	terms containing x^4			
b	Evaluate $\lim\limits_{x \to 0} \left(\dfrac{sinx}{x}\right)^{1/x}$	8	L2	CO2
c	If $u = f(x-y, y-z, z-x)$ then prove that $\dfrac{\partial u}{\partial x} + \dfrac{\partial u}{\partial y} + \dfrac{\partial u}{\partial z} = 0$	9	L2	CO2

<div align="center">OR</div>

4 a	Evaluate $\lim\limits_{x \to 0} \left[\dfrac{a^x + b^x + c^x}{3}\right]^{1/x}$	8	L2	CO2
b	Find $\dfrac{du}{dt}$ when $u = x^3 y^2 + x^2 y^3$ where $x = at^2, y = 2at$	8	L2	CO2
c	If $u = x+y+z$, $v = y+z$, $w = z$ then evaluate $J = \dfrac{\partial(u,v,w)}{\partial(x,y,z)}$.	9	L2	CO2

MRPai
28/01/21
Prepared by: Ms. Madhavi R Pai

Kamal
25/01/21
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Vivekananda College of Engineering & Technology, Puttur

[A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®]
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CONTINUOUS INTERNAL EVALUATION - 1

Dept: BS	Sem / Div: I Sem/ A,B,C,D,E,F	Sub: Calculus and Linear Algebra	S Code:18MAT11
Date: 01/02/2021	Time: 9:30-11:00AM	Max Marks: 50	Elective: N

Note: Answer any 2 full questions, choosing one full question from each part.

QN	Questions	Marks	RBT	CO's
	PART A			
1 a	Find the angle between the radius vector and the tangent for the curve $r=a(1-\cos\theta)$	8	L1	CO1
b	Show that the curves $r^n=a^n\cos n\theta;\, r^n=b^n\sin n\theta$ cut each other orthogonally.	8	L1	CO1
c	Find the dimensions of the rectangular box open at the top of the maximum capacity where the surface area is 432 sq cms..	9	L1	CO2
	OR			
2 a	With usual notation, prove that $\tan\varphi=r.\dfrac{d\theta}{dr}$	8	L1	CO1
b	Show that the curves $r=a(1+\cos\theta);\, r=b(1-\cos\theta)$ cut each other orthogonally.	8	L1	CO1
c	Find the extreme values of the function $f(x,y)=x^3 y^2(1-x-y)$	9	L1	CO2
	PART B			
3 a	Using Maclaurin's series, expand $\log(1+e^x)$ upto the	8	L2	CO2