

CUET 2026 May 31 Shift 2 Mathematics

Question Paper (Memory-Based)

Conducted by National Testing Agency (NTA)



General Instructions

- (i) The examination will be conducted in Computer-Based Test (CBT) mode.
- (ii) Each question carries +5 marks for correct answer and -1 mark for wrong answer.
- (iii) The total number of questions are 50.
- (iv) Duration of the exam is 1 hour (60 minutes).

1. If

$$y(x) = \det \begin{pmatrix} \sin x & \cos x & \sin x + \cos x + 1 \\ 27 & 28 & 27 \\ 1 & 1 & 1 \end{pmatrix}$$

for $x \in \mathbb{R}$, then $\frac{d^2y}{dx^2} + y$ equals:

- (A) -1
- (B) 0
- (C) 1
- (D) 2

2. Let $y = f(x)$ satisfy

$$\frac{dy}{dx} + \frac{xy}{x^2 - 1} = \frac{x^6 + 4x}{\sqrt{1 - x^2}}, \quad -1 < x < 1$$

with $f(0) = 0$. If

$$6 \int_{-1/2}^{1/2} f(x) dx = 2\pi - \alpha,$$

then α^2 equals:

- (A) 25
- (B) 26

(C) 27

(D) 28

3. If the system

$$2x + \lambda y + 3z = 5, \quad 3x + 2y - z = 7, \quad 4x + 5y + \mu z = 9$$

has infinitely many solutions, then $\lambda^2 + \mu^2$ equals:

(A) 20

(B) 24

(C) 26

(D) 28

4. Let $f : \mathbf{R} \rightarrow \mathbf{R}$ be a thrice differentiable odd function satisfying $f'(x) \geq 0$, $f''(x) = f(x)$, $f(0) = 0$, $f'(0) = 3$. Then $9f(\ln 3)$ equals:

(A) 24

(B) 30

(C) 36

(D) 42

5. Let $y = y(x)$ satisfy

$$\cos x (\log(\cos x))^2 dy + (\sin x - 3y \sin x \log(\cos x)) dx = 0, \quad x \in (0, \pi/2).$$

If $y(\pi/4) = -\frac{1}{\log 2}$, then $y(\pi/6)$ equals:

(A) $\frac{1}{\log 3 - \log 4}$

(B) $\frac{1}{\log 2}$

(C) $\frac{1}{\log 3}$

(D) $\frac{1}{\log 4}$

6. If

$$f(x) = \int \frac{1}{x^{1/4}(1+x^{1/4})} dx, \quad f(0) = -6,$$

then $f(1)$ equals:

- (A) $4(\ln 2 - 2)$
 - (B) $4(\ln 2 - 1)$
 - (C) $2(\ln 2 - 1)$
 - (D) $6(\ln 2 - 2)$
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7. The number of relations on $A = \{1, 2, 3\}$ containing at most 6 elements including $(1, 2)$, that are reflexive and transitive but not symmetric is:

- (A) 4
 - (B) 5
 - (C) 6
 - (D) 7
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8. The number of singular matrices of order 2, whose elements are from the set $\{2, 3, 6, 9\}$, is:

- (A) 32
 - (B) 36
 - (C) 40
 - (D) 44
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9. Let $a \in \mathbf{R}$ and A be a matrix of order 3×3 such that $\det(A) = -4$ and

$$A + I = \begin{bmatrix} 1 & a & 1 \\ 2 & 1 & 0 \\ a & 1 & 2 \end{bmatrix}.$$

If $\det((a + 1)\text{adj}((a - 1)A))$ is $2^m 3^n$, then $m + n$ equals:

- (A) 14
 - (B) 07
 - (C) 18
 - (D) 20
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10. Let

$$A = \begin{bmatrix} \log_5 128 & \log_4 5 \\ \log_5 8 & \log_4 25 \end{bmatrix}.$$

If A_{ij} is cofactor of a_{ij} , $C_{ij} = \sum_{k=1}^2 a_{ik}A_{jk}$, and $C = [C_{ij}]$, then $8|C|$ equals:

- (A) 238
 - (B) 240
 - (C) 242
 - (D) 244
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