

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

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**SECOND SEMESTER INTEGRATED M.C.A DEGREE EXAMINATION (R), JULY 2022****(2020 SCHEME)****Course Code: 20IMCAT108****Course Name: Problem Solving and Structured Programming****Max. Marks: 60****Duration: 3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. Write a short note on symbolic constant and C tokens.
2. What are variables in C programming language? Give examples.
3. Write the syntax of for ... loop. Give an example.
4. Explain what happens when the following statement is executed.  
$$\text{if} (\text{abs}(x) < \text{xmin}) \text{ x} = (\text{x} > 0) ? \text{xmin} : -\text{xmin};$$

Is this a compound statement or a compound statement embedded within this statement?
5. How do you declare and initialize 1-D and 2-D arrays? Give examples.
6. How can a list of strings be stored within a two-dimensional array? How can the individual strings be processed?
7. Write a short note on recursion.
8. What is the purpose of a static variable in a single file program? What is its scope?
9. Explain the concept of pointer to a pointer.
10. Summarize the different file types that can be specified by the fopen() function.

**PART B***(Answer one full question from each module, each question carries 6 marks)***MODULE I**

11. a) What is constant? Give suitable example. (3)  
b) Explain the role of pre-processor directive with suitable example. (3)

**OR**

12. How do you apply format features in inputs and outputs using scanf() and printf() functions? Explain. (6)

**MODULE II**

13. What are the various conditional statements? Explain the difference between nested if and switch case statement by taking suitable examples. (6)

**OR**

14. Write the minimum number of times that a do-while loop can be executed. Compare do-while with the while loop and explain the reasons for the differences. (6)

**MODULE III**

15. Mention the various string manipulation functions in C. (6)

**OR**

16. a) Write a C program to enter a line of text, store it in an array and then display it backwards. (3)  
b) Explain the library functions strcpy() and strcmp() with suitable examples. (3)

**MODULE IV**

17. Explain the following. (3)  
i) nested structure (3)  
ii) array of structure (3)

**OR**

18. a) What is a self-referential structure? For what kinds of applications are self-referential structures useful? (3)  
b) Write a C program that reads different names and addresses into the computer and, writes them out. Make use of structure variables within the program. (3)

**MODULE V**

19. a) Explain the array of pointers with example. (3)  
b) How are pointers and arrays related? Explain with an example. (3)

**OR**

20. a) Compare the use of fscanf() and fprintf() library functions. (3)  
b) Write a C program that will read a text file and count the number characters, spaces, tabs and newlines that are present in it. (3)

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