NMAT Logical Reasoning Sample Paper 01

Instructions

- **Total Questions:** 36 Multiple Choice Questions
- **Suggested 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 managers are graduates. Some graduates are engineers. Which conclusion logically follows?
    A. A. All managers are engineers
    B. B. Some engineers are managers
    C. C. Some graduates may be managers
    D. D. No manager is an engineer

2. **Statement:** Online learning improves accessibility to education.
Which assumption is implicit?
    A. A. Students have access to technology
    B. B. Schools will shut down
    C. C. Online learning is free
    D. D. Teachers are unnecessary

3. All roses are flowers. Some flowers fade quickly.
Which conclusion follows?
    A. A. All roses fade quickly
    B. B. Some roses fade quickly
    C. C. No roses fade quickly
    D. D. Cannot be determined

4. Which option weakens the argument below?
"Electric cars reduce pollution."

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A. A. Electricity is generated from coal in many areas.
B. B. Electric cars are expensive.
C. C. Sales of electric cars are increasing.
D. D. Governments support electric vehicles.

5. **Statement:** Exercise improves health. Walking is exercise.
Conclusion:
A. A. Walking improves health.
B. B. Health improves exercise.
C. C. Walking reduces exercise.
D. D. None follows.

6. All books are papers. Some papers are files.
Conclusion:
A. A. All files are books.
B. B. Some files are books.
C. C. No file is a book.
D. D. Cannot be determined.

7. Which option strengthens the argument below?
"Company productivity increased after remote work."
A. A. Employee satisfaction increased significantly.
B. B. Office rent decreased.
C. C. Competitors reduced staff.
D. D. Internet usage increased globally.

8. If all cats are animals and some animals are wild, then:
A. A. All cats are wild.
B. B. Some cats are wild.
C. C. No cats are wild.
D. D. Cannot be determined.

9. A study finds students who read daily score higher. What is the conclusion?
A. A. Reading may improve academic performance.
B. B. Exams should be removed.
C. C. Schools are unnecessary.
D. D. Students dislike reading.

10. Choose the best inference based on the following pattern:
"Higher prices always reduce demand. Demand decreased after prices rose."
A. A. Higher prices always reduce demand.
B. B. Demand decreased after prices rose.
C. C. Demand never changes.
D. D. Price and demand are unrelated.

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2 Analytical Reasoning (Questions 11–20)

Arrangement Set Context:

Five friends A, B, C, D and E are sitting 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.

11. Who sits at the other end?
    A. A. A
    B. B. B
    C. C. D
    D. D. E

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

13. Who sits in the exact middle position?
    A. A. A
    B. B. B
    C. C. D
    D. D. E

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

Standalone Analytical Questions:

15. Six people are standing in a queue. R is ahead of T but behind S. Who is in the exact middle?
    A. A. S
    B. B. R
    C. C. T
    D. D. Cannot be determined

16. In a class ranking, P is 12th from the top and 18th from the bottom. Find the total number of students in that class.

A. A. 28
B. B. 29
C. C. 30
D. D. 31

17. A is taller than B. B is taller than C. Who is the shortest among them?
    A. A. A
    B. B. B
    C. C. C
    D. D. Cannot be determined

18. If the 1st day of a month is a Monday, what day of the week is the 15th?
    A. A. Monday
    B. B. Tuesday
    C. C. Wednesday
    D. D. Thursday

19. An analog clock shows exactly 3:00. What is the interior angle between the hour and minute hands?
    A. A. 60°
    B. B. 75°
    C. C. 90°
    D. D. 120°

20. If all squares are rectangles and all rectangles are figures, then:
    A. A. All figures are squares
    B. B. All squares are figures
    C. C. No square is a figure
    D. D. Some figures are not rectangles

3 Blood Relations (Questions 21–24)

21. Pointing to a woman, Raj said: "She is the daughter of my grandfather's only son." The woman is Raj's:
    A. A. Sister
    B. B. Cousin
    C. C. Mother
    D. D. Aunt

22. A is the brother of B. B is the mother of C. How is A related to C?
    A. A. Uncle
    B. B. Father
    C. C. Brother
    D. D. Grandfather

23. If P is the father of Q and Q is the sister of R, how is P related to R?
    A. A. Uncle
    B. B. Father
    C. C. Brother
    D. D. Grandfather

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

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4 Direction Sense (Questions 25–28)

25. A person walks 10 m North and then 10 m East. In which direction is he now located relative to his starting point?
    A. A. North-East
    B. B. North-West
    C. C. South-East
    D. D. South-West

26. A person moves 5 m South and then turns and moves 12 m East. What is the shortest straight-line distance from the starting point?
    A. A. 13 m
    B. B. 15 m
    C. C. 17 m
    D. D. 19 m

27. A person walks 20 m East and then turns right. Which direction is he facing now?
    A. A. North
    B. B. East
    C. C. South
    D. D. West

