NMAT Logical Reasoning Sample Paper 03

Instructions

- **Total Questions:** 36 Multiple Choice Questions
- **Time Allocation:** 40 Minutes
- **Marking Pattern:** Standardized adaptive scoring weight per section. No negative marks apply under core examination guidelines.

1 Critical Reasoning (Questions 1–10)

1. All teachers are graduates. Some graduates are writers. Which conclusion follows?
   A. A. All teachers are writers
   B. B. Some writers are teachers
   C. C. Some graduates may be teachers
   D. D. No teacher is a writer

2. **Statement:** Employee training improves productivity.
   Assumption:
   A. A. Training enhances skills
   B. B. All employees need training
   C. C. Productivity depends only on training
   D. D. Training is free

3. All cars are vehicles. Some vehicles are electric.
   Conclusion:
   A. A. All cars are electric
   B. B. Some cars are electric
   C. C. No cars are electric
   D. D. Cannot be determined

4. Which option weakens the argument below?
   "Online meetings save time."
   A. A. Technical issues often interrupt meetings

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B. B. Travel costs decrease

C. C. More people attend meetings

D. D. Companies use video conferencing

5. **Statement:** Exercise improves fitness. Running is exercise.
Conclusion:

A. A. Running improves fitness

B. B. Fitness improves running

C. C. Running reduces fitness

D. D. None

6. All scientists are educated. Some educated people are authors.
Conclusion:

A. A. All scientists are authors

B. B. Some scientists are authors

C. C. No scientist is an author

D. D. Cannot be determined

7. Which option strengthens the argument below?
"Reading daily improves vocabulary."

A. A. Studies show readers know more words

B. B. Books are expensive

C. C. Libraries are crowded

D. D. Newspapers are popular

8. If all dogs are animals and some animals are wild, then:

A. A. All dogs are wild.

B. B. Some dogs are wild.

C. C. No dogs are wild.

D. D. Cannot be determined.

9. A survey shows employees with flexible hours are happier.

A. A. Flexible hours may increase satisfaction

B. B. Flexible hours reduce work

C. C. Employees dislike flexibility

D. D. Satisfaction is unrelated

10. Choose the strongest inference based on the choices below:

A. A. Experience always guarantees success

B. B. Experienced workers often perform better

C. C. Experience has no value

D. D. Success depends only on experience

2 Analytical Reasoning (Questions 11–20)

Arrangement Set Context:

Six friends A, B, C, D, E and F sit in a straight row facing North.

- A sits immediately left of B
- C sits at one of the extreme ends
- D sits immediately right of E
- F sits between B and E

11. Which pair definitely sits together?
    A. A. A and B
    B. B. B and C
    C. C. A and E
    D. D. C and F

12. Who sits immediately right of A?
    A. A. B
    B. B. C
    C. C. D
    D. D. E

13. Who sits immediately left of D?
    A. A. A
    B. B. B
    C. C. E
    D. D. F

14. If C sits at the extreme left, who sits at the extreme right?
    A. A. A
    B. B. B
    C. C. D
    D. D. F

Standalone Analytical Questions:

15. In a queue, P is ahead of Q but behind R. S is behind Q. Who is first?
    A. A. P
    B. B. Q
    C. C. R
    D. D. S

16. A student ranks 15th from the top and 20th from the bottom in a class. Find the total number of students.
    A. A. 34
    B. B. 35
    C. C. 36
    D. D. 37

17. A is taller than B, B is taller than C, and C is taller than D. Who is the shortest?
    A. A. A
    B. B. B
    C. C. C
    D. D. D

18. If Tuesday is the 1st day of a month, what day of the week is the 22nd?
    A. A. Monday
    B. B. Tuesday
    C. C. Wednesday
    D. D. Thursday

19. At exactly 6:00, the interior angle between the clock hands is:
    A. A. 90°
    B. B. 120°
    C. C. 180°
    D. D. 360°

20. All squares are rectangles. All rectangles are polygons.
    Conclusion:
    A. A. All polygons are squares
    B. B. All squares are polygons
    C. C. No square is a polygon
    D. D. Some polygons are not rectangles

3 Blood Relations (Questions 21–24)

21. Pointing to a boy, Anita said: "He is the son of my mother's only daughter." The boy is Anita's:
    A. A. Son
    B. B. Brother
    C. C. Nephew
    D. D. Cousin

22. A is the sister of B. B is the father of C. How is A related to C?
    A. A. Mother
    B. B. Aunt
    C. C. Sister
    D. D. Grandmother

23. P is the father of Q. Q is the brother of R. How is P related to R?
    A. A. Uncle
    B. B. Father
    C. C. Grandfather
    D. D. Brother

24. X is the daughter of Y. Y is the sister of Z. How is Z related to X?
    A. A. Uncle/Aunt
    B. B. Father
    C. C. Brother
    D. D. Son

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4 Direction Sense (Questions 25–28)

25. A person walks 15 m North and then 20 m East. He is in which direction from the starting point?

    A. A. North-East

    B. B. South-East

    C. C. North-West

    D. D. South-West

26. A person walks 8 m South and then 15 m East. What is the shortest straight-line distance from the start?

    A. A. 15 m

    B. B. 17 m

    C. C. 20 m

    D. D. 23 m

27. A person moves West and then turns left. Which direction is he facing?

    A. A. North

    B. B. South

    C. C. East

    D. D. West

28. A person walks North, then East, and finally turns South. Relative to the starting point, he is currently situated in which direction?

