

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling of two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank.

- 1- 1- Length of vector $2\hat{i} - \hat{j} - 2\hat{k}$ is
(A) 2 (B) 4 (C) 3 (D) 5
- 2- The unit vector along y-axis is
(A) $\hat{i}$ (B) $\hat{j}$ (C) $\hat{k}$ (D) 1
- 3- Focus of parabola $x^2 = -16y$ is
(A) (0,4) (B) (4, 0) (C) (0, -4) (D) (-4, 0)
- 4- If $a > b$, then
(A) $-a < b$ (B) $-a < -b$ (C) $a < -b$ (D) $a > b$
- 5- The point of intersection of lines $x + y = 2$ and $2x - y = 1$ is
(A) (1, 2) (B) (-1, 2) (C) (-1, -2) (D) (1,1)
- 6- Order of differential equation $y \frac{dy}{dx} + 2x = 0$ is
(A) 2 (B) 3 (C) 4 (D) 1
- 7- $\int \tan \frac{\pi}{4} dx$ is
(A) $\ln \sin \frac{\pi}{4}$ (B) x (C) $\sec^2 \frac{\pi}{4}$ (D) $\frac{x}{4}$
- 8- $\frac{d^2}{dx^2}(2^x)$ is
(A) $x 2^{x-1}$ (B) $\ln 2^x$ (C) $2^x (\ln 2)^2$ (D) $x \ln 2$
- 9- $\frac{d}{dx}(\sec^{-1} x + \operatorname{cosec}^{-1} x)$ equals
(A) 1 (B) 2 (C) 3 (D) zero
- 10- $\lim_{x \rightarrow \pi} \frac{\sin x}{\pi - x}$ equals
(A) zero (B) 1 (C) 2 (D) 3

(Turn over)

- 11- Derivative of $\cot x$ w.r.t. x is
 (A) $-\operatorname{cosec}^2 x$ (B) $\sec^2 x$ (C) $+\operatorname{cosec}^2 x$ (D) $-\sec^2 x$
- 12- $(\underline{i} \times \underline{j}) \times \underline{k}$ equals
 (A) -1 (B) 1 (C) zero (D) 2
- 13- $\int_0^1 \frac{1}{1+x^2} dx$ equals
 (A) $\frac{\pi}{4}$ (B) $\frac{2\pi}{3}$ (C) $\frac{3\pi}{4}$ (D) π
- 14- Directrices of $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ are
 (A) $x = \pm \frac{c}{e^2}$ (B) $y = \pm \frac{c}{e^2}$ (C) $x = \pm \frac{c}{e}$ (D) $\pm \frac{e^2}{c}$
- 15- The lines ℓ_1, ℓ_2 with slopes m_1, m_2 are perpendicular if
 (A) $m_1 m_2 = 1$ (B) $m_1 = m_2$ (C) $m_1 m_2 = -1$ (D) $m_1 + m_2 = 0$
- 16- Differential of y is
 (A) dy' (B) $\frac{dy}{dx}$ (C) dy (D) dx
- 17- $\frac{d}{dx} (\cos \sqrt{x})$
 (A) $\frac{-\sin \sqrt{x}}{\sqrt{x}}$ (B) $-\sin \sqrt{x}$ (C) $\frac{-\sin \sqrt{x}}{2\sqrt{x}}$ (D) $\frac{\cos \sqrt{x}}{\sqrt{x}}$
- 18- Function $F(x) = \frac{3x}{x^2+1}$ is called
 (A) even function (B) odd function (C) constant function (D) linear function
- 19- Slope of line parallel to x -axis is
 (A) -1 (B) zero (C) 1 (D) 2
- 20- Length of diameter of circle $x^2 + y^2 = 9$ is
 (A) 6 (B) 3 (C) 9 (D) 4