

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