Seat No: _____   Enrollment No:_____

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
M.Sc., Winter 2018-19 Examination

Semester: 1   Date: 12/12/2018
Subject Code: 11206106   Time: 10:30 am to 11:45 am
Subject Name: MATLAB PROGRAMMING   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. If A is a random matrix in MATLAB of order $6X5$, then which command will give all elements of 3rd column?
      (a) A(3,0)   (b) A(:,3)   (c) A(6,3)   (d) A(3,:)
   2. What is the output of the following MATLAB command?
      sym('1/2') + sym('1/3')
      (a) 0.8333   (b) 5/6   (c) 6/5   (d) 1/6
   3. Which of the following is a valid variable name?
      (a) 1MAX   (b) _kmph   (c) K5mph   (d) !Min
   4. If $A = [-1, 3, 0]$ in MATLAB, then what is the output of MATLAB command A^2?
      (a) $[2, 9, 1]$ (b) [1, 9 ,0]   (c) 10   (d) error

Q.1. B) Answer the following questions. (Each of 02 mark) (04)
   1. What is the difference between for loop and while loop?
   2. What is the general syntax for switch command in MATLAB? Give an example.

Q.2. A) Do as directed.(Each of 02 mark) (04)
   1. Write commands to plot $\sin(x^2)$, $\cos(2x)$, $e^x - 3$, x^3 in a single window using multiple plots.
   2. Write commands to find multiplication and division of polynomials $p(x) = x^5 - 4x^3 + 7x - 8$, $q(x) = x - 1$.

Q.2. B) Answer the following questions.(Each of 01 mark) (03)
   1. Which MATLAB command will give exact value of $\cos\left(\frac{\pi}{2}\right)$?
   2. Which command will give a scalar matrix with diagonal entries 2 of order $4X4$?
   3. What is the output of the following MATLAB script?
      for i=0:6
      if rem(i,3)==0
         disp([num2str(i+1)]);
      elseif rem(i,2)==0
      disp([num2str(i-1)])
      end
      end

Q.3 Answer any two of the following question.(Each of 04 marks) (08)
   1. Write syntax of a script M-file to check whether the given number is a prime or not.
   2. Write syntax a script M-file to find maximum and minimum of given n- integers.
   3. Write syntax a script M-file that gives first and second order derivative of the function $f(x) = 2 - x + \log(x)$ using Central Difference Formula at point $a = 1$ by taking $h = 10^{-4}$ and finds errors.

Q.4 Answer any one of the following questions. (07)
   1. Write syntax of a script M-file that solves the IVP:$y' = -2ty, y(0) = 1$ using Runge-Kutta 4th order method in the interval [0,6] and plots solution.
   2. Write syntax of a script M-file that finds numerical integration of $f(x) = 3x^2 + cosx$ using Trapezoidal and Simpson's $\frac{1}{3}$ rule by taking interval [1,2] and displays result and error.