



VIT

Vellore Institute of Technology

SCHOOL OF ADVANCED SCIENCES

CONTINUOUS ASSESMENT TEST-1

FALL SEMESTER-25-26

Course Name: Differential equations and transforms Course code: BMAT102L
Programme: B.Tech

Class Number: VL2025260103575

Slot: A1+TA1+TAA1 Faculty Name: Dr.K.Indhira Exam Duration: 90 Minutes

Maximum Marks: 50

ANSWER ALL THE QUESTIONS

Q.No.	Question	Max Marks	CO	BL
1.	Solve $(D^2 - 3D)y = e^{3x} + \sin x$ by using the method of undermined coefficients.	10	CO1	BL5
2.	A condenser of capacity C discharged through an inductance L and resistance R in series and the charge q at time t satisfies the equation $L \frac{d^2q}{dt^2} + R \frac{dq}{dt} + \frac{q}{C} = 0$. Given that $L = 0.25$ henries, $R = 250$ ohms, $C = 2 \times 10^{-6}$ farads and when $t = 0$, charge q is 0.002 coulombs and the current $\frac{dq}{dt} = 0$. Find q in terms of t .	10	CO1	BL3
3.	Find the complete integral and singular integral of $z = px + qy + \sqrt{1 + p^2 + q^2}$	10	CO1	BL1
4.	Solve $(mz - ny)p + (nx - lz)q = (ly - mx)$	10	CO2	BL5
5.	Solve: $3u_x + 2u_y = 0$, with $u(x, 0) = 4e^{-x}$, by using the method of separation of variables.	10	CO2	BL5