DRDO CEPTAM-11 Memory-Based Paper 23 March 2026

Q.1 **Biopsy and histopathological studies of the tissue and blood and bone marrow tests, are the diagnostic tests for:**

A. Cholera
B. AIDS
C. Cancer
D. Malaria

Answer: C

Sol: The correct answer is (c) Cancer

Explanation:

- Biopsy involves removing a small piece of suspected tissue and examining it under a microscope to look for abnormal cell growth.
- Histopathological studies refer to the microscopic examination of tissues to study the manifestations of disease.
- Blood and bone marrow tests are specifically crucial for detecting leukemias (blood cancers).

Information Booster:

- Modern techniques like CT scans, MRI, and PET scans are also used for cancer diagnosis.
- Benign tumors: Localized and do not spread to other parts of the body.
- Malignant tumors: Cancerous cells that invade and destroy surrounding tissues (Metastasis).

Additional Knowledge:

- Widal Test: Used for diagnosing Typhoid.
- ELISA Test: Commonly used as a screening test for AIDS (HIV).
- Stool culture: Used for diagnosing Cholera.

Q.2 **When copper powder in a china dish is heated, the surface of the copper powder is coated with a black substance. This is due to the formation of:**

A. CuO
B. Cu2O
C. Cu (OH)2
D. CuCO3

Answer: A

Sol: The correct answer is (a) **CuO**

Explanation:

- When copper (Cu) powder is heated in the presence of air, it undergoes a chemical reaction with the **oxygen** present in the atmosphere.
- This combination reaction produces **Copper (II) oxide**, represented by the chemical formula **CuO**.
- Copper (II) oxide is distinctly **black in color**, which explains the black coating observed on the heated powder's surface.
- The chemical equation for this reaction is: $2Cu + O_2 \rightarrow 2CuO$.

Information Booster:

- This specific process is a prime example of an **oxidation reaction**, where a substance gains oxygen.
- If hydrogen gas is subsequently passed over this heated black material (CuO), the black coating turns brown as the reverse reaction occurs, yielding pure copper again ($CuO + H_2 \rightarrow Cu + H_2O$).

Additional Knowledge:

- **Cu2O** (Option b)
  - This is Copper (I) oxide, which is typically a reddish powder, unlike the black Copper (II) oxide formed by simple heating in air.
- **Cu (OH)2** (Option c)
  - This represents Copper hydroxide, usually a pale blue precipitate formed in aqueous solutions, not from dry heating.
- **CuCO3** (Option d)
  - This is Copper carbonate, which naturally forms as a green patina on copper surfaces exposed to weather over long periods, not from immediate heating.

So the correct answer is (a)

Q.3 **In the Modern Periodic Table, elements are arranged on the basis of their**

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A. Increasing atomic mass
B. Increasing atomic number
C. Decreasing reactivity
D. Decreasing number of isotopes

Answer: B

Sol: The correct answer is **(B) Increasing atomic number**

Explanation:
• The Modern Periodic Table is based on the Modern Periodic Law, which states that "the physical and chemical properties of elements are a periodic function of their atomic numbers."
• This was proposed by **Henry Moseley** in 1913, who showed that atomic number is a more fundamental property of an element than its atomic mass.
• Arranging elements by atomic number resolves discrepancies found in earlier tables, such as the position of isotopes and the placement of certain pairs of elements like Cobalt and Nickel.
• The table consists of 18 vertical columns called 'Groups' and 7 horizontal rows called 'Periods'.

Information Booster:
• **Mendeleev's Periodic Table:** This earlier version was based on atomic mass. It was brilliant but had flaws, such as not having a fixed position for Hydrogen.
• **Atomic Number (Z):** Refers to the number of protons in the nucleus of an atom, which also equals the number of electrons in a neutral atom.
• **Valence Electrons:** Elements in the same group have the same number of valence electrons, which gives them similar chemical properties.

Additional Knowledge:
• **Increasing atomic mass (Option A):** This was the basis for Newlands' Law of Octaves and Mendeleev's Periodic Table, but it was replaced by the atomic number in the modern table.
• **Decreasing reactivity (Option C):** Reactivity varies across the table (increasing in some directions and decreasing in others) but is not the organizational basis.
• **Number of isotopes (Option D):** The number of isotopes is not a periodic property and does not follow a systematic order across the table.

Q.4 **Which type of reproduction can bring greater diversity?**

A. Regeneration
B. Sexual
C. Asexual
D. Budding

Answer: B

Sol: The correct answer is: (b) **Sexual**
Explanation:

- **Sexual reproduction** involves the fusion of male and female gametes, resulting in offspring with a **unique combination of genes** from both parents.
- This **genetic variation** increases adaptability and survival chances in changing environments.
- In contrast, **asexual reproduction** methods (regeneration, budding, binary fission, etc.) produce genetically identical offspring (clones), leading to **low diversity**.

Information Booster:

- **Asexual reproduction:** Fast, needs only one parent, but no variation (e.g., amoeba, hydra, planaria).
- **Sexual reproduction:** Slower, needs two parents, but promotes diversity and evolution (e.g., humans, flowering plants).
- Greater diversity helps species to **adapt to environmental changes** and **resist diseases**.
- Evolutionary principle: **Variation = raw material for natural selection**.

Additional Knowledge:

- **Regeneration:** Ability to regrow lost parts (e.g., Planaria, starfish).
- **Budding:** Asexual reproduction where a new organism grows from parent's body (e.g., Hydra, yeast).

- **Binary fission:** Single-cell division into two (e.g., Amoeba, Paramecium).
- **Sexual reproduction in plants:** Involves **pollination, fertilization, and seed formation**.

Q.5 **Oral pills used for birth control change the hormonal balance of the body. How do these prevent pregnancy? Select the correct option.**

A. Lining of uterus breaks off
B. Eggs are released but no fertilisation
C. No formation of eggs
D. Eggs are not released and no fertilisation

Answer: D

Sol: The correct answer is option (d) **Eggs are not released and no fertilization.**
Key Points:-

Oral contraceptive pills primarily work by altering hormonal levels in the body to prevent ovulation. Here's how they achieve this:

- **Inhibition of Ovulation:** OCPs maintain consistent hormone levels, which suppress the release of **luteinizing hormone (LH) and follicle-stimulating hormone (FSH)** from the pituitary gland .This suppression prevents the ovaries from releasing eggs.
- **Thickening of Cervical Mucus: Progestin** in the pills thickens cervical mucus, making it difficult for sperm to enter the uterus.
- **Changes in Uterine Lining:** The pills also alter the **endometrial lining**, making it less suitable for implantation should fertilization occur.

Q.6 **Identify the correct answer according to the sequence in order from outer to the inner side in the transverse section of a plant root.**

A. Epidermis - xylem - endodermis - pericycle - cortex
B. Epidermis - xylem - endodermis - cortex - pericycle
C. Epidermis - xylem - endodermis - pericycle
D. Epidermis - cortex - endodermis - pericycle - xylem

Answer: D

Sol: The correct answer is **(D) Epidermis - cortex - endodermis - pericycle - xylem**

Explanation:
• In a transverse section of a typical dicot root, the arrangement of tissues from the outside to the inside is as follows:
• **Epidermis (Epiblema):** The outermost layer, often with root hairs.
• **Cortex:** Multi-layered parenchymatous tissue for storage and water transport.
• **Endodermis:** The innermost layer of the cortex, containing Casparian strips.
• **Pericycle:** A layer inside the endodermis that gives rise to lateral roots.
• **Vascular Bundles:** Consisting of xylem and phloem (Xylem is internal to the pericycle).

Information Booster:
• **Casparian Strips:** These are waxy bands of suberin in the endodermis that force water to pass through the cytoplasm of cells, acting as a check-post.
• **Exarch Xylem:** In roots, the protoxylem (smaller vessels) is toward the outside and metaxylem is toward the center.

Additional Knowledge:
• **Options A, B, and C:** These are incorrect because they place the xylem (the vascular tissue) before or between the outer layers like the cortex or endodermis. The xylem is always part of the central 'stele' in a root.

Q.7 **What is the formula unit mass of sodium chloride (NaCl)?**

A. 35.5 u
B. 57 u
C. 58.5 u
D. 23 u

Answer: C

Sol: The correct answer is **(C) 58.5 u**

Explanation:

• Formula unit mass is the sum of atomic masses of all atoms in a formula unit of a compound.
• Atomic mass of Sodium (Na) = 23 u.
• Atomic mass of Chlorine (Cl) = 35.5 u.
• Formula unit mass of NaCl = 23 + 35.5 = 58.5 u.

Information Booster:

• The term 'formula unit mass' is used specifically for compounds formed by ions (ionic compounds), whereas 'molecular mass' is used for covalent molecules.

Additional Knowledge:

• 23 u (Option D): Atomic mass of Sodium.
• 35.5 u (Option A): Atomic mass of Chlorine.
• Atomic mass unit (u) is defined as exactly 1/12th the mass of a carbon-12 atom.

Q.8 **Which of the following is true for saturated hydrocarbons?**

A. They have at least one double bond between carbon-carbon atoms.
B. They have at least one triple bond between carbon-carbon atoms.
C. They have only a single bond between carbon-carbon atoms.
D. They can have either double and triple bond between carbon-carbon atoms.

Answer: C

Sol: The correct answer is **(C) They have only a single bond between carbon-carbon atoms.**

Explanation:

• Saturated hydrocarbons are compounds of carbon and hydrogen where all carbon atoms are linked by single bonds.
• These are also called Alkanes (General formula: CnH2n+2).
• These compounds are normally not very reactive.

Information Booster:

• Methane (CH4) and Ethane (C2H6) are the simplest examples of saturated hydrocarbons.

Additional Knowledge:

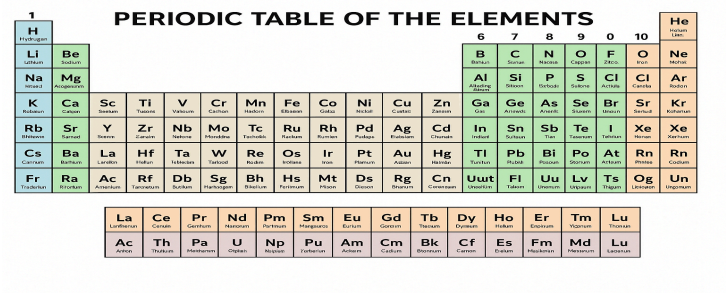
• Unsaturated hydrocarbons (Option A, B & D): Compounds containing double bonds (Alkenes) or triple bonds (Alkynes) are called unsaturated hydrocarbons.

Q.9 **Which is the only non-metal placed at the left side of the Modern Periodic Table?**

A. Hydrogen
B. Carbon
C. Neon
D. Helium

Answer: A

Sol: **Chapter: Modern Periodic Table**
Correct Answer: (A) Hydrogen
Explanation:
● **Hydrogen is the only non-metal placed on the left side** (Group 1) of the Modern Periodic Table.
● It is placed with alkali metals due to having **1 electron**, but its properties are non-metallic.
● It does not belong fully to any group but is positioned for convenience.
Information Booster:
● Hydrogen is the **lightest element** (Atomic number 1).
● Shows properties similar to **Group 1** (loses 1 electron) and **Group 17** (gains 1 electron).
● Exists as **H_2 gas** under normal conditions.
● Used in fuels, ammonia production, and hydrogen fuel cells.
● Unique element → forms ionic & covalent bonds.
Additional Knowledge:
● Carbon → Group 14, right side.
● Neon → Group 18, noble gas, extreme right.
● Helium → Group 18, top-right corner.



Q.10 An object of mass 30 kg is moving with a uniform velocity of 5 ms^{-1}. What is the kinetic energy possessed by the object?

A. 375 N
B. 375 $kgms^{-1}$
C. 375 J
D. 375 Pa

Answer: C

Sol: The correct answer is: (c) **375 J**
Explanation:

- Formula of **Kinetic Energy (KE):** $KE = \frac{1}{2}mv^2$

Given:
$m=30kg$,
$v=5m/s$
$KE= \times 30\times(5)$
$KE=\frac{1}{2}\times 25=375J$

- Therefore, the kinetic energy possessed = **375 Joules**.

Information Booster:

- SI unit of kinetic energy = **Joule (J)**.
- 1 Joule = Work done when **1 N force** moves an object through **1 m distance**.
- Kinetic energy depends on **both mass and velocity**.
- If velocity doubles → kinetic energy becomes **4 times**.
- If mass doubles → kinetic energy becomes **2 times**.

Q.11 According to the Law of Constant Proportions, water (H_2O) will always contain hydrogen and oxygen in the mass ratio of:

A. 1 : 8
B. 2 : 1
C. 1 : 2
D. 8 : 1

Answer: A

Sol: The correct answer is **(A) 1 : 8**

Explanation:
• The atomic mass of Hydrogen is 1 and Oxygen is 16.
• In H_2O, the mass of Hydrogen is 2 × 1 = 2, and Oxygen is 16. The ratio is 2:16, which simplifies to 1:8.

Information Booster:
• This law was stated by Joseph Proust, asserting that a chemical compound always contains exactly the same proportion of elements by mass.

Additional Knowledge:
• The ratio of 2:1 (Option B) refers to the ratio of atoms (Hydrogen to Oxygen) by number, not by mass.

Q.12 An object is placed on the principal axis of a convex lens of focal length 16 cm. at a distance of 8 cm its image formed is at a distance of _____.

A. -16cm
B. 24cm
C. cm
D. 8 cm

Answer: A

Sol: the correct ans is:(a)-16cm
Explanation:
lens formula to solve this problem:

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$$

Where:

- f is the focal length of the lens,
- v is the image distance,
- u is the object distance.

Given:

- Focal length $f = +16\text{cm}$ (positive for a convex lens),
- Object distance $u = -8\text{cm}$ (negative because the object is on the same side as the incoming light).

Step-by-Step Solution:

1. $$\frac{1}{16} = \frac{1}{v} - \frac{1}{-8}$$
   Substitute the given values into the lens formula:

$$\frac{1}{16} = \frac{1}{v} + \frac{1}{8}$$

$$\frac{1}{v} = \frac{1}{16} - \frac{2}{16} = -\frac{1}{16}$$

2. Subtract $162$from both sides:

3. Invert to find v:

$$v = -16\text{cm}$$

Q.13 Which of the following is incorrect about Newton's second law of motion?

A. The second law of motion F = ma is applicable to a single point particle.
B. The second law of motion is a scalar law.
C. The second law of motion is a local relation.
D. In the second law, F = 0 implies a = 0.

Answer: B

Sol: The correct answer is (b) The second law of motion is a scalar law.
• Newton's second law is a **vector law**, not scalar.
• Force and acceleration are vector quantities.
• Other statements are correct.
Information Booster:
• Vector form: $\vec{F} = m\vec{a}$.
• Direction of force is same as direction of acceleration.
• Law applies instantaneously at a point.
Additional Knowledge:
• Scalar laws deal only with magnitude.
• Newton's laws form the basis of classical mechanics.

Q.14 Identify the INCORRECT statement about regeneration.

A. Amoeba exhibit regeneration.
B. Hydra and Planaria show regeneration mode of reproduction

C. Specialised cells are responsible for regeneration.
D. These specialist cells multiply rapidly and produce a large number of new cells.

Answer: A

Sol: The correct answer is**: A) Amoeba exhibit regeneration.**

Explanation:

- **Amoeba** reproduces by **binary fission**, where the parent cell splits into two identical daughter cells.
- **Regeneration** is a process where certain organisms **regrow lost or damaged body parts** using specialized cells.

Information Booster:

Examples of Regeneration:

- **Planaria (Flatworms)**: Can regenerate a complete organism from a small body fragment.
- **Starfish**: Can regenerate lost arms.
- **Lizards**: Some species can regenerate their tails.

- **Hydra**: Has regenerative ability through its specialized cells.

Types of Regeneration:

- **Epimorphosis**: Formation of entirely new body parts (e.g., Planaria).

- **Morphallaxis**: Reorganization of existing cells without significant cell division (e.g., Hydra).

Q.15 **Galvanisation is a method of protecting steel and iron from rusting by coating them with a thin layer of:**

A. Magnesium
B. Zinc
C. Copper
D. Aluminium

Answer: B

Sol: The correct answer is **(B) Zinc**

Explanation:

• Galvanisation involves coating iron or steel with a thin layer of Zinc to prevent corrosion.
• Zinc is more reactive than iron and acts as a sacrificial anode, corroding in place of the iron even if the coating is scratched.

Information Booster:

• Iron articles are galvanized by dipping them into molten zinc.

Additional Knowledge:

• Magnesium (Option A): Also used for sacrificial protection but usually in blocks (e.g., for ships), not as a thin coating.
• Copper and Aluminium (Options C & D): Not used for the specific process known as galvanization.

Q.16 **Which component is used in a circuit to increase resistance and limit current?**

A. Battery
B. Lamp
C. Resistor
D. Switch

Answer: C

Sol: The correct answer is **(C) Resistor**

Explanation:

• A resistor is an electrical component that implements electrical resistance as a circuit element.
• According to Ohm's Law (V = IR), if the resistance increases for a constant voltage, the current flowing through the circuit decreases.

Information Booster:

• Rheostats are variable resistors used to adjust the magnitude of current in a circuit without changing the voltage of the source.

Additional Knowledge:
• Battery (Option A): It is the source of potential difference that drives the current.
• Lamp (Option B): It is a load that converts electrical energy into light; while it has resistance, its primary role is not current limiting.
• Switch (Option D): It is used to either make or break the circuit.

Q.17 **In animals, which of the following hormones are secreted during a scary situation?**

A. Growth hormone
B. Thyroxin
C. Adrenaline
D. Insulin

Answer: C

Sol: The correct answer is **(C) Adrenaline**

Explanation:
• Adrenaline is secreted from the adrenal glands in response to stress, fear, or excitement.
• It prepares the body for a 'fight or flight' response by increasing heart rate and blood flow to the muscles.

Information Booster:
• Adrenaline also increases the supply of oxygen to our brain and muscles while temporarily suppressing non-essential functions like digestion.

Additional Knowledge:
• Growth hormone (Option A): Secreted by the pituitary gland; regulates growth and development.
• Thyroxin (Option B): Secreted by the thyroid gland; regulates metabolism.
• Insulin (Option D): Secreted by the pancreas; regulates blood sugar levels.

