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Internal Assessment Test II – December 2023

Sub:	Engineering Mathematics-I					Sub Code:	BMATS101		
Date:	01/12/2023	Duration:	90 mins	Max Marks:	50	Sem / Sec:	I / I to L (Chem CYCLE)	OBE	

Question 1 is compulsory and answer any SIX questions from the rest.

		MARKS	CO	RBT
1.	Derive the expression for the radius of curvature for the curve **r = f(θ)**	[08]	CO1	L3
2.	Evaluate: (i) $\lim_{x\to 0}\left(\frac{\tan x}{x}\right)^{1/x}$ (ii) $\lim_{x\to 0}\left(\frac{(a^x+b^x+c^x)}{3}\right)^{1/x}$	[07]	CO2	L3
3.	Find the angle between the curves $r^n = a^n \sec n\theta$, and $r^n = a^n \operatorname{cosec} n\theta$.	[07]	CO1	L3
4.	Show that for the curve **r = a (1 + cosθ) ρ^2 varies as r**.	[07]	CO1	L3

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4.	Show that for the curve **r = a (1 + cosθ), ρ^2 varies as r.**	[07]	CO1	L3

5.	Obtain the pedal equation for the curve $r^n = a^n(cosn\theta + sinn\theta)$.	[07]	CO1	L3
6.	Find the radius of curvature of $y^2 = \frac{a^2(a-x)}{x}$ at $[a, 0]$.	[07]	CO1	L3
7.	Expand e^{cosx} by McLaurin's series up to the fourth-degree term.	[07]	CO2	L3
8.	If u=r sinθ $cos\emptyset$, v=r sin$\theta sin\emptyset$, w= $rcos\theta$, prove that $\frac{\partial(u,v,w)}{\partial(x,y,z)}$=r^{2}sin$\theta$	[07]	CO2	L3

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