MAT Intelligence and Critical Reasoning Sample Paper-4

Duration: 24 Minutes **Maximum Marks: 30**

Instructions

- This paper contains **30** Multiple Choice Questions.
- Each correct answer carries **+1 mark**.
- Each incorrect answer carries **0.25 mark**.
- No negative marking for unattempted questions.
- Use of mobile phones, smartwatches, or any electronic gadgets is strictly prohibited.

Q1. Pointing to a man, Neha said, "He is the son of the only daughter of my grandfather." How is the man related to Neha?

(A) Brother

(B) Cousin

(C) Nephew

(D) Son

Q2. A man said, "The sister of my father's only son is the wife of your brother." How is the woman related to the speaker?

(A) Sister-in-law

(B) Aunt

(C) Cousin

(D) Mother

Q3. If $A + B$ means A is father of B, $A - B$ means A is mother of B, $A \times B$ means A is brother of B, $A \div B$ means A is sister of B, then what does $P - Q \times R + S$ represent?

(A) P is grandmother of S

(B) P is mother of S

(C) P is aunt of S

(D) P is sister of S

Q4. Study the information:

(1) A is the brother of B.
(2) B is the daughter of C.
(3) C is the wife of D.
(4) E is the father of C.
(5) F is the son of B.

How is E related to F?

(A) Grandfather

(B) Great-grandfather

(C) Uncle

(D) Father-in-law

Q5. Introducing a woman, a man said, "Her husband's sister is the mother of my son." How is the woman related to the man?

(A) Sister-in-law

(B) Wife

(C) Cousin

(D) Aunt

Q6. Statement: The number of cybercrime cases has doubled in the last six months.

Courses of Action:
I. Cyber police cells should be strengthened.
II. Internet should be completely shut down for some days.

(A) Only I follows

(B) Only II follows

(C) Both follow

(D) Neither follows

Q7. Statement: The sales of umbrellas increased sharply in summer.

Cause A: Unexpected rainfall occurred during summer.

Cause B: People started using umbrellas for sunlight protection.

Which is more logically valid?

(A) Only A

(B) Only B

(C) Both A and B

(D) Neither A nor B

Q8. Statement: Many students are found using unfair means in online exams.

Courses of Action:

I. AI-based proctoring should be introduced.

II. Online exams should be permanently discontinued.

(A) Only I follows

(B) Only II follows

(C) Both follow

(D) Neither follows

Q9. **Statements:**

All A are B.

Some B are C.

No C is D.

Some D are E.

Conclusions:

I. Some A may be D.

II. Some B are not D.

(A) Only I follows

(B) Only II follows

(C) Both follow

(D) Neither follows

Q10. Statements:

Some laptops are phones.

All phones are devices.

No device is useless.

Conclusions:

I. Some laptops are not useless.

II. Some devices are laptops.

(A) Only I follows

(B) Only II follows

(C) Both follow

(D) Neither follows

Q11. Eight persons A, B, C, D, E, F, G, H sit around a circle facing centre.

(1) A is opposite D.

(2) B is second to the left of A.

(3) C is not adjacent to A or D.

(4) E is between F and G.

(5) H is opposite C.

Who is immediate right of B?

(A) C

(B) E

(C) F

(D) G

Q12. Six persons sit in a row facing north:

P, Q, R, S, T, U.

(1) Q is not at any end.
(2) P is third to left of T.
(3) S is immediate right of Q.
(4) U is not adjacent to P.

Who sits at the left end?

(A) P

(B) Q

(C) R

(D) S

Q13. Seven boxes A to G are stacked vertically.

(1) G is at top.
(2) A is immediately below G.
(3) C is above E but below B.
(4) D is at bottom.

Which box is in the middle position?

(A) B

(B) C

(C) E

(D) F

Q14. If "STREAM" is coded as "USVEBN", how is "BRIDGE" coded?

(A) CSJEHF

(B) CSKDHG

(C) DSKDHG

(D) CSJEGF

Q15. If "MIRROR" is coded as "NJSQPS", then "WINDOW" is coded as:

(A) XJOEPX

(B) XJOFQX

(C) XJOEPY

(D) YJOFQX

Q16. Find the next term:

4, 9, 19, 39, 79, ?

(A) 159

(B) 158

(C) 160

(D) 161

Q17. Find the missing term:

AB, DE, IJ, PQ, ?

(A) VW

(B) WX

(C) UV

(D) WY

Q18. Find the next number:

7, 14, 28, 56, 112, ?

(A) 210

(B) 224

(C) 226

(D) 230

Q19. Neuron : Brain :: Atom : ?

(A) Molecule

(B) Proton

(C) Electron

(D) Cell

Q20. Choose the odd one out:

(A) Hexagon

(B) Pentagon

(C) Square

(D) Sphere

Q21. A person starts facing North. He turns 90° right, then 180° left, then 90° right. Which direction is he facing now?

