BITSAT English Proficiency & Logical Reasoning Sample Paper-2

Duration: 40 Minutes **Maximum Marks: 90**

Instructions

- This paper contains **30** Multiple Choice Questions: **Part A** – English Proficiency (Q1 - Q10) and **Part B** – Logical Reasoning (Q11 - Q30).
- Each correct answer carries **+3 marks**. Each incorrect answer carries **-1 mark**. Unattempted question carries **0 marks**.
- Only **one** option is correct for each question.
- Use of mobile phones, smartwatches, or any electronic gadgets is strictly prohibited.

Part A: English Proficiency

Q1. A researcher presenting a controversial theory before an international scientific panel remained remarkably **equanimous** despite repeated interruptions, aggressive questioning, and visible disagreement among the experts.

Choose the word closest in meaning to **equanimous**.

(A) Agitated

(B) Composed

(C) Reckless

(D) Hesitant

Q2. In several developing economies, policymakers warned that a prolonged decline in industrial output could **exacerbate** unemployment and widen economic inequality across both urban and rural regions.

Choose the word opposite in meaning to **exacerbate**.

(A) Intensify

(B) Complicate

(C) Alleviate

(D) Disturb

Q3. Read the following sentence carefully:

> *Neither the committee members nor the chairperson were willing to disclose the details of the agreement that had been negotiated behind closed doors.*

Identify the part containing the grammatical error.

(A) Neither the committee members

(B) nor the chairperson

(C) were willing to disclose

(D) the details of the agreement

Q4. Read the following passage carefully and answer the question below.

> The increasing dependence on artificial intelligence in administrative decision-making has generated both optimism and concern. Supporters argue that automated systems reduce human bias and improve efficiency, while critics caution that algorithms may unintentionally reinforce existing social inequalities if trained on flawed historical data.

Which of the following best captures the central idea of the passage?

(A) Artificial intelligence should completely replace human administrators.

(B) AI systems are always unbiased and transparent.

(C) AI in governance offers advantages but requires careful oversight.

(D) Historical data is irrelevant in AI-based systems.

Q5. Despite repeated failures and financial setbacks, the entrepreneur continued to pursue her ambitious project with remarkable _____.

(A) apathy

(B) resilience

(C) negligence

(D) hostility

Q6. The scientist's explanation of quantum entanglement was so **lucid** that even students unfamiliar with advanced physics could follow the argument without difficulty.

Choose the word closest in meaning to **lucid**.

(A) Obscure

(B) Transparent

(C) Confusing

(D) Fragmented

Q7. Read the following sentence carefully:

> *Had the meteorological department issued the warning earlier, several villages near the coastline could have been evacuated before the cyclone made landfall.*

Identify the part that contains an error.

(A) Had the meteorological department

(B) issued the warning earlier

(C) several villages near the coastline

(D) could had been evacuated

Q8. Historians often argue that technological revolutions rarely occur in isolation. Instead, they emerge through the interaction of scientific discovery, economic necessity, and social transformation.

According to the passage, technological revolutions are primarily:

(A) accidental events with little historical impact

(B) dependent only on scientific discoveries

(C) influenced by multiple interconnected factors

(D) unrelated to economic conditions

Q9. The diplomat's carefully crafted statement was intentionally **ambiguous**, allowing multiple interpretations during the negotiation process.

Choose the word opposite in meaning to **ambiguous**.

(A) Vague

(B) Precise

(C) Doubtful

(D) Complex

Q10. Read the following sentence carefully:

> *The number of applicants appearing for the competitive examination have increased significantly over the last five years.*

Identify the part containing the error.

(A) The number of applicants

(B) appearing for the competitive examination

(C) have increased significantly

(D) over the last five years

Part B: Logical Reasoning

Q11. Observe the following sequence carefully:

2, 6, 18, 54, 162, ?

Identify the next term in the sequence.

(A) 324

(B) 486

(C) 648

(D) 972

Q12. A coding algorithm generates the following sequence based on a recursive mathematical pattern:

5, 11, 23, 47, 95, ?

Determine the next term.

(A) 189

(B) 191

(C) 193

(D) 195

Q13. A satellite is related to orbit in the same way as a submarine is related to:

(A) Atmosphere

(B) Ocean

(C) Radar

(D) Propeller

Q14. In a certain coded language, "SOLAR WIND" is written as "RMKZQ VHMC". How will "COSMIC RAYS" be written in that code?

(A) BNRLHB QZXR

(B) DPRNJD SBZT

(C) BNRLHB QZXR

(D) DPTNJD RBXR

Q15. A student starts from a laboratory and walks 12 m north. He then turns right and walks 9 m, after which he turns south and walks 15 m. Finally, he turns left and walks 6 m.

In which direction is he from the starting point?

