 \times 1/10 + 2\frac{1}{2}$ $\Rightarrow 11/3 \div \frac{22}{45} \times 1/10 + 5/2$ $\Rightarrow 11/3 \times \frac{45}{22} \times 1/10 + 5/2$ $\Rightarrow 15/2 \times 1/10 + 5/2 \Rightarrow 3/4 + 5/2$ $\Rightarrow 13/4$ (Ans)

Q. 93	A person sells an article at 80% of its marked price and earns a profit of 20%. Find the ratio of the cost price to the marked price. **a)** 1: 4 ✗ **b)** 2 : 3 ✓ **c)** 3 : 5 ✗ **d)** 3 : 4 ✗
Explanation:	 $CP = \frac{80 \times 5}{6} = \frac{200}{3}$ $CP : MP = \frac{200}{3} : 100$ $\Rightarrow 2 : 3$ (Ans)

Q. 94	Two inlet pipes A and B fill a tank in 8 hours and 12 hours respectively. A drain C can empty the full tank in 24 hours. If all three are open, how long to fill the tank? **a)** 6 hrs ✔ **b)** 8 hrs ✘ **c)** 9 hrs ✘ **d)** 4 hrs ✘
Explanation:	

Q. 95

The following table shows the marks obtained by 50 students in a test:

Marks	Number of Students
0–10	5
10–20	8
20–30	12
30–40	15
40–50	6
50–60	4

Find the mode of the marks.

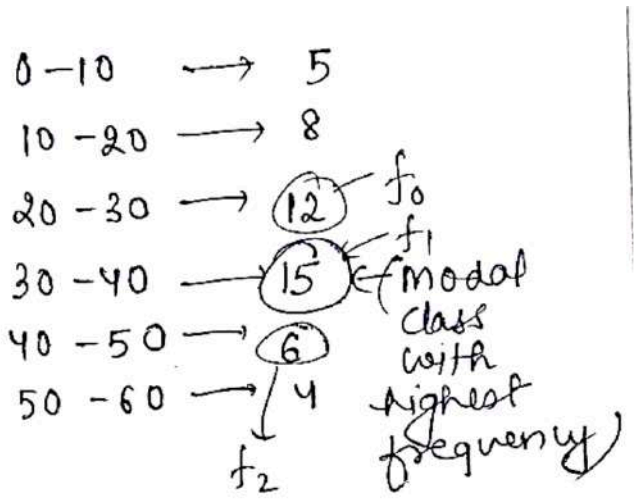
a) 30.2 ✗

b) 29.7 ✗

c) 34.6 ✗

d) 32.5 ✓

Explanation:



modal class = 30-40

$l = 30, h = 10$

$f_0 = 12, f_1 = 15, f_2 = 6$

$$\text{Mode} = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h$$

$$\Rightarrow 30 + \frac{15 - 12}{2 \times 15 - 12 - 6} \times 10$$

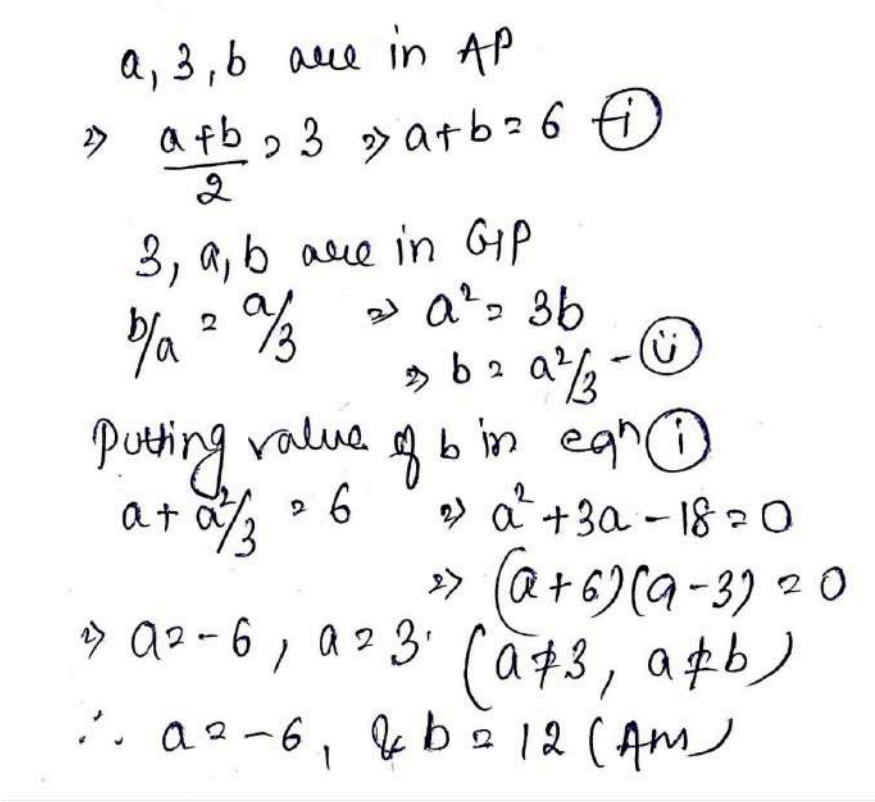
$$\Rightarrow 30 + \frac{30}{12} \Rightarrow 30 + 2.5$$