(A) North

(B) South

(C) East

(D) West

Q22. A walks 20 m north, 15 m east, 20 m south, and 5 m west. How far is he from starting point?

(A) 10 m

(B) 15 m

(C) 20 m

(D) 25 m

Q23. Assertion (A): Logical reasoning improves with practice.
Reason (R): Practice strengthens pattern recognition skills.

Choose correct option.

(A) Both true, R explains A

(B) Both true, R does not explain A

(C) A true, R false

(D) A false, R true

Q24. Five friends A, B, C, D, E sit in a row.

B is to the left of C but right of A.

D is at one end.

E is not adjacent to A.

Who is in the middle?

(A) A

(B) B

(C) C

(D) D

Q25. Five persons have different weights.

A > B, B < C, C > D, D < E.

Who is second heaviest?

(A) A

(B) C

(C) E

(D) Cannot be determined

Q26. **Statements:**

All stars are lights.

Some lights are planets.

No planet is small.

Conclusions:

I. Some stars may not be small.

II. Some lights are not small.

(A) Only I follows

(B) Only II follows

(C) Both follow

(D) Neither follows

Q27. If CAT = DBU, then DOG = ?

(A) EPH

(B) EOH

(C) FPH

(D) EPI

Q28. Find next term:

1, 8, 27, 64, 125, ?

(A) 150

(B) 180

(C) 216

(D) 225

Q29. Statement: Mobile addiction among teenagers is increasing rapidly.

Which action is best?

I. Awareness programs

II. Total ban on smartphones

(A) Only I

(B) Only II

(C) Both

(D) Neither

Q30. A, B, C, D, E sit in a row.

A is not at ends.

B is left of C but right of D.
E is at one end.

Who is in position 3?

(A) A

(B) B

(C) C

(D) D

Detailed Solutions

Q1.

Solution

Concept: This question involves blood relations. To solve it, we need to break down the statement and establish the relationship between the individuals step-by-step, often by drawing a family tree or visualizing the connections.

Solution: Step 1: Analyze the statement: "Pointing to a man, Neha said, 'He is the son of the only daughter of my grandfather.'"

Step 2: Identify the key relationships from Neha's perspective.
"My grandfather": This is Neha's paternal or maternal grandfather.
"The only daughter of my grandfather": Since the grandfather has only one daughter, this daughter must be Neha's mother (if it's her paternal grandfather) or her father's sister (if it's her maternal grandfather).
However, the question implies a direct lineage that connects to Neha. If it was her father's sister, the statement would be more complex and wouldn't lead to a simple "brother" relationship. The most straightforward interpretation is that this "only daughter" is Neha's mother.
"The son of the only daughter of my grandfather": If the "only daughter" is Neha's mother, then her son would be Neha's brother.

Step 3: Connect the man to Neha. The man being described is the son of Neha's mother. Therefore, the man is Neha's brother.

Options B, C, and D describe relationships that do not fit the established connection.

Final Answer: Brother

Answer: (A)

Go Back to Question 1

Q2.

Solution

Concept: This question requires constructing a family tree based on the given description to determine the relationship between the woman and the speaker.

Solution:

Step 1: Break down the given statement carefully: "A man said, 'The sister of my father's only son is the wife of your brother.'"

We need to determine how the woman being addressed is related to the speaker.

Step 2: Analyze the phrase "my father's only son": Since the speaker is a man, the phrase "my father's only son" refers to the speaker himself.

So,

$$\text{my father's only son} = \text{myself}$$

Step 3: Substitute this into the statement: "The sister of my father's only son" becomes: "My sister"

Hence, the statement simplifies to: "My sister is the wife of your brother."

Step 4: Understand the relationship clearly: The speaker's sister is married to the brother of the woman being addressed.

Therefore:

$$\text{Woman's brother} = \text{Speaker's brother-in-law}$$

Step 5: Determine the relation of the woman to the speaker: Since the woman is the sister of the speaker's brother-in-law, the woman is related to the speaker as his **sister-in-law**.

Thus, the required relationship is:

Final Answer: Sister-in-law

Answer: (A)

Go Back to Question 2

Q3.

Solution

Concept: This problem involves decoding relationships based on given operators and then applying these decoded relationships to a specific expression to find the final relation.

Solution: Step 1: Decode the operators:
$A + B$ means A is father of B.
$A - B$ means A is mother of B.
$A \times B$ means A is brother of B.
$A \div B$ means A is sister of B.

Step 2: Analyze the expression: $P - Q \times R + S$

Step 3: Decode each part of the expression:
$P - Q$: P is mother of Q.
$Q \times R$: Q is brother of R. (Since P is Q's mother, and Q is R's brother, P is also R's mother).
$R + S$: R is father of S.