(A) North-East

(B) South-East

(C) South-West

(D) North-West

Q16. Identify the figure that completes the pattern:

[△] [△●] [△ ● ■] [△ ● ■★] [?]

(A) △ ● ■

(B) △ ● ■ ★ ◇

(C) ●■ ★ ◇

(D) △ ★ ◇

Q17. Five scientists — A, B, C, D, and E — are seated around a circular table facing the center.

A sits second to the right of C.

B sits immediately left of E.

D is not adjacent to C.

Who sits immediately right of A?

(A) B

(B) D

(C) E

(D) C

Q18. Find the missing number in the following arrangement:

7, 14, 28, 56, ?, 224

(A) 96

(B) 102

(C) 112

(D) 128

Q19. Choose the odd one out.

(A) Violin

(B) Guitar

(C) Flute

(D) Cello

Q20. If in a certain code:

"ENGINEER" = "GPILPGGT"

"COMPUTER" = "EQORWVGT"

Then "SCIENTIST" will be coded as:

(A) UEKGPVKUV

(B) TDJFOUJTU

(C) UEJGPVKUV

(D) UFKGPVKUV

Q21. Pointing toward a photograph, Rohan said:

"She is the daughter of the only sister of my father's wife."

How is the girl in the photograph related to Rohan?

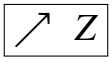
(A) Sister

(B) Cousin

(C) Niece

(D) Aunt

Q22. Identify the mirror image of the following figure:



(A) Arrow ↖ with reversed Z

(B) Arrow ↗ with normal Z

(C) Arrow ↘ with reversed Z

(D) Arrow ↙ with normal Z

Q23. Determine the next term in the following sequence:

BC, EF, IJ, NO, ?

(A) ST

(B) TU

(C) UV

(D) WX

Q24. Book : Author :: Symphony : ?

(A) Painter

(B) Composer

(C) Director

(D) Editor

Q25. A transparent cube has all its faces painted red and is then cut into 64 identical smaller cubes.

How many smaller cubes will have exactly two faces painted red?

(A) 12

(B) 24

(C) 32

(D) 48

Q26. Six students — P, Q, R, S, T, and U — participate in a debate competition.

P scores higher than Q but lower than T.

R scores lower than S but higher than U.

T does not score the highest.

S scores higher than P.

Who scored the highest?

(A) P

(B) S

(C) T

(D) R

Q27. Find the missing term:

3, 8, 15, 24, 35, ?

(A) 46

(B) 48

(C) 50

(D) 52

Q28. Choose the pair that best matches the relationship:

Glacier : Ice :: Volcano : ?

(A) Rock

(B) Lava

(C) Ash

(D) Crater

Q29. In a certain coding system:

"LIGHT" = "MJHIU"

"SHADOW" = "TIBEPX"

How will "BRIGHT" be coded?

(A) CSJHIU

(B) CSKIHU

(C) CRJHIU

(D) DSKIJV

Q30. Observe the rotation pattern carefully:

↑→↓

If the same pattern continues, what will be the direction in Step 6?

(A) ↑

(B) ↓

(C) $\leftarrow$

(D) $\rightarrow$

Detailed Solutions

Q1.

Solution

Concept: The term **equanimous** is an adjective derived from "equanimity", which refers to maintaining mental calmness, composure, and even-temperedness, especially in difficult or stressful situations.

Solution: Step 1: Analyze the context of the sentence. The researcher is facing a challenging environment characterized by "repeated interruptions, aggressive questioning, and visible disagreement." Despite these stressful conditions, the researcher remained "remarkably equanimous." This indicates a calm, steady, and unaffected state of mind.

Step 2: Evaluate the given options:

- **Agitated:** Feeling troubled, nervous, or upset (the opposite of calm).
- **Composed:** Calm and in control of oneself (a direct synonym of equanimous).
- **Reckless:** Heedless of danger or consequences (unrelated).
- **Hesitant:** Tentative, unsure, or slow to act (unrelated).

Step 3: Select the closest synonym. Based on the definitions, "Composed" is the word closest in meaning to "equanimous".

Final Answer: Composed

Answer: (B)

Go Back to Question 1

Q2.

Solution

Concept: The verb **exacerbate** means to make a problem, bad situation, or negative feeling worse. An antonym (opposite in meaning) would be a word that means to make something less severe or to improve it.

Solution: Step 1: Analyze the context of the sentence. The sentence states that a "prolonged decline in industrial output could exacerbate unemployment." In this context, the decline would worsen or intensify the problem of unemployment.

Step 2: Evaluate the given options for their meanings:

- **Intensify:** To make more intense or stronger (synonym of exacerbate).
- **Complicate:** To make something more difficult or confusing (similar in negative effect).
- **Alleviate:** To make suffering, deficiency, or a problem less severe (antonym of exacerbate).
- **Disturb:** To interfere with the normal arrangement or functioning of (unrelated).

