



Continuous Assessment Test –II

Programme Name & Branch: B. Tech.

Slot: B2+TB2

Semester: Winter2019-2020

Course Code: MAT 2002

Course Title: Applications of Differential and Difference Equations

Exam Type: Closed book

Exam Duration: 90 mins

Maximum Marks: 50

Answer any FIVE Questions (5 x10 =50)

1. Solve by method of un determined coefficients (10)
 $y'' + 3y' - 28y = e^{-3t} + 7t - 1$
2. Find the general solution of $y'' - 2y' + y = \frac{e^t}{t^2+1}$ by the method (10)
of variation of parameters.
3. a.) Solve: $(2x + 3)^2 y'' - 2(2x + 3)y' - 12y = 0$ (5)
b.) Convert the second order differential equation $2y'' - 5y' +$ (5)
 $y = t^2 + 2$ given that $y(3) = 6$ and
 $y'(3) = -1$ into to system of first order differential equations
4. Solve by matrix method $X' = \begin{pmatrix} 1 & 1 \\ 4 & 1 \end{pmatrix} X - \begin{pmatrix} t+1 \\ 4t+2 \end{pmatrix}$ (10)
5. Determine the response of a mass spring system under impulse (10)
time $t = 9$ modeled by $y'' + 2y' - 15y = 6\delta(t - 9)$ given that
 $y(0) = -5$ and $y'(0) = 7$ by Laplace transform method
6. Find the characteristic values and characteristic functions of (10)
Sturm –Liouville problem $(xy')' + \frac{\lambda}{x}y = 0$ with $y(1) = 0$
and $y(2) = 0$ on the interval $1 < x < 2$.

Join VIT Question Papers Today By Simply Searching It On Telegram App