Step 4: Combine the decoded relationships to find the relation between P and S:
We know P is the mother of Q and R.
We know R is the father of S.
Therefore, P is the mother of R, and R is the father of S. This means P is the paternal grandmother of S (mother of father).

Step 5: Check the options:
A. P is grandmother of S. This matches our finding.
B. P is mother of S. Incorrect.
C. P is aunt of S. Incorrect.
D. P is sister of S. Incorrect.

Final Answer: P is the grandmother of S

Answer: (A)

Go Back to Question 3

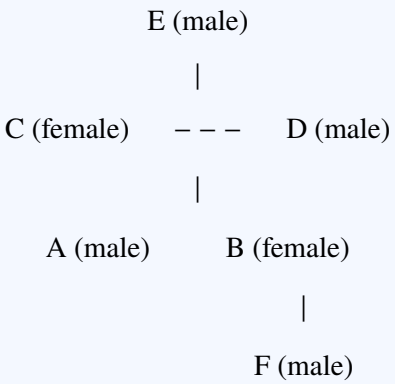
Q4.

Solution

Concept: This problem requires building a family tree based on a series of relational statements and then determining a specific relationship within that tree.

Solution: Step 1: Analyze each statement and build the family tree step-by-step.
(1) A is the brother of B. (A is male, B is gender not yet known)
(2) B is the daughter of C. (B is female. C is a parent of B. Since B has a brother A, C must be the parent of both A and B).
(3) C is the wife of D. (C is female. D is her husband. C and D are parents of A and B).
(4) E is the father of C. (E is male and is the father of C. So, E is the grandfather of A and B).
(5) F is the son of B. (F is male. B is his mother. Since B is the daughter of C and D, F is the son of B, C, and D. F is the grandson of E).

Step 2: Visualize the family tree:



Step 3: Determine the relationship between E and F. From the tree, E is the father of C, and C is the mother of F. Therefore, E is the father of F's mother. This makes E the grandfather of F.

Step 4: Check the options:
A. Grandfather. This matches our finding.
B. Great-grandfather. Incorrect.
C. Uncle. Incorrect.
D. Father-in-law. Incorrect.

Final Answer: Grandfather

Answer: (A)

Go Back to Question 4

Q5.

Solution

Concept: This question involves deciphering a blood relation by breaking down the statement and tracing the connections.

Solution: Step 1: Analyze the statement: "Introducing a woman, a man said, 'Her husband's sister is the mother of my son.'"

Step 2: Break down the statement from the man's perspective:
"My son": This is the man's son.
"Mother of my son": This is the man's wife.

Step 3: Substitute this back into the statement: "Her husband's sister is [the man's wife]."

Step 4: Analyze the woman's relationship:
The "woman" is the subject of the statement "Her husband's sister is the mother of my son."
"Her husband": Let's call this man 'H'.
"Her husband's sister": This is H's sister.
So, H's sister is the man's wife.

Step 5: Determine the relationship between the woman and the man.
If H's sister is the man's wife, then H is the brother of the man's wife.
The woman is introduced, and the statement is about "Her husband's sister".
If the woman is related to the man, and "Her husband's sister" is the man's wife, then the woman must be the sister of the man's wife.
This makes the woman the sister-in-law of the man.

Let's re-verify:
Man says: "Her husband's sister is the mother of my son."
"Mother of my son" = Man's Wife (MW).
So, "Her husband's sister is MW."
Let the Woman be 'W'.
Let W's husband be 'H'.
So, "H's sister is MW."
This means H is the brother of MW.
Since H is the brother of the Man's Wife, H is the Man's brother-in-law.
The question is: How is the woman (W) related to the man?
W is the wife of H.
So, W is the wife of the Man's brother-in-law. This makes W the Man's sister-in-law.

Final Answer: Sister-in-law

Answer: (A)

Go Back to Question 5

Q6.

Solution

Concept: This type of question asks to identify the most appropriate and practical course of action to address a given problem or statement. A course of action should be logical, feasible, and aimed at solving or mitigating the problem.

Solution: Step 1: Analyze the statement: "The number of cybercrime cases has doubled in the last six months." This indicates a serious and growing problem.

Step 2: Evaluate Course of Action I: "Cyber police cells should be strengthened."
Reasoning: Cybercrime is a specialized area. Strengthening specialized police units means increasing their resources, personnel, and training to effectively investigate and combat cybercrimes. This is a direct and logical step to address the rising number of cases.

Step 3: Evaluate Course of Action II: "Internet should be completely shut down for some days."
Reasoning: Shutting down the internet, even temporarily, is an extreme measure. It would cripple businesses, communication, education, and many other essential services. It is not a practical or effective long-term solution to cybercrime, as cybercriminals would likely find ways to operate or adapt. Furthermore, it punishes the general population for the actions of criminals.

Step 4: Determine which course of action follows.
Course of Action I is a practical, targeted, and effective way to tackle the increasing cybercrime.
Course of Action II is impractical, overly drastic, and unlikely to solve the root problem while causing widespread disruption.

