PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
M.Sc., Winter 2017-18 Examination

Semester: 1	Date: 30/12/2017
Subject Code: 11206106	Time: 2:00pm to 3:15pm
Subject Name: Matlab Programming-I	Total Marks: 30

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A) Multiple choice questions.(Each of 01 mark)   **(04)**
1. What is the outcome of the MATLAB command false|-5?
   (a) false   (b) true   (c) 0 (d) 1
2. If A=[1:3; 5:7; 2:4] in MATLAB, then what is the output of A(2,2)?
   (a) 2   (b) 6   (c) 3   (d) 5
3. Which of the following is not a valid variable name?
   (a) Max   (b) Exp   (c) age9   (d) exp
4. Which of the following gives an identity matrix of order $4X4$ in MATLAB?
   (a) zeros(4,4)   (b) eye(4)   (c) rand(4)   (d) ones(4)

Q.1. B) Answer the following questions.(Each of 02 mark)   **(04)**
1. What is the difference between inline function and function file?
2. What is the general syntax for "for loop" in MATLAB? Give an example.

Q.2. A) Do as directed.(Each of 02 mark)   **(04)**
1. Write syntax for plotting following graphs:
   i) $\sin(x^4)$ in the interval $[-10\pi, 10\pi]$
   ii) polar graph of $y = \cos(2x)$ in the interval $[0, 4\pi]$.
2. Write script file to calculate sum of the infinite series $\sum_{n=1}^{\infty} \frac{1}{n^2}$ using while loop.

Q.2. B) Answer the following questions.(Each of 01 mark)   **(03)**
1. Which MATLAB command will give value of π correct to 24 decimal places?
2. Which command will give roots of a polynomial in MATLAB?
3. What is the use of MATLAB commands det(A), eig(A), and trace(A), where A is any nxn matrix?

Q.3.   Answer any two of the following questions.(Each of 04 mark)   **(08)**
1. Write syntax of a script M-file that calculates square root of a given integer n using Heron's formula.
2. Write syntax of script M-file that finds maximum and minimum of given n integers.
3. Write syntax of a script M-file that finds partial derivative of the function $f(x,y) = xy^2$ using Central Difference Formula $w.r.t.$ variable y at point $(x,y) = (1,2)$ by taking $h = 10^{-4}$ and displays result and error. Write syntax for function file of given function.

Q.4.   Answer any one of the following questions.   **(07)**
1. Write syntax of a script M file to find minima of the function $f(x) = x^2 - sinx$.
2. Write syntax of a script M-file that calculates numerical integration of $f(x) = x + sinx$ using multiple use of Simpson's $\frac{1}{3}$ rule by taking interval [1,2] and $n = 2$ and displays result and error.