$$\Rightarrow 32.5$$

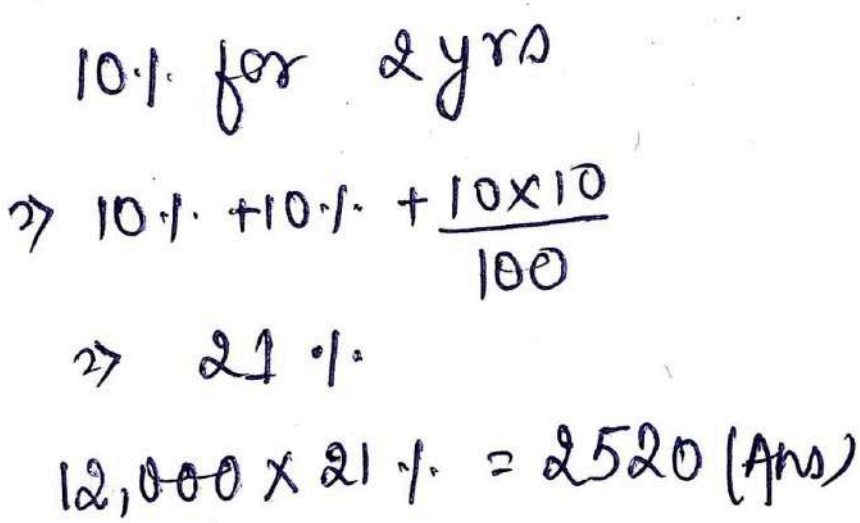
$\therefore$ Mode = 32.5 (Ans)

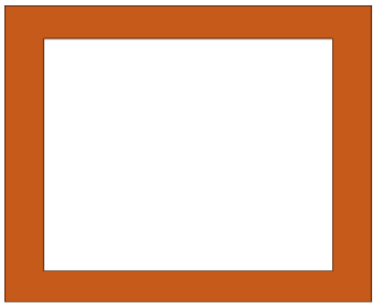
Q. 96	A cylinder has total surface area 1064π cm^2 and height 24 cm. Its volume is 1/16 of the volume of a cone having height 66 cm. Find the radius of the cone in cm. **a)** 48.5 cm ✗ **b)** 58.5 cm ✓ **c)** 64 cm ✗ **d)** 52 cm ✗
Explanation:	$2\pi r(r+h) = 1064\pi$ $r(r+h) = 532$ $r(r+24) = 14 \times 38$ $\boxed{r = 14}$ $\pi r^2 h = \frac{1}{3}\pi r_1^2 h \times \frac{1}{16}$ $14 \times 14 \times 24 = \frac{1}{3} r_1^2 \times 66 \times \frac{1}{16}$ $4704 = r_1^2 \times \frac{11}{8}$ $r_1^2 = 3429$ $r_1 = \sqrt{3429}$ $= 58.48$

