CBSE Class 12 Mathematics Compartment 2026

Question Paper PDF

Conducted by Central Board of Secondary Education (CBSE)

General Instructions

(i) This question paper contains **38 questions**. All questions are compulsory.

(ii) This question paper is divided into **five Sections – A, B, C, D and E.**

(iii) In **Section A**, Questions no. **1 to 18** are multiple choice questions (MCQs) and Questions no. **19 and 20** are Assertion-Reason based questions carrying **1 mark** each.

(iv) In **Section B**, Questions no. **21 to 25** are very short answer (VSA) type questions, carrying **2 marks** each.

(v) In **Section C**, Questions no. **26 to 31** are short answer (SA) type questions, carrying **3 marks** each.

(vi) In **Section D**, Questions no. **32 to 35** are long answer (LA) type questions, carrying **5 marks** each.

(vii) In **Section E**, Questions no. **36 to 38** are case study based questions carrying **4 marks** each.

Section-A

1. If

$$A = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$$

satisfies $A^T + A = I$**, then the value of** θ **is:**

(A) $\frac{\pi}{6}$

(B) $\frac{\pi}{3}$

(C) $\frac{2\pi}{3}$

(D) $\frac{5\pi}{6}$

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2. If A is a square matrix, then which of the following is *not true*?

(A) $A+A^T$ is a symmetric matrix.

(B) AA^T and A^TA are symmetric matrices.

(C) $A+A^T$ is a skew-symmetric matrix.

(D) $A-A^T$ is a skew-symmetric matrix.

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3. If

$$\begin{vmatrix} 3x & x+2 \\ 3(x-1) & x-2 \end{vmatrix} = \begin{vmatrix} 1 & 5 \\ 3 & 3 \end{vmatrix},$$

then the value of x is:

(A) 2

(B) $\frac{1}{3}$

(C) 5

(D) 3

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4. The value of

$$\sin^{-1}\left(\sin\frac{3\pi}{5}\right)$$

is:

(A) $\frac{3\pi}{5}$

(B) $\frac{\pi}{5}$

(C) $\frac{7\pi}{5}$

(D) $\frac{2\pi}{5}$

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5. If

$$f(x) = \begin{cases} \frac{|x|}{x}, & x \neq 0, \\ 0, & x = 0, \end{cases}$$

then which of the following statements is *not* correct?

(A) f is continuous for every $x < 0$.

(B) f is continuous for every $x \in \mathbb{R}$.

(C) f is continuous for every $x > 0$.

(D) f is continuous for each point except $x = 0$.

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6. For

$$f(x) = -|x+1| + 5,$$

which of the following statements is true?

(A) Max $f(x) = 0$ at $x = 4$.

(B) Max $f(x) = 5$ at $x = -1$.

(C) Max $f(x) = 4$ at $x = 0$.

(D) $f(x)$ has no maximum value.

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7. $\left[\tan^{-1}\sqrt{3} - \sec^{-1}(-2)\right]$ **is equal to:**

(A) π

(B) $-\dfrac{\pi}{3}$

(C) $\dfrac{\pi}{3}$

(D) $\dfrac{2\pi}{3}$

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8. If A **and** B **are square matrices of order** 3 **such that** $|A| = 4$ **and** $|B| = 7$**, then** $|2AB|$ **is:**

(A) 112

(B) 56

(C) 28

(D) 224

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9. If

$$A = \begin{bmatrix} 1 & -2 & 3 \\ 3 & 2 & -1 \end{bmatrix}, \qquad B = \begin{bmatrix} 2 & 3 \\ -1 & 2 \\ 4 & -5 \end{bmatrix}$$

and $C = [c_{ij}] = AB$**, then** c_{12} **is:**

(A) 22

(B) -16

(C) 4

(D) 0

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10. Differential of $\cos^{-1}(e^x)$ with respect to x is:

(A) $\dfrac{e^x}{\sqrt{1-e^{2x}}}$

(B) $-\dfrac{e^x}{\sqrt{1+e^x}}$

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

(D) $\dfrac{e^x}{\sqrt{1+e^{2x}}}$

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11. The values of x for which the rate of increase of $f(x) = x^3 - 5x^2 + 6x - 7$ is thrice the rate of increase of x, are:

(A) $-3, -\dfrac{1}{3}$

(B) $3, -\dfrac{1}{3}$

(C) $3, \dfrac{1}{3}$

(D) $-3, \dfrac{1}{3}$

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12. If

$$\int_0^1 (9x^2 - 4x - 2k)\,dx = 0,$$

then the value of k is:

(A) 1

(B) 0

(C) $\dfrac{1}{2}$

(D) $-\dfrac{1}{2}$

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13. The value of

$$\int \left[\frac{1}{\log x} - \frac{1}{(\log x)^2}\right] dx$$

is equal to:

(A) $\frac{x}{\log x} + C$
(B) $x^2 \log x + C$
(C) $\frac{1}{\log x} + C$
(D) $-\frac{1}{(\log x)^2} + C$

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14. If

$$y = \log \sqrt{\tan x},$$

then the value of

$$\frac{dy}{dx}$$

at

$$x = \frac{\pi}{4}$$

is:

(A) $\frac{1}{\sqrt{2}}$
(B) 0
(C) 1
(D) $\frac{1}{2}$

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15. If vectors

$$\vec{a} = 3\hat{i} - 2\hat{j} + 4\hat{k}$$

and

$$\vec{b} = \lambda\hat{i} + \hat{j}$$

are perpendicular to each other, then the value of λ is:

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

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16. If

$$\int_0^4 \frac{1}{x + \sqrt{x}}\, dx = k \log 3,$$

then the value of k is:

(A) 4

(B) -2

(C) -4

(D) 2

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17. If two events A and B are independent, then which of the following statements is *not* correct?

(A) $\overline{A}$ and B are independent.

(B) Being independent does not indicate that they are mutually exclusive.

(C) $P(\overline{A} \cap \overline{B}) = [1 - P(\overline{A})][1 - P(\overline{B})]$.

$(D) P(\overline{A} \cap \overline{B}) = [1 - P(A)][1 - P(B)]$.

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18. If A and B are independent events such that $P(A) = 0.45$ and $P(A \cup B) = 0.5$, then $P(B)$ is equal to :

(A) $\frac{1}{29}$

(B) $\frac{10}{11}$

(C) $\frac{10}{29}$

(D) $\frac{1}{11}$

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19. Assertion (A) : Let R be a relation on set A of all books in a school library given by $R = \{(x, y) : x, y \in A, x$ and y have the same number of pages$\}$ and S is a relation on set A from the same library such that $S = \{(p, q) : p$ and q are Mathematics books$\}$. Also, $R \cap S \neq \phi$. Then, $R \cap S$ is an equivalence relation.

Reason (R) : The intersection of two equivalence relations on a set is an equivalence relation on the set.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

20. Assertion (A) : Points A(6, −7, 0), B(16, −19, −4) and C(1, −1, 2) are collinear.

Reason (R) : Three points A, B and C are collinear, when point C is the mid-point of line segment joining points A and B.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.