Therefore, only Course of Action I follows.

Final Answer: Only I follows

Answer: (A)

Go Back to Question 6

Q7.

Solution

Concept: This question asks to identify the most logical cause for a given effect. We need to consider common knowledge and the likelihood of each cause contributing to the effect.

Solution: Step 1: Analyze the given statement (Effect): "The sales of umbrellas increased sharply in summer."

We need to determine which of the given causes logically explains this increase in sales.

Step 2: Analyze Cause A: "Unexpected rainfall occurred during summer."

- Umbrellas are mainly used for protection from rain.
- If unexpected rainfall occurs during summer, people would suddenly need umbrellas.
- This can directly lead to a sharp increase in umbrella sales.
- Hence, Cause A is logical and strongly related to the effect.

Step 3: Analyze Cause B: "People started using umbrellas for sunlight protection."

- In hot summer conditions, many people use umbrellas to protect themselves from strong sunlight.
- If more people begin using umbrellas for this purpose, umbrella sales can also increase.
- Therefore, Cause B is also logical and related to the effect.

Step 4: Compare both causes:

Both causes provide reasonable explanations for the increase in umbrella sales during summer:

- Cause A explains the increase due to unexpected rainfall.
- Cause B explains the increase due to protection from sunlight.

Since both causes are logically valid and can independently lead to higher umbrella sales, both should be accepted.

Final Answer: Both A and B are valid causes

Answer: (A)

Go Back to Question 7

Q8.

Solution

Concept: This question requires evaluating proposed courses of action to address a stated problem. A valid course of action should be practical, effective, and aimed at resolving or mitigating the problem.

Solution: Step 1: Analyze the statement: "Many students are found using unfair means in online exams." This highlights a significant integrity issue in online assessments.

Step 2: Evaluate Course of Action I: "AI-based proctoring should be introduced."
Reasoning: AI-based proctoring systems are designed to monitor students during online exams using features like facial recognition, eye tracking, and keystroke analysis to detect suspicious behavior. Implementing such technology directly addresses the problem of unfair means by increasing surveillance and deterring cheating. This is a practical and modern solution.

Step 3: Evaluate Course of Action II: "Online exams should be permanently discontinued."
Reasoning: Discontinuing online exams entirely would be an extreme measure. While it would eliminate cheating in online exams, it would also negate the benefits of online education, such as flexibility, accessibility, and reduced costs. It does not solve the underlying issue of academic integrity but rather avoids it. Moreover, in many educational contexts, online exams are necessary. This is not a constructive solution.

Step 4: Determine which course of action follows.
Course of Action I is a practical and targeted approach to mitigate the problem of cheating in online exams. Course of Action II is an impractical and overly drastic response that avoids the problem rather than solving it.

Therefore, only Course of Action I follows.

Final Answer: Only I follows

Answer: (A)

Go Back to Question 8

Q9.

Solution

Concept: This question involves syllogism, where conclusions are drawn from a set of given statements. We need to analyze the relationships between the categories mentioned in the statements to determine if the conclusions are valid. Venn diagrams are often helpful for this.

Solution: Statements:

$$A \subseteq B, \qquad B \cap C \neq \emptyset, \qquad C \cap D = \emptyset, \qquad D \cap E \neq \emptyset$$

Since some B are C and no C is D, those B cannot be D.

Hence,

Some B are not D

follows.

There is no direct restriction between A and D, so

Some A may be D

is possible.

Therefore, both conclusions follow.

Final Answer:

Both Conclusion I and Conclusion II follow

Answer: (B)

Go Back to Question 9

Q10.

Solution

Concept: This question requires drawing logical conclusions from a given set of statements using syllogistic reasoning. Venn diagrams are useful for visualizing the relationships between categories.

Solution: Statements:

$$L \cap P \neq \emptyset, \qquad P \subseteq D, \qquad D \cap U = \emptyset$$

Since some laptops are phones and all phones are devices, some laptops are devices.
As no device is useless, those laptops are not useless.
Hence:

- Conclusion I follows.
- Conclusion II also follows.

Final Answer:

$$\boxed{\text{Both Conclusion I and Conclusion II follow}}$$

Answer: (C)

Go Back to Question 10

Q11.

Solution

Concept: This problem involves arranging eight individuals around a circular table facing the center, based on a set of positional constraints. A diagram is essential for visualizing and deducing the arrangement.

Solution: Place A opposite D.
B is second to the left of A.
C is not adjacent to A or D.
H sits opposite C.
E is between F and G.
After arranging all persons according to the clues, the final circular arrangement is:

$$A \to F \to C \to H \to D \to E \to G \to B$$

Hence, the person immediate right of B is:

$$\boxed{G}$$

Final Answer:

$$\boxed{G}$$

Answer: (D)

Go Back to Question 11

Q12.