Q. 97	A cyclist rides 15 km at 10 km/h and 25 km at 15 km/h. He then covers 10 km at x km/h. If the average speed for the entire journey is 12 km/h, find x. a) 8 km/hr ✗ b) 9 km/hr ✗ c) 12 km/hr ✗ d) 10 km/hr ✓
Explanation:	$\frac{15+25+10}{15/10+25/15+10/x} = 12$ $\Rightarrow \frac{50}{3/2+5/3+10/x} = 12$ $\Rightarrow 50 = 18+20+\frac{120}{x}$ $\Rightarrow 12 = \frac{120}{x} \Rightarrow x = 10\ km/hr$

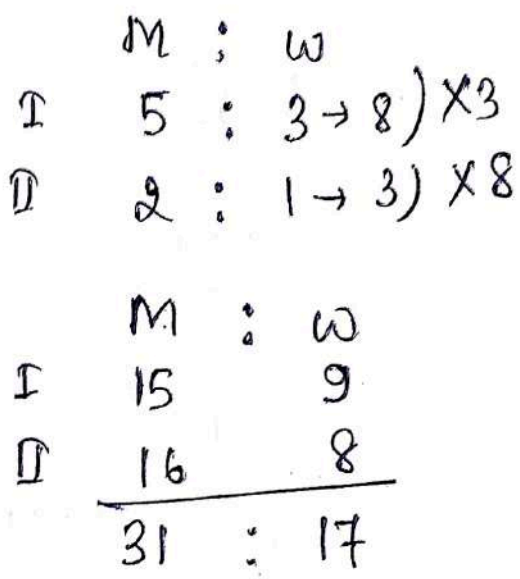
Q. 98	The terms a, 3, b are in A.P. and the terms 3, a, b are in G.P. If a ≠ b, find the values of a and b. a) -4,10 ✗ b) -6, 12 ✓ c) -8,14 ✗ d) 4,2 ✗
Explanation:	

Q. 99	**k is the largest number which, when divide by 3276, 5148, and 4212, leaves the same remainder. Find the product of the digits of k.** **a) 183** ✗ **b) 174** ✗ **c) 216** ✗ **d) 162** ✓
Explanation:	3276, 5148, 4212 4212- 3276 = 936 5148 – 3276 = 936 HCF of (936,936) = 936 K = 936 9 * 3 * 6 = 162

Q. 100	**A sum of ₹12,000 is invested at a compound interest rate of 10% per annum. What will be the total interest earned after 2 years?** **a) ₹2,860** ✗ **b) ₹2,460** ✗ **c) ₹2,520** ✓ **d) ₹2,331** ✗
Explanation:	

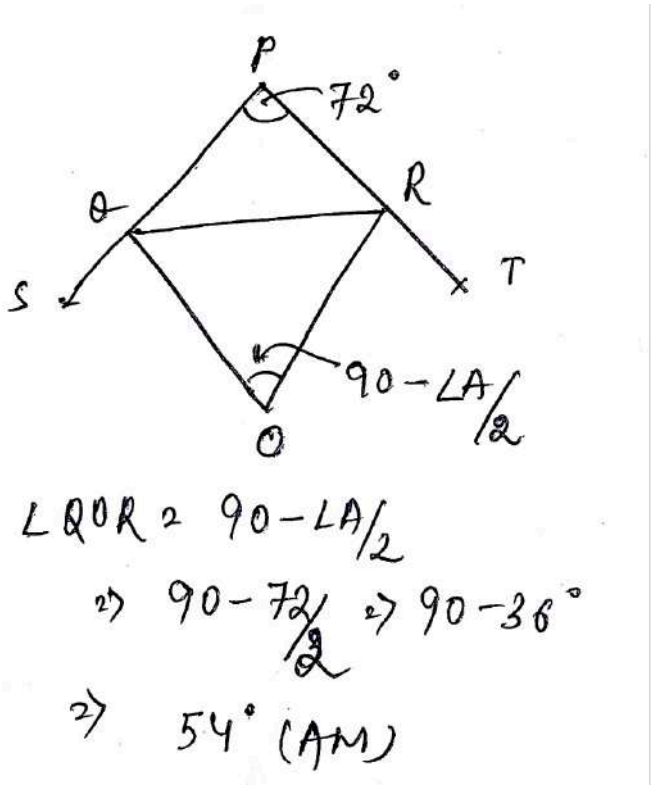
Q. 101	**A rectangular plot is 60 m long and 40 m wide. A path of width 2 m is built inside along the boundary. Find the area of the path.** **a) 384 m^2** ✔ **b) 376 m^2** ✘ **c) 364 m^2** ✘ **d) 396 m^2** ✘
Explanation:	 Outer rectangle $= 60 \times 40 = 2400\ m^2$ Inner rectangle $= (60 - 4) \times (40 - 4)$ $=> 56 \times 36 = 2016\ m^2$ Area of path $= 2400 - 2016 =$ **384 m^2**