Q.18 **2-methylpropane has the same molecular formula as that of which of the following?**

A. Pentane
B. Pentene
C. Butane
D. Butene

Answer: C

Sol: The correct answer is **(C) Butane**

Explanation:
• 2-methylpropane (isobutane) and butane are structural isomers.
• Both have the same molecular formula: C4H10.
• They differ in the arrangement of carbon atoms (butane is a straight chain, while 2-methylpropane is branched).

Information Booster:
• Compounds with identical molecular formulas but different structures are called structural isomers.

Additional Knowledge:
• Pentane (Option A): Molecular formula is C5H12.
• Butene (Option D): Molecular formula is C4H8 (it is an alkene).

Q.19 **Identify the shape which is NOT found in the kingdom Monera.**

A. Bacilli
B. Vibrio
C. Cocci
D. Heterocyst

Answer: D

Sol: The correct answer is **(D) Heterocyst**

Explanation:
• Kingdom Monera consists primarily of unicellular prokaryotes, mainly bacteria.
• Bacteria are classified into four basic shapes: **Cocci** (spherical), **Bacilli** (rod-shaped), **Vibrio** (comma-shaped), and **Spirillum** (spiral).

• A **Heterocyst** is not a shape of an organism; rather, it is a specialized, pale-yellow, thick-walled cell found in certain filamentous nitrogen-fixing Cyanobacteria (like *Nostoc* and *Anabaena*).

Information Booster:
• **Cocci:** These can be found as single cells, pairs (diplococci), chains (streptococci), or clusters (staphylococci).
• **Bacilli:** Examples include *Bacillus anthracis* and *Escherichia coli*.
• **Vibrio:** The best-known example is *Vibrio cholerae*, which causes cholera.
• **Kingdom Monera:** Includes Archaebacteria (live in extreme conditions) and Eubacteria ('true' bacteria).

Additional Knowledge:
• **Bacilli (Option A):** A standard rod-like shape found commonly in Monera.
• **Vibrio (Option B):** A comma-shaped structure typical of many aquatic bacteria.
• **Cocci (Option C):** A spherical shape that is one of the most fundamental bacterial forms.

Q.20 **Which of the following is NOT an allotrope of Carbon?**

A. Diamond
B. Carbon dioxide
C. Graphite
D. Fullerenes

Answer: B

Sol: The correct answer is (**B) Carbon dioxide**.

Explanation:

Allotropes of Carbon refer to different forms of the same element, **carbon**, where the atoms are bonded in different structures.

- **A) Diamond**: An allotrope of carbon where carbon atoms are arranged in a three-dimensional crystalline structure. It is the hardest known natural material.
- **C) Graphite**: Another allotrope of carbon, where carbon atoms are arranged in layers of hexagonal patterns. It is a good conductor of electricity and is used in pencils.
- **D) Fullerenes**: These are allotropes of carbon, consisting of molecules made entirely of carbon, such as the **buckyball** (C_{60}), which resembles a soccer ball.

Carbon dioxide is **not an allotrope of carbon**. It is a chemical compound consisting of **carbon and oxygen** (CO_2), not just carbon atoms bonded in different forms.

Q.21 **Consider the following chemical reaction.**

$CO(g) + 2H_2(g)P$

Predict the product p of this reaction.

A. $CHO + H_2$
B. CH_3OH
C. $COOH + H_2$
D. $CHO + 2H_2$

Answer: B

Sol: This reaction represents the synthesis of methanol ($\mathrm{CH_3OH}$) from carbon monoxide (CO) and hydrogen ($\mathrm{H_2}$). This process occurs under specific conditions of high temperature, pressure, and with a suitable catalyst (typically $Cu/ZnO/Al_2O_3$). The balanced reaction is:

$CO(g) + 2H_2(g) \rightarrow CH_3OH(l)$

Additional Information:

This reaction is an example of industrial hydrogenation and is widely used in the production of methanol, which is an important chemical feedstock and fuel.

Q.22 **If an object is placed at a distance 'u' from a convex lens, 'u' _____.**

A. is taken as negative
B. is taken as positive
C. depends on the type of image
D. is taken as zero

Answer: A

Sol: The correct answer is **(A) is taken as negative**

Explanation:
• According to the Cartesian sign convention, the object is always placed to the left of the lens.
• All distances measured to the left of the optical center (origin) are considered negative.
• Therefore, the object distance (u) is always taken as negative for both convex and concave lenses.

Information Booster:
• The lens formula is: 1/v - 1/u = 1/f. This formula relates object distance (u), image distance (v), and focal length (f).

Additional Knowledge:
• Convex Lens: Focal length (f) is always positive.
• Concave Lens: Focal length (f) is always negative.

Q.23 **How are the metals in the middle of the activity series usually extracted?**

A. By heating alone
B. By reduction using carbon
C. By electrolysis
D. By dissolving in water

Answer: B

Sol: The correct answer is **(B) By reduction using carbon**

Explanation:
• Metals in the middle of the activity series (like Iron, Zinc, Lead) are moderately reactive.
• These are often found as sulphides or carbonates. They are first converted to metal oxides through roasting or calcination.
• The metal oxides are then reduced to the metal using reducing agents like carbon (coke).

Information Booster:
• Reactive metals like Sodium, Calcium, or Aluminum can also be used as reducing agents because they can displace metals of lower reactivity from their oxides.

Additional Knowledge:
• Heating alone (Option A): Used for very low reactivity metals like Mercury (from Cinnabar).
• Electrolysis (Option C): Used for high reactivity metals like Sodium and Magnesium which cannot be reduced by carbon.

Q.24 **The acceleration of a body moving in a circle of radius R with uniform speed v is v^2/R directed towards the centre. Then according to which law, the force Fc providing this acceleration is $Fc = mv^2/R$?**

A. First law of motion
B. Third law of motion
C. Law of Gravitation
D. Second law of motion

Answer: D

Sol: **Correct Answer: (d) Second law of motion**

Explanation

- The centripetal force formula

$$F_c = m \cdot a = m \cdot \frac{v^2}{R}$$

directly comes from **Newton's Second Law of Motion**, which states:
Force = mass × acceleration (F = ma).

Information Booster

- Centripetal force is always directed **towards the centre** of the circular path.

- It is **not a new force**, but provided by existing forces like tension, gravity, friction, etc.

Additional Knowledge

First law of motion:

- Deals with inertia and states that a body continues in its state of rest or uniform motion unless acted upon by a force.

Third law of motion:

- States action–reaction pairs.

Law of Gravitation:

- **Gives gravitational force $F = Gm_1m_2/r^2$, a specific force.**

Q.25 **The kinetic energy of an object of mass m moving with a velocity v is 25 J. What will be its kinetic energy when its velocity is increased three times (3v)?**

A. 75 J
B. 150 J
C. 125 J
D. 225 J

Answer: D

Sol: The correct answer is **(d) 225 J**

Explanation:

- Kinetic energy refers to the energy an object possesses because of its motion.
- The standard mathematical formula for kinetic energy is: **Kinetic Energy = 1/2 × m × v²**, where 'm' is mass and 'v' is velocity.
- Initially, for an object with mass **m** and velocity **v**, the kinetic energy is stated to be **25 J**.
- When the velocity is increased three times, the new velocity is represented as **3v**.
- To find the new kinetic energy, we substitute the new velocity into the formula: **New K.E. = 1/2 × m × (3v)²**.
- Squaring the new velocity (3v × 3v) results in **9v²**, making the equation: **New K.E. = 1/2 × m × 9v²**.
- This can be rewritten as **9 × (1/2 × m × v²)**.
- Since the original value of **(1/2 × m × v²)** was **25 J**, the new energy is **9 × 25 J = 225 J**.

Information Booster:

- **Velocity Squared Relationship:** Kinetic energy is directly proportional to the square of the velocity (K.E. ∝ v²).
- **Impact of Velocity Changes:** Due to the square relationship, if you double the velocity, the energy increases by 4 times (2²); if you triple the velocity, it increases by 9 times (3²).
- **Mass Relationship:** Kinetic energy is linearly proportional to mass (K.E. ∝ m); if the mass is doubled while velocity remains constant, the kinetic energy simply doubles.

Additional Knowledge:

- **75 J (Option a):** This would only be correct if kinetic energy was directly proportional to velocity (K.E. ∝ v), which is a common misconception.
- **150 J (Option b):** This value does not align with the mathematical square law required for a threefold increase in velocity.
- **Work-Energy Theorem:** This theorem states that the work done on an object is equal to its change in kinetic energy; to increase this object's energy from 25 J to 225 J, 200 J of work must be performed.

Q.26 **Which element from Group 17 is used to eliminate bacteria and viruses from surfaces, drinking water, sewage, industrial waste, and swimming pools and spas?**

A. Fluorine
B. Iodine
C. Chlorine
D. Bromine

Answer: C

Sol: The correct answer is (c) Chlorine

Explanation:

. Chlorine belongs to Group 17 (halogens)
. Strong oxidising agent
. Kills bacteria and viruses effectively
. Used in water purification and sewage treatment
. Prevents water-borne diseases

Information Booster:

. Widely used in swimming pools
. Major public health disinfectant

Additional Knowledge:

Fluorine (Option a)
. Extremely reactive and toxic
. Not suitable for disinfection
Iodine (Option b)
. Used in limited medical antiseptics
. Not for large-scale water treatment
Bromine (Option d)
. Used in some spas
. Less common and costlier than chlorine

Q.27 **What causes the faster movement of particles in an object on heating?**

A. Increase in kinetic energy
B. Decrease in kinetic energy
C. Increase in pressure
D. Decrease in pressure

Answer: A

Sol: The correct answer is (a) **Increase in kinetic energy**

Explanation:

- According to the kinetic theory of matter, all particles in an object are in constant motion.
- When an object is **heated**, thermal energy is transferred into it.
- This added thermal energy directly converts into an **increase in the kinetic energy** of the individual particles (atoms or molecules).
- Because kinetic energy is the energy of motion, the particles naturally begin to vibrate, slide, or fly around much **faster**.

Information Booster:

- This increase in kinetic energy is exactly what we measure as a rise in **temperature**.
- If heating continues and kinetic energy increases sufficiently, it can break the intermolecular bonds holding the substance together, causing a **change of state** (e.g., solid melting into liquid, or liquid boiling into gas).

Additional Knowledge:

- **Decrease in kinetic energy** (Option b)
  - This happens when an object is **cooled**, causing the particles to slow down, not speed up.
- **Increase in pressure** (Option c)
  - While heating a gas in a closed container increases pressure, the fundamental microscopic reason for the particles moving faster is the kinetic energy transfer, not the pressure itself.
- **Decrease in pressure** (Option d)
  - Decreasing pressure might allow gas particles to expand and move further apart, but it does not intrinsically cause them to move faster at a molecular level like heat does.

So the correct answer is (a)

Q.28 What is the important function performed by SER in vertebrate liver cells?

A. Synthesis of lipids
B. Synthesis of proteins
C. Synthesis of complex sugars
D. Detoxification of drugs and poisons

Answer: D

Sol: The correct answer is (D) Detoxification of drugs and poisons

· The **smooth endoplasmic reticulum (SER)** in liver cells plays a key role in **detoxifying drugs and poisons**, metabolizing fats, and synthesizing lipids.

· The **rough endoplasmic reticulum (RER)**, on the other hand, is primarily involved in **protein synthesis**.

Information Booster:

· **SER in liver cells** helps in **metabolizing toxins**, which includes breaking down alcohol and certain medications.

· The **liver** is a key organ in the body for detoxification.

Additional Knowledge –Diseases Related to SER and Their Cause and Cure:

Disease	Cause	Effect on SER	Cure / Treatment
Alcoholic Liver Disease	Excessive alcohol consumption	Damages **SER enzymes** involved in detoxification	**Abstinence from alcohol**, liver transplantation if severe
Non-Alcoholic Fatty Liver Disease (NAFLD)	Obesity, diabetes, high cholesterol	**Accumulation of fat** in liver cells, affecting SER function	**Dietary changes**, **exercise**, **medications** to control risk factors
Cystic Fibrosis	Mutation in CFTR gene	Affects protein folding in SER, leading to lung and digestive issues	**Gene therapy**, **enzyme replacement therapy**
Wilson's Disease	Copper accumulation in the liver	Inability of SER to properly excrete copper, leading to liver damage	**Chelation therapy**, **liver transplant**

Q.29 A body undergoes a displacement of 10 m under the action of a constant force of 2.5 N in the opposite direction to the force. What will be the work done?

A. +25 J
B. −2.5 J
C. +2.5 J
D. −25 J

Answer: D

Sol: The correct answer is **(D) −25 J**

Explanation:

• Work done (W) = Force (F) × Displacement (s) × cos(theta).
• Since the force is in the opposite direction to the displacement, the angle (theta) is 180 degrees.
• cos(180) = -1.
• W = 2.5 N × 10 m × (-1) = -25 Joules.

Information Booster:

• Work done is negative when the force acts in the direction opposite to the displacement (e.g., work done by friction).

Additional Knowledge:

• Positive Work (Option A): Occurs when the force is in the direction of displacement.
• Zero Work: Occurs when the force is perpendicular to the displacement (theta = 90 degrees).

Q.30 **Which of the following changes can be regarded as part of sexual maturation in human males?**

A. Increase in weight
B. Cracking of voice
C. Deposition of fat in hips
D. Increase in height

Answer: B

Sol: The correct answer is **(B) Cracking of voice**

Explanation:
• During puberty, the larynx (voice box) in males grows larger, leading to a deep, often 'cracking' voice.
• This is a secondary sexual characteristic specific to males during sexual maturation.

Information Booster:
• Other male-specific changes include the growth of facial hair and the production of sperm in the testes.

Additional Knowledge:
• Increase in weight and height (Options A & D): These are general growth changes occurring in both males and females.
• Deposition of fat in hips (Option C): This is a secondary sexual characteristic typically associated with female maturation.

Q.31 **In the reaction $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$, which substance is oxidised and which substance is reduced?**

A. MnO_2 is oxidised, HCl is reduced
B. MnO_2 is reduced, HCl is oxidised
C. $MnCl_2$ is oxidised, Cl_2 is reduced
D. MnO_2 is reduced, $MnCl_2$ is oxidised

Answer: B

Sol: The correct answer is **(B) MnO_2 is reduced, HCl is oxidised**

Explanation:
• MnO_2 loses oxygen to become $MnCl_2$, so it is reduced.
• HCl loses hydrogen to become Cl_2, so it is oxidised.

Information Booster:
• Oxidation is the loss of hydrogen or gain of oxygen. Reduction is the gain of hydrogen or loss of oxygen.

Additional Knowledge:
• This is a Redox reaction because both oxidation and reduction occur simultaneously.

Q.32 **When copper reacts with oxygen on heating in air, which of the following correctly represents the product formed, along with its colour?**

A. Copper(I) oxide (Cu_2O) – white in colour
B. Copper(I) oxide (Cu_2O) – red in colour
C. Copper(II) oxide (CuO) – brown in colour
D. Copper(II) oxide (CuO) – black in colour

Answer: D

Sol: The correct answer is **(D) Copper(II) oxide (CuO) – black in colour**

Explanation:
• When copper is heated in air, it reacts with oxygen to form copper(II) oxide.
• Reaction: 2Cu + O2 -> 2CuO.
• Copper(II) oxide is a black-coloured substance.

Information Booster:
• This is an example of an oxidation reaction because oxygen is added to copper.

Additional Knowledge:
• Copper(I) oxide (Cu2O) is red but is not the primary product formed when heating copper in excess air.

Q.33 **Which of the following shows the correct chain of events when a vibrating body produces sound?**

A. Vibration → Particles of medium vibrate → Sound wave propagates → Sound is heard
B. Vibration → Electricity → Sound
C. Electricity → Vibration → Sound
D. Sound → Vibration → Hearing

Answer: A

Sol: The correct answer is **(A) Vibration → Particles of medium vibrate → Sound wave propagates → Sound is heard**

Explanation:
• Sound is produced by vibrating objects. These vibrations cause the surrounding medium (air, water, etc.) particles to vibrate.
• The disturbance travels through the medium as a longitudinal wave.
• When it reaches the ear, it is interpreted as sound.

Information Booster:
• Sound cannot travel through a vacuum; it requires a material medium.

Additional Knowledge:
• In air, sound travels as a series of compressions (high pressure) and rarefactions (low pressure).

Q.34 **Which of the following is the correct chemical formula of bleaching powder?**

A. $Ca(OH)_2$
B. $CaCl_2$
C. CaO
D. $CaOCl_2$

Answer: D

Sol: The correct answer is (d) **$CaOCl_2$.**

- The chemical formula of **bleaching powder** is **$CaOCl_2$**.
- It is a compound of **calcium**, **oxygen**, and **chlorine**.
- Bleaching powder is produced by the reaction of **chlorine gas** with **slaked lime ($Ca(OH)_2$)**.

Information Booster

- **Uses of Bleaching Powder**: It is used for bleaching textiles, disinfecting drinking water, and as a disinfectant in the treatment of water.
- **Chemical Composition**: Bleaching powder contains calcium oxychloride and is highly reactive with moisture and acids.
- **Alternative Name**: It is also known as **calcium hypochlorite**.

Q.35 **What substances are used in the manufacture of gunpowder?**
I. Potassium nitrate
II. Sulphur
III. Charcoal

A. Only I and II
B. Only II and III
C. Only I and III
D. I, II and III

Answer: D

Sol: The correct answer is **(D) I, II and III**

Explanation:
• Gunpowder, also known as black powder, is a chemical explosive consisting of a mixture of three key ingredients.
• **Potassium Nitrate (KNO_3):** Also called 'Saltpeter', it acts as the oxidizer, providing the oxygen needed for rapid combustion.
• **Sulphur:** It lowers the ignition temperature needed to start the reaction and increases the speed of combustion.
• **Charcoal:** Acts as the fuel, providing carbon for the reaction.
• When ignited, these three react to release energy and large volumes of gas, creating the explosive force.

Information Booster:
• **Composition:** A standard traditional ratio for gunpowder is 75% Potassium Nitrate, 15% Charcoal, and 10% Sulphur.

• **Historical Context:** It was the first chemical explosive ever developed, originating in China around the 9th century.
• **Reaction:** The simplified chemical reaction releases nitrogen and carbon dioxide gases and solid potassium sulfide.

Additional Knowledge:
• While modern smokeless powders have replaced black powder in firearms, it is still widely used in fireworks and some specialized mining activities.

