Question Format & QP Setter Information

Name of Examination	**Continuous Assessment Test** – **II** (Dec. 2021)				
Slot: B1+TB1	Course Mode: CBL		**Class Number (s):** VL2021220106144		
Course Code:	BMAT101L	Course Title:	Calculus		
Emp. No.:	13281	Faculty Name:	R.Tamizharasi	School: SAS	
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*General Instructions (if any):**1. OPEN BOOK Examinations, 2. ….***

Q. No.	Sub-division	Question Text	Marks	Unit / Module No.	HOTS? (Y/N)	Difficulty Level E/A/T	CO	
Answer all questions			Total Marks: 30					
1.	a)	(i) Expand $e^{ax}\cos by$ in Taylor's series as far as the second degree terms about the origin. (ii) Investigate the maxima and minima, if any, of the function $y^2+4xy+3x^2+x^3$. (5M+5M)	10					L3
		(OR)						
	b)	(i) Expand $(1+x+y)^{\frac{1}{2}}$ in Taylor's series as far as the second degree terms about the point (1, 0). (ii) Investigate the maxima and minima, if any, of the function x^2y+xy^2-axy. (5M+5M)	10	**III**	N	Easy (E)		L3
		(OR)						
	c)	(i) Expand $e^x\cos y$ in Taylor's series as far as the second degree terms near the point $\left(1, \frac{\pi}{4}\right)$. (ii) Investigate the maxima and minima, if any, of the function $xy+\frac{a^3}{x}+\frac{b^3}{y}$. (5M+5M)	10				CO2	L3
		(OR)						
	d)	(i) Expand $x^2-xy+\frac{1}{2}y^2+3$ in Taylor's series as far as the second degree terms in powers of $(x-3)$ and $(y-2)$. (ii) Investigate the maxima and minima, if any, of the function $xy^2(3x+6y-2)$. (5M+5M)	10					L3
2.	a)	Find the greatest distance of the point (3, 4, 12) from the unit sphere whose centre is at origin, using the Lagrange method of constrained maxima and minima.	10	**III**	N	Tough (T)	CO2	L3

		(OR)						
	b)	Find the shortest distance from the point (1, 2, -1) to the sphere $x^2+y^2+z^2=24$, using the Lagrange method of constrained maxima and minima.	10					L3
		(OR)						
	c)	Using the Lagrange method of constrained maxima and minima, find the largest product of the numbers x, y and z ,when $x^2+y^2+z^2=9$.	10					L3
		(OR)						
	d)	Find the shortest distance from the point (1, 2, 2) to the sphere $x^2+y^2+z^2=36$, using the Lagrange method of constrained maxima and minima.	10					L3
3.	a)	Compute the volume bounded by the plane $z=0$, the cylinder $x^2+y^2=1$ and the plane $x+y+z=5$.	10					L5
		(OR)						
	b)	Compute the volume bounded by the plane $z=0$, the cylinder $x^2+y^2=4$ and the plane $x+y+z=5$.	10	**IV**	N	Average (A)		L5
		(OR)						
	c)	Compute the volume bounded by the plane $z=0$, the cylinder $x^2+y^2=16$ and the plane $x+y+z=5$.	10				CO3	L5
		(OR)						
	d)	Compute the volume bounded by the plane $z=0$, the cylinder $x^2+y^2=9$ and the plane $x+y+z=5$.	10					L5

Signature with date