VIT
Vellore Institute of Technology

Continuous Assessment Test – I

Winter semester 2023-24

Proramme name & Branch: B.Tech

Course Name & Code: Differential Equations and Transforms & BMAT102L

Slot: A1+TA1+TAA1 **Exam Duration: 90 Min**

Max.Marks:50

	Answer ALL the questions 5x10=50M			
S.no.	**Questions**	**Marks**	**Course Outcome (CO)**	**BL**
1.	Solve $\left(x^2D^2+xD-9\right)y=x^2\log x$	10M	CO1	2
2.	Apply the method of variation of parameters to solve $\left(D^2+4\right)y=4\tan 2x$	10M	CO1	2
3.	An inductor of 2 henries, resistor of 16 ohms and capacitor of 0.02 farads are connected in series with a battery of electromotive force $E=100\sin 2t$. At $t=0$, the charge on the capacitor and current in the circuit are zero. Find the charge and current at $t>0$.	10M	CO1	3
4.(a)	Form a partial differential equation by elimination the arbitrary function from $z=f\left(x^2+y^2+z^2\right)$	5M	CO1	2
(b)	Solve $p^2+q^2=npq$	5M		
5	Solve the following partial differential equation by using Lagrange's method $(3z-4y)\frac{\partial z}{\partial x}+(4x-2z)\frac{\partial z}{\partial y}=(2y-3x)$	10M	CO1	2