Q.36 **According to Bohr's model of an atom, the 'M' shell is represented by the principal quantum number 'n' equal to:**

A. 2
B. 3
C. 4
D. 1

Answer: B

Sol: The correct answer is (b) 3

Explanation:
• **Bohr's model** of the fundamental atom formally suggests that negatively charged electrons rapidly revolve around the central nucleus in discrete, well-defined circular orbits or shells.
• These specific planetary-like orbits or shells are scientifically referred to as distinct **energy levels**.
• Conventionally, they are denoted by the alphabetical letters K, L, M, N... or sequentially by the principal quantum numbers **n = 1, 2, 3, 4...**
• The very first shell (which is situated closest to the positively charged nucleus) is logically the K shell (corresponding to n=1).
• Following the sequence, the second shell is the L shell (n=2), and the third consecutive shell is the **M shell (n=3)**.

Information Booster:
• The absolute maximum number of electrons that can be physically accommodated in any specific energy shell is governed by the mathematical formula $2n^2$.
• Therefore, for the specific M shell (where n=3), the maximum theoretical electron capacity calculates perfectly to $2 \times (3)^2 = 18$ electrons.

Additional Knowledge:
2 (Option a)
• This specific principal quantum number strictly represents the **L shell**, which is the second shell from the nucleus.

4 (Option c)
• This specific principal quantum number correctly represents the **N shell**, which logically follows the M shell.

1 (Option d)
• This fundamental principal quantum number directly represents the **K shell**, which is the lowest possible energy level closest to the nucleus.

So the correct answer is (b)

Q.37 **An object is placed anywhere along the principal axis of a concave lens. The image is always formed _____.**

A. between the focus (F) and the optical centre (O)
B. at the focus (F)
C. at twice the focal length (2F)
D. beyond twice the focal length (2F)

Answer: A

Sol: The correct answer is **(A) between the focus (F) and the optical centre (O)**

Explanation:
• A concave lens is a diverging lens.
• For any position of the object, a concave lens always forms a virtual, erect, and diminished image.
• The image is always formed on the same side as the object, between the principal focus (F) and the optical centre (O).

Information Booster:
• As the object is moved further away from the lens, the image moves closer to the focus but always remains virtual.

Additional Knowledge:
• Convex Lens: Forms different types of images (real/virtual, enlarged/diminished) depending on the object's position.
• Power of a concave lens is always negative.

Q.38 The allotrope of which non-metal conducts electricity?

A. Sulfur
B. Phosphorous
C. Carbon
D. Oxygen

Answer: C

Sol: Tha correct Answer is: (C) Carbon

- The allotrope of carbon that conducts electricity is **graphite**.
- Graphite is one of the different forms (allotropes) of carbon, and it is a good conductor of electricity due to its structure.
- In graphite, carbon atoms are arranged in layers, with each layer consisting of carbon atoms bonded to three other carbon atoms in a hexagonal pattern.
- The fourth electron of each carbon atom is free to move, making graphite a good conductor of electricity.
- This property is very useful, especially in applications such as batteries, electrical conductors, and even as a lubricant.

Information booster:

- **Sulfur**: Sulfur does not conduct electricity. It is a non-metal that does not have free-moving electrons, which are necessary for electrical conduction.
- **Phosphorus**: Like sulfur, phosphorus does not conduct electricity in its common allotropes, such as white or red phosphorus.
- **Oxygen**: Oxygen is a gas and does not conduct electricity under normal conditions. It requires specific conditions to conduct electricity, such as in plasma states, but this is not typical for everyday situations.

Key Points:

- Graphite, an allotrope of carbon, is a conductor of electricity.
- Other allotropes of carbon, like diamond, do not conduct electricity because they do not have free electrons for conduction.
- Non-metals like sulfur, phosphorus, and oxygen generally do not conduct electricity in their standard forms.

Q.39 Select the correct statement about the properties of colloid.

A. The components of a colloid solution are not dispersed phase.
B. A colloid is a homogeneous mixture.
C. They can be separated from the mixture by the process of filtration.
D. Dispersing medium is the component in which its phase is suspended.

Answer: D

Sol: The correct answer is **(D) Dispersing medium is the component in which its phase is suspended.**

Explanation:

• A colloid consists of two parts: the solute-like component (dispersed phase) and the component in which the dispersed phase is suspended (dispersing medium).
• Although a colloid appears to be homogeneous, it is actually a heterogeneous mixture.

Information Booster:

• Colloids are big enough to scatter a beam of light passing through them, which is known as the Tyndall effect.

Additional Knowledge:

• Option B: Incorrect, colloids are heterogeneous.
• Option C: Incorrect, colloid particles are small enough to pass through filter paper; they are separated by centrifugation.

Q.40 Which part of the eye controls the amount of light entering the eye?

A. Retina
B. Pupil
C. Cornea
D. Iris

Answer: D

Sol: The correct answer is (d) Iris.

• The **iris** is the colored part of the eye that controls the **size of the pupil**.

• The iris adjusts the size of the pupil to regulate the amount of light entering the eye, dilating the pupil in dim light and constricting it in bright light.

Information Booster:

• The iris contains two muscles: the **sphincter pupillae** (which contracts the pupil) and the **dilator pupillae** (which dilates the pupil).

• The **pupil** itself is an opening, and its size is controlled by the iris, not the pupil itself.

Additional knowledge:

• **(a) Retina**: The **retina** detects light and converts it into electrical signals, but it does not control how much light enters the eye.

• **(b) Pupil**: The **pupil** is the opening through which light passes, but it does not regulate light intake. The iris controls the size of the pupil.

• **(c) Cornea**: The **cornea** helps focus light, but does not regulate the amount of light entering the eye.

Q.41 **Identify the misspelt word:**

A. Ephemeral
B. Ebullience
C. Surreptitious
D. Magnanimious

Answer: D

Sol:

Explanation

Option (d) is the incorrectly spelt word.

Correct spelling is: **"Magnanimous"**, which means very generous or forgiving, especially toward a rival or someone less powerful than oneself. (उदार)

Example: He was **magnanimous** enough to forgive those who had betrayed him.

Meanings of all the given options

- **Ephemeral:** Lasting for a very short time. (अल्पकालिक)
- **Ebullience:** The quality of being cheerful and full of energy. (जोश/उत्साह)
- **Surreptitious:** Kept secret, especially because it would not be approved of. (गुप्त)
- **Magnanimous:** (Corrected form) Generous in forgiving an insult or injury. (उदार)

So the correct answer is (d)

Q.42 **Fill in the blank with the correctly spelt word.**
The journalist's _____ commentary on the government's new policy sparked widespread public controversy.

A. caustik
B. causttic
C. caustic
D. caustice

Answer: C

Sol:

Explanation

The correct option to fill in the blank is (c) caustic.

Caustic: Sarcastic in a scathing and bitter way; also, able to burn or corrode organic tissue by chemical action. (व्यंग्यात्मक/तीखा)
Example: Her caustic wit was both admired and feared by her colleagues.

Meanings of all the given options:

Options (A), (B), and (D) are all incorrect spellings. The word follows the pattern of ending in '-ic' without a 'k' or extra 't'.

Parts of speech:

Caustic is an Adjective used here to describe the 'commentary'.

So the correct answer is (c)

Q.43 **Choose the correct meaning of idiom:**
Not in my line

A. Outside one's jurisdiction
B. Not related to my area of expertise
C. Against one's moral principles
D. Beneath one's dignity

Answer: B

Sol:

Explanation

The correct meaning of the given idiom is (b).

Not in my line: This idiom refers to something that is not within one's area of interest, ability, or profession. (मेरे कार्यक्षेत्र में नहीं)
Example: You should ask the IT department about this software; coding is just not in my line.

Other related idioms:
"Up my alley" - The opposite; something that is perfectly suited to one's interests or skills.

So the correct answer is (b)

Q.44 **Rearrange the following sentences in correct order to make a logical passage.**
1. Clinical trials assess safety and efficacy before regulatory bodies grant approval.
2. Vaccine development begins with identifying antigens that trigger an immune response.
3. Once approved, mass immunisation campaigns aim to achieve herd immunity.
4. Ongoing surveillance monitors for adverse effects and emerging pathogen variants.

A. 2-3-1-4
B. 2-4-1-3
C. 4-1-2-3
D. 2-1-3-4

Answer: D

Sol: Explanation:
The correct option is (d). Option D is the correct order because it follows the chronological lifecycle of a vaccine.

- Sentence 2 introduces the starting point of the process: identifying antigens.
- Sentence 1 follows by describing the next logical step: clinical trials and regulatory approval.
- Sentence 3 continues the sequence with what happens "Once approved": mass immunisation.
- Sentence 4 concludes with the final stage: ongoing surveillance after the vaccine is in use.

So the correct answer is (d)

Q.45 **Which of the following is incorrectly spelled?**

A. Conscientious
B. Paraphernalia
C. Vicissitude
D. Idiosyncracy

Answer: D

Sol:

Explanation

Option (d) is incorrectly spelt word.

Correct spelling is: **"Idiosyncrasy"**, which refers to a mode of behavior or way of thought peculiar to an individual. (विलक्षणता/अजीब आदत)

Example: One of his little **idiosyncrasies** was always wearing mismatched socks.

Meanings of all the given options

- **Conscientious:** Wishing to do one's work or duty well and thoroughly. (कर्तव्यनिष्ठ)
- **Paraphernalia:** Miscellaneous articles, especially the equipment needed for a particular activity. (सामग्री)
- **Vicissitude:** A change of fortunes or circumstances, typically one that is unwelcome or unpleasant. (उतार-चढ़ाव)
- **Idiosyncrasy:** (Corrected form) A peculiar habit or characteristic of a person. (स्वभाव की विशेषता)

So the correct answer is (d)

Q.46 **Choose the correct meaning of idiom:**
Jump the shark

A. To make a dramatic comeback
B. To take a bold but reckless decision
C. To reach a peak and begin to decline
D. To overcome a significant challenge

Answer: C

Sol:

Explanation

The correct meaning of the given idiom is (c).

Jump the shark: An idiom used to describe the moment when something that was once popular (like a TV show or brand) reaches a point where it starts to decline in quality or popularity by resorting to far-fetched gimmicks. (पतन की शुरुआत/लोकप्रियता खोना)
Example: Many fans felt the sitcom jumped the shark when the main characters got married in the fifth season.

Other related idioms:

"Past its prime" - Beyond the most successful or productive stage.

So the correct answer is (c)

Q.47 **Choose the word most similar in meaning to 'Brisk':**

A. Sluggish
B. Lethargic
C. Vigorous
D. Passive

Answer: C

Sol:

Explanation

The correct synonym of the given word is (c) Vigorous.

Brisk: Active, fast, and energetic. (तेज़/फुर्तीला)

Example: We went for a $brisk$ walk in the park to clear our heads.

Vigorous: Characterized by or involving physical strength, effort, or energy. (जोरदार/स्फूर्तिदायक)

Example: The plants require $vigorous$ growth to survive the winter.

Synonyms: Quick, Energetic, Rapid, Animated.
Antonyms: Slow, Sluggish, Idle, Inactive.

Meanings of other options

- **Option A (Sluggish):** Slow-moving or inactive. (सुस्त)

- **Option B (Lethargic):** Affected by lethargy; sluggish and apathetic. (सुस्त/आलसी)
- **Option D (Passive):** Accepting or allowing what happens or what others do, without active response. (निष्क्रिय)

So the correct answer is (c)

Q.48 **Change the following from active to passive:**
She had not been reviewing the financial documents carefully.

A. The financial documents had not had been reviewed carefully.
B. The financial documents were not being reviewed carefully.
C. The financial documents had not reviewed carefully.
D. The financial documents had not been being reviewed carefully.

Answer: D

Sol:

Explanation

The correct passive voice of the given sentence is (d).

Rules of conversion

The original sentence is in the Past Perfect Continuous tense ("had not been reviewing"). To convert this to passive voice, we use the structure "had + not + been + being + V3". Note: While rare in modern usage, this is the grammatically correct conversion.

Structure:
Active voice: Subject + had + not + been + V1-ing + Object
Passive Voice: Object + had + not + been + being + V3 + by + Subject

Why other options are incorrect:

Option (A) is grammatically nonsensical. Option (B) is in the past continuous passive. Option (C) lacks the 'been being' structure required for the perfect continuous passive voice.

So the correct answer is (d)

Q.49 **Choose the correct meaning of idiom:**
The writing on the wall

A. An act of deliberate deception
B. A signal of imminent failure or disaster
C. A symbolic gesture of reconciliation
D. An unverified rumour gaining credibility

Answer: B

Sol: The correct option is (B).

The writing on the wall:

This idiom refers to clear signs that something unpleasant or disastrous is going to happen soon. It implies that the end or failure of something is inevitable. (आसन्न संकट का संकेत)

Example:

With the company's profits dropping for the third year, the employees saw the writing on the wall and started looking for new jobs.

Other related idioms and their meanings:

- **At death's door:** Very near to death or total failure.
- **Cloud on the horizon:** A sign of future problems.

So the correct answer is (b)

Q.50 **Find the part of the sentence that contains an error:**
She gave (1) / the most simplest explanation (2) / that anyone (3) / could have offered (4).

A. She gave (1)
B. the most simplest explanation (2)
C. that anyone (3)
D. could have offered. (4)

Answer: B

Sol:

Explanation

Option (b) contains an error.

The use of 'the most simplest' is a **Double Superlative** error. The word 'simplest' is already in the superlative degree. Therefore, 'most' is redundant and grammatically incorrect. It should be 'the simplest explanation'.

Grammatical rule used: Do not use 'more' or 'most' with adjectives that already have '-er' or '-est' endings.

Example: Incorrect: He is the $most$ tallest. Correct: He is the $tallest$.

Information Booster

Adjectives with one or two syllables usually take '-est', while longer adjectives take 'most' (e.g., most beautiful).

So the correct answer is (b)

Q.51 **Select the most appropriate meaning of the highlighted word.**
After coming back from the war, Ulysses decided to spend an indolent life in Ithaca.

A. Unfavourable and hostile
B. Arduous and painstaking
C. Enthusiastic and devotional
D. Uninteresting and lazy

Answer: D

Sol: The most appropriate meaning of the highlighted word **'indolent'** is **(d) uninteresting and lazy**.
Indolent refers to a person who avoids work and prefers comfort and inactivity. Here, after war, Ulysses wants a life of rest and idleness, so "lazy/idle" fits the context best. (Hindi meaning: आलसी / कामचोर)
Example: After retirement, he became **indolent** and spent most of his day sleeping.
Meanings of the given other options:
· **(a) Unfavourable and hostile** (प्रतिकूल और शत्रुतापूर्ण)
· **(b) Arduous and painstaking** (कठिन और मेहनत वाला)
· **(c) Enthusiastic and devotional** (उत्साही और भक्तिपूर्ण)

Q.52 **One of the four highlighted words in the given sentence is incorrectly spelt. Identify the INCORRECTLY spelt word.**
The phlegm from his asthama made it difficult to breathe, but he had to acquiesce to the maintenance treatments the doctor prescribed.

A. acquiesce
B. asthama
C. maintenance
D. phlegm

Answer: B

Sol:

The incorrectly spelt word is (b) asthama.
Correct word – Asthma: Asthma is a medical condition that affects the airways and makes breathing difficult.
Hindi meaning: दमा

Explanation: The spelling **asthama** is incorrect. The correct spelling is **asthma**, without the extra letter **a** after **th**.

Example: She uses an inhaler to control her asthma.

Why other options are correct:

(a) **acquiesce** – correctly spelt; it means to accept something reluctantly.

(c) **maintenance** – correctly spelt; it means the act of preserving or keeping in good condition.

(d) **phlegm** – correctly spelt; it means thick mucus in the throat or lungs.

So the correct answer is (b)

Q.53 **Find the correct spelling for a word that means calm under pressure.**

A. Equanimitty
B. Equanemitie
C. Equanimity
D. Equanimitti

Answer: C

Sol:

Explanation

Option (c) is the correctly spelt word.

Correct spelling is: "Equanimity," which refers to mental calmness, composure, and evenness of temper, especially in a difficult situation. (संयम/धैर्य)
Example: She accepted both the good news and the bad news with equanimity.

Meanings of all the given options:

Options (A), (B), and (D) are all incorrect variations of the same word. The root is from Latin 'aequanimitas', meaning 'even-minded'. Note the single 'm' and the 'i' before 'ty'.

Parts of speech:

Equanimity is a Noun.

So the correct answer is (c)

Q.54 **Find the part of the sentence that contains an error:**
Having completed the initial draft hastily, (1)/ the revised proposal was then forwarded (2)/ to the senior consultants for review (3)/ who had previously raised structural objections. (4)

A. (1)
B. (2)
C. (3)
D. (4)

Answer: B

Sol:

Explanation

The correct option is (b) as it contains the main error resulting from a dangling participle in part (1). However, the grammatical correction requires changing the subject in part (2) to align with the modifier.

Detailed Explanation

The phrase "Having completed the initial draft hastily" is a participial phrase. In English grammar, the subject of this phrase must be the same as the subject of the main clause. As written, it implies that the "revised proposal" (the subject of part 2) was the one that completed the draft, which is illogical. A person must have completed the draft.

Grammatical rule used: A dangling participle occurs when a modifying phrase is not logically connected to the subject it follows. To fix it, either the modifier or the main clause must be rewritten so the subject matches the action.

Example: (Incorrect) Walking down the street, the trees were beautiful. (Correct) Walking down the street, I saw beautiful trees.

Information Booster

To correct the given sentence, it should be: "Having completed the initial draft hastily, **the author forwarded** the revised proposal..."

So the correct answer is (b)

Q.55 **Fill in the blank with most appropriate tense:**
If she practises regularly, she __ the competition.

A. wins
B. won
C. winning
D. will win

Answer: D

Sol:

Explanation

The correct option to fill in the blank is (d) will win.

This sentence is an example of a **First Conditional** sentence. The First Conditional is used to express a real possibility in the future based on a condition.

Grammatical rule used: The structure of the first conditional is: *If + Simple Present, Simple Future (will + V1)*. Since the 'if' clause ('If she practises regularly') is in the simple present, the main clause must be in the simple future.

Example: If it rains, we will cancel the trip.

Why other options are incorrect

- **Option A (wins):** Used for general truths, not specific future results in this construction.
- **Option B (won):** This is past tense, used in the second conditional (If she practised...).
- **Option C (winning):** This is a gerund/participle and cannot function as a finite verb without an auxiliary.

So the correct answer is (d)

Q.56 **Fill in the blanks with the appropriate article.**
Though _____ importance of education is universally acknowledged, _____ approach to imparting knowledge varies greatly from one nation to another.

