IS089

MOBILES ARE BANNED USN: | 1 | M | S | 1 | 6 | I | S | 1 | 2 | 4T |

DEPARTMENT OF MATHEMATICS, M.S.R.I.T, BANGALORE-560054

Sub Code:	MAT101	Sub:	Engineering Mathematics-I		Test:	II
Time:	11.00-12.00pm	Term:	08-08-2016 to 17-12-2016		Marks:	30
Date:	10-11-2016	Semester:	I	Sections:	A to I	

Note: Answer any TWO full questions. Each main question carries 15 marks

Q.No.		Questions	Blooms Level	CO's	Marks
1.	(a)	Write the expression to find the volume of solid of revolution for a Cartesian curve when rotated about x – axis and y – axis.	L1	CO2	2
	(b)	Find the total perimeter of cardioid $r = a(1 - cos\theta), a > 0$	L2	CO2	3
	(c)	Find the surface area of the solid obtained when cycloid $x = a(\theta + sin\theta), y = a(1 + cos\theta)$ is rotated about its base.	L3	CO2	5
	(d)	Evaluate $\int_0^\infty \frac{e^{-x}}{x}(1 - e^{-ax})dx, a > -1$ by using differentiation under the integral sign.	L4	CO2	5
2.	(a)	With the help of neat diagram mark the region of integration for the integral $\iint_R x\,siny\,dy\,dx$ where R is the region bounded by $y = 4x; x + y = 3;\ x - axis\ and\ y = 2.$	L1	CO3	2
	(b)	Find $\int_0^{2\pi} \int_{a\,Sin\,\theta}^{a} r\,dr\,d\theta.$	L2	CO3	3
	(c)	Evaluate $\int_0^1 \int_{x^2}^{2-x} xy\ dydx$ by changing the order of integration.	L3	CO3	5
	(d)	Evaluate $\int_1^2 \int_{-2}^{z-1} \int_2^5 \frac{x}{y}\ dy\ dx\ dz$	L5	CO3	5
3.	(a)	Write the relation between Cartesian and spherical coordinate system	L1	CO3	2
	(b)	Find the area of the curve $x^{2/3} + y^{2/3} = a^{2/3}.$	L2	CO2	3
	(c)	Find the area enclosed by the curves $y = 2 - x$ and $y^2 = 2(2 - x)$ using double integration.	L3	CO3	5
	(d)	Find the volume of the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$ using triple integration.	L4	CO3	5

L1-Remember, L2-Understand, L3-Apply, L4-Analyze, L5- Evaluate, L6-Create