

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF MATHEMATICS
18MAB102T ADVANCED CALCULUS & COMPLEX ANALYSIS
UNIT -1 Multiple Integrals
Tutorial Sheet -2



Sl.No.	Questions	Answer
	PART -A	
1	Evaluate $\int_0^1 \int_0^2 \int_0^3 xyz dx dy dz$	$\frac{9}{2}$
2	Find the area of $r^2 = a^2 \cos 2\theta$ by double integration	$a^2/2$
3	Find the area enclosed by $y = x$ & $y = x^2$ in the first quadrant, using double integration	$\frac{1}{6}$
4	Change the order of Integration $\int_0^\infty \int_x^\infty \frac{e^{-y}}{y} dy dx$	$\int_0^\infty \int_0^y \frac{e^{-y}}{y} dx dy$
5	Find the area enclosed by the ellipse using double integration $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$	πab
	PART-B	
6	Change the order of integration and hence evaluate $\int_{-a}^a \int_0^{\sqrt{a^2-y^2}} x dx dy$	$2a^3/3$
7	Find the smaller of the area bounded by $y = 2 - x$ and $x^2 + y^2 = 4$	$\pi - 2$
8	Find the area lying inside the circle $r = a \sin \theta$ and the outside the cardioid $r = a(1 - \cos \theta)$	$\frac{a^2}{4}(4 - \pi)$
9	Change the order of integration and hence evaluate $\int_0^1 \int_{x^2}^{2-x} xy dy dx$	$3/8$
10	Change the order of integration and hence evaluate $\int_0^1 \int_y^{2-y} xy dx dy$	$1/3$