JHARKHAND Rai University
RANCHI

PRACTICE SET

End Semester (Fifth Sem.) Examination, December-2025

Program: B.Tech **Semester: V**

Course: IT Workshop (Scilab/Matlab) **Course Code: 3PCCCS304**

COURSE OUTCOME

After the successful completion of the course, the students will be able to:
1. Apply features of Matlab and algorithms to solve problems
2. Develop application programs with the help of various tool boxes available in Matlab.
3. Apply data analysis through graphical data representations
4. Implement programs with the use of arrays, strings in Matlab
5. Implement Functions and loops, using Python

Section A (16x 5= 80)

1. Define a variable in MATLAB/Scilab and explain its role in programming. (CO1, Unit1, Understand, LOT)
2. Define Scilab and briefly describe its purpose and key features. (CO1, Unit1, Understand, LOT)
3. Mention any five functions available in Scilab and briefly explain their purposes. (CO1, Unit1, Understand, LOT)
4. What is an array? Define it and explain with a suitable example. (CO4, Unit1, Understand, LOT)
5. Explain the following functions. (CO4, Unit1, Understand, LOT)
   (a) sum() (b) mean() (c) max ()
6. Describe scalar operations in Scilab with a relevant example. (CO4, Unit II, Understand, LOT)
7. Define subplots and describe how they can be utilized in Scilab for displaying multiple plots in a single figure. (CO3, Unit II, Understand, LOT)
8. Provide two examples of string functions in Scilab and briefly explain their purposes. (CO4 Unit II, Understand, LOT))
9. Define sparse array in Scilab with a proper example.

(CO4, Unit II, Understand, LOT)

10. Name input/output functions in Scilab that are commonly used for reading and writing data. (CO5, Unit II, Understand, LOT)
11. What is an object handler in Scilab? Explain its basic function. (CO2, Unit III, Understand, LOT)
12. What is a dialog box and a menu bar in Scilab? Describe their basic functions. . (CO2, Unit III, Understand, LOT)
13. List and explain three fundamental data types in Python. (CO5, Unit IV, Understand, LOT)
14. Discuss how visualizing data through plots enhances the understanding of scientific results. (CO3, Unit IV, Understand, LOT)
15. Write a Python code snippet to demonstrate the use of a 'While' loop.". (CO5, Unit V, Understand, LOT)
16. Write a simple Python program to find and display the average of three marks. (CO4, Unit V, Apply, LOT)

Section B (18x 10= 180)

17. Explain the various applications of Scilab and MATLAB. (CO1, Unit I, Understand, LOT)
18. Discuss the advantages and disadvantages of MATLAB. (CO1, Unit I, Understand, LOT)
19. Explain the working environment of MATLAB. (CO1,Unit I, Understand, LOT)
20. Describe the main features of Scilab. (CO1, Unit I, Understand, LOT)
21. Categorize the different arithmetic operators available in SciLab? (CO1,Unit I, Understand ,LOT)
22. List some general and workspace commands used in MATLAB/Scilab. (CO1,Unit I, Understand ,LOT)
23. Differentiate between a variable and an array in MATLAB. Provide an example of each. (CO1, Unit I, Analyze, LOT)
24. Explain the following function. (CO1,Unit I, Understand ,LOT)
    (a)eye() (b)ones() (c)zeros() (d)max() (e) mean ()
25. Discuss the hierarchy of operations in Scilab. (CO4, Unit I, Understand, LOT)
26. What are the purposes of plotting? Explain it. (CO3, Unit II, Understand, LOT)
27. Briefly describe two types of plots commonly used for data visualization in Scilab. (CO3, Unit II, Understand, LOT)
28. Demonstrate Scilab editor. Write a program in Scilab to calculate and display the average of three subject marks of any student. (CO2, Unit II, Apply, LOT)
29. Define sparse arrays in Scilab and provide an example illustrating their application. Explain the purpose of cell arrays in Scilab (CO1, Unit III, Understand, LOT)

30. Discuss two key features of Python that make it a popular language for various applications. (CO5, Unit IV, Understand, LOT)
31. (i)List and briefly explain three fundamental data types in Python.
    (ii)Provide examples demonstrating the use of arithmetic, comparison, and logical operators in Python. (CO5, Unit IV, Understand, LOT)
32. Write a Python program using a 'for' loop to perform a repetitive task (CO5, Unit V, Apply, LOT)
33. Write a brief Python program to demonstrate the concept of inheritance. (CO5,Unit V, Apply, LOT)
34. Define Object-Oriented Programming (OOP) and explain its core principles, highlighting the concepts of classes and objects. (CO5, Unit V, Understand, LOT)

Section C (6x 20= 120)

35. Analyze the role of the profiler in Scilab and evaluate its effectiveness in optimizing code performance. Demonstrate its usage with an appropriate code example and propose strategies to enhance performance based on profiler insights. (CO1, Unit II, Analyze, HOT)
36. Develop a Scilab/MATLAB program to perform the following operations on two 4×4 matrices and analyze the results:
    (e) Addition. (d) Subtraction (c) Multiplication (b) Transpose (a) Sum of diagonal elements (CO4, Unit I, Create, HOT)
37. Analyze and compare any three string functions in Scilab by demonstrating their implementation with suitable examples. Evaluate their effectiveness in different string manipulation scenarios. (CO4, Unit II, Analyze, HOT)
38. Analyze the use cases of the following functions in Scilab and explain how they can be applied for effective data visualization:
    (c) polarplot (b) subplot (a) plot (CO3, Unit II, Analyze, HOT)
39. Explain the concept of sparse arrays in Scilab and analyze a real-world scenario where using sparse arrays is more efficient than regular arrays (CO4, Unit 3, Analyze, HOT)
40. Critically examine the fundamental concepts of Object-Oriented Programming (OOP), including classes, objects, inheritance, and encapsulation. Discuss how these principles interrelate and contribute to designing scalable and maintainable software systems. (CO5, Unit V, Analyze, HOT)

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Summary Sheet:

CO Wise

CO	Q. No	Marks

CO1	1-3,17-25,29,34	135
CO2	11,12,28	20
CO3	14,26,27,28,38	45
CO4	4-9,15,36,37,39	95
CO5	10,13,16,30-34,40	85
Total		**380**

Unit Wise

Unit	**Q. No**	**Marks**
Unit 1	1-5,17-25,36	135
Unit 2	6-10,26-28,35,37,38	115
Unit 3	11,12,29,39	40
Unit 4	13,14,30,31	30
Unit 5	15,16,32-34,40	60
Total		**380**

Blooms Taxonomy Level (BTL) Wise

BTL	**Q. No**	**Marks**
HOT	35-40	120
	Total	**380**

Prepared by:

Disclaimer: -This is a Practice Set. The Question in End term examination will differ from the Practice Set. This Practice Set is meant for practice only.