

King Saud University
Department of Mathematics
M-203
(Differential and Integral Calculus)
Second-Mid Term Examination
(Summer Semester 1434/1435)

Max. Marks: 25

Time: 90 minutes

Marking Scheme: All Questions Carry equal Marks

Q. No: 1 Evaluate the integral $\int_0^3 \int_{y^2}^9 y \cos(x^2) dx dy$.

Q. No: 2 Use the double integral to find the volume of the solid bounded by the plane $z = 0$ and the paraboloid $z = 1 - x^2 - y^2$.

Q. No: 3 Find the surface area of the portion of the paraboloid $z = x^2 + y^2$ cut off by the plane $z = 4$.

Q. No: 4 Find the volume (using triple integral) of the solid bounded by the graphs of $z = 4 - y^2$, $x + z = 4$, $x = 0$, and $z = 0$.

Q. No: 5 Evaluate the integral $\int_{-2}^2 \int_{-\sqrt{4-x^2}}^{\sqrt{4-x^2}} \int_0^{\sqrt{4-x^2-y^2}} z^2 \sqrt{x^2 + y^2 + z^2} dz dy dx$ by changing it to spherical coordinates.