

[18/A-14]

Sardar Patel University  
External Examination (CBCS)  
B. Sc. IV<sup>th</sup> Semester (Computer Science)  
US04CCSC01 - Advanced 'C' and Introduction to Data Structure  
9<sup>th</sup> April, Monday - 2018

Time: 10:00 am to 01:00 pm

Total Marks: 70

**Q.1 Select the appropriate option.**

10

1. Which of the following function is used to allocate single block memory?  
(a) malloc() (b) realloc() (c) calloc() (d) free()
2. Which of the following defines a pointer variable to an integer?  
(a) int \*ptr; (b) int &ptr; (c) int \*\*ptr; (d) int &&ptr;
3. Which of the following allows a portion of memory to be shared by different types of data?  
(a) Array (b) Structure (c) Union (d) File
4. Which of the following can be used to create a new type that can be used anywhere a type is permitted?  
(a) union (b) struct (c) typedef (d) none of these
5. f = fopen( filename, "r" );  
Referring to the code above, what is the proper definition for the variable f?  
(a) FILE f; (b) FILE \*f; (c) file \*f; (d) int f;
6. Which one of the following is valid for opening a file for only reading?  
(a) fopen(filename, "r"); (b) fopen(filename, "r");  
(c) fopen(filename, "ra"); (d) fopen(filename, "read");
7. Which of the following data structure store the homogeneous data elements?  
(a) Arrays (b) Records (c) Pointers (d) None of these
8. The term "push" and "pop" is related to the?  
(a) array (b) queue (c) stacks (d) all of these
9. A storage representation of a linked list in a memory is \_\_\_\_\_.  
(a) Linear (b) Non-linear (c) Both (a) and (b) (d) None of these
10. A data structure that contains not only a data field but also contains pointer field is known as \_\_\_\_\_.  
(a) Queue (b) Stack (c) Linked List (d) Tree

**Q.2 Answer the following questions. (Attempt any TEN)**

20

1. What are the advantages of Pointers?
2. Explain how compile time and runtime memory allocation process differ?
3. Explain concept of pointer to array.

4. Explain typedef in brief with suitable example.
5. List file modes available to manage the file in C.
6. Explain use of fsacnf() function.
7. What is Primitive Data Structure?
8. Which are the main operations that can be performed on Data Structure?
9. Give representation of a Stack data structure.
10. Describes the different types of Linked List.
11. What is a Circular Linked list?
12. Define: Circular Queue and Priority Queue.

- Q.3** [a] Define Pointer. How it is declared? Explain how arithmetic operations can be performed on pointer variable by taking example. 5
- [b] Explain any two memory allocation function with example. 5

**OR**

- Q.3** [a] Explain the importance of pointers in functions by taking suitable example.. 5
- [b] Write notes on pointer to pointer and pointer to structure. 5
- Q.4** [a] Write note on: structure within structure and array of structure. 5
- [b] Describe the usage of function getc() and putc(). 5

**OR**

- Q.4** [a] Differentiate between union and structure. 5
- [b] Explain the function of getc() and putc() function by giving example. 5
- Q.5** What is Stack? Write an algorithm to perform PUSH, POP and PEEP operation on stack. 10

**OR**

- Q.5** [a] Draw the Hierarchical Structure of Data Structure. 5
- [b] What is non primitive data structure? List applications of data structure. 5
- Q.6** What is Queue? Write an algorithm to perform various operations on simple queue. 10

**OR**

- Q.6** [a] Write an algorithm to insert an element at the beginning of a Singly linked list. 5
- [b] Write an algorithm to delete an element from a Singly linked list. 5