THE OPEN UNIVERSITY OF SRI LANKA
B.Sc/B.Ed Degree Programme
Applied Mathematics – Level 05
ADU5320 – Introduction to MATLAB software
OPEN BOOK TEST (OBT) – 2021/2022

DURATION: ONE (01)–HOUR

Date: 21.01.2023 **Time: 04.00 p.m.-05.00 p.m.**

ANSWER **ALL** QUESTIONS

1. i) Determine each of the following questions either true or false. Give reasons, if your answer is false.

   a. $\boldsymbol{6x}$ is a valid variable name in MATLAB.

   b. $\boldsymbol{A(m,:)}$ gives the m^{th} column of matrix A.

   c. $\boldsymbol{inf}$ is a pre-defined variable in MATLAB.

   d. The MATLAB command of the expression $y = e^{-a}\sin(x) + 10\sqrt{y}$ is

   $$y = exp(-a) * sin(x) + 10 * \sqrt{y}$$

   e. Radians is the return type of trigonometric functions in MATLAB.

   ii) a. Write MATLAB commands to plot the functions $y_1 = \cos(x)$ and $y_2 = 0.5 * \cos(x)$ in the interval $0 \leq x \leq 2\pi$. Write commands to label the x axis and y axis and to add a title to the graph.

   b. Write a user-defined MATLAB function that determines the area of an equilateral triangle when the length of a side is given. Assume you type the codes in a M-file.

2. i) Write the MATLAB commands for each of the following statements. Assume you type the codes in a M-file.

   a. Request any two integers from the user.

   b. Compare the two user input numbers and print the maximum number. You must print the maximum number along with a text message.

ii) Consider the following matrix.

$$A = \begin{bmatrix} 1 & 5 & 0 & 8 \\ 0 & 1 & 3 & 0 \\ 0 & 6 & 2 & 1 \\ 2 & 3 & 1 & 4 \end{bmatrix}$$

a) Write a MATLAB code to obtain the above matrix.

b) Write a command to change the 2nd row, 3rd column entry to 7.

c) Write a command to get the 4th row, 4th column entry.