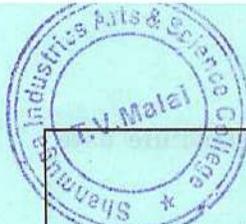18. Explain any five conditional control statements in C with their neat sketch of flow and example.

19. Explain call by value and call by reference with examples.

20. Describe the statements for file opening and closing in C. Write a program to count the number of words in a given text file.

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BCS11 — Digital Logic and Programming in C

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Perform 2's complement subtraction of 010110-100101.

2. What is don't care condition?

3. Give the function of encoder.

4. Define and mention the uses of registers.

5. How to construct a variable in C?

6. Give an example of While do statement with its flow diagram.

7. Give the ways to assign values to multi dimensional array elements?

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8. What is structure? How to define structure date type?

9. Give the statement for arithmetic operations on a pointer.

10. Give the statements for I/O operations on files.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Convert 110011 into hexadecimal.

Or

(b) Using k-map find minimum SOP for the function $F(a,b,c) = \Sigma m(0,1,5,6,7)$.

12. (a) Design a 4-bit adder using logic gates and explains its operation.

Or

(b) Draw the logic circuit diagram of BCD adder. Show its operation.

13. (a) Explain any five constants types with example.

Or

(b) Write a program in C to find the factorial of a given number.

14. (a) Write a program to find the factorial value of given number using recursion.

Or

(b) Compare the scope and lifetime of the various storage classes with examples.

15. (a) What do you understand by pointers? Give the syntax of declaration of a pointer for various data types.

Or

(b) Narrate the need of command line argument with a supportive program.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. For the given function, write the Boolean expression in product of maxterm form $f(a, b, c) = \Sigma m(2, 3, 5, 6, 7)$.

17. (a) What is a master-slave flip-flop? Write down its function.

(b) Explain various steps in the analysis of synchronous sequential circuits with suitable example.