SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai
Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &
Accredited by NBA (B.E - CSE, EEE, ECE, Mech & B.Tech.IT)
COIMBATORE-641 035, TAMIL NADU

DEPARTMENT OF MATHEMATICS

Course Code & Name : **23MAT101 -MATRICES AND CALCULUS**

Course Faculty : **Dr.S.Subhalakshmi**

Question Bank

UNIT V-MUTIPLE INTEGRALS

Part A- Two Mark Questions

1	Evaluate $\int_0^5 \int_0^2 (x^2+y^2)\,dxdy$	(WIPRO, 2023)	L -3
2	Evaluate $\int_0^1 \int_0^2 xy\,dxdy$	(WIPRO, 2023)	L -3
3	Evaluate $\int_2^3 \int_1^2 \frac{1}{xy}dxdy$	(WIPRO, 2023)	L -3
4	Sketch the region of integration in $\int_0^1 \int_0^x dydx.$	(TCS, 2022)	L -2
5	Change the order of integration in $\int_0^a \int_x^a f(x,y)dxdy.$	(WIPRO, 2020)	L -2
6	Change the order of integration $\int_0^1 \int_0^y dxdy.$	(WIPRO, 2020)	L -2
7	Obtain the value of $\int_0^a \int_0^b \int_0^c dxdydz$.	(TCS, 2022)	L -3
8	Evaluate $\int_1^3 \int_2^3 \int_1^2 x^2 yzdxdydz$	(TCS, 2022)	L -3
9	Evaluate $\int_0^a \int_0^b \int_0^c x^2+y^2+z^2 dxdydz$	(TCS, 2022)	L -3
10	Write any two applications of double integral		L-1

PART B

1	Change the order of integration in the interval $\int_0^1 \int_{x^2}^{2-x} xy\, dxdy$ and hence evaluate it.	GATE-2017	L-4
2	Change the order of integration in the interval $\int_0^a \int_{x^2/a}^{2a-x} xy\, dxdy$ and hence evaluate it		L-4
3	Change the order of integration in $\int_0^a \int_y^a x^2 + y^2\, dxdy$ and hence evaluate it.		L-4
4	Chage the order of integration $\int_0^\infty \int_x^\infty \frac{e^{-y}}{y} dydx$ hence evaluate it.	(GATE, 2021)	L -4
5	Find the area enclosed by the curves $y^2 = 4ax$ and $x^2 = 4ay$	(WIPRO, 2023)	L -3
6	Evaluate $\iint xydxdy$ over the positive quadrant of the circle $x^2+y^2 = 1$	(WIPRO, 2023)	L -3
7	Find the area of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$	(WIPRO, 2023)	L -3
8	Find the area bounded by the line y = x and parabola $x^2 = y$	(WIPRO, 2023)	L -3
9	Find the area bounded by the lines x = 0, y = 1, y = x using double integration	(WIPRO, 2023)	L -3
10	Evaluate $\iint (x - y)dxdy$ over the region between the line y = x and parabola $x^2 = y$	(WIPRO, 2023)	L -3
11	Evaluate $\int_0^{\log 2} \int_0^x \int_0^{x+y} e^{x+y+z}\, dxdydz$		L -3
12	Evaluate $\int_0^1 \int_0^{1-x} \int_0^{1-x-y} xy\, dxdydz$		L -3
13	Evaluate $\iiint_V \frac{dzdydx}{(x+y+z+1)^3}$ where V is the region bounded by x = 0, y = 0, z = 0 and x + y + z = 1		L -3
14	Using triple integration, find the volume of the sphere $x^2 + y^2 + z^2 = a^2$.	(HCL, 2023)	L -4
15	Find the volume of the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$.	(HCL, 2023)	L -4
16	Find the volume of the tetrahedron bounded by $x = 0, y = 0, z = 0$, $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$	(HCL, 2023)	L -4