Q. 102	A shopkeeper marks an article 40% above its cost price. He gives two successive discounts of 10% and 20% on the marked price and still gains ₹54. Find the cost price of the article. a) ₹6,250 ✗ b) ₹6,750 ✓ c) ₹6,650 ✗ d) ₹6,850 ✗
Explanation:	$\frac{MP}{CP} \times \frac{90}{100} \times \frac{80}{100} = \frac{SP}{CP}$ $\Rightarrow \frac{140}{100} \times \frac{9}{10} \times \frac{4}{5} = \frac{SP}{CP}$ $\Rightarrow \frac{SP}{CP} = \frac{126}{125}$) 1 → 54 $\therefore CP = 125 \times 54$ $\Rightarrow$ ₹6,750 (Ans)

Q. 103	**Two containers of equal capacity have milk and water in the ratio 5 : 3 and 2 : 1 respectively. If both the containers are emptied into a bigger container having the capacity to contain the whole mixture, what is the ratio of water to milk in the bigger container?** **a) 31 : 17** ✗ **b) 17:31** ✓ **c) 29 : 17** ✗ **d) 27 : 19** ✗
Explanation:	 Water: Milk = 17:31

Q. 104	**If the roots of $x^2 + px + q = 0$ are equal, find the relation between p and q.** **a)** $q^2 = 2p$ ✗ **b)** $q^2 = 4p$ ✗ **c)** $p^2 = 4q$ ✓ **d)** $p^2 = 2q$ ✗
Explanation:	For equal roots, discriminant = 0 ⇒ $D = b^2 - 4ac = 0$ ⇒ $p^2 - 4 \times 1 \times q = 0$ ⇒ $p^2 = 4q$ (Ans

Q. 105	**In a 600 m race, A gave B a head start of 5 seconds and still won the race by 20 seconds. If the ratio of the speed of A to the speed of B is 2 : 1, then the speed of B is:** **a)** 21 m/sec ✗ **b)** 12 m/sec ✓ **c)** 10 m/sec ✗ **d)** 18 m/sec ✗
Explanation:	Length of race = 600 m A B Speed 2 1 Time 1 2 Difference in time = 2 – 1 = 1 1 Unit = (5 + 10) = 25 seconds Time taken by B = 2 × 25 = 50 seconds Speed of B = $\frac{600}{50} = 12\ m/s$

Q. 106	In a triangle PQR, the sides PQ and PR are produced to S and T respectively. The bisectors of ∠SQR and ∠QRT meet at the point O. If ∠P = 72°, then what is the value of ∠QOR? **a)** 57° ✗ **b)** 54° ✓ **c)** 47° ✗ **d)** 44° ✗
Explanation:	 $\angle QOR = 90 - \angle A/2$ $\Rightarrow 90 - 72/2 \Rightarrow 90 - 36°$ $\Rightarrow 54°$ (AM)

Q. 107	**If $\tan\alpha = n\tan\beta$ and $\sin\alpha = m\sin\beta$, then $\sec^2\alpha$ is?** **a)** $\frac{m^2-1}{n^2-1}$ ✗ **b)** $\frac{m^2+1}{n^2+1}$ ✗ **c)** $\frac{n^2-1}{m^2-1}$ ✓ **d)** $\frac{n^2+1}{m^2+1}$ ✗

Explanation:

$\tan\alpha = n\tan\beta$

$\Rightarrow \tan\beta = \frac{1}{n}\tan\alpha$

$\Rightarrow \frac{1}{\cot\beta} = \frac{1}{n}\tan\alpha$

$\Rightarrow \cot\beta = n/\tan\alpha$

$\sin\alpha = m\sin\beta$

$\Rightarrow \operatorname{cosec}\beta = m/\sin\alpha$

$\operatorname{cosec}^2\beta - \cot^2\beta = 1$

$\Rightarrow \frac{m^2}{\sin^2\alpha} - \frac{n^2}{\tan^2\alpha} = 1$

$\Rightarrow \frac{m^2}{\sin^2\alpha} - \frac{n^2\cos^2\alpha}{\sin^2\alpha} = 1$

$\Rightarrow m^2 - n^2\cos^2\alpha = \sin^2\alpha$

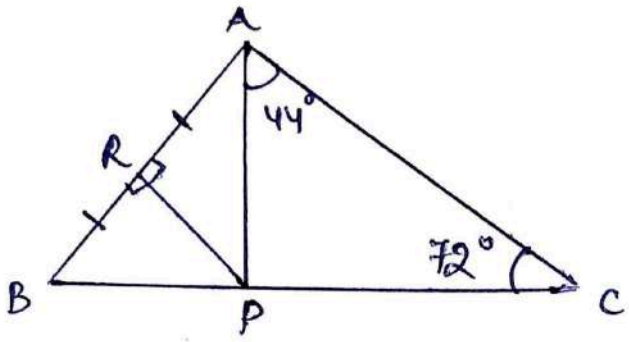
$\Rightarrow m^2 - n^2\cos^2\alpha = 1 - \cos^2\alpha$

$\Rightarrow m^2 - 1 = (n^2 - 1)\cos^2\alpha$

$\Rightarrow \cos^2\alpha = \frac{m^2-1}{n^2-1}$

$\Rightarrow \sec^2\alpha = \frac{n^2-1}{m^2-1}$ (Ans)

Q. 108	If $a + b + c = 2184$, $a : (b + c) = 4 : 9$ and $b : (a + c) = 3 : 11$, then what is the value of c? **a)** 1218 ✗ **b)** 1131 ✗ **c)** 1044 ✓ **d)** 1032 ✗
Explanation:	$\frac{a}{b+c} = \frac{4}{9}$; $\frac{b}{a+c} = \frac{3}{11}$ $\Rightarrow \frac{a}{b+c} = \frac{4\times14}{9\times14}$; $\frac{b}{a+c} = \frac{3\times13}{11\times13}$ $\Rightarrow \frac{a}{b+c} = \frac{56}{126}$; $\frac{b}{a+c} = \frac{39}{143}$ $a+b+c \rightarrow 182$ $182 \longrightarrow 2184$ $1 \longrightarrow 12$ $(a=56, b=39, c=87)$ $\therefore c = 87\times12 \Rightarrow 1044$ (Ans)

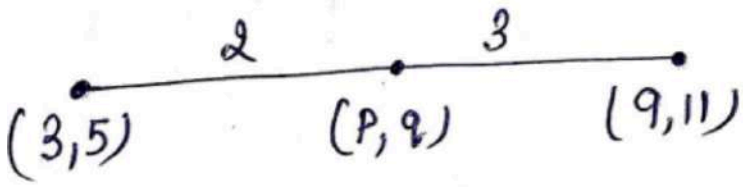
Q. 109	In a ΔABC, angle C is 72°, the perpendicular bisector of AB at R meets BC at P. If ∠PAC = 44° then ∠ABC is equal to: **a)** 36° ✗ **b)** 32° ✓ **c)** 39° ✗ **d)** 29° ✗
Explanation:	 ∠APB = 44 + 72° = 116° ΔRBP ≅ ΔRAP ∠RPB = ∠RPA = 116°/2 = 58° ∴ ∠ABC = 180° − (90 + 58) ⇒ 32° (Ans)

