

# 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  $\lambda$ .

- (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
- 

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)  $[-2, 2]$
- 

9. Simplify the following expression using inverse trigonometric properties:  $\tan(\sin^{-1} x + \cos^{-1} x)$   
where  $|x| \leq 1$ .

- (A) Not defined ( $\infty$ )  
(B) 1  
(C) 0  
(D)  $\frac{\pi}{2}$
- 

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
-