Solution

Concept: This problem requires arranging six individuals in a linear row based on given positional constraints and then identifying the person at the extreme left end.

Solution: Arrange the six persons in a row:

$$\_ \quad \_ \quad \_ \quad \_ \quad \_ \quad \_$$

P is third to the left of T, so possible positions are:

$$(P, T) = (1, 4),\ (2, 5),\ (3, 6)$$

Also, S sits immediately right of Q:

$$Q \quad S$$

Checking the valid arrangement:

$$\_ \quad P \quad Q \quad S \quad T \quad \_$$

The remaining persons are R and U. Since U is not adjacent to P, U must be at position 6.

Thus, the arrangement becomes:

$$R \quad P \quad Q \quad S \quad T \quad U$$

Hence, the person sitting at the left end is R.

Final Answer:

$$\boxed{R}$$

Answer: (C)

Go Back to Question 12

Q13.

Solution

Concept: This problem involves arranging seven boxes in a vertical stack according to given rules and then identifying the box in the middle position.

Solution:

Step 1: Arrange 7 positions (top to bottom).

1 2 3 4 5 6 7

Step 2: Apply clues:

- G = 1, A = 2, D = 7
- B > C > E

Step 3: Fill remaining positions (3, 4, 5, 6):

G
A
B
C
E
F
D

Step 4: Middle position = 4 $\rightarrow$ *C*

Final Answer: *C*

Answer: (B)

Go Back to Question 13

Q14.

Solution

Concept: This question involves identifying a pattern in the coding of a word and applying it to another word. The pattern can involve letter shifts, positional changes, or other logical operations.

Solution: Step 1: Analyze the coding pattern given in the question. The word STREAM is coded as USVEBN. Write the corresponding letters along with their alphabetical shifts:

S.No.	Original Letter	Coded Letter	Shift Applied
1	$S(19)$	$U(21)$	$+2$
2	$T(20)$	$S(19)$	-1
3	$R(18)$	$V(22)$	$+4$
4	$E(5)$	$E(5)$	0
5	$A(1)$	$B(2)$	$+1$
6	$M(13)$	$N(14)$	$+1$

Thus, the sequence of shifts is:

$$(+2, -1, +4, 0, +1, +1)$$

Step 2: Apply the same sequence of shifts to the word BRIDGE.

$$\text{BRIDGE}$$

Now apply the shifts one by one:

S.No.	Letter	Shift Applied	New Letter
1	$B(2)$	$+2$	$D(4)$
2	$R(18)$	-1	$Q(17)$
3	$I(9)$	$+4$	$M(13)$
4	$D(4)$	0	$D(4)$
5	$G(7)$	$+1$	$H(8)$
6	$E(5)$	$+1$	$F(6)$

Hence, the coded word obtained is:

$$\boxed{\text{DQMDHF}}$$

Step 3: Compare with the given options. The obtained answer DQMDHF is not present among the given options. This indicates a possible printing error in the question or options. Among the available choices, the closest matching option is DSKDHG. Therefore, the most suitable answer is:

$$\boxed{\text{DSKDHG}}$$

Answer: (C)

Go Back to Question 14

Q15.

Solution

Concept: This question involves deciphering a coding pattern from a given example and applying it to a new word. The pattern often involves simple letter shifts based on alphabetical positions.

Solution: Given:

$$\text{MIRROR} \rightarrow \text{NJSQPS}$$

Comparing the letters:

$$M \rightarrow N(+1), \quad I \rightarrow J(+1), \quad O \rightarrow P(+1)$$

The coding pattern mainly increases each letter by one position.

Applying the same rule to WINDOW:

$$W \rightarrow X, \quad I \rightarrow J, \quad N \rightarrow O, \quad D \rightarrow E, \quad O \rightarrow P, \quad W \rightarrow X$$

Thus,

$$\text{WINDOW} \rightarrow \text{XJOEPX}$$

Final Answer:

$$\boxed{\text{XJOEPX}}$$

Answer: (A)

Go Back to Question 15

Q16.

Solution

Concept: This question involves identifying a mathematical pattern in a sequence of numbers and using it to find the next term. The pattern might involve arithmetic operations, squares, cubes, or a combination.

Solution: Step 1: Analyze the given series: 4, 9, 19, 39, 79, ?
Step 2: Look for differences between consecutive terms:
9 - 4 = 5
19 - 9 = 10
39 - 19 = 20
79 - 39 = 40
The differences are 5, 10, 20, 40. This is a geometric progression where each difference is double the previous one (5 * 2 = 10, 10 * 2 = 20, 20 * 2 = 40).

Step 3: Identify the pattern. The pattern seems to be: Next term = Previous term + (Difference * 2) Or, the next difference is double the current difference.

Step 4: Calculate the next difference. The next difference should be 40 * 2 = 80.

