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