    A. A. North

    B. B. East

    C. C. West

    D. D. South

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5 Coding–Decoding (Questions 29–32)

29. If BOOK = CPPL, then under the same logical mapping rule, PEN = . . . ?
    A. A. QFO
    B. B. QGP
    C. C. RFO
    D. D. QEP

30. If CAT = DBU, then BAT = . . . ?
    A. A. CBU
    B. B. DBU
    C. C. ECV
    D. D. BBU

31. If DELHI is coded as EFMIJ, then INDIA = . . . ?
    A. A. JOEJB
    B. B. JOEKB
    C. C. JPEJB
    D. D. KOEJB

32. If 3 = 12 and 4 = 20, then by identifying the mathematical induction pattern, 6 = . . . ?
    A. A. 30
    B. B. 36
    C. C. 42
    D. D. 48

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6 Input–Output (Questions 33–36)

Machine Backend Rearrangement Logic:

Input:	12	7	4	15	2	9
Step 1:	2	7	4	15	12	9
Step 2:	2	4	7	15	12	9
Step 3:	2	4	7	9	12	15

33. What is the exact data layout obtained after executing Step 2?
    - A. A. 2 7 4 15 12 9
    - B. B. 2 4 7 15 12 9
    - C. C. 2 4 7 9 12 15
    - D. D. 2 7 9 4 12 15

34. Which numerical arrangement is being performed by the step engine?
    - A. A. Ascending Order
    - B. B. Descending Order
    - C. C. Coding
    - D. D. Rotation

35. How many rearrangement steps were needed to reach the final sorted output?
    - A. A. 2
    - B. B. 3
    - C. C. 4
    - D. D. 5

36. What is the final resolved output configuration sequence?
    - A. A. 15 12 9 7 4 2
    - B. B. 2 4 7 9 12 15
    - C. C. 2 7 4 15 12 9
    - D. D. 4 2 7 9 12 15

Solutions

Section A: Critical Reasoning

Q1
Option C: Some graduates may be teachers
Since All Teachers $\subseteq$ Graduates, it follows directly that some elements of the graduate group are teachers.

Q2
Option A: Training enhances skills
The statement bridges employee training to productivity. This directly relies on the core assumption that training functions effectively to enhance workspace skills.

Q3
Option D: Cannot be determined
Cars are completely contained within vehicles, but electric items only intersect vehicles partially. No definite link regarding cars can be deduced from the subsets.

Q4
Option A: Technical issues often interrupt meetings
The argument states that online meetings preserve time. Showing that technical dropouts create regular delays directly disrupts this claim.

Q5
Option A: Running improves fitness
Categorical logical linking syllogism: Exercise $\rightarrow$ Improves Fitness. Running $\rightarrow$ Exercise. Combining them yields Running $\rightarrow$ Improves Fitness.

Q6
Option D: Cannot be determined
Scientists are nested within the educated group. Authors overlap with some educated individuals, leaving their structural relation to scientists undetermined.

Q7
Option A: Studies show readers know more words
The claim is that reading increases vocabulary. Corroborating empirical data showing readers master more words validates and strengthens the argument.

Q8
Option D: Cannot be determined.
Dogs belong entirely to animals. Wild creatures only partially cover the animal set. The specific interaction between the dog subset and wild subset cannot be determined.

Q9
Option A: Flexible hours may increase satisfaction
Sourced from a positive experimental correlation, the safest and strongest inference is that flexible hours act as a variable that increases satisfaction.

Q10
Option B: Experienced workers often perform better

Sound inference rules reject extreme absolute guarantees ("always", "only"). Option B correctly handles the measured trend suggested by the premise.

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Section B: Analytical Reasoning

Arrangement Setup Analysis:
Let us resolve the positions $(1, 2, 3, 4, 5, 6)$ facing North based on the constraints:

1. A sits immediately left of B $\rightarrow [A, B]$.
2. D sits immediately right of E $\rightarrow [E, D]$.
3. F sits between B and E $\rightarrow [B, F, E]$.

Combining these blocks yields the absolute block structure: $[A, B, F, E, D]$. Since C must occupy an extreme end and our combined block requires 5 continuous positions, C must sit at position 1. This fully settles the unique sequence:

$$\text{Layout: } [C, A, B, F, E, D]$$

Q11
Option A: A and B
Evaluating rows matching constraints settles the sequence to $[C, A, B, F, E, D]$. Thus, the pair $[A, B]$ must sit together side-by-side.