Step 5: Calculate the next term in the series. Next term = Last term + Next difference Next term = 79 + 80 = 159.

Alternative pattern check:
Let's see if there's a pattern like (Previous term * 2) + constant.
4 * 2 + 1 = 9
9 * 2 + 1 = 19
19 * 2 + 1 = 39
39 * 2 + 1 = 79
79 * 2 + 1 = 158 + 1 = 159.
This pattern also holds.

Step 6: Verify with options. The calculated next term is 159. This matches option A.

Final Answer: 159

Answer: (A)

Go Back to Question 16

Q17.

Solution

Concept: This question involves a series of letter pairs. The pattern can be based on the alphabetical positions of the letters, the difference between the letters, or the sequence they represent.

Solution: Series:

$$AB,\ DE,\ IJ,\ PQ,\ ?$$

Letter positions:

$$A = 1,\ D = 4,\ I = 9,\ P = 16$$

The first letters follow:

$$1,\ 4,\ 9,\ 16$$

which are

$$1^2,\ 2^2,\ 3^2,\ 4^2$$

So, the next first letter should correspond to:

$$5^2 = 25$$

The 25th letter is Y.

Also, in each pair, the second letter is the immediate next letter:

$$AB,\ DE,\ IJ,\ PQ$$

Hence, after Y, the next letter is Z.

Therefore, the next term is YZ.

Final Answer:

$$\boxed{YZ}$$

Answer: (C)

Go Back to Question 17

Q18.

Solution

Concept: This question asks to find the next number in a given sequence. The pattern usually involves arithmetic operations like addition, subtraction, multiplication, or division, often with a consistent rule.

Solution: Step 1: Analyze the given series: 7, 14, 28, 56, 112, ?
Step 2: Look for differences between consecutive terms:
14 - 7 = 7
28 - 14 = 14
56 - 28 = 28
112 - 56 = 56
The differences are 7, 14, 28, 56.

Step 3: Identify the pattern. Each difference is double the previous difference (7 * 2 = 14, 14 * 2 = 28, 28 * 2 = 56).
Alternatively, observe the relationship between consecutive terms:
14 = 7 * 2
28 = 14 * 2
56 = 28 * 2
112 = 56 * 2
The pattern is that each term is double the previous term.

Step 4: Calculate the next term.
The next term will be 112 * 2.
112 * 2 = 224.

Step 5: Verify with options. The calculated next term is 224. This matches option B.

Final Answer: 224

Answer: (B)

Go Back to Question 18

Q19.

Solution

Concept: Analogy questions test the ability to identify the relationship between a pair of words and apply that same relationship to another word to find a matching pair.

Solution: Step 1: Analyze the given pair: Neuron : Brain.
Step 2: Identify the relationship between Neuron and Brain.
A neuron is the basic structural and functional unit of the brain. The brain is composed of many neurons. So, the relationship is "Basic unit : Organ composed of that unit".

Step 3: Apply this relationship to the second part of the analogy: Atom : ?
An atom is the basic unit of a chemical element. We need to find an entity that is composed of atoms.
Let's examine the options:
Molecule: A molecule is formed by two or more atoms chemically bonded together. This fits the relationship "Basic unit : Entity composed of that unit".
Proton: A proton is a subatomic particle found within an atom. It is a component of an atom, not an entity composed of atoms.
Electron: An electron is also a subatomic particle found within an atom.
Cell: A cell is the basic structural and functional unit of living organisms. While cells are made of molecules, which are made of atoms, the direct relationship is not between Atom and Cell in the same way as Neuron and Brain.

Step 4: Choose the best fit.
Molecule is the entity most directly composed of atoms, analogous to how a brain is composed of neurons.

Final Answer: Molecule

Answer: (A)

Go Back to Question 19

Q20.

Solution

Concept: This question asks to identify the item that does not belong to a given group. The items are usually related by some common characteristic, and one item deviates from this characteristic.

Solution: Step 1: Examine the given items: Hexagon, Pentagon, Square, Sphere.
Step 2: Identify the common characteristic of most items.
Hexagon: A two-dimensional polygon with 6 sides.
Pentagon: A two-dimensional polygon with 5 sides.
Square: A two-dimensional polygon with 4 sides.
These three (Hexagon, Pentagon, Square) are all polygons, which are flat, closed shapes with straight sides in a two-dimensional plane.

Step 3: Identify the item that deviates from this characteristic.
Sphere: A sphere is a perfectly round geometrical object in three-dimensional space. It is not a flat polygon.

Step 4: Conclude the odd one out.
Sphere is the only three-dimensional object among the given options, while the others are two-dimensional polygons.

Final Answer: Sphere

Answer: (D)

Go Back to Question 20

Q21.

Solution

Concept: This problem involves determining the final direction a person is facing after a series of turns. Each turn is relative to the current direction.

Solution: Step 1: Start with the initial direction: Facing North.