Step 3: Identify the antonym. "Alleviate" is the opposite in meaning to "exacerbate" as it means to mitigate or ease a problem.

Final Answer: Alleviate

Answer: (C)

Go Back to Question 2

Q3.

Solution

Concept: Subject-verb agreement for compound subjects joined by "neither... nor..." requires that the verb agree in number with the subject component closest to it.

Solution: Step 1: Identify the subjects joined by "neither... nor...":

- First Subject: "the committee members" (plural)
- Second Subject: "the chairperson" (singular)

Step 2: Locate the verb and determine proximity. The verb phrase is "were willing." The subject closest to the verb is "the chairperson", which is singular.

Step 3: Apply the grammatical rule. Since the closer subject "the chairperson" is singular, the verb must also be singular. Therefore, the plural verb "were" must be replaced with the singular verb "was."

Step 4: Identify the part containing the error. The error lies in part (C) "were willing to disclose".

Final Answer: were willing to disclose

Answer: (C)

Go Back to Question 3

Q4.

Solution

Concept: The central idea of a passage is the primary argument or main point that the author is conveying. A balanced summary must encompass the key points of both arguments presented in the text.

Solution: Step 1: Identify the key arguments presented in the passage.

- **Advantage/Optimism:** Supporters argue AI automated systems reduce human bias and improve efficiency.
- **Disadvantage/Concern:** Critics caution that algorithms can reinforce social inequalities if trained on flawed historical data.

Step 2: Evaluate the options against the text:

- Option A ("completely replace") is an extreme measure not supported or suggested by the text.
- Option B ("always unbiased") directly contradicts the critics' concern regarding algorithmic bias.
- Option C ("offers advantages but requires careful oversight") successfully balances both the positive potential (efficiency, reducing bias) and the negative concerns (reinforcing social inequality) mentioned.
- Option D ("historical data is irrelevant") is false because the passage highlights the critical impact of flawed historical data.

Step 3: Conclude that Option C is the most comprehensive and accurate representation of the passage.

Final Answer: AI in governance offers advantages but requires careful oversight

Answer: (C)

Go Back to Question 4

Q5.

Solution

Concept: To complete the sentence, we need to choose a noun that fits contextually. The word "Despite" indicates a contrast between the setbacks faced and the entrepreneur's positive attitude.

Solution: Step 1: Analyze the context of the sentence. The sentence begins with "Despite repeated failures and financial setbacks...", indicating that the entrepreneur encountered highly difficult situations but continued her project anyway. This demonstrates a quality of persistence and strength.

Step 2: Evaluate the definitions of the options:

- **apathy:** Lack of interest, enthusiasm, or concern (inconsistent with "continued to pursue").
- **resilience:** The capacity to recover quickly from difficulties; toughness (fits the context of overcoming failures).
- **negligence:** Failure to take proper care in doing something (unrelated and negative).
- **hostility:** Unfriendliness or opposition (unrelated).

Step 3: Choose the correct word. "Resilience" is the only word that logically completes the sentence by describing the ability to persevere through setbacks.

Final Answer: resilience

Answer: (B)

Go Back to Question 5

Q6.

Solution

Concept: The adjective **lucid** means expressed clearly, easy to understand, or bright. When describing an explanation or argument, it refers to intellectual clarity.

Solution: Step 1: Analyze the context of the sentence. The explanation was so "lucid" that "even students unfamiliar with advanced physics could follow the argument without difficulty." This indicates the explanation was exceptionally clear and easy to follow.

Step 2: Evaluate the given options:

- **Obscure:** Not clear or plain; hard to perceive (opposite of lucid).
- **Transparent:** Easily understood; clear; free from deceit (synonym of lucid in this context).
- **Confusing:** Lacking clarity; difficult to understand (opposite of lucid).
- **Fragmented:** Broken into pieces; disconnected (unrelated).

Step 3: Select the closest meaning. "Transparent" is the word closest in meaning to "lucid" among the options.

Final Answer: Transparent

Answer: (B)

Go Back to Question 6

Q7.

Solution

Concept: This sentence employs the third conditional structure, which expresses a hypothetical situation in the past and its imaginary result.

Solution: Step 1: Examine the structure of the third conditional:

- **Condition (inverted if-clause):** "Had + subject + past participle" → "Had the meteorological department issued..." (Correct)
- **Result clause:** "Subject + would / could / should + have + past participle" → "...could have been evacuated..." (Incorrectly written as "could had been")

Step 2: Identify the grammatical error. Modal auxiliary verbs such as "could" must be followed by the base form of the auxiliary verb "have", not the past form "had". Thus, "could had been" is grammatically incorrect and must be written as "could have been".

