PAPER ID-310019

Subject Code: RCAI502

Roll No: | | | | | | | | | | | | | |

MCA (INT.)
(SEM-V) THEORY EXAMINATION 2020-21
PROGRAMMING WITH MATLAB

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a.	Differentiate between double, uint and logical data types.
b.	Why do you use following commands in MATLAB? (i) clc, (ii) help, (iii) lookfor, (iv) whos
c.	Briefly explain any four array manipulation functions.
d.	Create script to concatenate two strings.
e.	Write a short note on the concept of try-catch.
f.	Write steps to solve differential equation with example.
g.	Explain any four marker and line-style options used in two-dimensional plots in brief.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a.	Discuss various application areas of MATLAB.
b.	Write commands to do the following- (i) Create a string. (ii) Print last 10 characters of the string. (iii) Create a multiple row string. (iv) Eliminate extra blanks of a string. (v) Print string in reverse order
c.	Write script to calculate sum of first 50 even numbers.
d.	Explain any four specialized two-dimensional plots with diagram.
e.	Write program to find Eigen values and Eigen vector of a given matrix.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Discuss all arithmetic operators applied on floating-point numbers with example.
(b)	Describe various components of MATLAB desktop with the help of a diagram.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Write functions to do the following- (i) Create a 4 X 4 array A (ii) Reshape array A to the size of 8 X 2 (iii) Flip array A in left-to-right direction (iv) Print all elements of last column of the array. (v) Print diagonal elements of the array. (vi) Sort array in descending order column-wise (vii) Delete all elements of second row of the array
(b)	Discuss any five functions for multi-dimensional array with example.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Write a program to demonstrate the concept of nested loops in MATLAB.
(b)	How do you construct a user-defined function and sub-function? What are the rules for constructing functions? Explain.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Write a program to draw a two-dimensional plot for 20 data points over $0 \le x \le 2\pi$ on x-axis and y-axis contains cosine of data points in x. Use line-styles, markers, colors, plot grids, axes boxes, labels and title.
(b)	Explain any four specialized three-dimensional plots with diagram.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Discuss functions with example to perform the following in data analysis- (i) Cumulative product of elements (ii) Find difference between elements. (iii) Cumulative sum of elements (iv) Calculate mean of elements. (v) Calculate variance
(b)	Discuss various types of quad( ) functions to compute integrals.