BANKURA UNIVERSITY

B.Sc. 3ʳᵈ Semester (Honours) Examination, March 2021

Subject: *Electronics (H)*

Course ID: 31715   **Course Code: SH/ELC/305/SEC-1(TH)**

Course Title: *Programming with MATLAB*

Full Marks: 40   **Time: 2 Hr**

(The figures in the right hand side margin indicate marks.
Answer all the questions)

1. Answer *any five* of the following questions: 2×5=10
   a) Explain plot command in MATLAB with colour and type of marker options.
   b) Suppose V= [10   21   32   45   58   64].   Write   MATLAB command to assign a new value 60 to the 4th element of vector V.
   c) Give the general format of fprintf command.
   d) Write MATLAB command to find the determinant of matrix $A = \begin{bmatrix} 2 & 4 \\ 3 & 5 \end{bmatrix}$.
   e) Explain MATLAB command 'clear' and 'clear XYZ'.
   f) What will be the output of the following MATLAB command?
      >>A=[2 3 5]
      >>B=[2 4 3]
      >>C=A.*B
   g) Describe the function 'polyval' in MATLAB. Write MATLAB script file for the polynomial $f(x) = x^5 - 2x^4 + 4x^3 - 7x^2 - 7x + 35$ to calculate f(2).
   h) Explain the format of the following MATLAB commands: i) disp ii) xlabel.

2. Answer *any four* of the following questions: 5×4=20

   a) Write a MATLAB function that accepts time t as an input and returns a voltage corresponding to the following equation: $v = e^{-t} \sin(2t)$.

   b) Explain 'while-end' loop used in MATLAB with suitable example.

                                                                    3+2

   c) Write a script file in MATLAB to plot the function $y=3x^3-26x+10$, and its first and second derivatives for -2<=x<=4 all in the same plot.

   d) Write a MATLAB program to plot sinx for $0<x<\pi$.

   e) Write the MATLAB commands to generate a table of conversions from inches to centimetres. The range of inches should be from 0 to 36 in increments of 4.

   f) Write a MATLAB script file to print the sum of EVEN numbers from 1 to N (given by the user).

3. Answer *any one* of the following questions: 10×1=10

   a) Write a MATLAB function file for the calculation of addition, subtraction, multiplication and division of two numbers entered by a user.

   b) Write a script file to determine whether an integer between 1 and 10 is even or odd, using switch construct.