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Reg. No. :

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Question Paper Code : 11512

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2026.

First Semester

GE3151 — PROBLEM SOLVING AND PYTHON PROGRAMMING

(Common to All Branches)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Draw the flowchart to find the maximum value in a list.
2. What is meant by recursion? How is it different from iteration?
3. Differentiate between expression and statement.
4. Write a Python script to calculate the distance between two points (x_1, y_1) and (x_2, y_2) .
5. Differentiate local and global variables.
6. Write a python function to return the square of a number.
7. When is it preferable to use a dictionary instead of a list?
8. Write a Python script to extract the first three elements of a list using slicing.
9. State the difference between syntax errors and runtime errors.
10. Mention any two open modes used in the open() function.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the different forms of 'if statement' with examples. (8)
(ii) Write a pseudocode to insert an element into a already sorted list.
Find the input and output components of this pseudocode. (8)

Or

- (b) (i) Evaluate the importance of functions in algorithm design with examples. (8)
(ii) Write a pseudocode to implement Towers of Hanoi problem. Identify the input and output components of this problem. (8)
12. (a) (i) Explain the role of the Python interpreter and interactive mode. Compare it with compiler. (8)
(ii) List and describe the different data types available in Python with examples. (8)

Or

- (b) Analyze how Python handles expressions with mixed data types and operator precedence using examples.
13. (a) (i) Explain while and for loops in Python with break, continue statements using examples. (10)
(ii) Write an iterative Python program to find a number in a array using binary search. (6)

Or

- (b) (i) Explain the composition of a function with its parameters and return values. Illustrate with examples. (8)
(ii) Write a recursive function to calculate the sum of the numbers stored in an array. (8)
14. (a) Compare and contrast lists, tuples, and dictionaries based on their structure, mutability and uses with examples.

Or

- (b) Design a Python program to prepare a student marks statement that calculates total, average and grade for each student using lists and dictionaries.

15. (a) (i) List and explain various file handling operations in Python with examples. (8)
- (ii) Write a Python program to count the number of words in a text file. (8)

Or

- (b) (i) Explain how exceptions are raised and handled in Python with an example. (8)
- (ii) Design a program to validate a voter's age, ensuring that the user input is an integer ≥ 18 and handle exceptions for invalid inputs. (8)
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