AP EAPCET 2025 May 24 Shift 2 Question Paper

Time Allowed :3 Hours	**Maximum Marks :**160	**Total questions :**160

General Instructions

Read the following instructions very carefully and strictly follow them:

1. Duration of Exam: 3 Hours
2. Total Number of Questions: 160 Questions
3. Section-wise Distribution of Questions:
    - Physics - 40 Questions
    - Chemistry - 40 Questions
    - Mathematics - 80 Questions
4. Type of Questions: Multiple Choice Questions (Objective)
5. Marking Scheme: One mark awarded for each correct response
6. Negative Marking: There is no provision for negative marking.

1.

If the roots of the quadratic equation $x^2 - 6x + k = 0$ have a difference of 2, find the value of k.

(A) 5

(B) 7

(C) 8

(D) 9

2.

Evaluate $\int_1^2 \frac{1}{x^2}\,dx$.

(A) $\frac{1}{2}$

(B) 1

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

(D) 2

3.

Find the area of the triangle with vertices at (0, 0), (3, 0), and (0, 4).

(A) 6

(B) 8

(C) 10

(D) 12

4.

The mean of 5 numbers is 10, and their variance is 16. If one number is increased by 5, what is the new mean?

(A) 10

(B) 11

(C) 12

(D) 13

5.

If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$**, find the inverse of matrix** A**.**

(A) $\begin{bmatrix} -2 & 1 \\ \frac{3}{2} & -\frac{1}{2} \end{bmatrix}$

(B) $\begin{bmatrix} -2 & 1 \\ \frac{1}{2} & -\frac{1}{2} \end{bmatrix}$

(C) $\begin{bmatrix} 2 & -1 \\ -\frac{3}{2} & \frac{1}{2} \end{bmatrix}$

(D) $\begin{bmatrix} 4 & -2 \\ -3 & 1 \end{bmatrix}$

6.

If $z = 1 + i$**, find the modulus of** z^2**.**

(A) $\sqrt{2}$

(B) 2

(C) $2\sqrt{2}$

(D) 4

7.

A box contains 4 white and 6 black balls. If 3 balls are drawn at random with replacement, what is the probability that at least one is white?

(A) $\frac{27}{125}$

(B) $\frac{98}{125}$

(C) $\frac{64}{125}$

(D) $\frac{61}{125}$

'8.

A particle is projected with a velocity of 20 m/s at an angle of 30° to the horizontal. What is the maximum height reached? (Take $g = 10\,\text{m/s}^2$**).**

(A) 5 m

(B) 10 m

(C) 15 m

(D) 20 m

9.

A convex lens has a focal length of 20 cm. If an object is placed 30 cm from the lens, what is the image distance?

(A) 12 cm

(B) 15 cm

(C) 60 cm

(D) 90 cm

10.

Two charges $+5\,\mu$C and $+5\,\mu$C are placed 1 m apart. What is the electric potential at the midpoint between them? (Take $k = 9 \times 10^9\,\text{N·m}^2/\text{C}^2$).

(A) $9 \times 10^4\,\text{V}$

(B) $1.8 \times 10^5\,\text{V}$

(C) $2.7 \times 10^5\,\text{V}$

(D) $3.6 \times 10^5\,\text{V}$