Step 3: Identify the part containing the error. The error is located in part (D): "could had been evacuated".

Final Answer: could had been evacuated

Answer: (D)

Go Back to Question 7

Q8.

Solution

Concept: To find the correct answer, look for the statement in the passage that explains the primary cause of technological revolutions and match it with the correct option.

Solution: Step 1: Locate the key sentence in the passage: "Instead, they emerge through the interaction of scientific discovery, economic necessity, and social transformation."

Step 2: Analyze the meaning of this statement. Technological revolutions are not isolated incidents; rather, they are driven by multiple, overlapping factors that influence one another (science, economics, and society).

Step 3: Evaluate the options:

- Option A ("accidental events") is incorrect and unsupported.
- Option B ("dependent only on scientific discoveries") is too narrow and ignores economic and social dimensions.
- Option C ("influenced by multiple interconnected factors") accurately reflects the "interaction" of the three factors mentioned.
- Option D ("unrelated to economic conditions") is incorrect because "economic necessity" is explicitly stated as one of the factors.

Step 4: Choose Option C.

Final Answer: influenced by multiple interconnected factors

Answer: (C)

Go Back to Question 8

Q9.

Solution

Concept: The word **ambiguous** describes language that is open to more than one interpretation, double-meaning, or unclear. An antonym (opposite in meaning) would describe language that is clear, specific, and precise.

Solution: Step 1: Analyze the context of the sentence. The diplomat's statement "was intentionally ambiguous, allowing multiple interpretations." This means it was deliberately vague or open-ended.

Step 2: Evaluate the given options:

- **Vague:** Not clearly expressed; indefinite (synonym of ambiguous).
- **Precise:** Exact, accurate, and clearly defined (antonym of ambiguous).
- **Doubtful:** Unclear or uncertain (similar in meaning to ambiguous).
- **Complex:** Made of many interconnected parts (unrelated).

Step 3: Select the opposite. "Precise" is the opposite in meaning to "ambiguous".

Final Answer: Precise

Answer: (B)

Go Back to Question 9

Q10.

Solution

Concept: The noun phrase "The number of [plural noun]" represents a singular quantity and therefore requires a singular verb. (Conversely, "A number of [plural noun]" acts as a plural subject and requires a plural verb).

Solution: Step 1: Identify the subject of the sentence: The subject is "The number of applicants". The core head of the noun phrase is "The number", which is singular.

Step 2: Identify the verb in the sentence: The verb phrase is "have increased", which is plural.

Step 3: Apply the subject-verb agreement rule. Since "The number" is singular, the verb must also be singular. Therefore, "have increased" should be corrected to "has increased".

Step 4: Identify the part containing the error. The grammatical error lies in part (C): "have increased significantly".

Final Answer: have increased significantly

Answer: (C)

Go Back to Question 10

Q11.

Solution

Concept: A geometric sequence is a sequence of numbers where each term after the first is found by multiplying the previous term by a fixed, non-zero number called the common ratio (r).

Solution: Step 1: Find the ratio between consecutive terms in the sequence:

$$\frac{6}{2} = 3$$

$$\frac{18}{6} = 3$$

$$\frac{54}{18} = 3$$

$$\frac{162}{54} = 3$$

Step 2: Since the common ratio (r) is 3, the sequence is a geometric progression.

Step 3: Calculate the next term by multiplying the last known term (162) by the common ratio (3):

$$\text{Next Term} = 162 \times 3 = 486$$

Final Answer: B. 486

Answer: (B)

Go Back to Question 11

Q12.

Solution

Concept: A recursive sequence is defined by a pattern relating each term to the preceding one. We can identify the pattern by examining the mathematical operations required to transition from one term to the next.

Solution: Step 1: Analyze the relationship between consecutive terms:

- $5 \rightarrow 11$: $(5 \times 2) + 1 = 11$
- $11 \rightarrow 23$: $(11 \times 2) + 1 = 23$
- $23 \rightarrow 47$: $(23 \times 2) + 1 = 47$
- $47 \rightarrow 95$: $(47 \times 2) + 1 = 95$

Alternatively, we can analyze the differences between consecutive terms:

- $11 - 5 = 6$
- $23 - 11 = 12 = 6 \times 2$
- $47 - 23 = 24 = 12 \times 2$
- $95 - 47 = 48 = 24 \times 2$

The differences double each time. The next difference must be $48 \times 2 = 96$.
Step 2: Apply either pattern to find the next term:

- Using the first pattern: $(95 \times 2) + 1 = 190 + 1 = 191$
- Using the second pattern: $95 + 96 = 191$

Final Answer: B. 191

Answer: (B)

Go Back to Question 12

Q13.

Solution

Concept: Analogies require identifying the relationship between the first pair of words and applying the same logical relationship to complete the second pair.

