Exam.Code:0905
Sub. Code: 33256

2076

B.E.(MEC), First Semester

ESC-X02: Computer Programming (MATLAB)

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. I (Section-A) which is compulsory and selecting two questions each from Section B-C.

x-x-x

Section-A

$5 \times 2 = 10$

1. (i) What do you understand by the term string? (2)

   (ii) How can the information be obtained regarding variables stored in the workspace? (2)

   (iii) Is it possible to customize plots? If yes, how? (2)

   (iv) Plot the function $s = 2\sin 3t + 2 + \sqrt{5t+1}$ over the interval $0 \leq t \leq 5$.Put the title on the plot, and properly label the axis. The variable s represents speed in feet per second; the variable t represents time in seconds (2)

   (v) The surface area A of a sphere depends on its radius r as follows: $A = 4\pi r^2$. Write the script file that prompts the user to enter a radius, computes surface area, and displays the result in a diary reading everything in script file (2)

Section-B

$10 \times 2 = 20$

2. Write a program to find out the count of even values in given 'n' numbers.

3. Differentiate between fplot and plot commands, plot the graphs for the functions $y = sin(x)$ and $y = cos(x)$ on the same graph for the values of x defined by $x = \left[0 : \frac{\pi}{30} : 2\pi\right]$.

4. Explain relational and logical operators in detail. Give example of each type.

Section-C

$10 \times 2 = 20$

5. Solve the equation

$$(x-3)(x+5) = 5$$

with the help of MATLAB function FZERO

6. Use QUAD function to integrate the following

$$\int_{-\infty}^{\infty} e^{\frac{-x^2}{2}} \mathrm{d}x$$

7. Use MATLAB to solve following fourth-order differential equation

$$\frac{\mathrm{d}^4y}{\mathrm{d}t^4} + 5\frac{\mathrm{d}^3y}{\mathrm{d}t^3} + 7\frac{\mathrm{d}^2y}{\mathrm{d}t^2} + 6\frac{\mathrm{d}y}{\mathrm{d}t} + 7y = 8$$

Choose your own initial conditions

x-x-x