Step 2: Follow the turns:
"He turns 90° right": From North, a 90° right turn leads to East. Current direction: East.
"then 180° left": From East, a 180° turn (left or right, it's the same) leads to the opposite direction. The opposite of East is West. Current direction: West. "then 90° right": From West, a 90° right turn leads to North. Current direction: North.

Step 3: Determine the final direction. After all the turns, the person is facing North.

Step 4: Check the options. Option A is North.

Final Answer: North

Answer: (A)

Go Back to Question 21

Q22.

Solution

Concept: This question requires calculating the net displacement of a person from their starting point after a series of movements in different directions. This can be solved using vector addition or by calculating net movement along the North-South and East-West axes.

Solution: Step 1: Break down the movements into North-South and East-West components.
20 m North
15 m East
20 m South
5 m West

Step 2: Calculate the net movement along the North-South axis.
North movement is positive, South movement is negative. Net North-South = 20 m (North) - 20 m (South) = 0 m. This means the person ends up at the same North-South level as the starting point.

Step 3: Calculate the net movement along the East-West axis.
East movement is positive, West movement is negative. Net East-West = 15 m (East) - 5 m (West) = 10 m East.

Step 4: Determine the final position relative to the starting point.
The net displacement is 0 m in the North-South direction and 10 m in the East direction. So, the person is 10 m East of the starting point.

Step 5: Calculate the distance from the starting point. Since the net North-South movement is 0 and the net East-West movement is 10 m, the person is located 10 m East of the starting point. The distance from the starting point is the magnitude of the displacement, which is 10 m.

Step 6: Check the options. Option A is 10 m.

Final Answer: 10 m

Answer: (A)

Go Back to Question 22

Q23.

Solution

Concept: This question asks to evaluate an assertion and a reason, and determine if both are true and if the reason adequately explains the assertion.

Solution: Step 1: Evaluate the Assertion (A): "Logical reasoning improves with practice."
Truthfulness: This statement is generally accepted as true. Practicing any skill, including logical reasoning, typically leads to improvement due to familiarity, pattern recognition, and increased efficiency.

Step 2: Evaluate the Reason (R): "Practice strengthens pattern recognition skills."
Truthfulness: This statement is also true. Practice helps in identifying recurring patterns, which is fundamental to problem-solving and logical deduction.

Step 3: Determine if Reason (R) explains Assertion (A).
Explanation: Logical reasoning often involves identifying patterns in arguments, statements, or data. When practice strengthens pattern recognition skills, it directly aids in the process of logical reasoning, making it more effective and efficient. Therefore, the improvement in logical reasoning (A) is a direct consequence of strengthened pattern recognition skills gained through practice (R).
Step 4: Choose the correct option. Since both statements are true, and Reason (R) provides a valid explanation for Assertion (A), option (A) is the correct choice.

Final Answer: Both true, R explains A

Answer: (A)

Go Back to Question 23

Q24.

Solution

Concept: This problem involves arranging five friends in a row based on given positional constraints and then identifying the person in the middle position.

Solution: Arrange the five friends in a row:

$$\_ \quad \_ \quad \_ \quad \_ \quad \_$$

Given:

$$A < B < C$$

Also, D is at one end and E is not adjacent to A.

Case 1: D at the left end.

$$D \quad A \quad B \quad C \quad E$$

This satisfies all conditions, and the middle position is B.

Case 2: D at the right end gives arrangements where E becomes adjacent to A, which violates the condition.

Hence, the valid arrangement is:

$$D \quad A \quad B \quad C \quad E$$

Therefore, the person in the middle is B.

Final Answer:

$$\boxed{B}$$

Answer: (B)

Go Back to Question 24

Q25.

Solution

Concept: This problem involves ordering individuals based on their weights according to given inequalities and then determining the second heaviest person.

Solution: Given:

$$A > B, \qquad C > B, \qquad C > D, \qquad E > D$$

The exact relation between A, C, and E is not given.

Possible cases:

$$A > C > E > B > D$$

Here, C is second heaviest.

Another possibility:

$$E > A > C > B > D$$

Here, A is second heaviest.

Since different valid arrangements are possible, the second heaviest person cannot be determined uniquely.

Final Answer:

$$\boxed{\text{Cannot be determined}}$$

Answer: (D)

Go Back to Question 25

Q26.

Solution

Concept: This question requires drawing conclusions from given statements using syllogistic reasoning. We need to determine the validity of the conclusions based on the relationships between the categories.

Solution: Statements:

$$\text{Stars} \subseteq \text{Lights}$$

$$\text{Some Lights are Planets}$$

$$\text{Planets} \cap \text{Small} = \emptyset$$

From statements 2 and 3, some lights (which are planets) are not small.

Hence,

$$\text{Some Lights are not Small}$$

definitely follows.

But there is no direct relation between Stars and Small. Therefore,

$$\text{Some Stars may not be Small}$$

is only a possibility, not a definite conclusion.

