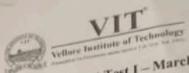
Reg. No.: Name :



	Continuous Assessment Test I	March 2023	Winter 2022-2023
	Continuous Assessment	Semester	DMALL
		Slot	A2+TA2
B.Tech. Parations and Transforms			
Programme Course Title Faculty	B.Tech. Differential Equations and Transforms Dr. Saroj Kumar Dash, Dr. Lakshmanan Shanmugham, Dr. Abhishek Kumar Singh, Dr. Harshavarthini Shanmugam,	Class No.	CH2022232300445, CH2022232300446, CH2022232300447, CH2022232300448, CH2022232300449, CH2022232300450
	Dr. Harshavardarrajan, Dr. P.T. Sowndarrajan, Dr. Soumendu Roy, Dr. Manimaran J.	Max. Marks	50
ime	90 Minutes	5x10 = 50	

		Answer ALL the Questions (5x10 = 50)	Marks
		Question Description . 1	
Q.		Solve the ordinary differential equation by using method of undetermined Solve the ordinary differential equation by using method of undetermined $v'' - 4y' - 12y = 3e^{5t} + \sin 2t + te^{4t}$.	
1			
2	-	A 2 kg mass is attached to a vertically hanged spring, which is inside a 61.25 cm below its original length. Suppose the spring-mass system is inside a damping medium with damping constant 8 units. Find the displacement $x(t)$ at any time t , if we start the experiment by releasing the mass from the position 2 cm above its equilibrium position. [Note: $g = 9.8$ units (in MKS system) and 980 units (in CGS system).]	10
3.	a)	Solve the ordinary differential equation: $x^2y'' + xy' + y = \sin(\ln x^2).$	5
	×	Form the PDE by eliminating the arbitrary function $F(xy + z^2, x + y + z) = 0.$	5
	a)	Solve the following PDE by the method of separation of variables. $\frac{\partial u}{\partial x} = 4 \frac{\partial u}{\partial y}, \text{ given that, } u(0, y) = 8e^{-3y}.$	
	b)	Solve: $x^2(y^2 - z^2)p + y^2(z^2 - x^2)q = z^2(x^2 - y^2)$.	
	4	Find the complete solution/integral of: $z = px + qy + \sqrt{1 + p^2 + q^2}$. And hence find the singular solution/integral if it exists.	
	b)	Find $L\left[t^{\frac{3}{2}} + 5t^3 + 7te^{-2t}\right]$	1