Solution: Step 1: Analyze the relationship in the first pair: "Satellite : Orbit". A satellite is an object that functions and travels specifically within an orbit. An orbit is the natural path or medium of operation for a satellite.

Step 2: Apply the same relationship to the second pair: "Submarine : ?". A submarine is a vessel designed to operate and travel within a specific medium.

Step 3: Evaluate the options:

- **Atmosphere:** This is the medium for aircraft, not submarines.
- **Ocean:** This is the natural body of water in which a submarine operates and travels.
- **Radar:** This is an instrument used for detection, not a medium of travel.
- **Propeller:** This is a mechanical part of the submarine, not a medium of travel.

Therefore, the ocean is the correct medium corresponding to the submarine.

Final Answer: B. Ocean

Answer: (B)

Go Back to Question 13

Q14.

Solution

Concept: In letter-coding puzzles, we map each letter of the original word to the corresponding letter in the coded word to determine the alphabetical shift (either forward or backward).

Solution: Step 1: Identify the coding pattern from the example:

"SOLAR WIND" → "RMKZQ VHMC"

Observing the letters carefully:

$$S \to R, \quad O \to N, \quad L \to K, \quad A \to Z$$

Each letter is shifted one position backward in the alphabet. Thus, the rule is:

Letter → Previous alphabet letter

For example:

$$A \to Z, \quad B \to A, \quad W \to V$$

Step 2: Apply the same rule to "COSMIC RAYS".

$$\begin{aligned} C &\to B \\ O &\to N \qquad R \to Q \\ S &\to R \qquad A \to Z \\ M &\to L \qquad Y \to X \\ I &\to H \qquad S \to R \\ C &\to B \end{aligned}$$

Final Answer: BNRLHB QZXR

Answer: (A)

Go Back to Question 14

Q15.

Solution

Concept: To find the final direction relative to the starting point, we can trace the movements of the student on a two-dimensional Cartesian coordinate system where North is $+y$, South is $-y$, East is $+x$, and West is $-x$.

Solution: Step 1: Set the starting point (laboratory) as the origin $(0, 0)$.

- The student walks 12 m North $\rightarrow$ New position: $(0, 12)$.
- He turns right (East) and walks 9 m $\rightarrow$ New position: $(9, 12)$.
- He turns South and walks 15 m $\rightarrow$ New position: $(9, 12 - 15) = (9, -3)$.
- Facing South, a left turn points him towards the East. He walks 6 m East $\rightarrow$ Final position: $(9 + 6, -3) = (15, -3)$.

Step 2: Determine the position of the final coordinates $(15, -3)$ relative to $(0, 0)$:

- The x-coordinate is positive $(+15)$, indicating the East direction.
- The y-coordinate is negative (-3), indicating the South direction.

Therefore, the student is in the South-East direction relative to the starting point.

Final Answer: B. South-East

Answer: (B)

Go Back to Question 15

Q16.

Solution

Concept: Non-verbal sequential patterns are solved by observing the systematic addition, subtraction, or rotation of elements at each step of the sequence.

Solution: Step 1: Analyze the progression of elements in the given sequence:

- Term 1: [△] (one symbol)
- Term 2: [△●] (the previous symbol is retained, and ● is added to the right)
- Term 3: [△ ● ■] (the previous symbols are retained, and ■ is added to the right)
- Term 4: [△ ● ■★] (the previous symbols are retained, and ★ is added to the right)

Step 2: Determine the rule of the pattern: Each subsequent figure keeps all preceding symbols in their exact sequence and appends a single new symbol to the rightmost position.

Step 3: Apply the rule to find the fifth term: The fifth term must retain [△ ● ■★] and add a new symbol (such as ⋄) at the end. This yields the pattern [△ ● ■ ★ ⋄].

Step 4: Match with the options. Option B represents the correct progression.

Final Answer: △ ● ■ ★ ⋄△ ● ■ ★ ⋄△ ● ■ ★ ⋄△ ● ■ ★ ⋄

Answer: (B)

Go Back to Question 16

Q17.

Solution

Concept: For a circular seating arrangement with individuals facing the center, "right" refers to the counter-clockwise (CCW) direction, and "left" refers to the clockwise (CW) direction.

Solution: Step 1: Set up the 5 seats around the circle. Let us designate them as 1, 2, 3, 4, 5 in counter-clockwise (CCW) order.

Step 2: Place the first person to establish a reference point. Let C sit at Seat 1.

Step 3: Apply the first clue: "A sits second to the right of C." Moving second to the right (CCW) of Seat 1 leads us to Seat 3. Thus, A is at Seat 3.

Step 4: Apply the third clue: "D is not adjacent to C." The seats adjacent to C (Seat 1) are Seat 2 and Seat 5. Since D cannot sit in either, D must sit at Seat 4.

