

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	The perimeter P of a square as a function of its area A is given as :
	(A) $4A$ (B) $4\sqrt{A}$ (C) $2A$ (D) $2\sqrt{A}$
2	Domain of cosine function $y = \cos x$ is :
	(A) Real numbers (B) $[-1, 1]$ (C) $(0, \infty)$ (D) $] -1, 1 [$
3	If $y = \tanh^{-1} x$, then $\frac{dy}{dx} = :$
	(A) $\frac{1}{1+x^2}$ (B) $\frac{1}{1-x^2}$ (C) $\frac{-1}{1+x^2}$ (D) $\frac{-1}{1-x^2}$
4	$\frac{d}{dx}(a^{\lambda x}) = :$
	(A) $a^{\lambda x}$ (B) $a^{\lambda x} \ln a$ (C) $\lambda a^{\lambda x} \ln a$ (D) $\frac{a^{\lambda x}}{\lambda \ln a}$
5	$\frac{d}{dx}(\sin \sqrt{x}) = :$
	(A) $\cos \sqrt{x}$ (B) $\cos \sqrt{x} \cdot \frac{1}{\sqrt{x}}$ (C) $\sqrt{x} \cos \sqrt{x}$ (D) $\cos \sqrt{x} \cdot \frac{1}{2\sqrt{x}}$
6	If $y = x^2 - 1$, then $dy = :$
	(A) $x dx + c$ (B) $(x-1) dx$ (C) $2x dx + c$ (D) $2x dx$
7	$\int_0^3 \frac{dx}{x^2 + 9} = :$
	(A) $\frac{\pi}{4}$ (B) $\frac{-\pi}{4}$ (C) 0 (D) $\frac{\pi}{12}$
8	$\int e^x (\sin x + \cos x) dx = :$
	(A) $e^x \cos x + c$ (B) $e^x \sin x$ (C) $e^x \sin x + c$ (D) $e^x \cos x$
9	$\int \frac{2}{x+2} dx = :$
	(A) $\ln x+2 + c$ (B) $\ln x+2 ^2 + c$ (C) $\frac{1}{\ln x+2 } + c$ (D) $2 \ln x + c$
10	$\int \frac{1}{\cos^2 x} dx = :$
	(A) $\frac{1}{\sin^2 x} + c$ (B) $\tan x + c$ (C) $\sec^2 x + c$ (D) $\operatorname{cosec}^2 x + c$

11	The lines represented by $ax^2 + 2hxy + by^2 = 0$ are imaginary if : (A) $h^2 - ab = 0$ (B) $h^2 - ab < 0$ (C) $h^2 - ab > 0$ (D) $h^2 - ab \neq 0$
12	Two lines $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are parallel if : (A) $a_1a_2 + b_1b_2 = 0$ (B) $a_1a_2 - b_1b_2 = 0$ (C) $a_1b_2 - a_2b_1 = 0$ (D) $a_1b_2 + a_2b_1 = 0$
13	Inclination of the line joining the points (4, 6) and (4, 8) is : (A) 90° (B) 45° (C) 30° (D) Undefined
14	A region is said to feasible region which is restricted to : (A) I quadrant (B) II quadrant (C) III quadrant (D) IV quadrant
15	An angle in a semicircle is of measure : (A) 90° (B) 60° (C) 45° (D) 30°
16	The coordinate of the vertices of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is : (A) $(0, \pm b)$ (B) $(\pm b, 0)$ (C) $(0, \pm a)$ (D) $(\pm a, 0)$
17	Focus of the parabola $x^2 - 5y = 0$ is : (A) $(\frac{5}{4}, 0)$ (B) $(0, \frac{5}{4})$ (C) $(0, -\frac{5}{4})$ (D) $(-\frac{5}{4}, 0)$
18	For parabola, value of eccentricity e is : (A) $e = 0$ (B) $e < 1$ (C) $e > 1$ (D) $e = 1$
19	If $\underline{u}, \underline{v}$ and $\underline{w}$ are coterminal edges of a tetrahedron, then its volume is : (A) $[\underline{u} \ \underline{v} \ \underline{w}]$ (B) $\frac{1}{3} [\underline{u} \ \underline{v} \ \underline{w}]$ (C) $\frac{1}{6} [\underline{u} \ \underline{v} \ \underline{w}]$ (D) $\frac{1}{9} [\underline{u} \ \underline{v} \ \underline{w}]$
20	A vector perpendicular to both vectors $\underline{a}$ and $\underline{b}$ is : (A) $\underline{a} \cdot \underline{b}$ (B) $\underline{a} \times \underline{b}$ (C) $\frac{\underline{a} \cdot \underline{b}}{ \underline{a} }$ (D) $\underline{b} \cdot \underline{a}$