

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	$\frac{d}{dx}(\sqrt{x}) = :$ (A) $\sqrt{x}$ (B) $\frac{1}{\sqrt{x}}$ (C) $\frac{1}{2x}$ (D) $\frac{1}{2\sqrt{x}}$
2	$\int \tan x dx = :$ (A) $\ln \sec x + c$ (B) $\ln \operatorname{cosec} x + c$ (C) $\ln \sin x + c$ (D) $\ln \cot x + c$
3	$\int \frac{e^x}{e^x + 3} dx = :$ (A) $\ln(e^x + 3) + c$ (B) $e^{2x} + c$ (C) $e^0 + c$ (D) $e^{2x} + 3 + c$
4	$\frac{d}{dx}(\cos x^2) = :$ (A) $2x \sin x^2$ (B) $-2x \sin x^2$ (C) $2 \cos x$ (D) $-2 \sin x$
5	If $y = \sin^{-1} \frac{x}{a}$, then $\sin y = :$ (A) $\cos y$ (B) $\cos x$ (C) $\frac{x}{a}$ (D) $\frac{y}{a}$
6	The function $y = 27 + x^2$ is a / an : (A) Constant function (B) Even function (C) Implicit function (D) Explicit function
7	A function $f(x)$ has relative maximum at $x = c$, if $f'(c) = 0$ and : (A) $f''(c) > 0$ (B) $f''(c) < 0$ (C) $f''(c) = 0$ (D) $f'(c) \neq 0$
8	$\int \sec^2 x dx = :$ (A) $\cot x + c$ (B) $\tan x + c$ (C) $2 \sec x + c$ (D) $\frac{1}{\cos^2 x} + c$
9	$\int_{-\pi}^{\pi} \sin x dx = :$ (A) 2π (B) 0 (C) 1 (D) $\cos \pi$

1-10	If $f(x) = 2x + 1$, then $f^{-1}(x) = ?$: (A) $2x - 1$ (B) $1 - 2x$ (C) $x - \frac{1}{2}$ (D) $\frac{x-1}{2}$
11	y-intercept of the line $2x - y - 4 = 0$ is : (A) 2 (B) -2 (C) 4 (D) -4
12	An angle in the semi circle is of measure : (A) 30° (B) 60° (C) 90° (D) 180°
13	The perpendicular distance of a line $5x + 12y = 7$ from origin is : (A) $\frac{1}{13}$ (B) $\frac{13}{7}$ (C) $\frac{7}{13}$ (D) -7
14	Equation of latus-rectum of parabola $y^2 = 4ax$ is : (A) $x = -a$ (B) $y = -a$ (C) $x = a$ (D) $y = a$
15	The mid point of line segment joining A (-8, 3), B (2, -1) is : (A) (-6, 2) (B) (10, 4) (C) (-3, 1) (D) (-16, -3)
16	The triple scalar product of vectors, calculates the volume of : (A) Triangle (B) Parallelogram (C) Tetrahedron (D) Parallelepiped
17	The equation of line $\frac{x}{b} + \frac{y}{a} = 1$ is in : (A) Normal form (B) Intercept form (C) Point-slope form (D) Two-points form
18	The radius of circle $x^2 + y^2 = 5$ is : (A) 25 (B) $\sqrt{5}$ (C) 5 (D) (0, 0)
19	Non-zero vector $\underline{a}$ and $\underline{b}$ are parallel if $\underline{a} \times \underline{b} =$: (A) 0 (B) 1 (C) -1 (D) (a, b)
20	The solution of the inequality $x + 2y < 6$ is : (A) (1, 1) (B) (1, 3) (C) (1, 4) (D) (1, 5)