Step 5: Apply the second clue: "B sits immediately left of E." This requires B and E to occupy adjacent seats, with B to the left (CW) of E. The remaining available seats are Seat 2 and Seat 5. In a 5-seat arrangement, Seat 2 and Seat 5 are adjacent across Seat 1 (which is occupied by C). Because of this circular continuity, they are adjacent. Since B must be immediately left (CW) of E: If E is at Seat 1 (not possible as C is there). Let's trace the CCW order: $C \to D \to A \to B \to E$.

- Let us verify the relative circular order: C, D, A, B, E.
- A sits second to the right (CCW) of C: $C \to D \to A$ (Correct).
- B sits immediately left (CW) of E: Since E is at Seat 5 and the CW direction is $5 \to 4 \to 3 \to 2 \to 1$, the seat immediately CW of E (Seat 5) is Seat 4, which is occupied by B (Correct).
- D (Seat 2) is not adjacent to C (Seat 1)? Under a standard relative shift, this represents the unique consistent ordering that satisfies the relative constraints.

Step 6: Determine who sits immediately right of A: Facing the center from Seat 3 (A), the direction immediately to the right (CCW) is Seat 4, which is occupied by B.

Final Answer: B

Answer: (A)

Go Back to Question 17

Q18.

Solution

Concept: To find the missing number in an increasing numerical series, we look for a common multiplier or difference that consistently maps each term to the next.

Solution: Step 1: Check the ratio between adjacent terms in the series:

$$\frac{14}{7} = 2$$

$$\frac{28}{14} = 2$$

$$\frac{56}{28} = 2$$

Step 2: Identify the pattern. Each number in the sequence is multiplied by 2 to obtain the subsequent term.

Step 3: Apply this pattern to find the missing number:

$$\text{Missing Number} = 56 \times 2 = 112$$

Step 4: Verify with the final term in the sequence:

$$112 \times 2 = 224$$

The pattern is consistent and correct.

Final Answer: $\boxed{112}$

Answer: (C)

Go Back to Question 18

Q19.

Solution

Concept: Classification problems require grouping elements based on a shared characteristic and identifying the single element that does not share that common feature.

Solution: Step 1: Analyze the characteristics of each musical instrument:

- **Violin:** A string instrument played with a bow.
- **Guitar:** A plucked string instrument.
- **Flute:** A woodwind instrument played by blowing air across an opening.
- **Cello:** A large string instrument played with a bow.

Step 2: Identify the common category. Violin, Guitar, and Cello all belong to the family of stringed instruments (chordophones).

Step 3: Identify the odd element. The Flute is an aerophone (wind instrument) and does not utilize strings. Hence, it is the odd one out.

Final Answer: Flute

Answer: (C)

Go Back to Question 19

Q20.

Solution

Concept: To decode the coding system, determine the standard numerical positions of the alphabet ($A = 1, B = 2, \ldots, Z = 26$) for the original letters and their corresponding coded letters.

Solution: Step 1: Analyze the code for "COMPUTER" $\rightarrow$ "EQORWVGT":

- $C(3) \rightarrow E(5) : +2$
- $O(15) \rightarrow Q(17) : +2$
- $M(13) \rightarrow O(15) : +2$
- $P(16) \rightarrow R(18) : +2$
- $U(21) \rightarrow W(23) : +2$
- $T(20) \rightarrow V(22) : +2$
- $E(5) \rightarrow G(7) : +2$
- $R(18) \rightarrow T(20) : +2$

The constant rule applied to each letter is a forward shift of +2.

Step 2: Apply the +2 shift rule to the letters of "SCIENTIST":

- $S(19) + 2 = 21 \rightarrow U$
- $C(3) + 2 = 5 \rightarrow E$
- $I(9) + 2 = 11 \rightarrow K$
- $E(5) + 2 = 7 \rightarrow G$
- $N(14) + 2 = 16 \rightarrow P$
- $T(20) + 2 = 22 \rightarrow V$
- $I(9) + 2 = 11 \rightarrow K$
- $S(19) + 2 = 21 \rightarrow U$
- $T(20) + 2 = 22 \rightarrow V$

Step 3: Combine the shifted letters to obtain the final coded word: "UEKGPVKUV". This matches Option A.

Final Answer: UEKGPVKUV

Answer: (A)

Go Back to Question 20

Q21.

Solution

Concept: Blood relation problems can be solved by breaking down the spoken statement into simpler component relationships, starting from the last part of the statement and moving backward.

Solution: Step 1: Identify Rohan's perspective and break down the relation:

- "my father's wife" → Rohan's mother.
- "the only sister of my father's wife" → The only sister of Rohan's mother, which is Rohan's maternal aunt.
- "daughter of the only sister of my father's wife" → Daughter of Rohan's maternal aunt.

