Register No.: ..... Name: .....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIRST SEMESTER INTEGRATED M.C.A DEGREE EXAMINATION (S), FEBRUARY 2024

(2020 SCHEME)

Course Code: **20IMCAT105**

Course Name: **Introduction to Programming**

Max. Marks: **60** **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. Define a flowchart. How can we design a valid flowchart?
2. List the components of a computer.
3. Define algorithm. What are the differences between algorithm and pseudocode?
4. Explain the different types of variables.
5. Write an algorithm to find the largest of three numbers.
6. Define control structure. What is the relevance of control structure in programming?
7. Differentiate repeat until loop and while loop with proper examples.
8. Write an algorithm to find the sum of natural numbers between a range.
9. Define one dimensional array. What are its features?
10. Write the concept of linear search with an example.

PART B

(Answer one full question from each module, each question carries 6 marks)

MODULE I

11. a) Explain flowcharting process. (4)
    b) Differentiate system flowchart and program flowchart. (2)

OR

12. a) Define
        i) Data
        ii) Information
        iii) Program. (3)
    b) Illustrate the important symbols used to draw a flowchart. (3)

MODULE II

13. a) Explain any two operators with an example. (3)
    b) Write a pseudocode that will evaluate following expression $10x^2y^2 + 5x^2y - 2xy + 12y + 15$. (3)

OR

14. a) What are the features of a good algorithm? (3)
    b) Explain constants and variables. Differentiate string constant and string variable. (3)

MODULE III

15. a) Develop an algorithm that will swap two numbers. (3)
    b) Define nested if statement with a suitable example. (3)

OR

16. a) Explain the different decision making statements with proper examples. (4)
    b) Develop an algorithm that will find the area of a triangle. (2)

MODULE IV

17. a) Explain the different iterative statements used in algorithms with suitable examples. (4)
    b) Write an algorithm to print 1st N natural numbers. (2)

OR

18. a) Write a pseudocode that will accept value of "n" and evaluate the following expression (3)
    $x + x^2 + x^4 + x^8 + \ldots + x^n$.
    b) Explain the sequential and iterative flow of execution. (3)

MODULE V

19. a) What is an array? Describe one dimensional array. (3)
    b) Write an algorithm to find the average of N elements in an array. (3)

OR

20. Suppose a table contains two fields, item and price.
    The table consist of "N" items.
    Write pseudocode to find (6)
    i) Mean
    ii) Median
    iii) Number of items with same price.

****