1. a) Describe the different symbols used in a flowchart with a suitable example.

b) What do you mean by structured programming?

c) Draw a flowchart with necessary explanations to give maximum and minimum of 3 integers x, y and z.

d) What do you mean by debugging of a program?

See Topic: **INTRODUCTION, Long Answer Type Question No. 2.**

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2. (a) Write a program in C to print 100 values of the following series:

    1   3   6   10   15   _____

(b) What is a ternary operator?

(c) Explain briefly the meanings of

   (i) Auto increment operator.

   (ii) Auto decrement operator.

a) See Topic: C FUNDAMENTAL, Short Answer Type Question No. 1.

b) & c) See Topic: OPERATORS, EXPRESSIONS & MANAGING INPUT OUTPUT, Short Answer Type Question No. 1 & 2.

3. a) What are the advantages of using functions in 'C' programming? What is the difference between user defined functions and library functions?

b) Write a program to find the length of a string taking the string as input from user, without using the 'strlen' function.

c) What do you mean by function prototype? Is it possible to use a user defined function in a program without giving its prototype? Justify your answer.

a) See Topic: FUNCTIONS, Long Answer Type Question No. 2.

b) See Topic: ARRAYS, Long Answer Type Question No. 2.

c) See Topic: FUNCTIONS, Long Answer Type Question No. 3.

4. a) What is recursion in programming?

b) Write a program in C to generate the terms of a Fibonacci Series using a recursive function. Take the number of terms from user.

c) Explain your idea behind 'call by value' and 'call by reference'. Which one is used in C?

a) See Topic: FUNCTIONS, Short Answer Type Question No. 2.

b) See Topic: FUNCTIONS, Short Answer Type Question No. 1.

c) See Topic: PIONTERS, Long Answer Type Question No. 1.

5. a) Briefly describe the different loop control structures in 'C' with syntax, example and explanation.

b) What are 'break' and 'continue' statements? Explain a switch statement with and without use of 'break'.

c) What happens when a 'break' statement is used within a loop statement (example: while, do-while, for)

a) See Topic: FLOW OF CONTROL, Long Answer Type Question No. 3.

b) See Topic: FLOW OF CONTROL, Long Answer Type Question No. 4.

c) See Topic: FLOW OF CONTROL, Short Answer Type Question No. 1.

6. a) What is a pointer variable: Explain with proper example.

b) Write a menu driven program to perform addition, subtraction and multiplication of two matrices A and B. For this, take input from user – the order of matrices A and B, the elements of the matrices. Before doing the operation requested, check, whether the matrices A and B are conformable of doing the requested operation.

a) See Topic: PIONTERS, Short Answer Type Question No. 1.
b) See Topic: ARRAYS, Long Answer Type Question No. 3.

7. a) What do you mean by storage classes in C? Name different storage classes and explain each with examples.
b) Write a C function that gives the reverse of a given string.
a) See Topic: FUNCTIONS, Question No. 4 of Long Answer Type Questions.
b) See Topic: PIONTERS, Short Answer Type Question No. 2.

8. Write short notes of the following:
   i) Linked list
   ii) Dynamic memory allocation
   iii) Preprocessor directives
   iv) Local and global variables
   v) Structure and Union

i) See Topic: DYNAMIC MEMORY ALLOCATION, Long Answer Type Question No. 4(a).
ii) See Topic: DYNAMIC MEMORY ALLOCATION, Long Answer Type Question No. 4(b).
iii) See Topic: FUNCTIONS, Long Answer Type Question No. 9(a).
iv) See Topic: FUNCTIONS, Long Answer Type Question No. 9(b).
v) See Topic: STRUCTURES AND UNIONS, Long Answer Type Question No. 4(b).