Q. 110	$If\ \frac{a}{b}+\frac{b}{c}+\frac{c}{a}=13\ and\ \frac{b}{a}+\frac{c}{b}+\frac{a}{c}=9,$ $then\ find\ the\ value\ of\ \frac{a^2}{b^2}+\frac{b^2}{c^2}+\frac{c^2}{a^2}$ **a)** 151 ✔ **b)** 154 ✘ **c)** 147 ✘ **d)** 149 ✘
Explanation:	$(a/b + b/c + c/a)^2 = a^2/b^2 + b^2/c^2 + c^2/a^2 + 2(a/b \times b/c + b/c \times c/a + c/a \times a/b)$ $\Rightarrow (13)^2 = a^2/b^2 + b^2/c^2 + c^2/a^2 + 2(a/c + b/a + c/b)$ $\Rightarrow 169 - 2\times 9 = a^2/b^2 + b^2/c^2 + c^2/a^2$ $\Rightarrow 169 - 18 = a^2/b^2 + b^2/c^2 + c^2/a^2$ $\Rightarrow 151$ (Ans)

Q. 111	**A person sells two items for ₹1,200 each. On one he gains 20%, on the other he loses 20%. Find the overall gain or loss.** **a)** ₹108 ✘ **b)** ₹100 ✔ **c)** ₹116 ✘ **d)** ₹98 ✘
Explanation:	**Solution:** Let CP of first item = ₹1,000 ⇒ Profit = ₹200 Let CP of second item = ₹1,500 ⇒ Loss = ₹300 Net result = ₹200 − ₹300 = ₹100 loss

Q. 112	In a company with 50 employees, the average daily wages of junior, senior, and managerial staff are ₹500, ₹800, and ₹1,200 respectively. The number of junior, senior, and managerial staff are in the ratio 3 : 5 : 2. Find the monthly average salary (in ₹) of an employee, assuming 30 working days in a month. **a)** 21600 ✗ **b)** 23700 ✓ **c)** 22500 ✗ **d)** 26800 ✗
Explanation:	Average daily wages = $\frac{500\times3+800\times5+1200\times2}{10}$ $\Rightarrow \frac{7900}{10} = ₹790$ Average monthly salary $\Rightarrow ₹790\times30 = ₹\ 23,700$ (Ans)

Q. 113	Let $0.\overline{24} \div 3.\overline{6} = x$, where x is a proper fraction in its simplest form. Then what will be the sum of numerator and denominator of x? **a)** 132 ✗ **b)** 129 ✓ **c)** 123 ✗ **d)** 121 ✗
Explanation:	$0.\overline{24} \div 3.\overline{6} = x$ $\Rightarrow \frac{24}{99} \div \left(3 + \frac{6}{9}\right)$ $\Rightarrow \frac{24}{99} \div \frac{11}{3} \Rightarrow \frac{24}{99} \times \frac{3}{11}$ $\Rightarrow \frac{8}{121}$ $\therefore$ Sum $= 8 + 121$ $\Rightarrow 129$ (Ans)

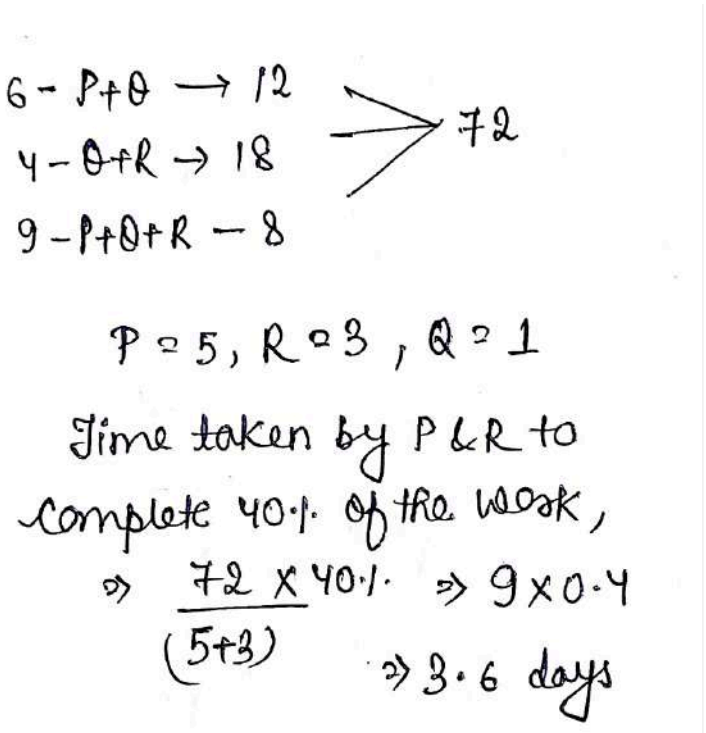
Q. 114	**Find the coordinates of the point which will divide the line joining the point (3, 5) and (9, 11) internally in the ratio 2 : 3.** **a)** $\frac{24}{5}, \frac{31}{5}$ ✗ **b)** $\frac{27}{5}, \frac{37}{5}$ ✓ **c)** $\frac{32}{5}, \frac{39}{5}$ ✗ **d)** $\frac{41}{5}, \frac{53}{5}$ ✗
Explanation:	 $P = \frac{3\times3 + 2\times9}{5}$ $P = 27/5$ $q = \frac{5\times3 + 11\times2}{5}$ $q = 37/5$ $\therefore (27/5, 37/5)$

