Vellore Institute of Technology

DEPARTMENT OF MATHEMATICS
SCHOOL OF ADVANCED SCIENCES
Summer Semester June –2022
Digital Assignment – II

Course Code : MAT2002 **Slot : C**
Course Name : AOD

ANSWER ALL QUESTIONS

Solve $(x^2D^2 - 4xD + 6)y = x^2$
Apply the method of variation of parameters to solve $y'' + y = \cos ecx$
Use the method of diagonalization to obtain the general solution for $x'' + AX = 0$; where $X = (x_1, x_2)^T$ and $A = \begin{bmatrix} 1 & 2 \\ 3 & 2 \end{bmatrix}$
Solve the system of linear differential equations by matrix method $x'(t) = x(t) + 4y(t)$; $y'(t) = x(t) + y(t)$
Find the *Z*-transform of the Sin(3n+5)
Find the Inverse Z-Transform of $Z^{-1}\left[\dfrac{2z^2 + 3z}{(z+2)(z-4)}\right]$
Solve $u_{n+2} + 4u_{n+1} + 3u_n = 3^n$ with u_0=0, u_1=1 using *Z*-Transform.