

Hall Ticket Number:

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Code No. : 14128 (C)

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (CBCS) IV-Semester Main Examinations, January-2021
Mathematical Programming for Engineers
 (Open Elective-II)

Time: 2 hours

Max. Marks: 60

Note: Answer any **NINE** questions from **Part-A** and any **THREE** from **Part-B****Part-A (9 × 2 = 18 Marks)**

Q. No.	Stem of the question	M	L	CO	PO
1.	Write the use of <i>what</i> and <i>clf</i> commands in MATLAB with an example.	2	1	1	1,2,5
2.	List different types of windows available in MATLAB.	2	1	1	1,2,5
3.	What is the importance of semicolon (;) operator in MATLAB?	2	1	1	1,5
4.	Mention the applications of MATLAB.	2	1	2	1,3,5
5.	Write the Newton Cotes-Simpson's 1/3rd formula for numerical integration and explain each parameter.	2	2	3	1,2,3,5
6.	Write the forward difference equation for numerical differentiation and explain each parameter.	2	2	3	1,2,3,5
7.	What are the methods used to solve non-linear equations?	2	2	3	1,3,5
8.	What is the functionality of command <i>roots</i> and explain with example?	2	2	3	1,2,5
9.	Mention importance and syntax of <i>ode45</i> and explain each parameter.	2	2	3	1,3,5
10.	Briefly explain the importance of <i>handles</i> structure.	2	2	2	1,2,5
11.	How many errors MATLAB will display if the following code executed and write the errors. A=[1;2;3]; B=[1 2]; C=A.*B; D=C*A;	2	2	4	1,2,3,5
12.	Write a MATLAB Program to plot the following equation. $e^{-at}(\cos bt + \cos bt^2)$	2	3	2	1,3,5
Part-B (3 × 14 = 42 Marks)					
13. a)	Assume that array <i>array1</i> is defined as shown, and determine the contents of the following sub-arrays: $\text{array1} = \begin{bmatrix} 1.2 & 0.2 & 2.2 & -365 & 8.0 \\ 0.1 & 1.3 & -6.8 & 2.9 & 5.4 \\ 2.3 & 0.2 & 0.6 & -2.4 & 5.3 \\ -1.6 & 5.4 & 0.7 & 3.1 & 5.0 \end{bmatrix}$ a) <i>array1</i> (2,:) b) <i>array1</i> ([2 2],:) c) <i>array1</i> (1:2:3,[3 3 4])	7	3	1	1,3,5
b)	x = eye(2,2); y = [x(:,1) x(:,2)]; A = [x y ; y x]; What is the final value of A(1:2,1:2)?	7	3	4	1,3,5

14. a)	Write a function file that converts temperature in degrees Centigrade (°C) to degrees Fahrenheit (°F). Use <i>input</i> and <i>fprintf</i> commands to display a mix of text and numbers.	7	3	3	1,2,3,5
b)	Explain the following commands with proper examples. i) <i>fill</i> ii) <i>bar</i> iii) <i>area</i> iv) <i>loglog</i> v) <i>stem</i> vi) <i>compass</i> vii) <i>comet</i>	7	2	2	1,2,5
15. a)	Write a program to differentiate the following function using Central Difference and Backward difference formula. $f(x)=\tan^{-1}(x)$.	7	2	3	1,2,3,5
b)	Write a program to solve the following linear equations using Gauss Elimination method using MATLAB. $3x+3y+z = 2, 3x+4y+4z = 3, 3x+3y+3z = 3$	7	3	3	1,2,3,5
16. a)	With an example write a program for solving non-linear equation using Newton-Raphson method.	8	4	3	1,2,3,5
b)	Explain Lagrange interpolation with an example using MATLAB.	6	3	3	1,2,3
17. a)	Explain the procedure for developing GUI containing three radio buttons and four check boxes with neat layout. a) If we select first radio button first check box only to be activated, remaining should be deactivated. b) If we select the second radio button, except first check box remaining all checkboxes should be activated. c) If we select third radio button all check boxes should be activated.	7	4	5	1,2,3,5
b)	Explain the procedure for creating a single GUI application for the Addition, Multiplication of two numbers and displaying the result in uneditable text box.	7	2	5	1,2,3,5
18. a)	With an example brief about <i>switch-case-otherwise</i> construction in MATLAB.	7	2	3	1,2,5
b)	What are the different types of files available in MATLAB for storing information and explain each of them.	7	2	1	1,2,5
19.	Answer any <i>two</i> of the following: a) What are the debugging methods available in MATLAB and explain them with examples. b) Explain the functionality of <i>polyval</i> and <i>polyfit</i> commands with examples. c) Explain the importance of <i>cells</i> in MATLAB.	7	2	3	1,3,5
		7	2	3	1,2,5
		7	2	2	1,2,5

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	60 %
2	Knowledge on application and analysis (Level-3 & 4)	40 %
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	--