

CUET 2026 May 21 shift 1 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 the function $f(x)$ defined below is continuous at $x = 2$, find the value of the constant k :

$$f(x) = \begin{cases} kx^2 & \text{if } x \leq 2 \\ 3x - 2 & \text{if } x > 2 \end{cases}$$

- (A) 1
- (B) 2
- (C) 4
- (D) 0

2. Find the slope of the normal to the curve $y = 2x^2 + 3 \sin x$ at the coordinate point where $x = 0$.

- (A) $-\frac{1}{3}$
- (B) 3
- (C) -3
- (D) $\frac{1}{3}$

3. The total area of a parallelogram constructed with adjacent vector sides given by $\vec{a} = \hat{i} - \hat{j} + 3\hat{k}$

and $\vec{b} = 2\hat{i} - 7\hat{j} + \hat{k}$ is equal to:

- (A) $15\sqrt{2}$
- (B) 15
- (C) $\sqrt{35}$
- (D) 0

4. A random variable X has the following probability distribution table: Find the exact value

X	0	1	2
$P(X)$	k	$2k$	$3k$

of the unknown parameter k .

- (A) $\frac{1}{6}$
- (B) $\frac{1}{3}$
- (C) 1
- (D) $\frac{1}{5}$

5. If two vectors $\vec{a} = 2\hat{i} + \lambda\hat{j} + \hat{k}$ and $\vec{b} = 4\hat{i} - 2\hat{j} - 2\hat{k}$ are perpendicular to each other, determine the value of the scalar constant λ .

- (A) 3
- (B) -3
- (C) 6
- (D) 0

6. Evaluate the principal value of the inverse trigonometric expression: $\sin^{-1}\left(\sin \frac{2\pi}{3}\right)$

- (A) $\frac{\pi}{3}$
- (B) $\frac{2\pi}{3}$
- (C) $-\frac{\pi}{3}$
- (D) $\frac{\pi}{6}$

7. If a square matrix A satisfies the condition $A^T = -A$, then the matrix A is classified as a:

- (A) Skew-symmetric matrix
- (B) Symmetric matrix

- (C) Identity matrix
(D) Orthogonal matrix
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8. Find the interval where the function $f(x) = x^2 - 4x + 6$ is strictly decreasing.

- (A) $(-\infty, 2)$
(B) $(2, \infty)$
(C) $(-\infty, 4)$
(D) $[-2, 2]$
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9. Simplify the following expression using inverse trigonometric properties: $\tan(\sin^{-1} x + \cos^{-1} x)$
where $|x| \leq 1$.

- (A) Not defined (∞)
(B) 1
(C) 0
(D) $\frac{\pi}{2}$
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10. Calculate the mean (expected value) of a random variable X given its probability distribution setup below:

X	1	2	3
$P(X)$	0.2	0.5	0.3

- (A) 2.1
(B) 2.0
(C) 1.0
(D) 3.0
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