	USN	

Internal Assessment Test – II January - 2025

Sub:	Mathematics-1 for CSE Stream							Code:	BMATS101
Date:	16-01-2025	Duration:	90 mins	Max Marks:	50	Sem:	I	SEC	I, J, K, L (CHE CYCLE)

Question 1 is compulsory and Answer any 6 from the remaining questions.

		Marks	OBE	
			CO	RBT
1	Find the extremum values of the function $x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$	[08]	CO1	L3
2	Find (i) Jacobian of u, v w with respect to x, y and z given u = x+y+z, v = y+z, w = z. (ii) the value of the limit $\lim_{x\to 0}\left(\frac{a^x+b^x}{2}\right)^{1/x}$	[07]	CO1	L3
3	$Solve\ the\ equation\ (xy + x^2y^3)\frac{dy}{dx} = 1$	[07]	CO2	L3

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3	$Solve\ the\ equation\ (xy + x^2y^3)\frac{dy}{dx} = 1$	[07]	CO2	L3

4	Find the Orthogonal Trajectories of $r^n = a^n \cos n\theta$	[07]	CO2	L3
5	Find the general and singular solution of $x^2(y - px) = p^2y$ by reducing to Clairaut's form using the substitution $X = x^2$, $Y = y^2$.	[07]	CO2	L3
6	Solve $x \equiv 2(\text{mod } 3)$, $x \equiv 3(\text{mod } 5)$, $x \equiv 2(\text{mod } 7)$ using the Chinese Remainder Theorem.	[07]	CO3	L3
7	Find the general solution of the linear Diophantine equation $70x+112y = 168$.	[07]	CO3	L3
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