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

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SECOND SEMESTER B.TECH DEGREE EXAMINATION (R,S), MAY 2024
COMMON TO ALL BRANCHES
(2020 SCHEME)

Course Code : 20EST102

Course Name: Programming in C

Max. Marks : 100 **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. Give a brief idea about memory hierarchy with a neat diagram. Also, compare in terms of speed, cost and storage capacity.
2. Draw the flowchart to find out the largest of three numbers.
3. Consider x = (a / b > 5) ? (a * b) : 5; Predict the value of x if a = 25 and b= 5.
4. Differentiate between entry controlled and exit controlled loop statements with example.
5. Illustrate with an example, how a two-dimensional array is declared and initialized.
6. Explain any 3 string handling functions using examples.
7. Define formal parameters and actual parameters in a function using an example.
8. Distinguish between the user defined datatypes, structure and union.
9. Explain how a pointer variable is declared and initialized. Discuss the advantages of using pointers.
10. Explain any three file handling functions in C with suitable example.

PART B

(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) Differentiate between algorithm, flowchart and pseudo code with an example. (6)
    b) Explain the architecture of a computer with a suitable block diagram. (8)

OR

12. a) Write the algorithm and draw the flow chart to implement the logic to sort the given set of numbers in ascending order. (10)

b) Differentiate between compiler and interpreter. (4)

MODULE II

13. a) Write a C program to test whether a given number is palindrome or not. (7)

b) Explain the various operators in C using suitable examples. (7)

OR

14. a) Write a C program to print all prime numbers between 1 and 100. (9)

b) Describe the various primary datatypes in C with suitable examples. (5)

MODULE III

15. a) Write a C program to perform linear search on an array of numbers. (5)

b) Write a C program to implement a password checker: Read a string 'str' of size 'n' and print 1 if the given string 'str' is a valid password else 0. (9)

'str' is a valid password if it satisfies the below conditions:

- At least 4 characters
- Starting character must not be a number
- At least one numeric digit

OR

16. a) Write a C program to perform matrix multiplication. (9)

b) Write a C program to find length of a string without using string handling functions. (5)

MODULE IV

17. a) Using function, write a C program to find the sum of major diagonal elements of a square matrix passed to it. (7)

b) Explain the concept of recursion. Illustrate the same by writing a C program to find the sum of first n natural numbers. (7)

OR

18. a) Discuss the differences between call by value and call by reference parameter passing techniques with the help of a suitable example. (7)

b) A student database stores following information about students in a class: roll_no, name and CGPA. Write a C program to display the details of students whose CGPA is greater than 7. (7)

MODULE V

19. a) Write a C program to copy the contents of one file to another file. (7)

b) Write a C program to compute the sum of the elements stored in an array using pointers. (7)

OR

20. a) Write a C program to open a text input file and count number of characters, words and lines in it and then store the results in an output file. (8)

b) Explain how we can access array elements using pointers with suitable examples. (6)

****