

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, Dec 2019

Programme Name: B.TECH OPEN ELECTIVE

Semester: V

Course Name: Matlab for engineering.

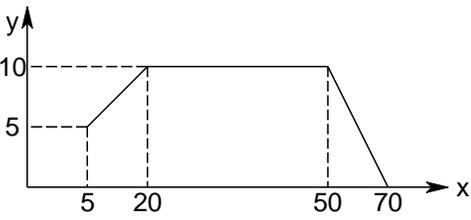
Time: 03 hrs

Course Code: ECEG 3203

Max. Marks: 100

Nos. of page(s): 2

SET A

S. No.	SECTION A : Attempt all the questions	Marks	CO
Q 1	Consider the function $F = 5\sin 2\pi xy + 5x^2 + 3xy + 5z$. Create the column vector A such that A_{ij} belongs to the $F(x,y,z)$ for $x=[1\ 2\ 3\ 4\ 5]$, $y=[9\ 0\ 7\ 8\ 4]$, $z=[1\ 0\ 5\ 3\ 2]$. Write a matlab program for the above statements.	7	CO1
Q 2	Find the errors in the following instructions: (a) $x = [1\ 2\ 0\ 7\ 9]$ $y = 5*x^2 + 9*x + 10$ (b) $y = [0\ 1\ 7\ 9\ 2]$ $F = \text{inline}(9.*x^2 + 5.*x + 100)$	8	CO1, CO2
Q 3	Write the Matlab instructions to evaluate the integral of the given function <div style="text-align: center;">  </div>	7	CO2, CO1
Q4	Consider the discrete function $Y = [-2\ -1\ -2\ 2\ 4\ 11\ 16]$, Write the Matlab code to evaluate the odd even part of Y and plot the subplots in a single plot.	8	CO2, CO3
SECTION B : Attempt all the questions			
Q 5	Create a 10x10 matrix random matrix and do the following operations: (a). Multiply all the elements by 100 and round off the each element. (b). Replace all the element of 10x10 matrix with zeros (c). Replace all the element of 10x10 matrix with infinity (d). Extract all $30 \leq a_{ij} \leq 50$ in a vector B.	15	CO1, CO2
Q6	Write a MATLAB instructions for the following (a). Consider the complex matrix A such that $A_{ij} = a + bj$, Evaluate the real magnitude of each element and the phase angle of each element. (b). Plot Phase Vs Amplitude using matlab instructions (Attributes y axis: phase angle, Attribute x axis, Amplitude)	15	CO3, CO4

Q7	<p>Solve the second order non linear ODE using matlab instructions and plot the output</p> $\ddot{\theta} + \omega^2 \sin \theta = 0 \Rightarrow \ddot{\theta} = -\omega^2 \sin \theta$ <p>with the initial conditions</p> $\theta(0) = 1, \quad \dot{\theta}(0) = 0.$	15	CO2, CO4
Attempt all the questions			
Q8	<p>(a) Write the matlab instruction code for matrix $A = [1 \ 2 \ 3 \ 4; 4 \ 9 \ 36 \ 1; 1+1j \ 3+4j \ 6+0j]$ such the new matrix results into $B = [1 \ 4 \ 9 \ 16; 2 \ 3 \ 6 \ 1; 1.414 \ 5 \ 6]$. Add the diagonal elements of A and B'.</p> <p>(b). write the application of Matlab in your engineering branch with some real time examples.</p> <p>(c). $A = [2 \ 3 \ 4 \ 0; 1 \ 9 \ 6 \ 1; 0 \ 0 \ 1 \ 6]$; $B = [1 \ 0 \ 5 \ 8; 1 \ 1 \ 0 \ 1; 9 \ 7 \ 6 \ 5]$ find the $M = (A > Y) \& (X > 6)$ and $Z = \sim(A B)$</p>	25	CO4,C O3