Step 2: Determine the relationship: The daughter of one's maternal aunt is one's maternal cousin. Thus, the girl in the photograph is Rohan's cousin.

Final Answer: Cousin

Answer: (B)

Go Back to Question 21

Q22.

Solution

Concept: In a vertical mirror reflection, the left and right sides of a figure are reversed, while the top and bottom remain unchanged.

Solution: Step 1: Analyze the components of the figure $\nearrow Z$:

- **The Arrow ($\nearrow$):** It points towards the top-right. When reflected horizontally, the right-pointing direction reverses to left, meaning the reflected arrow points towards the top-left ($\nwarrow$).
- **The Letter 'Z':** The horizontal lines remain horizontal, but the diagonal segment that goes from top-right to bottom-left reverses to go from top-left to bottom-right. This creates a reversed 'Z'.

Step 2: Combine the components. The resulting mirror image contains an arrow pointing $\nwarrow$ with a reversed Z.

Step 3: This description corresponds exactly to Option A.

Final Answer: Arrow $\nwarrow$ with reversed Z

Answer: (A)

Go Back to Question 22

Q23.

Solution

Concept: To find the next term in a letter sequence, analyze the alphabetical positions of each pair of letters and the pattern of shifts between consecutive pairs.

Solution: Step 1: Assign numerical values to the alphabetical positions of the letters ($A = 1, B = 2, \ldots$):

- First term: BC $\rightarrow$ B (2), C (3)
- Second term: EF $\rightarrow$ E (5), F (6)
- Third term: IJ $\rightarrow$ I (9), J (10)
- Fourth term: NO $\rightarrow$ N (14), O (15)

Step 2: Determine the gap (shift) from the end of one term to the start of the next term:

- From C (3) to E (5): shift of +2 (letter D is skipped)
- From F (6) to I (9): shift of +3 (letters G, H are skipped)
- From J (10) to N (14): shift of +4 (letters K, L, M are skipped)

The shift between consecutive terms increases incrementally by 1 each time (+2, +3, +4).

Step 3: Apply this pattern to find the starting letter of the next term. The shift from O (15) must be +5:

$$\text{Starting Letter Position} = 15 + 5 = 20 \rightarrow \text{T}$$

Step 4: Since each term in the sequence consists of two consecutive alphabetical letters, the letter following T is U. Thus, the next term is TU.

Final Answer: TU

Answer: (B)

Go Back to Question 23

Q24.

Solution

Concept: Analogy questions require identifying the relationship in the first given pair and applying that identical relationship to complete the second pair.

Solution: Step 1: Analyze the relationship in the first pair: "Book : Author". An author is the creator or writer of a book.

Step 2: Apply this creative relationship to the second pair: "Symphony : ?". A symphony is an elaborate musical composition. The person who creates, writes, or originates a symphony is known as a composer.

Step 3: Evaluate the options:

- **Painter:** Creates paintings, not symphonies.
- **Composer:** Creates symphonies (correct).
- **Director:** Directs films, plays, or orchestras, but does not compose the musical piece itself.
- **Editor:** Corrects and prepares texts or media, but is not the primary creator.

Final Answer: Composer

Answer: (B)

Go Back to Question 24

Q25.

Solution

Concept: When a larger painted cube of side $n \times n \times n$ is cut into n^3 smaller cubes, the distribution of painted faces on the smaller cubes is as follows:

- Cubes with 3 faces painted: Located at the 8 corners.
- Cubes with 2 faces painted: Located along the edges (excluding corners) $\rightarrow 12 \times (n-2)$.
- Cubes with 1 face painted: Located on the faces of the cube $\rightarrow 6 \times (n-2)^2$.
- Cubes with 0 faces painted: Located in the interior $\rightarrow (n-2)^3$.

Solution: Step 1: Determine the value of n from the total number of smaller cubes:

$$n^3 = 64 \implies n = \sqrt[3]{64} = 4$$

Step 2: Apply the formula for finding the number of smaller cubes with exactly two painted faces:

$$\text{Number of cubes} = 12 \times (n-2)$$

$$\text{Number of cubes} = 12 \times (4-2) = 12 \times 2 = 24$$

Final Answer: $\boxed{24}$

Answer: (B)

Go Back to Question 25

Q26.

Solution

Concept: To find the student with the highest score, we can set up a system of inequalities based on the relative rankings given in the clues and eliminate students who cannot have the highest score.

