Question Bank 4

School of Basics and Applied Science

**Mathematics**

Course Name: Multivariable Calculus Course Code: BMA101

Date: 08-09-2019

| S. No. | Questions | CO | Bloom’s Taxonomy Level | Difficulty Level | Competitive Exam Question Y/N | Area | Topic | Unit | Marks |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Compute: | 4 | K2 | M | N | Double integrals in Cartesian coordinates | Rectangular region | 4 | 2 |
| 2 | Compute: | 4 | K2 | M | N | Double integrals in Cartesian coordinates | Rectangular region | 4 | 2 |
| 3 | Compute: | 4 | K2 | M | N | Double integrals in Cartesian coordinates | Rectangular region | 4 | 2 |
| 4 | Compute: | 4 | K2 | M | N | Double integrals in Cartesian coordinates | Rectangular region | 4 | 2 |
| 5 | Compute the double integral over the region *R*:; | 4 | K3 | H | N | Double integrals in Cartesian coordinates | Rectangular region | 4 | 6 |
| 6 | Calculate for and . | 4 | K3 | H | N | Double integrals in Cartesian coordinates | Rectangular region | 4 | 6 |
| 7 | Compute: | 4 | K2 | M | N | Double integrals in Cartesian coordinates | Non-rectangular region | 4 | 6 |
| 8 | Compute: | 4 | K2 | M | N | Double integrals in Cartesian coordinates | Non-rectangular region | 4 | 6 |
| 9 | Compute: | 4 | K2 | M | N | Double integrals in Cartesian coordinates | Non-rectangular region | 4 | 6 |
| 10 | Compute: | 4 | K2 | M | N | Double integrals in Cartesian coordinates | Non-rectangular region | 4 | 6 |
| 11 | Integrate over the region in the first quadrant bounded by the lines | 4 | K3 | H | N | Double integrals in Cartesian coordinates | Non-rectangular region | 4 | 10 |
| 12 | Compute: | 4 | K3 | H | N | Double integrals in Cartesian coordinates | Non-rectangular region | 4 | 6 |
| 13 | Compute: | 4 | K3 | H | N | Double integrals in Cartesian coordinates | Non-rectangular region | 4 | 10 |
| 14 | Plot the region, reverse the order of integration of the integral: | 4 | K2 | M | N | Double integrals in Cartesian coordinates | Change order of integration | 4 | 6 |
| 15 | Plot the region, reverse the order of integration and then calculate the integral: | 4 | K3 | H | N | Double integrals in Cartesian coordinates | Change order of integration | 4 | 10 |
| 16 | Sketch the region of integration and write an equivalent integral with the order of integration reversed for the integral | 4 | K2 | H | N | Double integrals in Cartesian coordinates | Change order of integration | 4 | 6 |
| 17 | Sketch the region of integration and write an equivalent integral with the order of integration reversed for the integral | 4 | K2 | H | N | Double integrals in Cartesian coordinates | Change order of integration | 4 | 6 |
| 18 | Sketch the region of integration, reverse the order of integration and evaluate the integral | 4 | K3 | H | N | Double integrals in Cartesian coordinates | Change order of integration | 4 | 10 |
| 19 | Compute: | 4 | K2 | M | N | Double integrals in Polar coordinates | Polar curves | 4 | 2 |
| 20 | Compute: | 4 | K2 | M | N | Double integrals in Polar coordinates | Polar curves | 4 | 2 |
| 21 | Find the limits of integration for over the region *R* that lies inside the cardioid and outside the circle | 4 | K2 | M | N | Double integrals in Polar coordinates | Polar curves | 4 | 2 |
| 22 | Change the Cartesian integral into polar integral and then compute the polar integral: | 4 | K3 | H | N | Double integrals in Polar coordinates | Change Cartesian integrals into polar integrals | 4 | 10 |
| 23 | Change the Cartesian integral into polar integral and then compute the polar integral: | 4 | K3 | H | N | Double integrals in Polar coordinates | Change Cartesian integrals into polar integrals | 4 | 10 |
| 24 | Change the Cartesian integral into polar integral and then compute the polar integral: | 4 | K3 | H | N | Double integrals in Polar coordinates | Change Cartesian integrals into polar integrals | 4 | 10 |
| 25 | Change the Cartesian integral into polar integral and then compute the polar integral: | 4 | K3 | H | N | Double integrals in Polar coordinates | Change Cartesian integrals into polar integrals | 4 | 10 |
| 26 | Change the Cartesian integral into polar integral and then compute the polar integral: | 4 | K3 | H | N | Double integrals in Polar coordinates | Change Cartesian integrals into polar integrals | 4 | 10 |
