8. (a) Explain user defined function with suitable example. 6

(b) What is array ? Explain the declaration and initialization of one dimensional array with suitable example. 6

OR

9. (a) Describe recursive function with suitable example. 6

(b) Write a program in C for multiplication of matrix. 6

10. (a) Explain the declaration of initialization of string variable with example. 6

(b) Write a program in C to calculate sum and average of n array elements using pointer. 6

OR

11. (a) Explain the following functions with example :
   (i) Strcat( )
   (ii) Strcpy( )
   (iii) Strcmp( ). 6

(b) Explain the declaration of initialization of pointer variable with example. 6

12. (a) Explain in detail the structure with example. 6

(b) Explain file opening modes in C. 6

OR

13. (a) Explain the following with syntax and example :
   (i) fget( )
   (ii) fgets( )
   (iii) fputs. 6

(b) Explain Union with suitable example. 6

B.Sc. (Part–I) Semester–II Examination

2S : COMPUTER SCI./COMPUTER APPLI./

INFORMATION TECH.

(Data Structure & Advance 'C')

Time—Three Hours]   [Maximum Marks—80

Note :– (1) All questions are compulsory.

       (2) Question No. 1 carry **8** marks and all other questions carry **12** marks.

       (3) Assume suitable data wherever necessary.

1. (a) Fill in the blanks :
   (i) QUEUE is a _____ data structure.
   (ii) The logical or mathematical model of a particular organization of data is called _____.
   (iii) A pointer is _____ data type.
   (iv) By default the function returns _____ value. 2

(b) Choose correct alternative :
   (i) fscanf ( ) function read data from :
        (a) Keyboard
        (b) Both (a) and (b)
        (c) File
        (d) None of these

(ii) Adding an element into stack is called :
    (a) PUSH
    (b) STACK
    (c) POP
    (d) ADD

(iii) The end of linked list is marked by_____ value in the LINK field.
    (a) NULL
    (b) INFO
    (c) LINK
    (d) START

(iv) _____ variables are those which are declared within the particular function.
    (a) Global
    (b) Automatic
    (c) Local
    (d) Static   2

(c) Answer in **ONE** sentence :
    (i) What is linked list ?
    (ii) What is sorting ?
    (iii) What is meant by user defined function ?
    (iv) What is Array ?   4

2. (a) What is data structure ? Explain various operations performed on data structure.   6

(b) What is a QUEUE ? Write an algorithm to insert an element into a queue.   6

OR

3. (a) What is a stack ? Explain representation of stack in memory.   6

(b) What is linear array ? Write an algorithm for traversing a linear array.   6

4. (a) What is a linked list ? Explain the representation of linked list in memory.   6

(b) Write an algorithm to insert an element into linked list.   6

OR

5. (a) Explain in detail the implementation of circular queue in memory.   6

(b) Write an algorithm to delete ITEM in the list.   6

6. (a) Explain the selection sort with suitable example. 6

(b) What is a binary tree ? Explain the representation of binary tree in memory.   6

OR

7. (a) Explain the following :
    (1) Insertion sort
    (2) Bubble sort
    (3) Linear search   6

(b) What is meant by traversing a binary tree ? Write preorder, inorder and postorder traversing of following binary tree.   6