28. A person walks North, then turns West, and finally turns South. What is his final direction relative to the starting position?
    A. A. East
    B. B. North
    C. C. West
    D. D. South

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5 Coding-Decoding (Questions 29–32)

29. If CAT is coded as DBU, then under the same logical scheme, DOG = . . . ?
    A. A. EPH
    B. B. EOG
    C. C. FPH
    D. D. EPI

30. If PEN is coded as QFO, then BOOK = . . . ?
    A. A. CPPL
    B. B. CQQM
    C. C. DQPL
    D. D. CPOK

31. If DELHI is written as EFMIJ, then INDIA = . . . ?
    A. A. JOEJB
    B. B. JOEJB
    C. C. JPEJB
    D. D. JPFKB

32. If 2 = 6, 3 = 12, and 4 = 20, then by following the same pattern, 5 = . . . ?
    A. A. 25
    B. B. 30
    C. C. 35
    D. D. 40

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6 Input-Output & Miscellaneous (Questions 33–36)

Machine Arrangement Logic:

Input:	8	5	3	9	2	7
Step 1:	2	5	3	9	8	7
Step 2:	2	3	5	9	8	7
Step 3:	2	4	5	7	8	9

33. What is the exact data layout obtained after executing Step 2?

A. A. 2 5 3 9 8 7

B. B. 2 3 5 9 8 7

C. C. 2 3 5 7 8 9

D. D. 2 5 7 3 8 9

34. Which underlying mathematical arrangement system is being carried out?

A. A. Ascending Arrangement

B. B. Descending Arrangement

C. C. Coding

D. D. Rotation

35. How many sequential rearrangement steps were necessary to achieve the final target sequence?

A. A. 2

B. B. 3

C. C. 4

D. D. 5

36. What is the final resolved output configuration sequence?

A. A. 2 3 5 7 8 9

B. B. 9 8 7 5 3 2

C. C. 2 5 3 7 8 9

D. D. 3 5 7 8 9 2

Solutions

Section A: Critical Reasoning

Q1
Option C: Some graduates may be managers
If All Managers $\subseteq$ Graduates, then any manager is a graduate. Hence, some elements of the graduate group are managers.

Q2
Option A: Students have access to technology
To claim that an online medium expands educational accessibility, it is a non-negotiable premise that the baseline student demographic has access to the required technology hardware.

Q3
Option D: Cannot be determined
The rose group is completely nested inside flowers, but since the fast-fading subset only covers a portion of flowers, the exact interaction with the rose group cannot be determined.

Q4
Option A: Electricity is generated from coal in many areas.
The claim states that electric vehicles minimize pollution. Showing that the primary electrical generation source relies heavily on coal power directly weakens the environmental argument.

Q5
Option A: Walking improves health.
Syllogistic linking chain: Walking $\rightarrow$ Exercise. Exercise $\rightarrow$ Improves Health. Combining the propositions yields Walking $\rightarrow$ Improves Health.

Q6
Option D: Cannot be determined.
Overlapping partial sets: Books $\subseteq$ Papers, and some papers intersect with files. The specific orientation and link between files and books remains unknown.

Q7
Option A: Employee satisfaction increased significantly.
Tracking operational metrics: Substantial rises in worker satisfaction scores serve as strong psychological indicators that support the claim of increased workspace output.

Q8
Option D: Cannot be determined.
Cats are entirely animals. Wild entities only partially cover the animal set. The precise interaction between the cat subset and wild subset remains structurally undetermined.

Q9
Option A: Reading may improve academic performance.
A direct positive connection between daily reading habits and scoring performance yields the valid inductive inference that reading can enhance academic success.

Q10
Option B: Demand decreased after prices rose.

Standard data inference constraint: Options A, C, and D define broad absolute general assumptions. Statement B records the verified factual historical pattern observation.

Section B: Analytical Reasoning

Arrangement Setup Analysis:
Let us map the row positions $(1, 2, 3, 4, 5)$ facing North matching the explicit constraints:

1. A sits immediately left of B $\rightarrow [A, B]$.
2. D sits immediately right of E $\rightarrow [E, D]$.
3. C must occupy an extreme end.

This yields two valid layout permutations depending on which extreme end C is placed:

- Case 1 (C on left end): $[C, E, D, A, B]$
- Case 2 (C on right end): $[E, D, A, B, C]$

In both valid setups, the structural configurations hold consistent properties.

Q11
Option C: D
Reviewing both valid positional permutations ($[C, E, D, A, B]$ or $[E, D, A, B, C]$), if C anchors one end, either B or E must map to the other end. Looking at the logic grid where $E - D$ forms a fixed pair, the layout leaves D at an extreme location or adjacent position depending on base indexing options. If Case 1 holds true, B is at the other end. If Case 2 holds true, E is at the other end.

Q12
Option A: A and B
The initialization rules explicitly mandate that A sits immediately left of B, which locks the pair $[A, B]$ together side-by-side across all circumstances.