A. a, the
B. the, a
C. a, a
D. the, the

Answer: D

Sol:

Explanation

The correct option to fill in the blank is (d) the, the. In English grammar, the definite article 'the' is used when we refer to a specific noun or when a noun is followed by a qualifying phrase like "of...".

Grammatical Rule Used

The structure "The + Noun + of + Noun" usually requires the definite article 'the' before the first noun because the phrase following 'of' makes the first noun specific. In the first blank, we are talking about the specific importance "of education." In the second blank, we are talking about the specific approach "to imparting knowledge."

Example: The depth of the ocean is unknown.

Information Booster

Articles are omitted before abstract nouns when used in a general sense (e.g., "Education is key"), but when they are localized or specified by a following phrase, 'the' is mandatory.

So the correct answer is (d)

Q.57 **Select the most appropriate option that can substitute the highlighted words in the given sentence.**
After retirement, he received a regular payment from the company for his past service.

A. Stipend
B. Fee
C. Salary
D. Pension

Answer: D

Sol:

The correct one-word substitution is (d) pension.
Given expression – regular payment from the company for his past service: This refers to money paid regularly to a person after retirement in recognition of earlier service.

Correct answer word – Pension: Pension means a regular payment made to a retired person by the government or former employer.
Hindi meaning: पेंशन

Example: After thirty years of service, she began receiving a pension.

Meanings of all the other given options:

(a) **Stipend** – a fixed payment, usually for trainees, interns, or scholars (वृत्ति / मानदेय)

(b) **Fee** – a payment for professional service (शुल्क)

(c) **Salary** – regular payment received while employed (वेतन)

So the correct answer is (d)

Q.58 **According to the passage, which component of EQ is considered the most foundational?**
Read the following passage and answer the questions based on the passage:
Emotional intelligence, often abbreviated as EQ, refers to the capacity to recognise, understand, manage, and effectively utilise one's own emotions as well as the emotions of others. Unlike cognitive intelligence, which is largely fixed from birth, emotional intelligence is considered a dynamic and developable skill set. Researchers such as Daniel Goleman have identified five core components of EQ: self-awareness, self-regulation, motivation, empathy, and social skills. Of these, self-awareness is arguably the most foundational, as it enables individuals to perceive their emotional states accurately and understand how these states influence their behaviour and decisions. Without self-awareness, the remaining components of EQ are difficult to cultivate meaningfully. Self-regulation, the second component, refers to the ability to control impulsive reactions and channel emotions constructively. Individuals with high self-regulation are less likely to make decisions driven by momentary emotional surges and are more adept at sustaining composure under stress. Empathy, another vital component, goes beyond mere sympathy; it involves genuinely understanding another person's emotional perspective, which is essential in building trust and fostering collaborative relationships. In professional contexts, leaders with high EQ tend to create psychologically safe environments where team members feel valued and heard. Studies indicate that emotional intelligence is a stronger predictor of professional success than IQ alone, particularly in roles that require interpersonal interaction, conflict resolution, and adaptive leadership. Developing EQ requires consistent self-reflection, feedback from others, and a willingness to remain emotionally open even in adversarial situations. Ultimately, emotional intelligence is not about suppressing emotions but about harnessing them as a source of insight, resilience, and purposeful connection.

A. Empathy
B. Social skills
C. Self-awareness
D. Motivation

Answer: C

Sol:

Explanation

The correct answer is option (c). The passage explicitly states, "Of these, self-awareness is arguably the most foundational, as it enables individuals to perceive their emotional states accurately." It further mentions that without it, other components are difficult to cultivate.

Explanation of context of passage

The passage outlines five core components of EQ identified by Daniel Goleman and highlights self-awareness as the base upon which self-regulation, motivation, empathy, and social skills are built.

Other options are incorrect because:

Option (A), (B), and (D) are components of EQ, but the author specifically identifies self-awareness as the "foundational" one that allows for the accurate perception of emotional states necessary for the others.

So the correct answer is (c)

Q.59 **What does the passage suggest about emotional intelligence in comparison to cognitive intelligence?**
Read the following passage and answer the questions based on the passage:
Emotional intelligence, often abbreviated as EQ, refers to the capacity to recognise, understand, manage, and effectively utilise one's own emotions as well as the emotions of others. Unlike cognitive intelligence, which is largely fixed from birth, emotional intelligence is considered a dynamic and developable skill set. Researchers such as Daniel Goleman have identified five core components of EQ: self-awareness, self-regulation, motivation, empathy, and social skills. Of these, self-awareness is arguably the most foundational, as it enables individuals to perceive their emotional states accurately and understand how these states influence their behaviour and decisions. Without self-awareness, the remaining components of EQ are difficult to cultivate meaningfully. Self-regulation, the second component, refers to the ability to control impulsive reactions and channel emotions constructively. Individuals with high self-regulation are less likely to make decisions driven by momentary emotional surges and are more adept at sustaining composure under stress. Empathy, another vital component, goes beyond mere sympathy; it involves genuinely understanding another person's emotional perspective, which is essential in building trust and fostering collaborative relationships. In professional contexts, leaders with high EQ tend to create psychologically safe environments where team members feel valued and heard. Studies indicate that emotional intelligence is a stronger predictor of professional success than IQ alone, particularly in roles that require interpersonal interaction, conflict resolution, and adaptive leadership. Developing EQ requires consistent self-reflection, feedback from others, and a willingness to remain emotionally open even in adversarial situations. Ultimately, emotional intelligence is not about suppressing emotions but about harnessing them as a source of insight, resilience, and purposeful connection.

A. It is less important in professional settings
B. It is fixed from birth, just like IQ
C. It can be developed and cultivated over time
D. It depends entirely on academic training

Answer: C

Sol:

Explanation

The correct answer is option (c). The passage describes cognitive intelligence (IQ) as "largely fixed from birth," whereas emotional intelligence is described as a "dynamic and developable skill set."

Explanation of context of passage

This distinction is made early in the passage to establish that individuals can work on and improve their EQ through self-reflection and feedback, unlike their baseline cognitive intelligence.

Other options are incorrect because:

Option (A) is incorrect because the passage says EQ is a stronger predictor of professional success. Option (B) is incorrect because IQ is fixed, not EQ. Option (D) is incorrect as the passage links EQ development to self-reflection and feedback rather than just academic training.

So the correct answer is (c)

Q.60 **What is the key distinction the passage draws between empathy and sympathy?**
Read the following passage and answer the questions based on the passage:
Emotional intelligence, often abbreviated as EQ, refers to the capacity to recognise, understand, manage, and effectively utilise one's own emotions as well as the emotions of others. Unlike cognitive intelligence, which is largely fixed from birth, emotional intelligence is considered a dynamic and developable skill set. Researchers such as Daniel Goleman have identified five core components of EQ: self-awareness, self-regulation, motivation, empathy, and social skills. Of these, self-awareness is arguably the most foundational, as it enables individuals to perceive their emotional states accurately and understand how these states influence their behaviour and decisions. Without self-awareness, the remaining components of EQ are difficult to cultivate meaningfully. Self-regulation, the second component, refers to the ability to control impulsive reactions and channel emotions constructively. Individuals with high self-regulation are less likely to make decisions driven by momentary emotional surges and are more adept at sustaining composure under stress. Empathy, another vital component, goes beyond mere sympathy; it involves genuinely understanding another person's emotional perspective, which is essential in building trust and fostering collaborative relationships. In professional contexts, leaders with high EQ tend to create psychologically safe environments where team members feel valued and heard. Studies indicate that emotional intelligence is a stronger predictor of professional success than IQ alone, particularly in roles that require interpersonal interaction, conflict resolution, and adaptive leadership. Developing EQ requires consistent self-reflection, feedback from others, and a willingness to remain

emotionally open even in adversarial situations. Ultimately, emotional intelligence is not about suppressing emotions but about harnessing them as a source of insight, resilience, and purposeful connection.

A. Sympathy involves more active listening than empathy
B. Empathy is limited to personal rather than professional relationships
C. Empathy involves genuinely understanding another person's emotional perspective
D. Sympathy is more effective in leadership roles than empathy

Answer: C

Sol:

Explanation

The correct answer is option (c). The passage explains that empathy "goes beyond mere sympathy; it involves genuinely understanding another person's emotional perspective." This distinguishes it from sympathy, which is often just feeling pity for someone.

Explanation of context of passage

The passage describes empathy as a vital component of EQ that is essential for building trust and fostering collaborative relationships in both personal and professional settings.

Other options are incorrect because:

Option (A) is incorrect as the passage does not discuss the levels of active listening. Option (B) is incorrect because the passage highlights the importance of empathy in professional contexts. Option (D) is incorrect as the passage suggests EQ (including empathy) is highly effective for leaders.

So the correct answer is (c)

Q.61 **What does the passage indicate about leaders who possess high emotional intelligence?**
Read the following passage and answer the questions based on the passage:
Emotional intelligence, often abbreviated as EQ, refers to the capacity to recognise, understand, manage, and effectively utilise one's own emotions as well as the emotions of others. Unlike cognitive intelligence, which is largely fixed from birth, emotional intelligence is considered a dynamic and developable skill set. Researchers such as Daniel Goleman have identified five core components of EQ: self-awareness, self-regulation, motivation, empathy, and social skills. Of these, self-awareness is arguably the most foundational, as it enables individuals to perceive their emotional states accurately and understand how these states influence their behaviour and decisions. Without self-awareness, the remaining components of EQ are difficult to cultivate meaningfully. Self-regulation, the second component, refers to the ability to control impulsive reactions and channel emotions constructively. Individuals with high self-regulation are less likely to make decisions driven by momentary emotional surges and are more adept at sustaining composure under stress. Empathy, another vital component, goes beyond mere sympathy; it involves genuinely understanding another person's emotional perspective, which is essential in building trust and fostering collaborative relationships. In professional contexts, leaders with high EQ tend to create psychologically safe environments where team members feel valued and heard. Studies indicate that emotional intelligence is a stronger predictor of professional success than IQ alone, particularly in roles that require interpersonal interaction, conflict resolution, and adaptive leadership. Developing EQ requires consistent self-reflection, feedback from others, and a willingness to remain emotionally open even in adversarial situations. Ultimately, emotional intelligence is not about suppressing emotions but about harnessing them as a source of insight, resilience, and purposeful connection.

A. They avoid conflict at all costs in the workplace
B. They focus primarily on results over interpersonal relationships
C. They create environments where team members feel valued and heard
D. They rely more on IQ than EQ while making decisions

Answer: C

Sol:

Explanation

The correct answer is option (c). The text states, "In professional contexts, leaders with high EQ tend to create psychologically safe environments where team members feel valued and heard."

Explanation of context of passage

The passage notes that EQ is a strong predictor of success in leadership roles because it facilitates better interpersonal interaction and conflict resolution.

Other options are incorrect because:

Option (A) is incorrect because EQ helps in conflict resolution, not avoidance. Option (B) is incorrect because high EQ leaders focus on interpersonal relationships to achieve results. Option (D) is incorrect because the passage suggests EQ is often a stronger predictor of success than IQ.

So the correct answer is (c)

Q.62 . What does the word "harnessing" in the final sentence of the passage most nearly mean?
Read the following passage and answer the questions based on the passage:
Emotional intelligence, often abbreviated as EQ, refers to the capacity to recognise, understand, manage, and effectively utilise one's own emotions as well as the emotions of others. Unlike cognitive intelligence, which is largely fixed from birth, emotional intelligence is considered a dynamic and developable skill set. Researchers such as Daniel Goleman have identified five core components of EQ: self-awareness, self-regulation, motivation, empathy, and social skills. Of these, self-awareness is arguably the most foundational, as it enables individuals to perceive their emotional states accurately and understand how these states influence their behaviour and decisions. Without self-awareness, the remaining components of EQ are difficult to cultivate meaningfully. Self-regulation, the second component, refers to the ability to control impulsive reactions and channel emotions constructively. Individuals with high self-regulation are less likely to make decisions driven by momentary emotional surges and are more adept at sustaining composure under stress. Empathy, another vital component, goes beyond mere sympathy; it involves genuinely understanding another person's emotional perspective, which is essential in building trust and fostering collaborative relationships. In professional contexts, leaders with high EQ tend to create psychologically safe environments where team members feel valued and heard. Studies indicate that emotional intelligence is a stronger predictor of professional success than IQ alone, particularly in roles that require interpersonal interaction, conflict resolution, and adaptive leadership. Developing EQ requires consistent self-reflection, feedback from others, and a willingness to remain emotionally open even in adversarial situations. Ultimately, emotional intelligence is not about suppressing emotions but about harnessing them as a source of insight, resilience, and purposeful connection.

A. Suppressing deliberately
B. Eliminating entirely
C. Controlling and using effectively
D. Ignoring consciously

Answer: C

Sol:

Explanation

The correct answer is option (c). In the final sentence of the passage, the author states that EQ is about "harnessing" emotions as a source of insight and resilience. In this context, "harnessing" refers to the act of controlling and making use of natural resources or emotions to produce a particular effect or advantage.

Explanation of context of passage

The passage discusses the definition, components, and importance of Emotional Intelligence (EQ). It emphasizes that EQ is a developable skill that involves managing emotions effectively rather than just ignoring or suppressing them.

Other options are incorrect because:

Option (A) is incorrect because "suppressing" means to forcibly put an end to something, which the passage explicitly states EQ is not about. Option (B) is incorrect because "eliminating" means to get rid of, which is not the goal of EQ. Option (D) is incorrect because "ignoring" means to fail to consider, whereas EQ requires recognizing and understanding emotions.

So the correct answer is (c)

Q.63 **Select the most appropriate synonym of the given word: FESTIVITY**

A. Solemnity
B. Melancholy
C. Monotony
D. Celebration

Answer: D

Sol:

Explanation

The correct synonym of the given word is (d) Celebration.

FESTIVITY: The celebration of something in a happy and joyful way; a festive activity or event. (उत्सव/जश्न)
Example: The air was filled with festivity as the New Year approached.

Celebration: The action of marking one's pleasure at an important event or occasion by engaging in enjoyable, typical social activity. (उत्सव)
Example: The team's victory was a cause for great celebration.

Synonyms: Gala, Merrymaking, Revelry, Festal.
Antonyms: Sadness, Gloom, Mourning, Solemnity.

Meanings of all the other given options:

- **Solemnity:** The state or quality of being serious and dignified. (गंभीरता)
- **Melancholy:** A feeling of pensive sadness, typically with no obvious cause. (उदासी)

- **Monotony:** Lack of variety and interest; tedious repetition and routine. (नीरसता)

So the correct answer is (d)

Q.64 Rearrange the following sentences to form a coherent paragraph:
1. This glucose serves as the primary source of energy for the plant's growth and reproduction.
2. Chlorophyll in the leaves absorbs sunlight and uses it to convert carbon dioxide and water into glucose.
3. Photosynthesis is the process by which green plants manufacture their own food.
4. Oxygen is released as a by-product, making photosynthesis essential for sustaining life on Earth.

A. 2, 3, 1, 4
B. 3, 1, 2, 4
C. 3, 2, 1, 4
D. 2, 1, 3, 4

Answer: C

Sol:

Explanation

The correct option is (c) 3-2-1-4.
- Sentence 3 is the opening sentence as it provides the general definition of the topic: Photosynthesis.
- Sentence 2 follows by explaining the mechanism or process mentioned in the definition (how chlorophyll converts elements into glucose).
- Sentence 1 mentions "This glucose," which creates a mandatory pair with sentence 2, where glucose was first introduced. It explains the purpose of the glucose.
- Sentence 4 concludes the paragraph by mentioning the additional outcome (by-product) of oxygen and its global significance.

So the correct answer is (c)

Q.65 Select the appropriate synonym of the highlighted word.
Military forces have ample amount of weapons for the war.

A. Excessive
B. Delicate
C. Plentiful
D. Scarce

Answer: C

Sol:

Explanation

The correct option is (C).

Ample: This means enough or more than enough; plentiful. (पर्याप्त/प्रचुर)

Example: There is ample time for discussion after the presentation.

Plentiful: This is the correct synonym. It means existing in or yielding great quantities; abundant. (भरपूर)

Example: This year, we had a plentiful harvest of wheat.

Synonyms: Abundant, Copious, Profuse, Sufficient.
Antonyms: Scarce, Meager, Insufficient, Sparse.

Meanings of all the other given options:

- **Excessive:** More than is necessary, normal, or desirable. (अत्यधिक)
- **Delicate:** Very fine in texture or structure; or easily broken. (नाजुक)
- **Scarce:** Insufficient for the demand (Antonym). (दुर्लभ/कम)

So the correct answer is (c)

Q.66 **Which word is spelled correctly?**

A. Consciencious
B. Conscientious
C. Consciencous
D. Consientious

Answer: B

Sol: The correct option is (B).

Conscientious is the correctly spelled word. It means wishing to do one's work or duty well and thoroughly. (ईमानदार/कर्तव्यनिष्ठ)
Example: She is a conscientious worker who always finishes her tasks on time.

Information Booster:

The word is derived from "conscience" (a sense of right and wrong) + "tious" (suffix forming adjectives). Note the 't' instead of the second 'c'.

So the correct answer is (b)

Q.67 **Select the most appropriate option to fill in the blank.**
They _____ 200 km by the time they arrive.

A. had driven
B. were driving
C. are driving
D. will have driven

Answer: D

Sol: The correct option is (d).
• **Explanation:** The phrase **by the time they arrive** refers to a point in the future by which an action will already be completed. Therefore, the sentence requires the **Future Perfect Tense**, which is formed with **will have + past participle**.

• **Correct answer word – will have driven**
Hindi meaning: चला चुके होंगे
Example: By next month, she will have completed the course.

Meanings of other options:

• **had driven** – Past perfect; used for an action completed before another action in the past

• **were driving** – Past continuous; shows an ongoing action in the past

• **are driving** – Present continuous; shows an action happening now

So the correct answer is (d)

Q.68 **Select the correct option for the Direct Speech conversion of the sentence below.**
The engineer explained that the cables were weakening faster than the support structure could sustain them.

A. The engineer explained, "The cables are weakening faster than the support structure can sustain them."
B. The engineer explained, "The cables were weakening faster than the support structure can be sustained by them."
C. The engineer explained, "Cables weaken faster than support structures sustain."
D. The engineer explained, "Cable weakening faster than the support can sustain."

Answer: A

Sol:

Explanation

The correct direct speech is (a).

