

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 in your answer book. Use marker or pen to fill the circles. Cutting or filling up two or more circles will result no mark.

SECTION-A

Q.1	Questions	A	B	C	D
1.	If $y = e^{x \ln a}$ then $\frac{dy}{dx} =$ _____.	$a^x (\ln a)$ ✓	$e^x (\ln a)$	$\ln(a)$	1
2.	If $\int_{-2}^1 f(x) dx = 5$, $\int_1^3 f(x) dx = 3$, then $\int_{-2}^3 f(x) dx =$ _____.	8 ✓	2	1	-8
3.	The suitable substitution for the function involving $\sqrt{x^2 - a^2}$ to integrate the function is:	$x = a \sin \theta$	$x = a \sec \theta$ ✓	$x = a \tan \theta$	$x = \sin \theta$
4.	$\int \frac{1}{(2x+3)^4} dx =$ _____.	$-\frac{8}{(2x+3)^3}$	$\frac{8}{(2x+3)^3}$ ✓	$-\frac{1}{6(2x+3)^3}$	$\frac{1}{6(2x+3)^3}$
5.	Vertices of the ellipse $4x^2 + 9y^2 = 36$ are:	$(\pm 3, 0)$ ✓	$(0, \pm 3)$	$(\pm 2, 0)$	$(0, \pm 2)$
6.	Under what condition $\frac{d}{dx} (\coth^{-1} x) = \frac{1}{1-x^2}$	$ x \leq 1$	$ x \geq 1$	$ x < 1$	$ x > 1$ ✓
7.	$\int_{-1}^2 x dx =$ _____.	2	-2	$\frac{5}{2}$ ✓	-4
8.	The point of the solution region where two of its boundary lines intersect is called:	Convex region	Boundary point ✓	Vertex	Feasible region
9.	$\lim_{h \rightarrow 0} (1 - 2h)^{\frac{1}{h}} =$ _____.	e^{-2} ✓	e^2	0	1
10.	Normal form of the equation $2x + y = -2$ is:	$-\frac{2x}{\sqrt{5}} - \frac{y}{\sqrt{5}} = \frac{2}{\sqrt{5}}$ ✓	$\frac{2x}{\sqrt{5}} - \frac{y}{\sqrt{5}} = \frac{2}{\sqrt{5}}$	$-\frac{2x}{\sqrt{5}} + \frac{y}{\sqrt{5}} = \frac{2}{\sqrt{5}}$	$\frac{2x}{\sqrt{5}} + \frac{y}{\sqrt{5}} = \frac{2}{\sqrt{5}}$
11.	If the vectors $2\hat{i} + \alpha\hat{j} + 5\hat{k}$ and $3\hat{i} + \hat{j} + \alpha\hat{k}$ are perpendicular then $\alpha =$ _____.	0	1	-1 ✓	2
12.	Unit vector in the direction of $\underline{v} = [3, -4]$ is:	$[\frac{-3}{5}, \frac{4}{5}]$ ✓	$[\frac{3}{5}, \frac{-4}{5}]$ ✓	$[\frac{-3}{5}, \frac{-4}{5}]$	$[\frac{3}{5}, \frac{4}{5}]$
13.	If $f(x) = 4x - x^2$ defined for interval $[-1, 5]$ then $f(x)$ increases in the interval.	$[-1, 3]$	$[-1, 2]$ ✓	$[2, 5]$	$[-1, 5]$
14.	The length of latusrectum for parabola $x^2 = -16y$ is:	16 ✓	4	32	8
15.	Which one is the centre of the circle $x^2 + y^2 - 6x + 4y + 13 = 0$	$(-3, 2)$	$(-3, -2)$	$(3, 2)$	$(3, -2)$ ✓
16.	If $y = \frac{1}{x^2}$ then $\frac{dy}{dx}$ at $x = 1$	-1	1	-2 ✓	2
17.	Slope of the line $12y = 5x + 39$ is:	$-\frac{5}{12}$	$\frac{5}{12}$ ✓	$\frac{39}{12}$	$-\frac{39}{12}$
18.	Domain of the function $f(x) = x^2 + 1$ is:	$[0, +\infty)$	$(-\infty, +\infty)$ ✓	$[-\infty, +\infty]$	$(-\infty, 0]$
19.	The line $y = a$ lies above the x -axis if:	$a = 0$	$a < 0$	$a \leq 0$	$a > 0$ ✓
20.	The location in the plane of the point $P(x, y)$ for which $x < 0$ and $y \geq 0$.	The first quadrant	The second quadrant ✓	The third quadrant	The fourth quadrant