SRM Institute of Science and Technology

DEPARTMENT OF MATHEMATICS

18MAB102T-Advanced Calculus and Complex Analysis

2020-2021 Even

Unit I: Multiple Integrals

Assignment-1

Answer**ALL** Questions (5 × 12 = 60 Marks)

1. Evaluate $\int_0^{log_a} \int_0^x \int_0^{x+y} (e^{x+y+z}) dz dy dx$. –(6M)
   Using double integration find the area enclosed by the curves $y = 2x^2$ and $y^2 = 4x$.—(6M)
2. Evaluate $\int\int r^2 dr d\theta$ area between the circles $r = acos\theta$ and $r = 2acos\theta$.
3. Change the order of integration in $\int_0^a \int_{\frac{x^2}{a}}^{2a-x} xydxdy$ and hence evaluate.
4. Evaluate $\int\int\int dxdydz$, Where V is the volume of the tetrahedron whose vertices are(0,0,0),(0,1,0), (1,0,0) and (0,0,1).
5. Change into polar co-ordinates and then evaluate $\int_0^2 \int_0^{\sqrt{2x-x^2}} \frac{x}{\sqrt{x^2+y^2}} dxdy$.

**********ALL THE BEST**********