

Seat No.: \_\_\_\_\_

No. of printed pages : 02

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Sardar Patel University  
External Examination (CBCS)  
M. Sc.(Integrated) (Information Technology) - II<sup>nd</sup> Semester  
PS02CIIT03  
Advanced 'C' Programming and Introduction to Data Structures  
24<sup>th</sup> October, Monday, 2016

Time: 02.00 pm to 5.00pm

Total Marks: 70

Q-1 Select an appropriate option.

10

- 1 Which of the following is not a derived data type?  
(a) Arrays (b) Pointers (c) Float (d) Structure
- 2 Which of the following is not a C memory allocation function?  
(a) malloc() (b) calloc() (c) realloc() (d) alloc()
- 3 int a, \*p = &a; Which of the following statement will not add 1 to a variable?  
(a) a++; (b) a+=1; (c) \*p = \*p+1; (d) \*p++
- 4 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
- 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) struct FILE f; (d) int f;
- 6 Two dimensional arrays are also called \_\_\_\_\_.  
(a) Tables arrays (b) Matrix arrays (c) Both A and B (d) None of these
- 7 Files are a \_\_\_\_\_ type of Data Structure.  
(a) Linear (b) Primitive (c) Non-Primitive (d) Non-Linear
- 8 A stack is \_\_\_\_\_ type of data structure.  
(a) Linear (b) Non-Linear (c) Both (a) and (b) (d) None of these
- 9 A data structure in which insertion of an element occurs at one end and deletion of an element occurs at other end is known as \_\_\_\_\_.  
(a) Tree (b) Graph (c) Queue (d) Stack
- 10 A data structure that contains not only a data field but also contains pointer field is known as \_\_\_\_\_.  
(a) Queue (b) Stack (c) Tree (d) Linked List

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

20

- 1 Define: indirection operator, pointer variable
- 2 List out benefits of pointers.
- 3 Differentiate: structure and union
- 4 Explain typedef in brief.

- 5 Differentiate: printf and fprintf
- 6 Differentiate: getc and getchar
- 7 Define: Data Structure, Stack
- 8 State various Applications of Stack.
- 9 What do you mean by Top and Bottom of a Stack?
- 10 What is a Singly Linked list?
- 11 State various types of queue.
- 12 Differentiate: Stack and Queue

Q-3

- (a) How can we declare and initialize pointer variable? How can we access value of variable through pointer type variable? 5
- (b) Write a note on Dynamic memory allocation. 5

**OR**

Q-3

- (a) What is structure? Explain its definition, declaration and assigning values to members of structure. 5
- (b) Write note on pointer to structure. 5

Q-4

- (a) What is union? Explain its definition, declaration and assigning values to members of union. 5
- (b) Describe the usage and limitation of getc and putc. 5

**OR**

Q-4

- (a) Explain fprintf and fscanf function with example. 5
- (b) Explain the getw and putw function with example. 5

Q-5

- (a) Write a short note on primitive data structure operations. 5
- (b) Write an algorithm to insert an element into a Stack. 5

**OR**

Q-5

- (a) Write down advantages of data structure. 5
- (b) Write an algorithm for Peep operation of a Stack. 5

- Q-6 Write an algorithm to insert and delete an element in simple queue. 10

**OR**

- Q-6 Write an algorithm for Singly linked list. 10
  - (i) Insert an element at the beginning.
  - (ii) Insert an element at the end.