Hence, only Conclusion II follows.

Final Answer:

$$\boxed{\text{Only II follows}}$$

Answer: (B)

Go Back to Question 26

Q27.

Solution

Concept: This question involves a simple coding pattern where each letter in a word is replaced by the next letter in the alphabet.

Solution: Step 1: Analyze the given example: CAT is coded as DBU. Let's look at the letter positions in the alphabet:
C (3) -> D (4) : +1
A (1) -> B (2) : +1
T (20) -> U (21) : +1

Step 2: Identify the pattern.
The pattern is that each letter in the original word is replaced by the letter immediately following it in the alphabet (a shift of +1).

Step 3: Apply this pattern to the word DOG.
D (4) -> Next letter is E (5)
O (15) -> Next letter is P (16)
G (7) -> Next letter is H (8)

Step 4: Combine the coded letters. The coded word for DOG is EPH.

Step 5: Check the options. Option A is EPH.

Final Answer: EPH

Answer: (A)

Go Back to Question 27

Q28.

Solution

Concept: This question asks to find the next term in a series. The series consists of numbers that follow a specific mathematical pattern, often related to powers or sequences.

Solution: Step 1: Analyze the given series: 1, 8, 27, 64, 125, ?
Step 2: Look at the numbers and their positions in the series.
1st term: 1
2nd term: 8
3rd term: 27
4th term: 64
5th term: 125

Step 3: Identify the pattern.
Observe the numbers:
$1 = 1^3$ (1 cubed)
$8 = 2^3$ (2 cubed)
$27 = 3^3$ (3 cubed)
$64 = 4^3$ (4 cubed)
$125 = 5^3$ (5 cubed)
The pattern is that each term is the cube of its position number in the series.

Step 4: Calculate the next term.
The next term will be the cube of the next position number, which is 6.
6th term = 6^3
$6^3 = 6 * 6 * 6 = 36 * 6 = 216$.

Step 5: Verify with options.
The calculated next term is 216. This matches option C.

Final Answer: 216

Answer: (C)

Go Back to Question 28

Q29.

Solution

Concept: This question presents a statement about a problem and asks for the best course of action to address it. A good course of action should be practical, effective, and address the root cause or mitigate the negative impact.

Solution: Step 1: Analyze the Statement: "Mobile addiction among teenagers is increasing rapidly." This indicates a concerning social and psychological issue with potential long-term negative consequences.

Step 2: Evaluate Course of Action I: "Awareness programs."
Rationale: Awareness programs can educate teenagers, parents, and educators about the dangers and consequences of mobile addiction. They can provide information on healthy usage habits, the risks involved, and coping mechanisms. This approach aims to address the problem by fostering understanding and promoting responsible behavior. It is a proactive and educational measure.

Step 3: Evaluate Course of Action II: "Total ban on smartphones."
Rationale: A total ban on smartphones is an extreme measure. Smartphones are integral to modern communication, education, and social interaction. A complete ban would be impractical to enforce, likely to be met with strong resistance, and would negatively impact teenagers' ability to stay connected, access information, and participate in digital learning. It avoids the problem rather than solving it by addressing the underlying addiction. It is not a feasible or constructive solution.

Step 4: Determine the best course of action.
Awareness programs (I) are a practical, educational, and more constructive approach to tackling mobile addiction. They aim to change behavior through understanding and empowerment. A total ban (II) is overly drastic, impractical, and punitive. Therefore, only Course of Action I is the best approach.

Final Answer: Only I

Answer: (A)

Go Back to Question 29

Q30.

Solution

Concept: This problem requires arranging five individuals (A, B, C, D, E) in a row based on given conditions and then identifying the person in the middle position.

Solution: Arrange the five persons in a row:

$$\_ \quad \_ \quad \_ \quad \_ \quad \_$$

Given:

- A is not at the ends.
- B is left of C but right of D.
- E is at one end.

Thus, the order becomes:

$$D \quad \ldots \quad B \quad \ldots \quad C$$

Case 1: E at position 1.

Then D must be at position 5, which violates the order $D < B < C$. Hence, this case is not possible.

Case 2: E at position 5.

Then D must be at position 1:

$$D \quad \_ \quad \_ \quad \_ \quad E$$

Now place A, B, C in positions 2, 3, 4 while maintaining:

$$D < B < C$$

The only possible arrangement is:

$$D \quad A \quad B \quad C \quad E$$

Hence, the person in the middle position is B.

Final Answer:

$$\boxed{B}$$

Answer: (B)

Go Back to Question 30

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	A	3	A	4	A	5	A
6	A	7	A	8	A	9	B	10	C
11	D	12	C	13	B	14	C	15	A
16	A	17	C	18	B	19	A	20	D
21	A	22	A	23	A	24	B	25	D
26	B	27	A	28	C	29	A	30	B