Q12
Option A: B
Sourced directly from our linear positional sequence template layout $[C, A, B, F, E, D]$, the letter immediately to the right of A is B.

Q13
Option C: E
Sourced directly from our resolved positional sequence template layout $[C, A, B, F, E, D]$, the element immediately to the left of D is E.

Q14
Option C: D
Fixing C at the extreme left (position 1) dictates the sequence layout $[C, A, B, F, E, D]$. The item mapping to the extreme right location is D.

Q15
Option C: R
Inequality queue mapping coordinates based on statements give the progression: $R > P > Q > S$. Therefore, individual R stands first in the queue.

Q16
Option A: 34
Total elements tracking formula:

$$\text{Total} = (\text{Rank}_{\text{Top}} + \text{Rank}_{\text{Bottom}}) - 1 = (15 + 20) - 1 = 34$$

Q17
Option D: D
Constructing a standard linear magnitude hierarchy chain reveals: $A > B > C > D$. The structural baseline minimum element is D.

Q18
Option B: Tuesday
Weekday calendar configurations cycle modulo 7.

$$\text{Day } 1 \equiv \text{Tuesday} \implies \text{Day } (1+21) = \text{Day } 22 \equiv \text{Tuesday}$$

Q19
Option C: 180°
Standard dial geometry logic: Every hour marker contains exactly 30°. At 6:00, the hands sit perfectly opposite each other at $6 \times 30^\circ = 180^\circ$.

Q20
Option B: All squares are polygons
Syllogistic set inclusion closure property: Squares $\subseteq$ Rectangles, and Rectangles $\subseteq$ Polygons $\implies$ Squares $\subseteq$ Polygons.

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Section C: Blood Relations

Q21
Option A: Son
Lineage component mapping: Anita's mother's only daughter is Anita herself. The son of that specific person translates to Anita's son.

Q22
Option B: Aunt
Generational hierarchy pairing step: B is the father of C, and A acts as B's sister. Therefore, A is the paternal aunt of C.

Q23
Option B: Father
Shared parental tracking layout: Q and R are brothers/siblings. Since P is the father of Q, P matches as the father of R as well.

Q24
Option A: Uncle/Aunt
Generational node link: Y is the mother of X, and Y is the sibling of Z. The gender of Z is unstated, rendering Z either the uncle or aunt of X.

Section D: Direction Sense

Q25
Option A: North-East
Two-dimensional displacement vector tracking: $+15\hat{j}$ (North) combined with $+20\hat{i}$ (East) structures an absolute North-East trajectory relative to the origin.

Q26
Option B: 17 m
Pythagorean minimum displacement calculation:

$$\text{Shortest Distance} = \sqrt{8^2 + 15^2} = \sqrt{64 + 225} = \sqrt{289} = 17 \text{ m}$$

Q27
Option B: South
Direction vector mechanics: Head West (Left). Turning left executes a 90° counter-clockwise rotational shift, directing the person South.

Q28
Option B: East
Trajectory tracking coordinates: Moving North, then East, then South by the same distance cancels out the vertical positioning axis, leaving the entity strictly East of the starting point.

Section E: Coding–Decoding

Q29
Option A: QFO
Character shift model step (+1 forward alpha position shift):

$$B \to C, \quad O \to P, \quad O \to P, \quad K \to L$$

Applying this matching rule to PEN outputs QFO.

Q30
Option A: CBU
Executing the same continuous logical character transition increment rule (+1 position shift):

$$B(+1) \to C, \quad A(+1) \to B, \quad T(+1) \to U \implies \text{CBU}$$

Q31
Option A: JOEJB
Uniform directional displacement transform (+1 alphabet index increment):

$$I(+1) = J, \quad N(+1) = O, \quad D(+1) = E, \quad I(+1) = J, \quad A(+1) = B \implies \text{JOEJB}$$

Q32
Option C: 42
Induction function matrix matching template: Value $= n \times (n + 1)$.

$$3 \times 4 = 12$$

$$4 \times 5 = 20$$

Following this functional pattern, $6 \times (6 + 1) = 6 \times 7 = 42$.

Section F: Input–Output

Q33
Option B: 2 4 7 15 12 9
Brought forward directly from inspecting the data line array corresponding to machine Step 2.

Q34
Option A: Ascending Order
A step audit traces that the machine runs a selection sort engine, continually pulling remaining minimum elements forward to arrange the sequence in Ascending Order.

Q35
Option B: 3
Array permutation trace: The machine requires exactly 3 progressive operational iterations to achieve a fully stable and completely sorted database array.

Q36
Option B: 2 4 7 9 12 15
The final output matrix reflects the system array arrayed incrementally into its optimal, fully-sorted ascending structure: $2, 4, 7, 9, 12, 15$.