



- Q.2** (a) Write a comparative study between for, while and do-while loop. [5]  
(b) Write a program in C to find all the prime numbers in the range 10 to 100. [4]  
(c) Explain with suitable example, the difference between structure and union. [5]
- Q.3** (a) Write a C program to read  $n$  unsorted integers to an array of size  $n$  and pass the array to a function to sort the integers into ascending order using bubble sort technique. [7]  
(b) What are the different storage classes in C. Explain each of them in detail. [7]
- Q.4** (a) List all the shapes used in the flowchart. Draw the flowchart to illustrate the concept of break and continue statements taking suitable examples. [8]  
(b) What do you mean by tail recursion. Explain with an example. [6]
- Q.5** (a) Define a structure *Student* that consist of the following members: *Reg\_No*, *Name*, *DoB* and marks of three subjects. Use nested structure for *DoB*. Write a C program to input details for 10 students. Also, it should calculate age and average marks obtained by these students as output. [9]  
(b) Write a C program to generate Fibonacci series till  $n^{th}$  term without using recursion. [5]
- Q.6** (a) Write a C program that implements string copy function *StrCpy(Str1, Str2)*. This function copies the string *Str1* to another string *Str2* without using library functions. [7]  
(b) Write a program to read a file and display its contents along with line number before each line. [7]
- Q.7** (a) Write a program in C which prints all the digits of a positive integer number entered by user into words. Eg. If 732 is entered through the keyboard, the program should output "seven three two". [8]  
(b) How do you access a structure variable through a structure pointer? Explain with example program. [6]
- Q.8** (a) Write a C program to print the following pattern (till  $n$  rows, where  $n$  is taken as input) [8]
- ```
    1
   2 2
  3 3 3
 4 4 4 4
```
- (b) Write a complete C program to find out the Trace of a square matrix [Trace means the sum of Principal Diagonal Elements]. [6]
- Q.9** Write short notes on *any two* of the following: [7x2=14]  
(a) Pointer Arithmetic  
(b) Dynamic Memory Allocation  
(c) Array of Pointers  
(d) Bitwise Shift Operator