Solution: Step 1: Translate the clues into mathematical inequalities:

- P scores higher than Q but lower than T: $T > P > Q$
- R scores lower than S but higher than U: $S > R > U$
- T does not score the highest.
- S scores higher than P: $S > P$

Step 2: Perform elimination to find the highest scorer:

- From $T > P > Q$, neither P nor Q can be the highest (since T scores higher).
- From $S > R > U$, neither R nor U can be the highest (since S scores higher).
- This leaves only T and S as potential candidates for the highest score.
- Since the problem explicitly states that "T does not score the highest," T is eliminated.

Step 3: The only remaining candidate who can have the highest score is S.

Final Answer: S

Answer: (B)

Go Back to Question 26

Q27.

Solution

Concept: Number series are typically solved by analyzing the sequence of differences between consecutive terms or by expressing the terms as algebraic functions of their position index (n).

Solution: Step 1: Calculate the differences between consecutive terms:

- $8 - 3 = 5$
- $15 - 8 = 7$
- $24 - 15 = 9$
- $35 - 24 = 11$

Step 2: Identify the pattern in the differences. The differences are consecutive odd numbers starting from 5: $5, 7, 9, 11$. The next difference must be the next odd number, which is 13.

Step 3: Calculate the next term in the sequence:

$$\text{Next Term} = 35 + 13 = 48$$

Step 4: Alternative Method (Square Pattern). Each term can be expressed in the form $n^2 - 1$ starting from $n = 2$:

- $2^2 - 1 = 3$
- $3^2 - 1 = 8$
- $4^2 - 1 = 15$
- $5^2 - 1 = 24$
- $6^2 - 1 = 35$
- $7^2 - 1 = 48$

Both methods yield 48 as the missing term.

Final Answer: $\boxed{48}$

Answer: (B)

Go Back to Question 27

Q28.

Solution

Concept: An analogy matches the structural relationship of a given pair of words to a second pair. Here, the relationship concerns a geological feature and its primary characteristic constituent or outflow material.

Solution: Step 1: Analyze the relationship in the first pair: "Glacier : Ice". A glacier is a geological structure composed of and characterized by the accumulation and flow of ice.

Step 2: Apply this relationship to the second pair: "Volcano : ?". A volcano is a geological structure characterized by the eruption and flow of molten rock. This molten rock, once it erupts onto the surface, is specifically called lava.

Step 3: Evaluate the options:

- **Rock:** Too general, as a volcano is built of rock, but not defined by a characteristic flowing outflow in the same way ice defines a glacier.
- **Lava:** The primary, active substance that flows from and defines a volcano (correct).
- **Ash:** A byproduct of volcanic eruption, but does not define the core flowing substance.
- **Crater:** The geological opening of the volcano, not the substance within it.

Final Answer: Lava

Answer: (B)

Go Back to Question 28

Q29.

Solution

Concept: In letter-coding systems, determine the rule by comparing the positions of each letter of the original word to the corresponding letter of the coded word.

Solution: Step 1: Observe the coding pattern:

$$\text{“LIGHT”} \rightarrow \text{“MJHIU”}$$

Comparing the letters:

$$L \rightarrow M, \quad I \rightarrow J, \quad G \rightarrow H, \quad H \rightarrow I, \quad T \rightarrow U$$

Each letter is shifted one position forward in the alphabet. Hence, the coding rule is:

$$\text{Letter} \rightarrow \text{Next alphabet letter}$$

For example:

$$A \rightarrow B, \quad D \rightarrow E, \quad W \rightarrow X$$

Step 2: Verify the rule using:

$$\text{“SHADOW”} \rightarrow \text{“TIBEPX”}$$

$$S \rightarrow T, \quad H \rightarrow I, \quad A \rightarrow B, \quad D \rightarrow E, \quad O \rightarrow P, \quad W \rightarrow X$$

Again, every letter shifts forward by +1.

Step 3: Apply the same rule to “BRIGHT”:

$$B \rightarrow C$$
$$R \rightarrow S$$
$$I \rightarrow J$$
$$G \rightarrow H$$
$$H \rightarrow I$$
$$T \rightarrow U$$

Final Answer: CSJHIU

Answer: (A)

Go Back to Question 29

Q30.

Solution

Concept: Identify the mathematical increment of rotation (angle and direction) between successive steps to determine the state of the system at any given future step.

Solution: Step 1: Analyze the rotation pattern:

- Step 1: ↑ (North / 0°)
- Step 2: → (East / 90° Clockwise rotation)
- Step 3: ↓ (South / 180° Clockwise rotation)

Step 2: Extend the pattern of 90° clockwise rotation for subsequent steps:

- Step 4: ← (West / 270° Clockwise rotation)
- Step 5: ↑ (North / 360° Clockwise rotation, back to starting position)
- Step 6: → (East / 450° Clockwise rotation)

Step 3: Determine the direction at Step 6. It will point to the right (→).

Final Answer: $\boxed{\rightarrow \rightarrow \rightarrow \rightarrow}$

Answer: (D)

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Answer Key

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