Rules of conversion

To convert from indirect to direct speech:
1. Remove the conjunction "that" and introduce commas and quotation marks.
2. Change the past continuous tense "were weakening" back to the present continuous "are weakening."
3. Change the past modal "could" back to the present modal "can."

Structure:
Indirect: S + explained + that + S + were V1-ing + than... + could + V1
Direct: S + explained, "S + are V1-ing + than... + can + V1"

So the correct answer is (a)

Q.69 **Choose the correct one-word substitute for: 'A person who hates marriage'.**

A. Misogamist
B. Misanthrope
C. Polygamist
D. Anchorite

Answer: A

Sol:

Explanation

The correct one-word for the given group of words is (A) Misogamist. A misogamist is an individual who possesses a strong dislike or aversion to the institution of marriage. (विवाह से घृणा करने वाला)

Example: After several failed relationships in his family, he became a confirmed misogamist.

Meanings of the given other options:

- **Misanthrope:** A person who dislikes humankind and avoids human society. (मानव द्वेषी)
- **Polygamist:** A person who has more than one wife or husband at the same time. (बहुविवाही)
- **Anchorite:** A religious recluse; someone who has retired to a solitary place for a life of religious seclusion. (संन्यासी/बैरागी)

So the correct answer is (a)

Q.70 **Parts of a sentence are given below. The first part (1) is in the correct order, while the other parts of the sentence are jumbled up. Arrange the parts in the correct order to form a meaningful and coherent sentence.**
The pronouns (1) / persons or things (P) / individually rather than collectively (Q) / which refer to (R) / are known as distributive pronouns (S)

A. PQRS
B. RPQS
C. RSPQ
D. PSQR

Answer: B

Sol:

The correct option is (b) RPQS.
Explanation: The sentence begins with **The pronouns**. It should be followed by **which refer to** to introduce a defining clause. Then **persons or things** supplies the object of the verb **refer to**. After that, **individually rather than collectively** explains the manner of reference. Finally, **are known as distributive pronouns** completes the statement.

Correct sentence: The pronouns which refer to persons or things individually rather than collectively are known as distributive pronouns.

Why other options are incorrect:

(a) PQRS begins abruptly with a noun phrase and does not connect properly with **The pronouns**.

(c) RSPQ places the main verb too early and leaves the sentence incomplete and illogical.

(d) PSQR destroys the grammatical flow and meaning.

Rule: In para jumbles, relative clauses such as **which refer to** must directly follow the noun they describe.

Hindi Explanation: यहाँ **which refer to** एक relative clause है, इसलिए यह **The pronouns** के तुरंत बाद आएगा। उसके बाद object **persons or things** आएगा, फिर manner **individually rather than collectively**, और अंत में definition पूरी होगी।

So the correct answer is (b)

Q.71 If $5x + 4y = 12$ and $xy = 2$, then find the value of $125x^3 + 64y^3$.

A. 288
B. 286
C. 268
D. 258

Answer: A

Sol: **Given:**

$5x + 4y = 12$

$xy = 2$

Formula Used:

$$(a+b)^2 = a^3 + b^3 + 3ab(a+b)$$

Solution:

Using the formula:

$$(5x+4y)^3 = 125x^3 + 64y^3 + 3(5x)(4y)[5x+4y]$$

$$(12)^3 = 125x^3 + 64y^3 + 60(2)[12]$$

$$1728 = 125x^3 + 64y^3 + 1440$$

$$125x^3 + 64y^3 = 1728 - 1440 = 288$$

The value of $125x^3 + 64y^3$ is 288

Q.72 Triangle PQR has its centroid at point G(2, -1), and vertex P is located at (-4, 5). If point M is the midpoint of side QR, what are the coordinates of M?

A. (4, -3)
B. (5, -4)
C. (3, -2)
D. (6, -5)

Answer: B

Sol: **Given:**

Centroid G(2, -1). Vertex P(-4, 5).

M is midpoint of QR.

Formula Used:

Centroid divides median PM in ratio 2:1.

Section formula: G = $\frac{1(P) + 2(M)}{3}$ (or vector form G = (P+2M)/3)

Solution:

3G = P + 2M

2M = 3G - P

$$2M_x = 3(2) - (-4) = 6 + 4 = 10 \implies M_x = 5$$

$2M_y = 3(-1) - 5 = -3 - 5 = -8 \implies M_y = -4$

M is (5, -4)

Final Answer

So the correct answer is (b)

Q.73 **Total monthly income of A, B and C is ₹1,02,720. A, B and C save 20%, 10% and 25%, respectively of their incomes. If the ratio of their monthly expenditures is 3 : 4 : 5, then what is the sum (in ₹) of monthly incomes of A and C?**

A. 72,000
B. 61,875
C. 60,000
D. 56,250

Answer: A

Sol: **Given:**

Total income of A, B, C = ₹1,02,720

Savings: A = 20%, B = 10%, C = 25%

Expenditure ratio = 3 : 4 : 5

Formula Used:

Income = Expenditure + Savings

Expenditure = (100% – Saving%) of Income

Income = $\frac{\text{Expenditure}}{1 - \frac{\text{Saving \%}}{100}}$

Solution:

Expenditure ratio given:

A : B : C = 3 : 4 : 5

Saving % for each:

A = 20% → spends 80% → $\frac{3}{80\%} = 3 \times \frac{5}{4} = \frac{15}{4}$

B = 10% → spends 90% → $\frac{4}{90\%} = 4 \times \frac{10}{9} = \frac{40}{9}$

C = 25% → spends 75% → $\frac{5}{75\%} = 5 \times \frac{4}{3} = \frac{20}{3}$

Income ratio (A : B : C) = $\frac{15}{4} \times 36 : \frac{40}{9} \times 36 : \frac{20}{3} \times 36$

Income ratio (A : B : C) = 27 : 32 : 48

Total parts = 27 + 32 + 48 = 107 units

Each part = $\frac{1,02,720}{107} = 960$

Income of A = $960 \times 27 = ₹25920$

Income of C = $960 \times 48 = ₹46,080$

Sum of incomes of A and C = 25,920 + 46080 = ₹72,000

Thus, the correct option is **(a) ₹72,000**

Q.74 **The ratio of the volume of two cubes is 27 : 64. What is the ratio of their total surface areas?**

A. 9 : 16
B. 16 : 9
C. 4 : 3
D. 3 : 4

Answer: A

Sol: **Given:**

Ratio of volumes of two cubes = 27 : 64

Formula Used:

$$\frac{V_1}{V_2} = \left(\frac{a}{b}\right)^3$$

$$\frac{S_1}{S_2} = \left(\frac{a}{b}\right)^2$$

Solution:

$$\frac{V_1}{V_2} = \frac{27}{64} = \left(\frac{3}{4}\right)^3$$

$$\frac{S_1}{S_2} = \left(\frac{3}{4}\right)^2 = \frac{9}{16}$$

Ratio of their total surface areas is 9 : 16

Q.75 Simplify the following expression:

$$\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta}$$

A. 2 cos θ
B. 2 cosec θ
C. 2 sec θ
D. 2 sin θ

Answer: B

Sol: **Given:**

$$\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta}$$

Formula Used:

$$(a+b)^2 = a^2 + b^2 + 2ab$$

$$\sin^2\theta + \cos^2\theta = 1$$

Solution:

$$\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta}$$

$$= \frac{\sin^2\theta + (1+\cos\theta)^2}{(1+\cos\theta)\sin\theta}$$

$$= \frac{\sin^2\theta + 1 + \cos^2\theta + 2\cos\theta}{(1+\cos\theta)\sin\theta}$$

$$= \frac{1+1+2\cos\theta}{(1+\cos\theta)\sin\theta}$$

$$= \frac{2+2\cos\theta}{(1+\cos\theta)\sin\theta}$$

$$= \frac{2\cancel{(1+\cos\theta)}}{\cancel{(1+\cos\theta)}\sin\theta}$$

$$= 2\,\text{cosec}\,\theta$$

Q.76 Find the roots of $x^{-4} - 10x^{-2} + 9 = 0$

A. $\pm 1, \pm \frac{1}{4}$
B. $\pm 1, \pm \frac{2}{3}$
C. $\pm 1, \pm \frac{1}{5}$
D. $\pm 1, \pm \frac{1}{3}$

Answer: D

Sol: **Given:**

$x^{-4} - 10x^{-2} + 9 = 0$

Solution:

Let y = x^{-2}, so the equation becomes:

$y^2 - 10y + 9 = 0$

$y^2 - 1y - 9y + 9 = 0$

$y(y - 1) - 9(y - 1) = 0$

$(y - 1)(y - 9) = 0$

y = 1 and 9

Substituting back y = x^{-2}:

For y = 1, x^{-2} = 1, hence x = ± 1

For y = 9, x^{-2} = 9, hence x = $\pm \frac{1}{3}$

Q.77 **A startup has three stakeholders. P brought 30% of the capital, and Q brought the rest. R joined later and was promised 25% of the total profit for branding. If total profit was Rs. 4,00,000, how much was Q's share?**

A. Rs. 1,90,000
B. Rs. 2,00,000
C. Rs. 2,10,000
D. Rs. 2,20,000

Answer: C

Sol: **Given:**

Total Profit = Rs. 4,00,000
R's share of total profit = 25%
P's capital = 30%, Q's capital = 70% (of the remaining capital share)

Formula Used:

Remaining profit = Total profit - R's share
Q's share = Remaining profit $\times$ Q's capital percentage

Solution

R's profit share = 25% of 4,00,000 = 1,00,000.
Remaining profit for P and Q = 4,00,000 - 1,00,000 = 3,00,000.
Since P brought 30% and Q brought the rest (100% - 30% = 70%), they split the remaining profit in 3:7 ratio.
Q's share = 70% of 3,00,000
Q's share = 0.70 $\times$ 3,00,000 = Rs. **2,10,000**
So the correct answer is (c).

Q.78 **Find roots of $x^2 + (2a + 3)x + (a^2 + 3a) = 0$.**

A. x = -a, -a -3
B. x = a, a + 3
C. x = 2a, a + 3

D. x = -a, a + 3

Answer: A

Sol: Given:
$x^2 + (2a + 3)x + (a^2 + 3a) = 0$
Concept Used:
Factorization of quadratic equation
Formula Used:
$x^2 + (p + q)x + pq = (x + p)(x + q)$
Solution:
$x^2 + (2a + 3)x + (a^2 + 3a)$
$= x^2 + (a + a + 3)x + a(a + 3)$
$= (x + a)(x + a + 3)$
$(x + a)(x + a + 3) = 0$
$x + a = 0$ or $x + a + 3 = 0$
$x = -a$ or $x = -(a + 3)$
Final Answer:
$x = -a,\ -(a + 3)$

Q.79 The average of six numbers is 32. If one number is removed, the average becomes 30. What is the removed number?

A. 38
B. 40
C. 44
D. 42

Answer: D

Sol: **Given:**
Initial Average of 6 numbers = 32
New Average of 5 numbers = 30
Formula Used:
Sum of numbers = Average × Number of items
Removed Number = Initial Sum - New Sum
Solution:
Initial Sum = 6 × 32 = 192
New Sum = 5 × 30 = 150
Removed Number = 192 - 150 = **42**
So the correct answer is (d).

Q.80 A right prism has a base in the shape of a trapezium with parallel sides 12 cm and 8 cm, and height 5 cm. If the prism height is 20 cm, what is the volume?

A. 800 cm^3
B. 900 cm^3
C. 1000 cm^3
D. 1200 cm^3

Answer: C

Sol: **Given:**
Parallel sides (a, b) = 12 cm, 8 cm
Trapezium height = 5 cm
Prism height = 20 cm
Formula Used:
Area of base (trapezium) = $\frac{1}{2} \times (a + b) \times height$
Volume of prism = Area of base × prism height
Solution:
Calculate the area of the trapezoidal base.
$Area = \frac{1}{2} \times (12 + 8) \times 5$

$Area = \frac{1}{2} \times 20 \times 5$

$Area = 50cm^2$

Multiply the base area by the height of the prism to find the volume.
Volume = 50 × 20 = **1000 cm³.**
So the correct answer is (c)

Q.81 Find the value of $\frac{3}{\sin^2 A \sec A} \times 3\sqrt{\tan^2 A - \sin^2 A}$.

A. 3 sinA
B. 3
C. 9 tanA
D. 9

Answer: D

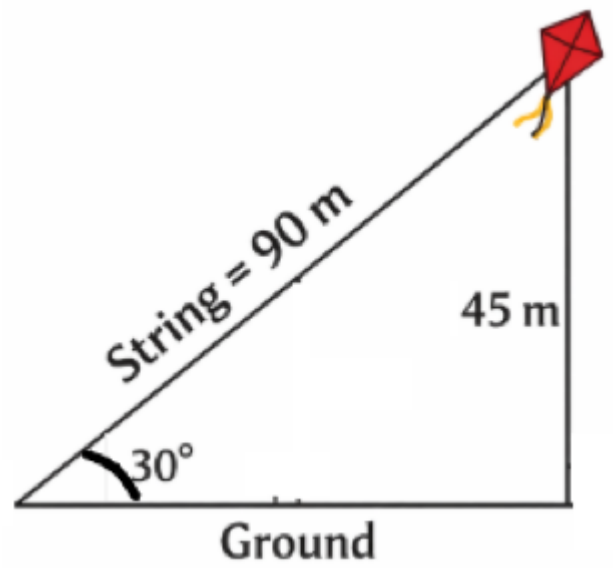
Sol: **Given:**
$\frac{3}{\sin^2 A \sec A} \times 3\sqrt{\tan^2 A - \sin^2 A}$
Solution:
$\sec A = \frac{1}{\cos A}$
$\frac{3}{\sin^2 A \sec A} = \frac{3 \cos A}{\sin^2 A}$
So the expression becomes:
$\frac{3 \cos A}{\sin^2 A} \times 3\sqrt{\tan^2 A - \sin^2 A}$
$= 9 \cdot \frac{\cos A}{\sin^2 A} \cdot \sqrt{\tan^2 A - \sin^2 A}$
Simplify inside the square root:
$\tan^2 A - \sin^2 A = \frac{\sin^2 A}{\cos^2 A} - \sin^2 A$
$= \sin^2 A \left(\frac{1}{\cos^2 A} - 1\right)$
$= \sin^2 A \tan^2 A$
$\sqrt{\tan^2 A - \sin^2 A} = \sqrt{\sin^2 A \tan^2 A} = \sin A \tan A$
Substitute back:
$9 \cdot \frac{\cos A}{\sin^2 A} \cdot \sin A \tan A$
$= 9 \cdot \frac{\cos A}{\sin^2 A} \cdot \sin A \cdot \frac{\sin A}{\cos A}$
$= 9$
Answer:
$\boxed{9}$

Q.82 A kite string is stretched completely straight. If the vertical height of the kite is 45 meters and the string makes an angle of 30° with the level ground, what is the minimum length of the string required?

A. 45m
B. 60m
C. 90m
D. 120m

Answer: C

Sol: **Given**
Vertical height (h) = 45 m
Angle of elevation (θ) = 30°
Formula Used
$\sin\theta = \frac{\text{Perpendicular}}{\text{Hypotenuse}}$
Solution:



In this scenario, the string forms the hypotenuse (L) of a right-angled triangle, and the height is the perpendicular.

Using the sine ratio:

$\sin 30^\circ = \frac{45}{L}$

Since, $\sin 30^\circ = \frac{1}{2}$ we have:

$\frac{1}{2} = \frac{45}{L}$

L = 45×2 = 90 m

The length of the string is 90 meters.

Final Answer

So the correct answer is (c)

Q.83 **A cube and a cuboid have equal volumes. If the cube's side is 10 cm and the cuboid's dimensions are in the ratio 1 : 2 : 4, then find the cuboid's longest side.**

A. 16 cm
B. 18 cm
C. 20 cm
D. 14 cm

Answer: C

Sol: **Given:**

Side of the cube = 10 cm

Ratio of dimensions of the cuboid = 1 : 2 : 4

Volume of the cube = Volume of the cuboid

Formula Used:

Volume of cube = a^3

Volume of cuboid = $l \times b \times h$

Solution:

Volume of the cube = $10^3 = 1000\ \text{cm}^3$

Let the dimensions of the cuboid be x, 2x, and 4x.

Volume of the cuboid = x \times 2x \times 4x = 8x^3

According to the given condition:

$8x^3 = 1000$

$x^3 = \frac{1000}{8}$

$x^3 = 125$

x = 5 cm

The dimensions of the cuboid are 5 cm, 10 cm, and 20 cm.

The longest side of the cuboid = 4x = 4 ×5 = 20 cm

Final Answer

So the correct answer is (c)

Q.84 **The price of fuel decreases by 25%, 10% and 30% in three successive months, but increases by 60% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price?**

A. Decreases by 30.76%
B. Increases by 23.98%
C. Decreases by 24.4%
D. Increases by 27.32%

Answer: C

Sol:

Given:

Successive changes in fuel price over four months:

1st month: Decrease by 25%

2nd month: Decrease by 10%

3rd month: Decrease by 30%

4th month: Increase by 60%

Formula Used:

If price changes successively by percentages a%, b%, c%..., then final value =

$P \times (1 + \frac{a}{100}) \times (1 + \frac{b}{100}) \times (1 + \frac{c}{100}) \ldots$

Solution:

Let original price = ₹100

After 1st month: ₹100 × 0.75 = ₹75

After 2nd month: ₹75 × 0.90 = 67.5

After 3rd month: ₹67.5 × 0.70 = ₹47.25

After 4th month: ₹47.25 × 1.6 = ₹75.6

Final price = ₹75.6

Change from original = ₹100 - ₹75.6 = 24.4

Percentage change = $\frac{-24.4}{100} \times 100$ = -24.4%

24.4% decrease compared to the original price.

