AW–1668

B.Sc. (Part–I) Semester–II Examination
2S : COMPUTER SCIENCE/COMPUTER APPLICATION/INFORMATION TECHNOLOGY (Old) UPTO
(Data Structure and Advance C)

Time : Three Hours]   [Maximum Marks : 80

Note :—(1) All questions are compulsory.

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

(3) Assume suitable data wherever necessary.

1. (A) Fill in the blanks :—   2

   (i) Queue is also called as _____.

   (ii) The insertion of an element into the stack is called _____ operation.

   (iii) Collection of homogeneous data element is known as _____.

   (iv) The variables declared within function are called _____ variables.

   (B) Choose correct alternative :—   2

   (i) Finding the location of given element is called :

       (a) Sorting   (b) Searching

       (c) Traversing   (d) Merging

   (ii) PUSH operation on stack means _____.

       (a) Inserting an item   (b) Deleting an item

       (c) Visiting an item   (d) None of the above

   (iii) The function fgetc( ) is used to _____.

       (a) Add data to file   (b) Find the element

       (c) Read char from file   (d) None of the above

   (iv) Concatenation means _____.

       (a) Addition of element (b) Extracting string

       (c) Combining strings   (d) None of the above

   (C) Answer in **ONE** sentence each :—   4

   (i) What is POP operation ?

   (ii) What is sorting ?

   (iii) What is a pointer ?

   (iv) What is a structure ?

2. (a) How the queue is represented in a memory ? Explain.   6

   (b) What is stack ? What are the operations performed on stack ? Explain it.   6

OR

3. (a) What is data structure ? What are the various operations to be performed on data structure ? 6

 (b) Write an algorithm for traversing an array. 6

4. (a) What is circular queue ? How is it implemented in computer memory ? 6

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

OR

5. (a) State and explain the difference between queue and circular queue. 6

 (b) Write an algorithm to traverse linked list. 6

6. (a) Explain inorder, preorder and postorder tree traversal with example. 6

 (b) What is selection sort ? Write an algorithm for selection sort. 6

OR

7. (a) What is binary tree ? Draw binary tree for :

    $[A + B] - C/[D * E]$. 6

 (b) Write an algorithm for insertion sort. 6

8. (a) What is function ? Explain function prototype with example. 6

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

OR

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

 (b) Describe recursive function with suitable example. 6

10. (a) What is string ? What operations can be performed on string ? Explain. 6

 (b) Write a program in C to find out biggest element from 'n' array element using pointer. 6

OR

11. (a) What is pointer ? Explain the declaration and initialization of pointer variable. 6

 (b) Explain the following string functions with example :

    (i) strcat( )

    (ii) strcpy( )

    (iii) strcmp( ). 6

12. (a) Describe the declaration and initialization of structure with example. 6

 (b) Explain file opening modes in 'C' 6

OR

13. (a) Explain the difference between structure and union with suitable example. 6

 (b) Explain the following functions with example :

    (i) fgets( )

    (ii) fprintf( )

    (iii) fwrite( ) 6