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 2023
(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. Draw a flowchart to check whether the sum of two numbers are even or not.
2. What are the general rules of flowcharting?
3. Differentiate "=" and "==" operators.
4. Write down the characteristics of an algorithm.
5. Write an algorithm to print factorial of a given number.
6. A company decided to give bonus of 5% to employee whose year of service is more than 5 years. Write an algorithm to input the salary and year of service of the employee and print the net bonus amount.
7. What is the difference between 'if' and 'while' statement?
8. Write an algorithm to print the following pattern if input number is 3.
   2 4 6
   2 4
   2
9. Define one dimensional array with an example.
10. Draw a flowchart to find the average of N numbers which is stored in an array.

PART B

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

MODULE I

11. a) Differentiate system flowcharts and program flowcharts. State the advantages and limitations of using flowcharts. (4)
    b) Draw a flowchart to show the log in procedure on to a Facebook account. (2)

OR

12. What is an algorithm? Differentiate algorithm and flowchart. Explain different symbols used in flowcharts with suitable example. (6)

MODULE II

13. What is an operator? List and explain any five operators with an example. (6)

OR

14. a) Formulate an algorithm to solve a quadratic equation. (4)
    b) Define variable. State the important rules for creating a variable. (2)

MODULE III

15. a) Explain decision structures in programming. (4)
    b) Write an algorithm to find out the sum of squares of first six natural numbers which are divisible by four. (2)

OR

16. a) Explain sequence structures in programming. (2)
    b) Write an algorithm to display the prime numbers between two numbers A and B entered by the user. Ensure that the value of A is less than B. (4)

MODULE IV

17. Write an algorithm to find the sum of N terms for a given value of X in the following mathematical series: (6)
    $X + (X^2 / 2) + (X^3 / 3) + \ldots\ldots$ up to N terms.

OR

18. Explain repetition control structures with the help of a diagram and suitable examples. (6)

MODULE V

19. Design an algorithm to find the mean and standard deviation of N elements stored in an array. (6)

OR

20. Design an algorithm and flowchart to find the minimum value in an array of N numbers. (6)

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