| 27 | Evaluate where *R* is the semicircular region bounded by the x-axis and the curve | 4 | K4 | H | N | Double integrals in Polar coordinates | Change Cartesian integrals into polar integrals | 4 | 10 |
| 28 | Find the volume of the region bounded above by the elliptical paraboloidand below by the rectangle | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 29 | Find the volume of the region bounded above by the paraboloidand below by the square | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 30 | Find the volume of the region bounded above by the planeand below by the square | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 31 | Find the volume of the region bounded above by the surfaceand below by the rectangle | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 32 | Find a value of the constant *k* so that | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 6 |
| 33 | Find the volume of the prism whose base is the triangle in the *xy*-plane bounded by the *x*-axis and the linesand whose top lies in the plane | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 34 | Find the volume of pastry that lies beneath the surfaceand above the region R bounded by the curvethe line and the *x*-axis. | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 35 | Find the volume of the region bounded above by the paraboloidand below by the triangle enclosed by the lines and in the *xy*-plane. | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 36 | Find the area of the region R bounded byand in the first quadrant using double integral. | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 37 | Find the area of the region R enclosed by the parabolaand the lineusing double integral. | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 38 | Find the area of the playing field described by using Fubini’s Theorem and simple geometry. | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 39 | Find the area enclosed by the lemniscate | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 40 | Find the volume of the solid region bounded above by the paraboloidand below by the unit circle in the *xy-*plane. | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 41 | Using polar integration, find the area of the region *R* in the *xy*-plane enclosed by the circleabove the lineand below the line | 4 | K4 | H | N | Application of Double integral | Area and volume by double integral | 4 | 10 |
| 42 | Evaluate: | 4 | K3 | H | N | Triple integrals in Cartesian coordinates | Triple integral | 4 | 6 |
| 43 | Evaluate: | 4 | K3 | H | N | Triple integrals in Cartesian coordinates | Triple integral | 4 | 6 |
| 44 | Evaluate: | 4 | K3 | H | N | Triple integrals in Cartesian coordinates | Triple integral | 4 | 6 |
| 45 | Evaluate: | 4 | K3 | H | N | Triple integrals in Cartesian coordinates | Triple integral | 4 | 6 |
| 46 | Evaluate the triple integral where Q is the rectangular box defined by | 4 | K4 | H | N | Triple integrals in Cartesian coordinates | Triple integral | 4 | 10 |
| 47 | Find the volume of the cube of side 2 unit using triple integral. | 4 | K4 | H | N | Application of Triple integrals | Volume by triple integral | 3 | 10 |
| 48 | Find the volume of the region enclosed by the surfacesand | 4 | K4 | H | N | Application of Triple integrals | Volume by triple integral | 3 | 10 |
| 49 | Find the volume of the region enclosed by the cylinderand by the planes | 4 | K4 | H | N | Application of Triple integrals | Volume by triple integral | 3 | 10 |
| 50 | Find the volume of the region in the first octant bounded by the coordinate planes, the plane and the cylinder | 4 | K4 | H | N | Application of Triple integrals | Volume by triple integral | 3 | 10 |
| 51 | Find the volume of the region in the first octant bounded by the coordinate planes, and the surface | 4 | K4 | H | N | Application of Triple integrals | Volume by triple integral | 3 | 10 |
| 52 | Find the volume of the region in the first octant bounded by the coordinate planes, the plane and the cylinder | 4 | K4 | H | N | Application of Triple integrals | Volume by triple integral | 3 | 10 |

Signature of Course Coordinator/DC:

Signature of Dean:

IQAC: