

# CUET 2026 May 29 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. Identify the order and degree of the differential equation:

$$\left(\frac{d^3y}{dx^3}\right)^2 + 4\left(\frac{dy}{dx}\right)^4 + y = \sin(x)$$

- (A) Order 3, Degree 4
- (B) Order 3, Degree 2
- (C) Order 4, Degree 3
- (D) Order 1, Degree 4

2. Consider a  $3 \times 3$  matrix  $A$ . If

$$\text{adj}(A) = \begin{pmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{pmatrix}$$

find  $\det(A)$ .

- (A) 8
- (B) 4

(C)  $2\sqrt{2}$

(D) 2

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**3. Find the shortest distance between the lines**

$$\vec{r} = \hat{i} + 2\hat{j} + \hat{k} + \lambda(\hat{i} - \hat{j} + \hat{k})$$

**and**

$$\vec{r} = 2\hat{i} - \hat{j} - \hat{k} + \mu(2\hat{i} + \hat{j} + 2\hat{k})$$

(A)  $3/\sqrt{2}$

(B)  $9/\sqrt{54}$

(C)  $\sqrt{6}$

(D) 0

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**4. Maximize**

$$Z = 3x + 4y$$

**subject to**

$$x + y \leq 10, \quad x, y \geq 0$$

(A) (10, 0)

(B) (0, 10)

(C) (5, 5)

(D) (0, 0)

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**5. Probability that the second ball is red, given the first was blue (3 red and 5 blue balls, without replacement).**

(A)  $3/7$

(B)  $3/8$

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- (C)  $2/7$   
(D)  $5/14$
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6. Find the local maximum of

$$f(x) = x^3 - 3x + 2$$

- (A)  $x = 1$   
(B)  $x = -1$   
(C)  $x = 0$   
(D)  $x = 2$
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7. Find the domain of

$$f(x) = \sin^{-1}(2x - 1)$$

- (A)  $[0, 1]$   
(B)  $[-1, 1]$   
(C)  $[0, \infty)$   
(D)  $[-0.5, 0.5]$
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8. Is

$$f(x) = |x - 2|$$

differentiable at  $x = 2$ ?

- (A) Yes  
(B) No  
(C) Only for  $x > 2$   
(D) Only for  $x < 2$
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9. Find the adjoint of

$$A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$$

(A)

$$\begin{pmatrix} 4 & -2 \\ -3 & 1 \end{pmatrix}$$

(B)

$$\begin{pmatrix} 1 & 3 \\ 2 & 4 \end{pmatrix}$$

(C)

$$\begin{pmatrix} 4 & 2 \\ 3 & 1 \end{pmatrix}$$

(D)

$$\begin{pmatrix} -4 & 2 \\ 3 & -1 \end{pmatrix}$$

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10. Find the derivative of

$$f(x) = e^{x^2}$$

(A)  $e^{x^2}$

(B)  $2xe^{x^2}$

(C)  $x^2e^{x^2-1}$

(D)  $e^{2x}$

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