SRM OF INSTITUTE OF SCIENCE AND TECHNOLOGY
FACULTY OF ENGINEERING AND TECHNOLOGY
18MAB102T- ADVANCED CALCULUS AND COMPLEX ANALYSIS
PART - A : MULTIPLE CHOICE QUESTIONS

UNIT – I: MULTIPLE INTEGRALS

1. Evaluation of $\int_0^1\int_0^1 dxdy$ is

   (a) 1 (b) 2 (c) 0 (d) 4

2. The curve $y^2 = 4x$ is a

   (a) parabola (b) hyperbola (c) straight line (d) ellipse

3. Evaluation of $\int_0^{\pi}\int_0^{\pi} d\theta d\phi$ is

   $a)\ 1$ $b)\ 0$ $c)\ \pi/2$ $d)\ \pi^2$

4. The area of an ellipse is

   $a)\ \pi r^2$ $b)\ \pi a^2 b$ $c)\ \pi ab^2$ $d)\ \pi ab$

5. $\int_1^b\int_2^a \frac{dxdy}{xy}$ is equal to

   a) $\log a + \log b$ b) $\log a$ c) $\log b$ d) $\log a \log b$

6. $\int_0^1\int_0^x dxdy$ is equal to

   1

   $a)\ 1$ $b)\ 1/2$ $c)\ 2$ $d)\ 3$

7. $\int_0^1\int_0^2 dxdy$ is equal to

   $a)\ \int_0^2\int_0^1 dydx$ $b)\ -\int_0^1\int_0^2 dxdy$ $c)\ \int_2^0\int_0^1 dydx$ $d)\ \int_1^0\int_0^2 dydx$

8. If R is the region bounded $x = 0,\ y = 0,\ x + y = 1$ then $\iint_R dxdy$ is equal to

   $a)\ 1$ $b)\ 1/2$ $c)\ 1/3$ $d)\ 2/3$

9. Area of the double integral in cartesian co-ordinate is equal to

   $a)\ \iint_R dydx$ $b)\ \iint_R rdrd\theta$ $c)\ \iint_R xdxdy$ $d)\ \iint_R x^2dxdy$

10. Change the order of integration in $\int_0^a\int_0^x dxdy$ is

$a)\ \int_0^a\int_0^x dxdy$ $b)\ \int_0^a\int_0^x xdydx$ $c)\ \int_0^a\int_y^a dxdy$ $d)\ \int_0^a\int_0^y dxdy$

11. Area of the double integral in polar co-ordinate is equal to

$a)\ \iint_R drd\theta$ $b)\ \iint_R r^2drd\theta$ $c)\ \iint_R (r+1)drd\theta$ $d)\ \iint_R rdrd\theta$

12. $\int_0^1\int_0^2\int_0^3 dxdydz$ is equal to

$a)\ 3$ $b)\ 4$ $c)\ 2$ $d)\ 6$

13. The name of the curve $r = a(1+\cos\theta)$ is

a) lemniscate b) cycloid c) cardioid d) hemicircle

14. The volume integral in cartesian coordinates is equal to

$a)\ \iiint_V dxdydz$ $b)\ \iiint_V drd\theta d\phi$ $c)\ \iint_R drd\theta$ $d)\ \iint_R rdrd\theta$

15. $\int_0^1\int_0^2 x^2ydxdy$ is equal to

$a)\ \frac{2}{3}$ $b)\ \frac{1}{3}$ $c)\ \frac{4}{3}$ $d)\ \frac{8}{3}$

16. $\int_0^1\int_0^1 (x+y)dxdy$ is equal to

$a)\ 1$ $b)\ 2$ $c)\ 3$ $d)\ 4$

17. After changing the double integral $\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}dxdy$ into polar coordinates, we have

$a)\ \int_0^{\pi/2}\int_0^\infty e^{-r^2}drd\theta$ $b)\ \int_0^{\pi/4}\int_0^\infty e^{-r}drd\theta$ $c)\ \int_0^{\pi/2}\int_0^\infty e^{-r^2}rdrd\theta$ $d)\ \int_0^{\pi/2}\int_0^\infty e^{-r}drd\theta$

18. $\int_0^\infty\int_0^y \frac{e^{-y}}{y}dxdy$ is equal to

$a)\ 1$ $b)\ 0$ $c)\ -1$ $d)\ 2$

19. The value of the integral $\int_0^2\int_0^1 xydxdy$ is

(a) 1 (b) 2 (c) 3 (d) 4

20. The value of the integral $\int_0^{\pi/2}\int_0^{\pi/2} \sin(\theta+\phi)d\theta d\phi$

(a) 1 (b) 2 (c) 3 (d) 4

21. The region of integration of the integral $\int_{-b}^{b}\int_{-a}^{a} f(x,y)dxdy$ is

(a) square (b) circle (c) rectangle (d) triangle

22. The region of integration of the integral $\int_0^1\int_0^x f(x,y)dxdy$ is

(a) square (b) rectangle (c) triangle (d) circle

23. The limits of integration is the double integral $\iint_R f(x,y)dxdy,$ where R is in the first quadrant and bounded by $x=0,\ \ y=0,\ \ x+y=1$ are

$(a)\ \int_{x=0}^{1}\int_{y=0}^{1-x} f(x,y)dydx$ $(b)\ \int_{y=1}^{2}\int_{x=0}^{1-y} f(x,y)dxdy$

$(c)\ \int_{y=0}^{1}\int_{x=1}^{y} f(x,y)dxdy$ $(d)\ \int_{y=0}^{2}\int_{x=0}^{1-y} f(x,y)dxdy$

ANSWERS:

1	a	6	b	11	d	16	a	21	c
2	a	7	a	12	d	17	c	22	c
3	d	8	b	13	c	18	a	23	a
4	d	9	a	14	a	19	a		
5	d	10	c	15	c	20	b		