

UNIT-V: Multi variable Calculus (Integration)

S.No	Questions	BT	CO	PO	
Part – A (Short Answer Questions)					
1	Evaluate $\int_0^2 \int_0^3 xy dx dy$	L1	CO3	PO1	
2	Evaluate $\int_0^2 \int_0^x y dx dy$	L2	CO3	PO2	
3	Evaluate $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)} dx dy$	L1	CO3	PO1	
4	Evaluate $\int_0^\pi \int_0^{\sin\theta} r dr d\theta$	L1	CO3	PO1	
5	Write the limits after changing the order of integration $\int_0^a \int_{\frac{x^2}{a}}^{2a-x} xy^2 dy dx$	L3	CO3	PO2	
6	Find $\int_{-1}^1 \int_{-2}^2 \int_{-3}^3 dx dy dz$	L3	CO3	PO2	
7	Find $\int_0^1 \int_1^2 \int_2^3 xyz dx dy dz$	L1	CO3	PO1	
8	Find $\int_0^1 \int_1^2 \int_2^3 (x + y + z) dx dy dz$	L3	CO3	PO2	
9	Shade the region bounded by the $y = x^2$ and $x = y^2$.	L3	CO3	PO2	
10	Evaluate $\int_0^1 \int_0^2 y^2 dx dy$	L3	CO3	PO2	
Part – B (Long Answer Questions)					
11	a)	Evaluate $\int_0^1 \int_x^{\sqrt{x}} (x^2 + y^2) dx dy$	L4,L5	CO3	PO3
	b)	Evaluate $\iint y^2 dx dy$ where R is the region bounded by the parabolas $y^2 = 4x$ and $x^2 = 4y$.	L3	CO3	PO2
12	a)	Evaluate $\iint (x^2 + y^2) dx dy$ in the positive quadrant for which $x+y \leq 1$.	L3	CO3	PO2
	b)	Evaluate $\int_0^\pi \int_0^{\sin\theta} r dr d\theta$.	L3	CO3	PO2
13	a)	Evaluate $\iint r^3 dr d\theta$ over the area included between the circles $r=2\sin\theta$ and $r=4\sin\theta$.	L4,L5	CO3	PO3

	b)	Evaluate $\int_0^1 \int_{x^2}^{2-x} xydydx$ by change of order of integration.	L3	CO3	PO2
14	a)	Evaluate $\int_0^1 \int_0^{1-x} \int_0^{1-x-y} dx dy dz$.	L3	CO3	PO2
15		Evaluate $\iiint xyz dx dy dz$ over the positive octant of the sphere $x^2 + y^2 + z^2 = a^2$.	L2,L3	CO3	PO2
16		Find the volume of the greatest rectangular parallelepiped that can be inscribed in an ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$.	L2,L3	CO3	PO2

*Blooms Taxonomy Level(BT) (L1-Remembering; L2- Understanding;L3-Applying;L4-Analyzing;L5-Evaluating;L6-Creating)

Course Outcomes(CO)

Program Outcomes(PO).