BIEEE-001

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

00063   **Term-End Examination**

December, 2018

BIEEE-001 : DYNAMIC SYSTEM SIMULATION

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt any **seven** questions. Each question carries equal marks. Use of scientific calculator is allowed. Assume missing data if any with suitable justification.*

1. List and explain various 'MATLAB classes' that you can work with in the MATLAB software.   *10*

2. Differentiate between 'Script file' and 'Function file'. Also write a Script file to solve the following :   *5+5*

$$\begin{bmatrix} 5 & 2r & r \\ 3 & 6 & 2r-1 \\ 2 & r-1 & 3r \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 2 \\ 3 \\ 5 \end{bmatrix}$$

3. Draw a Simulink model that can solve the non-linear equation   *10*

$$f(z) = z^2 + 4z + 3 + \sin z - z \cos z$$

4. Create a model using Simulink that converts Celsius temperature to Fahrenheit and displays the Fahrenheit-Celsius temperature graph over a range of 0 – 100°C.   *10*

5. Explain each step of modelling and simulation of a static Ward-Leonard system of speed control.   *10*

6. Create a Simulink model to analyze a full-wave semi-controlled AC to DC converter circuit.   *10*

7. Develop a simulation model of a pneumatic system using transfer functions.   *10*

8. What do you understand by "m-files" ? How are the m-files created in MATLAB ? Also write a MATLAB program to plot the frequency response of the Laplace transfer function given as $F(s) = \dfrac{1}{s^2 + 0.5s + 1}$ *10*

9. Write short notes on any *two* of the following :   *5+5=10*

    (a) Statistical models in simulation

    (b) Simulation of digital control system

    (c) Poisson processes