USN

NMAM INSTITUTE OF TECHNOLOGY, NITTE

(An Autonomous Institution affiliated to VTU, Belagavi)

II Sem B.E. (Credit System) Mid Semester Examinations - I, February 2016

15MA201 – ENGINEERING MATHEMATICS - II

Duration: 1 Hour Max. Marks: 20

*Note: Answer any **One** full question from **each Unit.***

Unit – I

		Marks	BT*
1 a)	With Usual notations prove that $\beta(m,n)=\frac{\Gamma(m)\times\Gamma(n)}{\Gamma(m+n)}$	6	L*5
b)	Evaluate $\int_0^1 x^7(1-x^4)^3\,dx$	4	L2, L3
2 a)	Evaluate the following integral by changing the order of the integration $\int_0^1\int_0^{\sqrt{1-x^2}} y^2\,dy\,dx$	6	L5
b)	Evaluate the following $\int_0^a\int_0^x\int_0^{x+y} e^{x+y+z}\,dz\,dy\,dx$	4	L2, L3

Unit – II

3 a)	If $L\{f(t)\}=F(s)$, prove that $L\{t^n f(t)\}=\frac{(-1)^n d^n}{ds^n}F(s)$	4	L2, L4
b)	(i) Find the Laplace Transform of f(t) = t ; 0<t<c = 2c – t ; c<t<2c and f(t+2c)= f(t) (ii) Find $L\{\sinh 3t(\cos t)^2\}$	6	L2, L3
4 a)	Find (i) $L\left\{t\int_0^t \frac{e^t\sin t}{t}dt\right\}$ (ii) $L\{t^2e^{-3t}\sin 2t\}$	6	L2, L3
b)	Rewrite the following function using unit step function and hence find its Laplace transform $f(t)=\begin{cases} t-1 & 0\le t<2 \\ 3-t & 2\le t<3 \\ 0 & t\ge 3 \end{cases}$	4	L2, L4

Bloom's Taxonomy, L* Level

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