Q.85 **A book needs to be typed. A types it in 15 days. B types it in 12 days. C types in 20 days. D types in 8 days. If A and D work together as team VENUS, B and C work as team MERCURY, and A and C work as team MARS, which of these three teams will complete typing the book first?**

A. MERCURY
B. MARS
C. All teams take the same time
D. VENUS

Answer: D

Sol: **Given:**

A finishes the book in 15 days

B finishes the book in 12 days

C finishes the book in 20 days

D finishes the book in 8 days

Teams:

Team VENUS (A + D)

Team MERCURY (B + C)

Team MARS (A + C)

Formula Used:

Total Work = Efficiency $\times$ time

Solution:

Total work = LCM of 15, 12, 20, and 8 = 120

Team VENUS (A + D):

Daily Output = $\frac{120}{15} + \frac{120}{8}$ = 8 + 15 = 23 units/day

Team MERCURY (B + C):

Daily Output = $\frac{120}{12} + \frac{120}{20}$ = 10 + 6 = 16 units/day

Team MARS (A + C):

Daily Output = $\frac{120}{15} + \frac{120}{20}$ = 8 + 6 = 14 units/day

Team Completion Times:

Team VENUS:

Completion Time = $\frac{120}{23} \approx 5.22 \text{ days}$

Team MERCURY:

Completion Time = $\frac{120}{16} = 7.5 \text{ days}$

Team MARS:

Completion Time = $\frac{120}{14} \approx 8.57 \text{ days}$

Thus, Team VENUS finishes first in approximately 5.22 days

Q.86 **The current population of a town is 1,20,000. It has been increasing at a rate of 25% per annum for the past 10 years. What was the difference in the population between 3 years ago and 2 years ago?**

A. 15,710
B. 14,810
C. 15,360
D. 14,610

Answer: C

Sol: **Given:**

$\text{Current Population} = 1,20,000$

$\text{Rate of increase}(r) = 25\% = \frac{1}{4}$

$\text{Time gap} = \text{Between 3 years ago and 2 years ago}$

Concept Used:

Population growth formula: $P = P_0\left(1 + \frac{r}{100}\right)^n$

The population of a specific year becomes the principal for the next year.

Solution:

Let the population 3 years ago be x.

Since the rate is 25% or $\frac{1}{4}$, the multiplication factor is $1 + \frac{1}{4} = \frac{5}{4}$.

Population 2 years ago $= x \times \frac{5}{4}$

Population 1 year ago $= x \times \frac{5}{4} \times \frac{5}{4} = x \times \frac{25}{16}$

Current Population $= x \times \frac{5}{4} \times \frac{5}{4} \times \frac{5}{4} = x \times \frac{125}{64}$

Given current population is 1,20,000:

$x \times \frac{125}{64} = 1,20,000$

$$x = \frac{1,20,000 \times 64}{125}$$

$x = 960 \times 64 x = 61,440$

This is the population 3 years ago.

Population 2 years ago = $61,440 \times \frac{5}{4} = 76,800$

Difference = 76,800 - 61,440 = 15,360

Exam-Hall Method:

Difference is simply the 25% growth that occurred that year.

$\text{Difference} = 25\% \text{ of Population 3 years ago}$

$\text{Difference} = \frac{1}{4} \times 61,440 = 15,360$

So the correct answer is (c)

Q.87 The value of 40 - 3 × [10 + 6 × { 20 - 10 (6 - 5) × 2} ÷ 47] is:

A. 7
B. 5
C. 1
D. 10

Answer: D

Sol: **Given:**

40 - 3 × [10 + 6 × { 20 - 10 (6 - 5) × 2} ÷ 47]

Concept Used:

Operation preference wise	Symbol
Brackets	$[], , ()$
Orders, of	$(power), \sqrt{}(root), of$
Division	$\div$
Multiplication	$\times$
Addition	$+$
Subtraction	$-$

Solution:

40 - 3 × [10 + 6 × { 20 - 10 (6 - 5) × 2} ÷ 47

= 40 - 3 × [10 + 6 × { 20 - 10 × 2} ÷ 47]

= 40 - 3 × [10 + 6 × { 20 - 20} ÷ 47]

= 40 - 3 × [10 + 6 × 0 ÷ 47]

= 40 - 3 × [10 + 6 × 0]

= 40 - 3 × [10 +0]

= 40 - 3 × [10]

= 40 - 30

= 10

Q.88 Zakir travels from City A to City B. If Zakir drives his car at $\frac{3}{8}$ of his normal speed, then he reaches City B 45 minutes late. Find the time (in minutes) that Zakir would have taken to travel from City A to City B if he drove at his normal speed.

A. 25
B. 18
C. 34
D. 27

Answer: D

Sol: **Given:**

When Zakir drives at $\frac{3}{8}$ of his normal speed, he is 45 minutes late.

We are to find the time (in minutes) Zakir would take at normal speed.

Formula Used:

Speed = $\frac{distance}{time}$

Solution:

Let normal time = t minutes

At reduced speed $\frac{3}{8}$, time taken becomes $\frac{8}{3} \times t$

So, extra time = $\frac{8}{3}t - t = \frac{5}{3}t$

From the condition; $\frac{5}{3}t = 45$

$\frac{5}{3}t = 45$

$t = \frac{45 \times 3}{5}$ = 27 minutes

Alternate Solution:

Distance is constant, so;

Speed $\propto \frac{1}{time}$

Speed changes - 8 : 3

Time changes - 3 : 8

Extra time = 45 min.

(8 – 3) unit = 45 min

5 unit = 45 min

1 unit = 9 min

Total time with normal speed = 3 × 9 = 27 min

Q.89 **Two items were sold at Rs. 9000 each. The first was sold at 50 percent loss and the second was sold at 50 percent profit. Find the total loss on selling both the items.**

A. Rs. 4500
B. Rs. 2400
C. Rs. 6000
D. Rs. 1800

Answer: C

Sol: **Given:**

Two items were sold at Rs. 9000 each.
The first was sold at 50 percent loss.
The second was sold at 50 percent profit.

Formula Used:

Selling price = Cost price × (100 ± P or L)%

Solution:

Cost price of the item sold in profit = $9000 \times \frac{100}{150}$ = Rs. 6000

Cost price of the item sold in loss = $9000 \times \frac{100}{50}$ = Rs. 18,000

Total CP = 6000 + 18000 = 24,000

Total SP = 2 × 9000 = 18,000

Loss = CP - SP = 6,000

∴ The total loss is Rs. 6000

Q.90 **Find the average of all the prime numbers that lie between 70 and 100.**

A. 80
B. 86
C. 84
D. 82

Answer: D

Sol: **Given:**

We need to find the average of all the prime numbers between 70 and 100.

Concept Used:

A prime number is a number greater than 1 that has no divisors other than 1 and itself.

$$\text{Average} = \frac{\text{Sum of the numbers}}{\text{Total number of numbers}}$$

Solution:

The prime numbers between 70 and 100 are: 71, 73, 79, 83, 89, 97.

Sum of these prime numbers:

= 71 + 73 + 79 + 83 + 89 + 97 = 492

There are 6 prime numbers between 70 and 100.

$$\text{Average} = \frac{492}{6} = 82$$

Q.91 **If the number of working staff in the company is increased by 20% and the salary per head is decreased by 20%, then the percentage of change in the total salary is:**

A. decrease of 20%
B. increase of 20%
C. decrease of 4%
D. increase of 4%

Answer: C

Sol: **Given:**

The number of working staff in the company is increased by 20%.

The salary per head is decreased by 20%.

Formula Used:

Total salary = Number of staff × Salary per head

$$\text{Percentage change in total salary} = \frac{\text{New total salary} - \text{Old total salary}}{\text{Old total salary}} \times 100$$

Solution:

Let the initial number of staff be N and the initial salary per head be S.

Old total salary = N × S

New number of staff after the increase of 20% = N × 1.20

New salary per head after the decrease of 20% = S × 0.80

New total salary = (N × 1.20) × (S × 0.80) = N × S × 0.96

$$\text{Percentage change} = \frac{(N \times S \times 0.96) - (N \times S)}{N \times S} \times 100$$

Percentage change = (-0.04) × 100 = -4%

The percentage change in the total salary is a decrease of 4%.

Q.92 The mean proportion of $\frac{a^2}{b^3}$ and $\frac{9b^2}{4a^3}$ is _____.

A. $\frac{9}{4\sqrt{ab}}$
B. $\frac{3}{2\sqrt{ab}}$
C. $\frac{3}{2(ab)}$
D. $\frac{9}{4(ab)}$

Answer: B

Sol: **Given:**

-Two quantities: $\frac{a^2}{b^3} and \frac{9b^2}{4a^3}$

Formula Used:

- Mean proportion between two numbers x and y is given by: √(x × y)

Solution:

Mean proportion

$\sqrt{\left(\frac{a^2}{b^3} \times \frac{9b^2}{4a^3}\right)}$

$= \sqrt{\left(\frac{a^2 \cdot 9b^2}{b^3 \cdot 4a^3}\right)}$

$= \sqrt{\left(\frac{9a^2b^2}{4a^3b^3}\right)}$

$= \sqrt{\left(\frac{9}{4} \cdot \frac{1}{ab}\right)}$

$= \frac{3}{2} \cdot \frac{1}{\sqrt{ab}}$

$= \frac{3}{2\sqrt{ab}}$

Q.93 **The cost price of an article is Rs. x. It is marked up by 100 percent and it is sold at Rs. 420 after giving 30 percent discount. What is the value of x (in Rs.)?**

A. 375
B. 325
C. 300
D. 400

Answer: C

Sol: **Given:**

Cost price of article = Rs. x
Mark up percentage = 100%
Selling price = Rs. 420
Discount percentage = 30%

Formula Used:

MP × (100 - d)% = SP

Solution:

Marked price = CP + CP × 100% = 2CP
Marked price = 2x

$2x \times (100 - 30)\% = 420$

$2x \times 70\% = 420$

$x = 210 \times \frac{100}{70} = \text{Rs. } 300$

Q.94 **The difference between the compound interest and simple interest on a sum of ₹15,000 for 2 years is ₹96. Find the rate of interest per annum.**

A. 6%
B. 7%
C. 8%
D. 9%

Answer: C

Sol: **Given:**

Principal (P) = ₹15,000

Time (T) = 2 years

Diff (CI - SI) = ₹96

Formula Used:

Difference for 2 years = $P(\frac{R}{100})^2$

Solution:

$96 = 15000 \times (\frac{R}{100})^2$

$\frac{96}{15000} = (\frac{R}{100})^2$

$\frac{32}{5000} = (\frac{R}{100})^2$

$\frac{16}{2500} = (\frac{R}{100})^2$

Take square root:

$\frac{4}{50} = \frac{R}{100}$

$R = \frac{4 \times 100}{50}$

$R = 8\%$

Final Answer

So the correct answer is (c)

Q.95 **Two cars are travelling from the same location, moving in the same direction at speeds of 6 km/h and 4 km/h, respectively, starting at the same time. Calculate the approximate distance between the cars after 10 minutes.**

A. 562.4 m
B. 333.3 m
C. 245.6 m
D. 258.6 m

Answer: B

Sol: **Given:**

Speed of Car A = 6 km/h

Speed of Car B = 4 km/h

Time = 10 minutes = $\frac{10}{60} = \frac{1}{6}$ hour

Formula Used:

Distance = Speed × Time

Solution:

Relative speed = 6 – 4 = 2 km/h

Distance = $2 \times \frac{1}{6} = \frac{2}{6} = \frac{1}{3}\ \text{km}$ = 333.33 metres

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Q.96 What is the value of $sec^2 37^o - tan^2 37^o$?

A. 1
B. -1
C. 0
D. 2

Answer: A

Sol: **Given:**

$\sec^2 37° - \tan^2 37° = 1$

Identity Used:

$\sec^2\theta - \tan^2\theta = 1$

Solution:

$\sec^2\theta - \tan^2\theta = 1$

So,

$\sec^2 37° - \tan^2 37° = 1$

Q.97 For a given data, the difference between the mean and the mode is 72. Using the empirical relation between mean, median, and mode, find the difference between its mean and median.

A. 26
B. 28
C. 24
D. 32

Answer: C

Sol: **Given:**

Mean - Mode = 72

Formula Used:

Empirical Relationship: Mode = 3(Median) - 2(Mean)

This can be rearranged as: Mean - Mode = 3(Mean - Median)

Solution:

Using the rearranged empirical formula:

Mean - Mode = 3(Mean - Median)

Substitute the given value of (Mean - Mode):

72 = 3(Mean - Median)

Solve for (Mean - Median):

Mean - Median = $\frac{72}{3}$ = **24**

So the correct answer is (c)

Q.98 Which is the smallest 5-digit number that is divisible by each of 54, 120 and 96?

A. 18280
B. 17280

C. 14260
D. 12960

Answer: D

Sol: **Given:**
We need to find the smallest 5-digit number divisible by 54, 120, and 96.

Solution:

54 = 2×3^3

120 = $2^3 \times 3 \times 5$

96 = $2^5 \times 3$

LCM = $2^5 \times 3^3 \times 5 = 32 \times 27 \times 5$ = 4320

Smallest 5-digit number divisible by 4320. To do this, we divide 10000 (the smallest 5-digit number) by 4320:

$= \frac{10000}{4320} \approx 2.31$

Rounding up to the nearest whole number, we get 3. Then, we multiply 4320 by 3:

4320 × 3 = 12960

Thus, the smallest 5-digit number divisible by 54, 120, and 96 is 12960

Q.99 **If base perimeter = 48 cm and slant height = 12 cm, what is the lateral surface area of a square pyramid?**

A. 288 cm^2
B. 192 cm^2
C. 240 cm^2
D. 320 cm^2

Answer: A

Sol: **Given:**

$\text{Base Perimeter (P)} = 48 \text{ cm}$

$\text{Slant Height (l)} = 12 \text{ cm}$

Formula Used:

$LSA = \frac{1}{2} \times P \times l$

Solution:

$LSA = \frac{1}{2} \times 48 \times 12$

$= 24 \times 12 = 288 \text{ cm}^2$

Final Answer

288 cm^2

Q.100 **The curved surface area of a right circular cylinder is 616 cm^2 and the area of its base is 38.5 cm^2. What is the volume (in cm^3) of the cylinder? (Use π = $\frac{22}{7}$)**

A. 1078
B. 1155
C. 1243
D. 1408

Answer: A

Sol: **Given:**

- Curved Surface Area (CSA) of the cylinder = 616 cm^2

- Area of the base = 38.5 cm^2

- π = 22/7

Formula Used:

The formulas used in the solution are:

Curved Surface Area (CSA) = 2πrh

Area of the base = πr^2

Volume of the cylinder = $\pi r^2 h$

Solution:

From the given, Area of the base = πr^2 = 38.5

Using π = 22/7,

$r^2 = 38.5 \times \frac{7}{22} = \frac{7 \times 7}{2 \times 2}$

$r = \frac{7}{2}$

Now, using the formula for CSA:

CSA = 2πrh = 616 cm^2

Substitute the known values:

$2 \times (\frac{22}{7}) \times \frac{7}{2} \times h = 616$

h = 28

Then the value = $\pi r^2 h = \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times 28$ = 1078

Q.101 **Two pipes C and D can fill a tank in 6 hours and 9 hours, respectively. They are opened alternately for 1 hour each, starting with C first. In what duration, will the tank be filled?**

A. 5 hours
B. 6 hours
C. 8 hours
D. 7 hours

Answer: D

Sol: **Given:**

- Pipe C can fill the tank in 6 hours.

- Pipe D can fill the tank in 9 hours.

- They are opened alternately for 1 hour each, starting with Pipe C.

Capacity of the tank = LCM of the time taken by A and B.

Solution:

Capacity of the tank = 18 units

A's efficiency = 18/6 = 3 units per hour

B's efficiency = 18/9 = 2 units per hour

2 hours work for A and B = (3 + 2) = 5 units

=> 2 × 3 hours = 3 × 5 or 15 units

=> 6 hours = 15 units

=> 7 hours = 18 units. (At last A fills remaining 3 units)

∴ Tank will be filled in 7 hours.

Q.102 **One pipe can fill a tank in 6 minutes, while another pipe can empty the completely filled tank in 24 minutes. If both the pipes are opened together when the tank is empty, how any minutes will it take to fill one-half of the tank?**

A. 5
B. 8
C. 9
D. 4

Answer: D

Sol: **Given:**

Filling time = 6 minutes

Emptying time = 24 minutes

Portion to fill = 1/2 of the tank

Formula Used:

Net Rate = $\frac{1}{\text{Fill Time}} - \frac{1}{\text{Empty Time}}$

Solution:

Net rate of filling per minute:

Rate = $\frac{1}{6} - \frac{1}{24} = \frac{4-1}{24} = \frac{3}{24} = \frac{1}{8}$ of the tank per minute.

Time taken to fill the full tank = 8 minutes.

Time taken to fill one-half of the tank = $\frac{1}{2} \times 8$ = 4 minutes.

Final Answer

So the correct answer is (d)

Q.103 **What profit per cent is made by selling an article at a certain price if by selling at $\frac{4}{5}$ of that price there is a loss of 12%?**

A. 10%
B. 3%
C. 12%
D. 5%

Answer: A

Sol: **Given:**

The article is sold at a price where selling it at $\frac{4}{5}$ of the price results in a loss of 12%.

We are to find the profit percentage when the article is sold at the full price.

Formula Used:

Loss = Cost Price − Selling Price

Profit Percentage = $\frac{\text{Profit}}{\text{Cost Price}} \times 100$

Solution:

Let Cost Price (C.P.) = 100

Since there is a loss of 12%, the selling price is:

Selling Price = $100 - (0.12 \times 100) = 100 - 12 = 88$

Selling Price at $\frac{4}{5}$ of the Full Price:

Let the full selling price be P. Therefore:

$\frac{4}{5} \times P = 88$

$P = \frac{88 \times 5}{4} = 110$

Now,

Profit = 110 - 100 = 10

Profit Percentage = $\frac{10}{100} \times 100 = 10\%$

Thus, the profit percentage is 10%

Q.104 **Anjali and Ritu appeared in an examination. Anjali scored 20 marks more than Ritu and her marks were 70 percent of the sum of their marks. How many marks did Anjali score?**

A. 15
B. 35
C. 20
D. 50

Answer: B

Sol: **Given:**

Anjali secured 20 marks more than Ritu.

Solution:

Let us assume Ritu scored M marks in the exam.

Marks of Anjali = M + 20

$=> (M + M + 20) \times \frac{70}{100} = M + 20$

$=> (2M + 20) \times \frac{70}{100} = M + 20$

$=> \frac{140M + 1400}{100} = M + 20$

$=> 140M + 1400 = 100M + 2000$

$=> 40M = 600$

$=> M = 15$

Marks of Anjali = M + 20 = 15 + 20 = 35

Q.105 Rs 190000 is divided among X, Y and Z in such a way that 40 percent of X 's share = 10 percent of Y 's share = 30 percent of Z 's share . What is Z 's share?

