Continuous Assessment Test-I, March 2023

Course Code: BMAT102L | Date of Exam: 26-03-2023

Course Name: Differential Equations and Transforms | Slot: A1+TA1+TAA1

Maximum Marks: 50 | Duration: 90 Minutes

Answer ALL the questions (5x10=50)

1. Solve $x^2\frac{d^2y}{dx^2}-x\frac{dy}{dx}+2y=x\log x$ [CO1] [BT2]

2. Solve $\frac{d^2y}{dx^2}+4y=\tan 2x$, by the method of variation of parameters. [CO1] [BT2]

3. An electric circuit consists of an inductance 0.1 henry, a resistance of 20 ohms and a condenser of capacitance 25 micro –farads. Find the charge' q' and current 'i' at any time ' t', given that at t =0, q =0.05 coulomb and i =0 when t =0. [CO1] [BT3]

4. (i) Form the partial differential equation by eliminating the arbitrary function f from $f(x^2+y^2,\ x^2-z^2)=0$.

(ii) Solve $p^2+q^2=n^2$ [CO1] [BT2]

5. Solve the partial differential equation $x^2(y-z)p+y^2(z-x)q=z^2(x-y)$ [CO1] [BT2]