Q. 115	**Which of the following fraction does not lie between 13/17 and 23/29 ?** **a) 18/23** ❌ **b) 19/24** ❌ **c) 17/22** ❌ **d) 20/23** ✔
Explanation:	Explanation: • 13/17 ≈ 0.7647 • 23/29 ≈ 0.7931 Now check each option: • 18/23 ≈ 0.7826 ✅ lies between • 19/24 ≈ 0.7917 ✅ lies between • 17/22 ≈ 0.7727 ✅ lies between • 20/23 ≈ 0.8696 ❌ **does not lie between** Therefore, 20/23 does not lie between 13/17 and 23/29.

Q. 116	Three years ago, the average age of P, Q, and R was 27 years. Three years from now, the average age of P and R will be 30 years. Find the age of Q after 5 years from now. **a)** 36 ✗ **b)** 43 ✗ **c)** 39 ✗ **d)** 41 ✓
Explanation:	3 years ago, P + Q + R = 27 × 3 ⇒ 81 Present sum of P, Q, R ⇒ 81 + 3 × 3 = 90 yr Present sum of P, R ⇒ 30 × 2 − 3 × 2 ⇒ 54 yr ∴ Age of Q = 90 − 54 = 36 yr Age of Q after 5 yrs = ⇒ 36 + 5 = 41 yrs (Ans)

Q. 117	**Find the positive difference between the mode and the median of: 8, 9, 10, 8, 11, 12, 8, 13, 14, 10, 8, 15** **a) 0** ✗ **b) 1** ✗ **c) 2** ✓ **d) 3** ✗
Explanation:	**Arrange in ascending order:** 8, 8, 8, 8, 9, 10, 10, 11, 12, 13, 14, 15 **Median**: Total numbers = 12 Median = average of 6th and 7th terms = (10 + 10)/2 = 10 **Mode:** Most frequent number = 8 (occurs 4 times) **Difference = | Mode − Median | =|8 – 10| = 2** **Answer: 2**

Q. 118	**A box contains 5 red balls, 4 green balls, and 3 blue balls. Two balls are drawn at random without replacement. What is the probability that both balls are of the same colour?** **a)** 19/66 ✔ **b)** 17/66 ✘ **c)** 5/33 ✘ **d)** 23/66 ✘
Explanation:	$\frac{{}^5C_2 + {}^4C_2 + {}^3C_2}{{}^{12}C_2}$ $\frac{\frac{5\times4}{2} + \frac{4\times3}{2} + \frac{3\times2}{2}}{\frac{12\times11}{2}}$ $\Rightarrow \frac{20+12+6}{132}$ $\Rightarrow \frac{38}{132} \Rightarrow \frac{19}{66}$ (Ans)

Q. 119	**P and Q together can complete a task in 12 days, while Q and R together can complete it in 18 days. P, Q and R together can finish the same task in 8 days. In how many days can P and R together complete 40% of the work?** **a)** 4.5 days ✗ **b)** 3.6 days ✓ **c)** 4.8 days ✗ **d)** 2.7 days ✗
Explanation:	

Q. 120	If 496 coins consist of 1 rupee, 50 paise and 20 paise coins whose values are in the ratio of 13 : 4 : 2, the number of 1 rupee coins will be. **a)** 182 ✗ **b)** 208 ✓ **c)** 272 ✗ **d)** 256 ✗
Explanation: