

Roll No. to be filled in by the candidate

HSSC (P-II)- A-2024

Paper Code

8

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9

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Mathematics (Objective)

(For All Sessions)

(GROUP-I)

Time: 30 Minutes

Marks : 20

Note: Write Answers to the Questions on the objective answer sheet provided. Four possible answers A, B, C and D to each question are given. Which answer you consider correct, fill the corresponding circle A, B, C or D given in front of each question with Marker or Pen ink on the answer sheet provided.

- 1.1 Midpoint of $A(2, 0), B(0, 2)$ is: (A) $(0, 2)$ (B) $(2, 0)$ (C) $(2, 2)$ (D) $(1, 1)$
2. The ___ point satisfies $x + 2y < 6$ (A) $(4, 1)$ (B) $(3, 1)$ (C) $(1, 3)$ (D) $(1, 4)$
3. In a conic, the ratio of the distance from a fixed point to the distance from a fixed line is: (A) Focus (B) Vertex (C) Eccentricity (D) Centre
4. Standard equation of Parabola is: (A) $y^2 = 4ax$ (B) $x^2 + y^2 = a^2$ (C) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ (D) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
5. Equation of tangent to circle $x^2 + y^2 = a^2$ at $P(x_1, y_1)$ is: (A) $xx_1 + yy_1 = a^2$ (B) $xx_1 - yy_1 = a^2$ (C) $xy_1 + yx_1 = a^2$ (D) $xy_1 - yx_1 = a^2$
6. The volume of parallelopiped = _____. (A) $(\underline{u} \times \underline{v}) \cdot \underline{\omega}$ (B) $(\underline{u} \times \underline{v}) \times \underline{\omega}$ (C) $\underline{u} \times (\underline{v} \times \underline{\omega})$ (D) $\underline{u} \times (\underline{u} \times \underline{v})$
7. The non-zero vectors are perpendicular when: (A) $\underline{u} \cdot \underline{v} = 1$ (B) $|\underline{u} \cdot \underline{v}| = 1$ (C) $\underline{u} \cdot \underline{v} = 0$ (D) $\underline{u} \cdot \underline{v} \neq 0$
8. $\underline{j} \times \underline{k} =$ _____. (A) $\underline{i}$ (B) $-\underline{i}$ (C) 0 (D) $\underline{k}$
9. The range of $f(x) = 2 + \sqrt{x-1}$ is: (A) $[1, +\infty)$ (B) $[2, +\infty)$ (C) $(1, +\infty)$ (D) $(2, +\infty)$
10. The perimeter P of square as a function of its area A: (A) $3\sqrt{A}$ (B) $4\sqrt{A}$ (C) $\sqrt{A}$ (D) $2\sqrt{A}$
11. If $f(x) = \frac{1}{x^2}$ then $\hat{f}(3) =$ _____. (A) $\frac{1}{9}$ (B) $-\frac{2}{3}$ (C) $-\frac{2}{27}$ (D) $\frac{1}{27}$
12. If $\hat{f}(c) = 0$ & $\hat{f}''(c) > 0$ then C is point of: (A) Maxima (B) Minima (C) Inflection (D) Constant
13. $\frac{d}{dx}(\log_a x) =$ _____. (A) $\frac{1}{x \ln a}$ (B) $\frac{\ln a}{x}$ (C) $\frac{1}{x}$ (D) $\frac{-1}{x \ln a}$
14. $\frac{d}{dx}(\cot ax) =$ _____. (A) $\operatorname{cosec}^2 ax$ (B) $a \operatorname{cosec}^2 ax$ (C) $-a \operatorname{cosec}^2 ax$ (D) $-a \operatorname{cosec} ax$
15. $\int \frac{1}{\sqrt{1-x^2}} dx =$ _____. (A) $\sin^{-1} x + c$ (B) $\cos^{-1} x + c$ (C) $-\sin^{-1} x + c$ (D) $-\cos^{-1} x + c$
16. $\int \frac{1}{x} dx =$ _____. (A) $\ln x + c$ (B) $\frac{1}{x^2} + c$ (C) $-\frac{1}{x^2} + c$ (D) $\frac{1}{x} + c$
17. The solution of differential equation $\frac{dy}{dx} = -y$ is: (A) $y = xe^{-x}$ (B) $y = ce^{-x}$ (C) $y = e^x$ (D) $y = ce^x$
18. $\int_0^1 \frac{1}{1+x^2} dx =$ _____. (A) $\frac{\pi}{4}$ (B) $\frac{2\pi}{3}$ (C) $\frac{3\pi}{4}$ (D) π
19. x - intercept of the line $2x + 5y - 1 = 0$ is: (A) 2 (B) 3 (C) $\frac{1}{2}$ (D) $\frac{1}{5}$
20. Slope of y - axis is: (A) 0 (B) 1 (C) -1 (D) Undefined