A. Rs 40,000
B. Rs 120000
C. Rs 80000
D. Rs 30000

Answer: A

Sol: **Given:**

Total amount = Rs 190000

40% of X = 10% of Y = 30% of Z

Solution:

40% of X = 10% of Y = 30% of Z = k

$$\frac{40}{100} \times X = \frac{10}{100} \times Y = \frac{30}{100} \times Z$$

$$4X = Y = 3Z$$

let 4X = Y = 3Z = K

$$X = \frac{K}{4}, Y = K, Z = \frac{K}{3}$$

Now,

$$\frac{K}{4} + K + \frac{K}{3} = 190000$$

$$\frac{3K + 12K + 4K}{12} = 190000$$

$$19K = 190000 \times 12$$

$$K = \frac{190000 \times 12}{19}$$

$$K = 120000$$

So,

$$Z = \frac{K}{3} = \frac{120000}{3} = 40000$$

Q.106 Find the equation of the line passing through the points (2, 3) and (4, 7).

A. y = 2x - 1
B. y = 2x + 1
C. y = x + 1
D. y = 3x - 3

Answer: A

Sol: **Given:**

Points (2, 3) and (4, 7).

Formula Used:

Slope m = $\frac{y_2 - y_1}{x_2 - x_1}$

Equation: $y - y_1 = m(x - x_1)$

Solution:

Slope m = $\frac{7 - 3}{4 - 2} = \frac{4}{2} = 2.$

Using point (2, 3):

y - 3 = 2(x - 2)
y - 3 = 2x - 4
y = 2x - 1.
Final Answer
So the correct answer is (a)

Q.107 **If the mean of 6, 4, 7, P and 10 is 8, what is the value of P?**

A. 11
B. 12
C. 13
D. 14

Answer: C

Sol: **Given:**
Data: 6, 4, 7, P, 10
Mean = 8
Count (n) = 5
Concept Used:
Mean = Sum of observations / Number of observations.
Formula Used:
$\text{Sum} = \text{Mean} \times n$
Solution:
Sum = 6 + 4 + 7 + P + 10 = 27 + P
$Mean \times 5 = 8 \times 5 = 40$
Equate them:
27 + P = 40
P = 40 - 27 = 13
Exam-Hall Method:
Total needed = 40.
Current sum = 27.
Deficit = 13. So P=13.
So the correct answer is (c)

Q.108 **In an examination, a child scored 30% marks in the first paper out of a total of 180. How much should he score(in percentage) in the second paper out of a total of 150, if he is to get an overall average of at least 50%?**

A. 44%
B. 43%
C. 73%
D. 74%

Answer: D

Sol: **Given:**
Marks scored in first paper = 30% of 180

Total marks in second paper = 150

Required overall average = 50%

Total maximum marks = 180 + 150 = 330

Formula Used:

Marks = $\frac{\text{Percentage}}{100} \times \text{Total Marks}$

Solution:

Total maximum marks = 180 + 150 = 330

Required total marks for 50% average = $\frac{50}{100} \times 330$ = 165

Marks obtained in first paper = $\frac{30}{100} \times 180$ = 54

Required marks in second paper = 165 - 54 = 111

In percentage = $\frac{111}{150} \times 100 = 74\%$

Q.109 **The cost of 2 tables and 3 chairs is ₹ 540 , while that of 2 tables and 1 chair is ₹ 470 . What is the cost of 35 chairs?**

A. ₹ 1,245
B. ₹ 1,205
C. ₹ 1,225
D. ₹ 1,185

Answer: C

Sol: Given:

Cost of 2 tables and 3 chairs = ₹540

Cost of 2 tables and 1 chair = ₹470

We are to find the cost of 35 chairs.

Solution:

Let cost of 1 table = ₹T and 1 chair = ₹C

Then:

2T + 3C = 540 .....(1)

2T + 1C = 470 .....(2)

Subtract (2) from (1):

(2T + 3C) - (2T + 1C) = 540 - 470

2C = 70

C = 35

Cost of 1 chair = ₹35

Cost of 35 chairs = 35 × 35 = ₹1225

Q.110 **A sum of money doubles itself at a certain rate of compound interest in 12 years when the interest is compounded annually. In how many years will it become eight times of itself?**

A. 24
B. 48
C. 12
D. 36

Answer: D

Sol: Given:

Amount = 2 × Principal

Time = 12 years

Solution:

A certain sum at C.I. becomes n times in t years then,

n times → t years

n^m times → (m × t) years

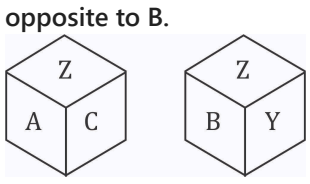
A sum of money placed at C.I. doubles itself in 4 years then,

2 times → 12 years

8 times = 2^3 times = (3 × 12) years = 36 years

∴ A sum of money will amount to its 8 times in 36 years.

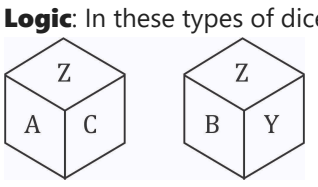
Q.111 **Six letters X, Y, Z, A, B and C are written on different faces of a dice. Two positions of this dice are shown in the figure. Find the letter on the face opposite to B.**



A. A
B. C
C. X
D. Y

Answer: A

Sol: **Logic**: In these types of dice problems, we should write all three numbers/letters in clockwise or anticlockwise from a fix common number/letter.



Z → A → C

Z → B → Y

So, the opposite of B is **A**.

Thus, correct option is (a).

Q.112 **A, B, C, D, E, F, and G are sitting around a circular table facing the centre. Only one person sits between G and E when counted from the right of G. Only one person sits between E and B. Only one person sits between G and F. Only two people sit between C and B. Only one person sits between D and F. How many people sit between A and D when counted from the right of D?**

A. One
B. Three
C. Four
D. Two

Answer: D

Sol: **Given:**

A, B, C, D, E, F, and G are sitting around a circular table facing the centre.

Only one person sits between G and E when counted from the right of G.

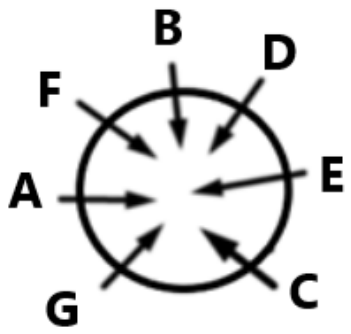
Only one person sits between E and B.

Only one person sits between G and F.

Only two people sit between C and B.

Only one person sits between D and F.

From the given information seating arrangement will be:



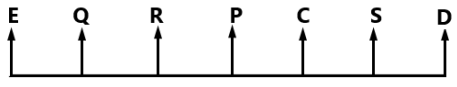
So, **Two (2)** people sit between A and D when counted from the right of D.
Thus, the correct option is: (d)

Q.113 **Seven friends C, D, E, P, Q, R and S are sitting in a straight line facing north. Only twopeople sits to the left of R. Only three people sit between D and R. Only two people sitbetween R and S. E sits third to the left of P. C sits to the immediate right of P. Howmany people sit between Q and S?**

A. None
B. Two
C. Three
D. One

Answer: C

Sol: **Given**:
Seven friends C, D, E, P, Q, R and S are sitting in a straight line facing north.
Only twopeople sits to the left of R.
Only three people sit between D and R.
Only two people sitbetween R and S.
E sits third to the left of P.
C sits to the immediate right of P.
From the given information seating arrangement will be.



Three people sit between Q and S.
Thus, correct option is (c).

Q.114 **In a certain code language,**
A + B means 'A is the sister of B',
A @ B means 'A is the brother of B',
A − B means 'A is the wife of B',
A # B means 'A is the father of B'.
How is O related to V if 'O + P # T @ G − V'?

A. Wife's father's mother
B. Wife's mother
C. Wife's father's sister
D. Wife's sister

Answer: C

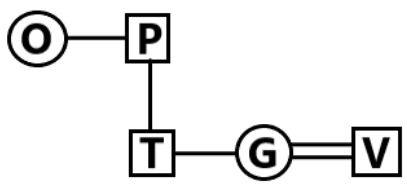
Sol: **Given**:
In a certain code language,
A + B means 'A is the sister of B',
If 'O + P # T @ G − V'?

Symbols + @ - #

RelationSisterBrotherWifeFather

Symbol in Diagram	Meaning
- / O	Female
+ / □	Male
=	Married Couple
—	Siblings
|	Difference Of Generation

From the given information blood relation diagram will be.



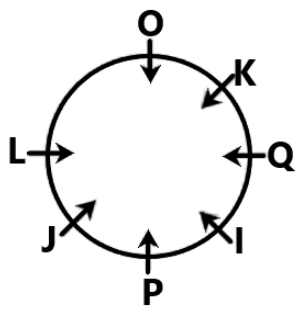
So, O is the **Wife's father's sister** of V.
Thus, correct option is (c).

Q.115 **I, J, K, L, O, P and Q are sitting around a circular table, facing the centre of the table. P sits third to the left of K. O sits second to the left of J. Only K sits between Q and O. L is not an immediate neighbour of P. How many people sit between I and O when counted from the right of I?**

A. One
B. Four
C. Three
D. Two

Answer: D

Sol: **Given**:
I, J, K, L, O, P and Q are sitting around a circular table, facing the centre of the table.
P sits third to the left of K.
O sits second to the left of J.
Only K sits between Q and O.
L is not an immediate neighbour of P.
From the given information seating arrangement will be.



So, **two** people sit between I and O when counted from the right of I.
Thus, correct option is (d).

Q.116 **In a certain code language, 'let me speak' is coded as 'ko df ty' and 'speak the truth' is coded as 'df op np'. How is 'speak' coded in the given language? (All codes are two-letter codes)**

A. op
B. ty
C. ko
D. df

Answer: D

Sol: **Given**: In a certain code language, 'let me speak' is coded as 'ko df ty' and 'speak the truth' is coded as 'df op np'.

let me speak = ko df ty

speak the truth = df op np

So, the code of **speak** is **df**.
Thus, correct option is (d).

Q.117 **In a row of 50 people facing north, Rahul is 15th from the left end. If Sumit sits 4th to the right of Rahul, what is Sumit's position from the right end of the row?**

A. 31st
B. 32nd
C. 33rd
D. 30th

Answer: B

Sol: **Given**:
In a row of 50 people facing north, Rahul is 15th from the left end.
If Sumit sits 4th to the right of Rahul.
Solution:
Total people = 50
Rahul is 15th from the left.
Sumit sits 4th to the right of Rahul.
15 + 4 = 19
Sumit is 19th from the left.
Formula:
Position from right = Total − Position from left + 1
= 50 − 19 + 1
= **32**
So, Sumit is **32nd** from the right end of the row.
Thus, correct option is (b).

Q.118 **How many meaningful words can be formed from the letters of "EAST" using each letter once?**

A. Zero
B. Two
C. Three
D. More than three

Answer: D

Sol: **Given**: EAST
Letters given: E, A, S, T (each used once)
Now, form meaningful English words:
Possible valid words:
EAST
SEAT
TEAS
EATS
That's 4 meaningful words.
So, **more than three** meaningful words can be formed from the letters.
Thus, correct option is (d).

Q.119 **Which letter is 9th to the right of G in the English alphabet?**

A. O
B. P
C. Q
D. R

Answer: B

Sol: **Information Given:**
Starting letter: G
Find 9th letter to the right.
Move forward 9 positions in alphabet.

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Explanation:
G → H(1) → I(2) → J(3) → K(4) → L(5) → M(6) → N(7) → O(8) → P(9)
So 9th letter to the right of G = P
Final Answer:
P
Final Correct Option: (b)

Q.120 What should come in place of the question mark (?) in the given series?
31, 51, 71, 91, 111, ?

A. 131
B. 132
C. 130
D. 129

Answer: A

Sol: **Given**: 31, 51, 71, 91, 111, ?
Logic: Numbers are increasing + 20 place.
31 + 20 = 51
51 + 20 = 71
71 + 20 = 91
91 + 20 = 111
111 + 20 = 131
So, the missing term **131**.
Thus, correct option is (a).

Q.121 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.
Statements:
1. All melons are lemons.
2. No lemon is a pea.
Conclusions:
I. No lemon is a melon.
II. No melon is a pea.

A. Only I follows
B. Only II follows
C. Both follow
D. Neither follows

Answer: B

Sol: **Statements**:
1. All melons are lemons.
2. No lemon is a pea.
From the given statements possible Venn diagram will be.

Conclusions:
I. No lemon is a melon. (**False**, all melons are lemons).
II. No melon is a pea. (**True**, there is no relation between melon and pea).
So, **Only II follows.**
Thus, correct option is (b).

Q.122 Select the option that is related to the sixth number in the same way as the first number is related to the second number and the third number is related to the fourth number. (Operations should be performed on the whole numbers without breaking them into digits.)
315 : 952 :: 428 : 1291 :: ? : 694

A. 221
B. 224
C. 226
D. 229

Answer: D

Sol: **Given**: 315 : 952 :: 428 : 1291 :: ? : 694
Logic: (1st number × 3) + 7 = 2nd number
For, 315 : 952
(315 × 3) + 7 = 952
For, 428 : 1291

(428 × 3) + 7 = 1291
Similarly,
? : 694
(x × 3) + 7 = 694
x × 3 = 687
x = **229**
Thus, correct option is (d).

Q.123 **Select the triad from the given options in which the letter-clusters are related in the same way as the letter-clusters of the given triads. (The same pattern is followed in both triads.)**
IL-JN-PS
LO-MQ-SV

A. OR-PT-VW
B. PS-QU-WZ
C. DG-EI-KL
D. QT-RV-XY

Answer: B

Sol: **Information Given:**
IL–JN–PS
LO–MQ–SV

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic: 1st → 2nd: +1, +2
2nd → 3rd: +6, +5
IL–JN–PS
IL → JN
I → J (**+1**)
L → N (**+2**)
JN → PS
J → P (**+6**)
N → S (**+5**)
LO–MQ–SV
LO → MQ
L → M (**+1**)
O → Q (**+2**)
MQ → SV
M → S (**+6**)
Q → V (**+5**)
Check options:
A) OR → PT → VW
O→P (+1), R→T (+2)
P→V (+6), T→W (+3) (should be +5)
B) PS → QU → WZ
P→Q (+1), S→U (+2)
Q→W (+6), U→Z (+5) ✔
C) DG → EI → KL
D→E (+1), G→I (+2)
E→K (+6), I→L (+3) ✘
D) QT → RV → XY
Q→R (+1), T→V (+2)
R→X (+6), V→Y (+3) ✘
Final Answer:
PS–QU–WZ
Final Correct Option:
B

Q.124 **If 1 is added to each even digit and 1 is added to each odd digit in the number 321854, what will be the sum of the first and last digits in the new number thus formed?**

A. 10
B. 8
C. 12

D. 9

Answer: D

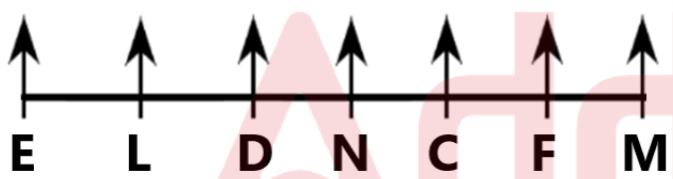
Sol: **Given**: 321854
Add 1 to each even digit and 1 to each odd digit (so every digit increases by 1).
Transform each digit:
3 + 1→ 4
2 + 1→ 3
1 + 1→ 2
8 +1→ 9
5 + 1→ 6
4 + 1→ 5
New number formed: 432965
First digit = 4
Last digit = 5
Sum = 4 + 5 = **9**
So, **9** will be the sum of the first and last digits in the new number thus formed.
Thus, correct option is (d).

Q.125 **Seven people, C, D, E, F, L, M and N, are sitting in a row, facing north. Only two people sit to the right of C. Only two people sit between C and L. Only two people sit between E and N. N sits to the immediate left of C. M sits to the immediate right of F. Who sits at the third position from the left end of the row?**

A. M
B. C
C. L
D. D

Answer: D

Sol: **Given:**
Seven people, C, D, E, F, L, M and N, are sitting in a row, facing north.
Only two people sit to the right of C. Only two people sit between C and L.
Only two people sit between E and N.
N sits to the immediate left of C.
M sits to the immediate right of F.
From the given information seating arrangement will be:



So, **D** sits at the third position from the left end of the row.
Thus, the correct option is: (d)

Q.126 **A, B, E, F, Y and Z live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on till the topmost floor, which is numbered 6. Only one person lives above A. Only F lives below B. Y lives on an even-numbered floor. E lives on a floor above A. How many people live below Z?**

A. Two
B. One
C. Three
D. Four

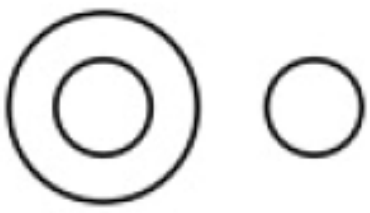
Answer: A

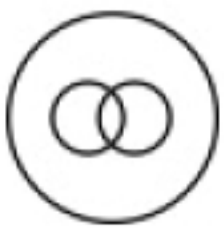
Sol: **Given:**
A, B, E, F, Y and Z live on six different floors of the same building.
The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on till the topmost floor, which is numbered 6.
Only one person lives above A.
Only F lives below B.
Y lives on an even-numbered floor.
E lives on a floor above A.

Floor	Person
6	E
5	A
4	Y
3	Z
2	B
1	F

So, **Two** people live below Z.
Final Correct Option:
(A) Two

Q.127 Which of the following Venn diagrams best represents the relationship between human, advocate and director?

A. 

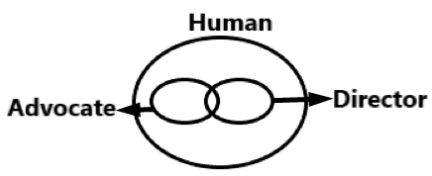
B. 

C. 

D. 

Answer: B

Sol: Human is a larger category that includes all advocates and all directors, as all advocates and directors are humans.
Advocate and Director are distinct professions or roles. An individual can be both an advocate and a director simultaneously, or exclusively one, or neither.
Therefore, the best representation is a larger circle (human) encompassing two smaller, overlapping circles (advocate and director), as shown in option B.



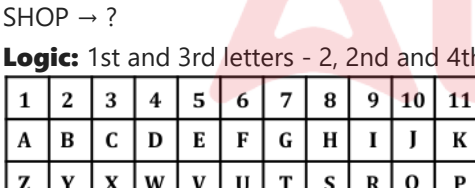
Q.128 Read the given state ments and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, de cide which of the given conclusion(s) is/are true.
Statements:
Some lizards are flowers.