Q13
Option A: A
Following the resolved positional row layout for Case 1 ($[C, E, D, A, B]$), the third or exact middle position is occupied by D. For Case 2 ($[E, D, A, B, C]$), the middle position is occupied by A.

Q14
Option B: B
Fixing C specifically at the extreme left end (Position 1) locks the sequence layout into Case 1: $[C, E, D, A, B]$. The individual at the extreme right end is B.

Q15
Option D: Cannot be determined
The linear constraints establish that $S > R > T$. Because the problem provides no total population size index parameters or details for the remaining three individuals, the absolute center position cannot be determined.

Q16
Option B: 29
Total elements tracking parameter layout formula:

$$\text{Total} = (\text{Rank}_{\text{Top}} + \text{Rank}_{\text{Bottom}}) - 1 = (12 + 18) - 1 = 29$$

Q17
Option C: C
Constructing a relative magnitude linear chain from the clues reveals: $A > B > C$. The absolute trailing structural minimum element is C.

Q18
Option A: Monday
Calendar progression loops cycle explicitly modulo 7.

$$\text{Day } 1 \equiv \text{Monday} \implies \text{Day } (1 + 14) = \text{Day } 15 \equiv \text{Monday}$$

Q19
Option C: 90°
Dynamic hand sweep geometry: Each hourly division on a standard analog clock face encompasses exactly 30° of arc. At 3:00, the hand separation matches:

$$\text{Angle} = 3 \times 30^\circ = 90^\circ$$

Q20
Option B: All squares are figures
Transitive subset inclusion sorting: Squares $\subseteq$ Rectangles, and Rectangles $\subseteq$ Figures $\implies$ Squares $\subseteq$ Figures.

Section C: Blood Relations

Q21
Option A: Sister
Lineage tracing loop: Raj's grandfather's only son refers directly to Raj's biological father. The daughter of Raj's father must be Raj's sister.

Q22
Option A: Uncle
Generational node link step: B is the mother of C, and A is the brother of B. This establishes A as the maternal uncle of C.

Q23
Option B: Father
Sibling relationship extension: Q and R are sisters/siblings. Since P is the father of Q, P must also be the father of R.

Q24
Option B: Father
Spousal pairing configuration: Y is the mother of X, and Y is married to Z. This identifies Z as the husband and biological father of X.

Section D: Direction Sense

Q25
Option A: North-East
Vector displacement mapping: Moving $+10\hat{j}$ (North) followed by $+10\hat{i}$ (East) fields a final placement coordinate situated completely North-East of the origin.

Q26
Option A: 13 m
Hypotenuse distance resolution via the Pythagorean theorem:

$$\text{Distance} = \sqrt{5^2 + 12^2} = \sqrt{25 + 144} = \sqrt{169} = 13 \text{ m}$$

Q27
Option C: South
Facing vector shift tracking: Walking East ($+90^\circ$ orientation axis). Executing a sharp right turn adds a 90° clockwise adjustment, directing the person South.

Q28
Option C: West
Trajectory trace: Walking North $\rightarrow$ Turn left to West $\rightarrow$ Turn left to South. This forms an open bracket trajectory that leaves the person situated strictly West of the starting position.

Section E: Coding-Decoding

Q29
Option A: EPH
Uniform letter index shift mapping (+1 forward step):

$$C \to D, \quad A \to B, \quad T \to U$$

Applying this matching rule to DOG fields:

$$D(+1) \to E, \quad O(+1) \to P, \quad G(+1) \to H \implies \text{EPH}$$

Q30
Option A: CPPL
Character transition shift logic (+1 alphabet index step forward):

$$P(+1) \to Q, \quad E(+1) \to F, \quad N(+1) \to O$$

Applying this system rule to BOOK fields:

$$B(+1) \to C, \quad O(+1) \to P, \quad O(+1) \to P, \quad K(+1) \to L \implies \text{CPPL}$$

Q31
Option A: JOEJB
Uniform directional displacement transform (+1 alpha steps forward):

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

Q32
Option B: 30
Polynomial pattern layout induction extraction: Value $= n \times (n+1)$.

$$2 \times 3 = 6$$

$$3 \times 4 = 12$$

$$4 \times 5 = 20$$

Following this functional math pattern, $5 \times (5+1) = 5 \times 6 = 30$.

Section F: Input-Output & Miscellaneous

Q33
Option B: 2 3 5 9 8 7
Extracted directly from visual inspection of the machine array trace matching Step 2.

Q34
Option A: Ascending Arrangement
Algorithmic review reveals that the automated sequence routine isolates remaining minimum values step-by-step and pulls them forward to organize the sequence in Ascending Arrangement.

Q35
Option B: 3

Tracking execution run logs reveals that the processor runs through exactly 3 sequential sorting shifts before the values lock into place.

Q36

Option A: 2 3 5 7 8 9

The final output array reflects the sorted data items positioned incrementally into their optimal, fully ascending layout: $2, 3, 5, 7, 8, 9$.

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