

CUET 2026 May 14 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 $f(x) = x^5 - 5x^3 + 5x^2 - 1$, then the number of critical points of $f(x)$ is:

- (a) 1
- (b) 2
- (c) 3
- (d) 4

2. The integral $\int \frac{2+x^4}{1+x^2} dx$ is equal to

- (a) $\frac{1}{3}x^3 + 3 \tan^{-1} x - x + C$
- (b) $\frac{1}{3}x^3 + 3 \tan^{-1} x + x + C$
- (c) $\frac{1}{3}x^3 - 3 \tan^{-1} x - x + C$
- (d) $\frac{1}{3}x^3 - 3 \tan^{-1} x + x + C$

3. The value of the integral $I = \int_{-3}^3 (x^3 - x) dx$ is

- (a) 0
- (b) $3/2$
- (c) $1/2$

(d) x

4. The integral $\int e^x \left(\tan^{-1} x + \frac{1}{1+x^2} \right) dx$ is equal to

- (a) $e^x (\tan^{-1} x + 2) + C$
 - (b) $\tan^{-1} x + C$
 - (c) $e^x \tan^{-1} x + C$
 - (d) $e^x \cot^{-1} x + C$
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5. The value of $\int_0^2 |x - 2| dx =$

- (a) 1
 - (b) 2
 - (c) 3
 - (d) $3/2$
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6. If $X + Y = \begin{pmatrix} 5 & 3 \\ 0 & 7 \end{pmatrix}$ and $X - Y = \begin{pmatrix} 7 & 1 \\ 2 & 3 \end{pmatrix}$. Then X and Y are

- (A) $X = \begin{pmatrix} 6 & 2 \\ 1 & 5 \end{pmatrix}$ and $Y = \begin{pmatrix} -1 & 1 \\ -1 & 2 \end{pmatrix}$
 - (B) $X = \begin{pmatrix} 0 & 5 \\ 1 & 4 \end{pmatrix}$ and $Y = \begin{pmatrix} -1 & -1 \\ -1 & 2 \end{pmatrix}$
 - (C) $X = \begin{pmatrix} 6 & 2 \\ 1 & 5 \end{pmatrix}$ and $Y = \begin{pmatrix} -1 & -1 \\ -1 & 2 \end{pmatrix}$
 - (D) $X = \begin{pmatrix} 1 & 4 \\ 5 & 0 \end{pmatrix}$ and $Y = \begin{pmatrix} 0 & 2 \\ 1 & 1 \end{pmatrix}$
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7. A certain type of fish has a $4/5$ probability of surviving in a pond, while another fish has a $2/5$ probability of survival. What is the probability that exactly one of them survives?

- (a) $2/5$
 - (b) $9/16$
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- (c) $14/25$
(d) $16/25$
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8. A card is picked at random from a pack of 52 playing cards. Given that the picked card is a king, the probability of this card to be a card of spade is:

- (a) $1/3$
(b) $4/13$
(c) $1/4$
(d) $1/2$
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9. If $\vec{a}$ and $\vec{b}$ are unit vectors, then the angle between $\vec{a}$ and $\vec{b}$ for $\sqrt{3}\vec{a} - \vec{b}$ to be a unit vector is given by :

- (a) $\pi/6$
(b) $\pi/4$
(c) $\pi/3$
(d) $2\pi/3$
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10. Consider the function $f(x) = -2x^3 - 9x^2 - 12x + 5$. Then, which of the following is/are correct?

- (a) $f(x)$ decreasing in $(0, \infty)$ and increasing in $(-\infty, 0)$
(b) $f(x)$ increasing in $(-\infty, 1) \cup (2, \infty)$ and decreasing in $(1, 2)$
(c) $f(x)$ increasing in $(0, \infty)$ and decreasing in $(-\infty, 0)$
(d) $f(x)$ is increasing in $(-2, -1)$ and decreasing in $(-\infty, -2) \cup (-1, \infty)$
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