

Kendriya Vidyalaya Asansol
Half-Yearly Exam

Class – XII
Time Duration : 3hr

Sub: Mathematics

Session : 2022-2023
Full Marks: 80

General Instructions:

- This question paper contains five sections A, B, C, D and E.
- Section A has 20 questions of 1 mark each.
- Section B has 5 questions of 2 marks each.
- Section C has 6 questions of 3 marks each.
- Section D has 3 case based study questions of 4 marks each.
- Section E has 4 questions of 5 marks each.

SECTION - A
(Multiple Choice Questions)

Each question carries 1 mark.

1 × 20 = 20

1. A relation R in a set A is called _____, if $(a_1, a_2) \in R$ implies $(a_2, a_1) \in R$, for all $a_1, a_2 \in A$.
(a) symmetric (b) transitive (c) equivalence (d) non-symmetric.
2. Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be defined by $f(x) = \frac{1}{x} \forall x \in \mathbb{R}$. Then f is
(a) one-one (b) onto (c) bijective (d) f is not defined.
3. The principal value of $\tan^{-1}(\tan(\frac{3\pi}{5}))$ is
(a) $\frac{2\pi}{5}$ (b) $-\frac{2\pi}{5}$ (c) $\frac{3\pi}{5}$ (d) $-\frac{3\pi}{5}$.
4. If $\sin^{-1} x + \sin^{-1} y = \frac{\pi}{2}$, then value of $\cos^{-1} x + \cos^{-1} y$ is
(a) $\frac{\pi}{2}$ (b) π (c) 0 (d) $\frac{3\pi}{2}$.
5. If A is a square matrix, then $A - A^T$ is a
(a) diagonal matrix (b) skew-symmetric matrix (c) symmetric matrix (d) none of these.
6. The matrix $\begin{bmatrix} 0 & -5 & 7 \\ 5 & 0 & -11 \\ -7 & 11 & 0 \end{bmatrix}$ is
(a) a skew-symmetric matrix (b) a symmetric matrix (c) a diagonal matrix (d) an upper triangular matrix.
7. If $\begin{vmatrix} 2x & 5 \\ 8 & x \end{vmatrix} = \begin{vmatrix} 6 & -2 \\ 7 & 3 \end{vmatrix}$ then the value of x is
(a) 3 (b) ± 3 (c) ± 6 (d) 6.
8. If $x = t^2, y = t^3$, then $\frac{dy}{dx} =$ _____
(a) $\frac{3}{2}$ (b) $\frac{3}{4t}$ (c) $\frac{3}{2t}$ (d) $\frac{3t}{2}$.
9. The point(s) at which the function f is given by $f(x) = \begin{cases} \frac{x}{|x|}, & x < 0 \\ -1, & x \geq 0. \end{cases}$ is continuous,
is/are
(a) $x \in \mathbb{R}$ (b) $x = 0$ (c) $x \in \mathbb{R} \setminus \{0\}$ (d) $x = -1, 1$.

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Ying-Ying Zheng



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