FS 2018-19

MAT1011(CFE) - ELA

Assessment 1: Matrices and Plotting through Matlab

Due-Date of Online Submission: 31.08.2018:

Guidelines for Submission:

- First download this question-sheet
- Create a matlab file (phani.m, for instance), in which the first few lines should be as follows:
  (a) Fall Semester 2018 - 19
  (b) Course: MAT1011(CFE) - ELA
  (c) Slot ————————
  (d) Assessment No. ————————
  (e) Regd. No. ————————
  (f) Name ————————
  Write the matlab programme or code in this file for each of the tasks given to you.
- Then generate the output. Scan the graphical output, also where ever required.
- Take the snap shot /Scan the m-file and the corresponding output file(s) neatly, which should be clearly visible.
- Make a **single pdf** file and upload it through the lab log-in portal.
- **Do not mail** the file to me.
- Follow the guidelines strictly. Any deviation from the above instructions will lead to the reduction in marks

Uploading of file in any other format (image files, zipped files etc.) *is not acceptable.*

Exercise 1 (2 marks)**.** Create a matlab file for finding the sum $1+\frac{1}{2}+\frac{1}{3}+\cdots+\frac{1}{n}$, for any natural number n. You should use *for* loop. Generate the output for $n = 11$.

Exercise 2 (2 marks)**.** Given any square matrix A of order n, how do you find its determinant and trace by matlab? Run your programme for $A = \begin{pmatrix} -1 & 0 & -1 \\ 2 & 3 & 4 \\ 2 & 4 & 5 \end{pmatrix}$ and generate the output.

Exercise 3 (2 marks)**.** If A is non-singular matrix of of order n, how do you find its inverse? Verify your code for $A = \begin{pmatrix} 9 & 1 & 1 \\ 1 & 9 & 1 \\ 1 & 1 & 9 \end{pmatrix}$ and generate the output.

Exercise 4 (2 marks)**.** Sketch the graphs of the functions $f(t) = 2^t + 2^{-t}$ and $g(t) = 2^t - 2^{-t}$ for $[-3\pi, 3\pi]$. What do you conclude about the functions from the graphical output?

Exercise 5 (2 marks)**.** Use the matlab to sketch the graph of

$$f(x) = \begin{cases} x^2 - 1, & x < 0 \\ x, & 0 \leq x < 1 \\ 2x^2 + 1, & x \geq 1. \end{cases}$$

Explore for the possibility of graphing f apart from using the command `piecewise(.)`