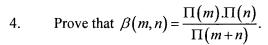
AG	AG		AG	AG	AG	AG	1
Code No: 131AB JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD B.Tech I Year I Semester Examinations, May - 2018 MATHEMATICS-II (Common to CE, ME, MCT, MMT, AE, MIE, PTM, CEE, MSNT) Time: 3 hours Max. Marks: 75							
	Note: This questi Part A is Part B co	ion paper contain compulsory w nsists of 5 Uni	ns two parts A and hich carries 25 its. Answer any		r all questions	in Part A.	
AG				A A G		(25 Marks)	_
	1.a) Find $L\{\cos t\}$	$s^3 2t$.			[2]		
AG	b) \wedge Find $E^{-1}\left\{ \overline{0}\right\}$ c) Evaluate \int_{0}^{1}	$ \frac{4}{s+1)(s+2)} $ $ x^{7}(1-x)^{5} dx. $	AG	AG	[2]	AG	<u> </u>
	d) Evaluate \int_{0}^{∞}	$x^4e^{-x^2}dx.$			[3]		
AG	e) Evaluate \int_{0}^{0}	sy dydx.	AG	AG		AG	A
	f) Evaluate \int_{-1}^{1}	$\int_{-2}^{2} \int_{-3}^{3} dx dy dz.$			[3]		
AG	g) If $\overline{r} = x\overline{i} + \overline{i}$ h) State Green i) Evaluate ∇		d div r.	AG	\[\bigcit{[2]}{\bigcit{[3]}{\bigcit{[2]}}} \end{array}	AG	A
	j) If \bar{a} is a con	stant vector then	find $curl(\overline{r} \times \overline{a})$).	[3]		
			PART -]			(50 Marks)	
Д() ₂	2.a) Find $E\{te^{2t}\}$	$\sin 3t$.	AG	AG	AG	ÄĜ	$/\Delta$
	b) Find $L^{-1} \left\{ \frac{1}{(s)} \right\}$	$\left.\frac{s^2}{s^2+4)\left(s^2+25\right)}\right\}$				[5+5]	
△ <u></u>	Solve the d $x(0) = 1, x(0)$	ifferential equation $\pi/2 = 1$.	$ \frac{d^2x}{dt^2} + 9x = $	sin/ using Lap	lace transform,	given that [10]	A



[10]



5. Show that $\beta(m, \frac{1}{2}) = 2^{2m-1}\beta(m, m)$.

6.

Change the order of integration and solve $\int_{0}^{a} \int_{x^{2}/a}^{2a-x} xy^{2} dy dx.$

[10]



Find the area of the loop of the curve $r = a(1 + \cos \theta)$.

Prove that $\nabla \cdot (\overline{A} \times \overline{B}) = \overline{B} \cdot (\nabla \times \overline{A}) - \overline{A} \cdot (\nabla \times \overline{B})$.

b)

Find the directional derivative of $2x^2 + z^2$ at (1, -1, 3) in the directional of $\overline{l} + 2\overline{j} + 3\overline{k}$.



Verify Green's theorem for $\int (xy+y^2)dx + x^2dy$ where 'C' is bounded by y=x and

Verify the Stoke's theorem for $F = y\vec{i} + z\vec{j} + x\vec{k}$ and surface is the part of the plane $x^2 + y^2 + z^2 = 1$ above the xy - plane. [10]