Paper Code	BAS	2	0	3		Roll No												

BANSAL INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Affiliated to Dr. APJ Abdul Kalam Technical University, Lucknow)
Internal Examination (TEST–1 Odd sem. 2024-25)

Programme: B. Tech.		Semester: II	M.M.20
Section:		Subject: Engineering Mathematics-II	
Date: 28/04/2025		Time: 1Hour	
Knowledge Level (KL)		KL1- Remembering	KL4- Analyzing
		KL2- Understanding	KL5- Evaluating
		KL3- Applying	KL6- Creating

Part A- Answer Any TWO Questions		(5X2=10 Marks)	
1.	A body executes damped force vibrations given by the equation $\frac{d^2x}{dt^2} + 2k\frac{dx}{dt} + b^2x = e^{-kt}\sin wt$. Solve the equation for both the cases, when $\omega^2 \neq b^2 - k^2$ and $\omega^2 = b^2 - k^2$.	CO1	KL1
2.	Solve $(1+x)^2\frac{d^2y}{dx^2} + (1+x)\frac{dy}{dx} + y = 4\cos\log(1+x)$.	CO1	KL1
3.	Solve $\frac{d^2y}{dx^2} - y = \frac{2}{1+e^x}$ by method of variation of parameter.	CO1	KL1

Part B - Answer Any TWO Questions		(5X2=10 Marks)	
1.	Solve simultaneous differential eqns. $\frac{dx}{dt} + 2x + 4y = 1 + 4t$; $\frac{dy}{dt} + x - y = \frac{3}{2}t^2$.	CO1	KL1
2.	Apply method of variation of parameter to solve $x^2\frac{d^2y}{dx^2} + 4x\frac{dy}{dx} + 2y = e^x$.	CO1	KL5
3.	Solve by changing the independent variable $\cos x\frac{d^2y}{dx^2} + \sin x\frac{dy}{dx} + 2y\cos^3x = 2\cos^5x$.	CO1	KL5