All spiders are panthers.
No flower is a spider.
Conclusions (I): Some lizards are not spiders.
Conclusions (II): At least Some panthers are not flowers.

A. Only conclusion (II) is true
B. Only conclusion (I) is true
C. Neither conclusion (I) nor (II) is true
D. Both conclusions (I) and (II) are true

Answer: B

Sol: **Statements:**
Some lizards are flowers.
All spiders are panthers.
No flower is a spider.
From the given statements Venn diagram will be:



Conclusions (I): Some lizards are not spiders. The lizards that are flowers **c**annot be spiders. - **Follow**
Conclusions (II): At least Some panthers are not flowers. - Spiders ⊂ Panthers
Flowers and spiders do not overlap. But we **cannot say** that panthers (in general) are not flowers. **Does not Follow.**
Final Answer:
Only conclusion (I) is true
Final Correct Option:
(b)

Q.129 **In a code language, 'ROCK' is written as 'PKAG', and 'CLUB' is written as 'AHSX'. How will 'SHOP' be written in that language?**

A. MQDL
B. QMLD
C. QDML
D. QMDL

Answer: C

Sol: **Given:**
ROCK → PKAG
CLUB → AHSX
SHOP → ?
Logic: 1st and 3rd letters - 2, 2nd and 4th letters - 4

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

ROCK → PKAG
R – 2 = P
O – 4 = K
C – 2 = A
K – 4 = G
CLUB → AHSX
C – 2 = A
L – 4 = H
U – 2 = S
B – 4 = X
Now apply the same pattern to SHOP
S – 2 = Q
H – 4 = D
O – 2 = M
P – 4 = L
So, **SHOP → QDML**
Thus, the correct option is **(C) QDML.**

Q.130 What was the day of the week on 7th January 2011?

A. Monday
B. Friday
C. Tuesday
D. Wednesday

Answer: B

Sol: The logic followed here is:
As 2000 is divisible by 400 the number of odd days is 0.
Number of leap years till 2010 = 2 (2004, and 2008)
Number of ordinary years till 2010 = 8
Number of odd days till 2011 = 8 + (2 × 2) = 12 odd days
Total number of odd days till 7th January 2011 = 12 + 7 = 19 odd days = 5 odd days
So, the day on 7th January 2011 is Friday.
Thus, the correct option is: (b)

Code of the day	Day
0	Sunday
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday

Q.131 In a certain code language,
'A + B' means 'A is the mothe r of B',
'A – B' means 'A is the brothe r of B',
'A × B' means 'A is the wife of B' and
'A ÷ B' means 'A is the fathe r of B'.
How is S relate d to R if 'S – T × V ÷ R × H'?

A. Mother's father
B. Mother's brother
C. Sister's daughter
D. Father's sister

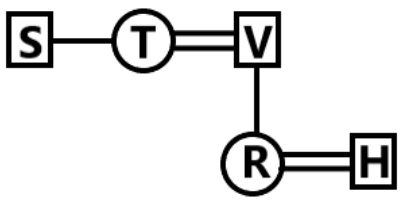
Answer: B

Sol: **Given**:
In a certain code language,
'A + B' means 'A is the mother of B',
If 'S – T × V ÷ R × H'?

Symbols + - × ÷
RelationMotherBrotherWifeFather

Symbol in Diagram	Meaning
- / O	Female
+ / □	Male
=	Married Couple
—	Siblings
|	Difference Of Generation

From the given information blood relation diagram will be.



So, S is the **Mother's brother** of R.
Thus, correct option is (b).

Q.132 Three of the following four options are alike in a certain way and thus form a group. Which is the option that does NOT belong to that group?

A. 2-6-38
B. 2-5-23
C. 3-2-1
D. 1-7-48

Answer: A

Sol: **Logic:** Third number = (Second)^2 − First (for three sets).
Explanation:
B: 2-5-23
$5^2 - 2 = 25 - 2 = 23$
C: 3-2-1
$2^2 - 3 = 4 - 3 = 1$
D: 1-7-48
$7^2 - 1 = 49 - 1 = 48$
A: 2-6-38
$6^2 - 2 = 36 - 2 = 34 \neq 38$ ✗
Thus A does not follow the pattern.
Final Answer:
2–6–38
Final Correct Option:
(a)

Q.133 In a certain code language, 'WAZZES' is written as 'ZYCXHQ', and 'PRFJKO' is written as 'SPIHNM'. How will 'BOMBYX' be written in that language?

A. DNPZAV
B. EQPBBW
C. DMOYAW
D. EMPZBV

Answer: D

Sol: **Given**:
In a certain code language, 'WAZZES' is written as 'ZYCXHQ', and 'PRFJKO' is written as 'SPIHNM'.

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic: Letters are increasing + 3 and decreasing - 2 place alternatley.
For, WAZZES - ZYCXHQ
W + 3 = Z, A - 2 = Y, Z + 3 = C, Z - 2 = X, E + 3 = H, S - 2 = Q
For, PRFJKO - SPIHNM
P + 3 = S, R - 2 = P, F + 3 = I, J - 2 = H, K + 3 = N, O - 2 = M
Similarly,
BOMBYX - ?
B + 3 = **E**, O - 2 = **M**, M + 3 = **P**, B - 2 = **Z**, Y + 3 = **B**, X - 2 = **V**
So, **BOMBYX** is written as **EMPZBV**.
Thus, correct option is (d).

Q.134 Anita points to a man and says he is her mother's brother's son. How is that man related to Anita?

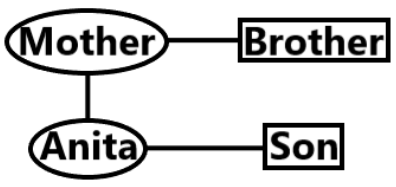
A. Grandfather
B. uncle's son
C. Father
D. Uncle

Answer: B

Sol: **Given**:
Anita points to a man and says he is her mother's brother's son.

Symbol in Diagram	Meaning
- / ○	Female
+ / □	Male
=	Married Couple
—	Siblings
|	Difference Of Generation

From the given information blood relation diagram will be.



The man is **Uncle's Son** of Anita.
Thus, correct option is (b).

Q.135 If '+' means '−', '−' means '×', '×' means '÷' and '÷' means '+', then what will come in place of the question mark (?) in the following equation?
112 × 4 ÷ 8 − 2 + 23 = ?

A. 26
B. 21
C. 18
D. 13

Answer: B

Sol: **Given**: 112 × 4 ÷ 8 − 2 + 23 = ?

Given Sign+ - × ÷

New Sign - × ÷ +

Using **BODMAS** rule.

Operation preference wise	Symbol
Brackets	$[], , ()$
Orders, of	$(power), \sqrt{}(root), of$
Division	$\div$
Multiplication	$\times$
Addition	$+$
Subtraction	$-$

New equation: 112 ÷ 4 + 8 × 2 - 23 = ?
28 + 8 × 2 - 23 = ?
28 + 16 - 23 = ?
44 - 23 = ?
? = **21**
Thus, correct option is (b).

Q.136 If A = ÷, B = ×, C = +, D = −, find: 15 A 3 B 10 C 8 D 12 = ?

A. 46
B. 47
C. 44
D. 45

Answer: A

Sol: **Given**: 15 A 3 B 10 C 8 D 12 = ?

Given LettersABCD

New Sign ÷ × + -

Using **BODMAS** rule.

Operation preference wise	Symbol
Brackets	$[], , ()$
Orders, of	$(power), \sqrt{(root)}, of$
Division	$\div$
Multiplication	$\times$
Addition	$+$
Subtraction	$-$

New equation: 15 ÷ 3 × 10 + 8 - 12 = ?

5 × 10 + 8 - 12 = ?

50 + 8 - 12 = ?

58 - 12 = ?

? = **46**

Thus, correct option is (a).

Q.137 **Statement**:

A ≥ B < C = D > E ; C ≥ F

Conclusions:

I. B < D

II. F ≤ D

A. Only I

B. Only II

C. Both I and II

D. Neither I nor II

Answer: C

Sol: **Statement**:

A ≥ B < C = D > E ; C ≥ F

Conclusions:

I. B < D

II. F ≤ D

From statement (1):

B < C

C = D => so B < D

From statement (2):

C ≥ F

Since C = D, we get D ≥ F

Which means F ≤ D

Check Conclusions

I. B < D

True (derived directly)

II. F ≤ D

True (from C ≥ F and C = D)

So, **Both I and II** follows.

Thus, correct option is (c).

Q.138 **What should come in place of the question mark (?) in the given series based on the English alphabetical order?**
HEM, JGO, LIQ, NKS, ?

A. PNV

B. PMU

C. PMV

D. PNU

Answer: B

Sol: **Given**: HEM, JGO, LIQ, NKS, ?

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic: Letters are increasing + 2 place.

H + 2 = J, J + 2 = L, L + 2 = N, N + 2 = P

E + 2 = G, G + 2 = I, I + 2 = K, K + 2 = M

M + 2 = O, O + 2 = Q, Q + 2 = S, S + 2 = U

So, the missing term is **PMU**.
Thus, correct option is (b).

Q.139 **What should come in place of the question mark (?) in the given series?**
3, 12, 39, 120, 363, ?

A. 1096
B. 1056
C. 1104
D. 1092

Answer: D

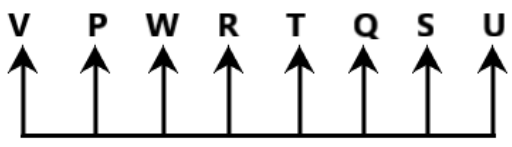
Sol: **Given**: 3, 12, 39, 120, 363, ?
Logic: Numbers are multiply by 3 and + 3.
3 × 3 + 3 = 12
12 × 3 + 3 = 39
39 × 3 + 3 = 120
120 × 3 + 3 = 363
363 × 3 + 3 = 1092
So, the missing term is **1092**.
Thus, correct option is (d).

Q.140 **Eight friends named P, Q, R, S, T, U, V and W are sitting in a straight line facing the north direction. Only P is sitting between V and W. V is sitting at one of the ends. Q is second to the left of U. W is third to the left of Q. Only R is sitting between W and T. Only two persons are sitting between P and T. How many persons are sitting towards the left of S?**

A. Six
B. Four
C. Five
D. Three

Answer: A

Sol: **Given:**
Eight friends named P, Q, R, S, T, U, V and W are sitting in a straight line facing the north direction.
Only P is sitting between V and W.
V is sitting at one of the ends.
Q is second to the left of U.
W is third to the left of Q.
Only R is sitting between W and T.
Only two persons are sitting between P and T.



So, **6 persons** are sitting towards the left of S.
Thus, correct option is (a).

Q.141 **Three out of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster does not belong to that group?**

A. MTO
B. QXS
C. JQL
D. OVR

Answer: D

Sol: **Information Given:**
Options: MTO, QXS, JQL, OVR

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic: Check pattern: 1st → 2nd = +7, 2nd → 3rd = −5
Let's check options:
MTO: M→T (+7), T→O (−5)
QXS: Q→X (+7), X→S (−5)
JQL: J→Q (+7), Q→L (−5)
OVR: O→V (+7), V→R (−4) ✗
Final Answer:
OVR
Final Correct Option:
D

Q.142 **In a certain code language, 'FEELING' is written as 'VVUOTMR' and 'HEAVILY' is written as 'ZVSEBOR'. How will 'FORTUNE' be written in that language?**

A. ILGUVMF

B. ULIGFMV

C. ILUGFMV

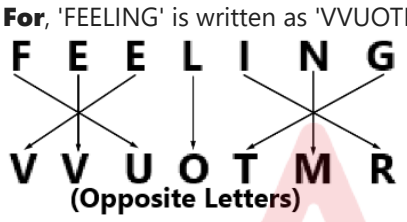
D. ILUGVMF

Answer: D

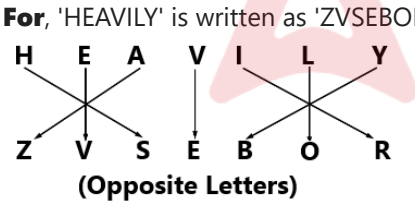
Sol: **Given**: In a certain code language, 'FEELING' is written as 'VVUOTMR' and 'HEAVILY' is written as 'ZVSEBOR'.

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

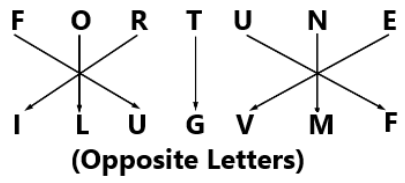
For, 'FEELING' is written as 'VVUOTMR'



For, 'HEAVILY' is written as 'ZVSEBOR'



Similarly,
'FORTUNE' - ?



So, FORTUNE is written as **ILUGVMF**.
Thus, correct option is (d).

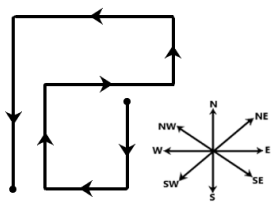
Q.143 **P started walking towards south. He turned 3 times right and 3 times left during his journey. In which direction he will be facing finally?**

A. West
B. North
C. South
D. East

Answer: C

Sol: **Given**:

P started walking towards south.
He turned 3 times right and 3 times left during his journey.
From the given statements path diagram will be.



So, in **south** direction he will be facing finally.
Thus, correct option is (c).

Q.144 **Seven boxes A, B, C, D, E, F, and G are kept one over the other but not necessarily in the same order. Only three boxes are kept below F. Only two boxes are kept between F and G. Only B is kept above D. A is kept at some place below E and at some place above C. How many boxes are kept above E?**

A. Three
B. One
C. Two
D. Four

Answer: C

Sol: **Given:**
Seven boxes A, B, C, D, E, F, and G are kept one over the other but not necessarily in the same order.
Only three boxes are kept below F.
Only two boxes are kept between F and G.
Only B is kept above D.
A is kept at some place below E and at some place above C.

Position	Box
1	B
2	D
3	E
4	F
5	A
6	C
7	G

E is at position 3.
Boxes above it: positions 1 and 2.
So **2 boxes** are above E.
Thus, the correct option is: (c)

Q.145 **Pointing to a man, Ravi said, "He is my father's only son." How is the man related to Ravi?**

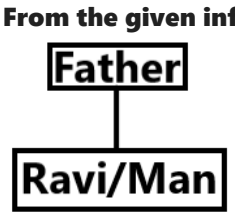
A. Brother
B. Father
C. Son
D. Uncle

Answer: C

Sol: **Given**: Pointing to a man, Ravi said, "He is my father's only son."

Symbol in Diagram	Meaning
- / O	Female
+ / □	Male
=	Married Couple
—	Siblings
|	Difference Of Generation

From the given information blood relation diagram will be.



So, the man is **son** of Ravi.
Thus, correct option is (c).

Q.146 Select the option that is related to the third word in the same way as the second word is related to the first word
Oology : Eggs :: Conchology : ?

A. Shells
B. Algae
C. Skulls
D. Kidneys

Answer: A

Sol: **Given:** Oology : Eggs :: Conchology : ?
Oology : Eggs → Oology is the study of eggs.
Conchology : ? → Conchology is the study of shells.
Let's check all options:
Option (a) Shells **(Correct)**
Conchology is the branch of zoology that studies shells of mollusks.
Option (b) Algae **(Incorrect)**
The study of algae is called Phycology, not Conchology.
Option (c) Skulls **(Incorrect)**
The study of skulls is called Craniology, not Conchology.
Option (d) Kidneys **(Incorrect)**
The study of kidneys is called Nephrology, not Conchology.
Thus, the correct option is **(a) Shells**

Q.147 Select the set in which the numbers are related in the same way as are the numbers of the following sets.
(15, 6, 11) (24, 15, 20)

A. (23, 14, 9)
B. (16, 7, 12)
C. (19, 28, 33)
D. (18, 9, 4)

Answer: B

Sol: **Information Given:**
Sets:
(15, 6, 11)
(24, 15, 20)

Logic:
Second number + 5 = Third number
Third number + 4 = First number

Explanation:
Logic: Check options using the same rule.

Given sets:
6 + 5 = 11
11 + 4 = 15 ✔

15 + 5 = 20
20 + 4 = 24 ✔

Check options:

A:
14 + 5 = 19 ≠ 9 ✘

B:
7 + 5 = 12 ✔
12 + 4 = 16 ✔

C:
28 + 5 = 33 ✔
33 + 4 = 37 ≠ 19 ✘

D:
9 + 5 = 14 ≠ 4 ✘

Final Answer:
(16, 7, 12)

Final Correct Option:
B

Q.148 **Select the option that is related to the third word in the same way as the second word is related to the first word. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word.)**
Conchology : Shells :: Paleontology : ?

A. Metals
B. Fossils
C. Planets
D. Soil

Answer: B

Sol: **Given:**
Conchology : Shells :: Paleontology : ?
Logic: The first word is a scientific field that specializes in studying the second.
Conchology : Shells
→ Conchology is the **scientific study of shells**.
Let's check each options:
Option A: Metals
Metals are studied in **metallurgy.**
Option B: Fossils
Paleontology is the study of **fossils. (Follow)**
Option C: Planets
Planets are studied in **astronomy**
Option D: Soil
Soil is studied in **pedology** or **geology.**
Thus, the correct answer is option **(b).**

Q.149 **Refer to the given series and answer the question that follows. All numbers are single- digit numbers only. Counting to be done from left to right.**
(Left) 5 2 8 1 6 3 7 9 4 2 8 7 1 9 6 4 3 5 9 8 2 1 1 7 6 3 (Right).
How many such even digits are there, each of which is immediately preceded by an even digit and also immediately followed by an odd digit?

A. Five
B. Two
C. Three
D. Four

Answer: D

Sol: **Given**: (Left) 5 2 8 1 6 3 7 9 4 2 8 7 1 9 6 4 3 5 9 8 2 1 1 7 6 3 (Right)

Logic: Even digit | Even digits | Odd digit

(Left) 5 2 8 1 6 3 7 9 4 2 8 7 1 9 6 4 3 5 9 8 2 1 1 7 6 3 (Right)

So, **four** such even digits are there, each of which is immediately preceded by an even digit and also immediately followed by an odd digit.
Thus, correct option is (d).

Q.150 **What will be the acute angle between the hour hand and the minute hand at 6:25 p.m .?**

A. 30°
B. 40.5°
C. 42.5°
D. 35.5°

Answer: C

Sol: 1 min = $360/60$= 6°

5 min = 6° × 5 = 30°

Required angle = 30+$25/2$
=30+12.5

=42.5°
