

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