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SEAT No._____ No. of Printed Pages : 2

[A-57&A-58]

SARDAR PATEL UNIVERSITY

BCA EXAMINATION, 2nd SEMESTER (2010-batch)

Monday, 9th April, 2018

2:00 p.m. to 5:00 p.m.

US02CBCA01

[Advanced C Programming and Introduction to Data Structure]

Maximum Marks: 70

Q-1 Multiple Choice Question.[Each Question carries one Mark] [10]

1) Which operator is used with a pointer to access the value of the variable whose address is contained in the pointer?
   A. Address (&) C. Indirection (*)
   B. Assignment (=) D. Selection (->)

2) Which of the following defines and initializes a pointer to the address of x?
   A. int *ptr = *x; C. int *ptr = &x;
   B. int &ptr = *x; D. int *ptr = ^x;

3) Which of the following allows a portion of memory to be shared by different types of data?
   A. Array C. Union
   B. Structure D. File

4) Which of the following is not a derived data type?
   A. Arrays C. Pointers
   B. Float D. Structure

5) What are two predefined FILE pointers in C?
   A. stdout and stderr C. stdout and stdio
   B. console and error D. stdio and stderr

6) Which of the following data structures are indexed structures?
   A. linear arrays C. Both A and B
   B. linked lists D. None of these

7) A data structure where elements can be added or removed at either end but not in the middle?
   A. Linked lists C. Queues
   B. Stacks D. Deque

8) A linked list is ____ type of data structure?
   A. Linear C. Both (A) and (B)
   B. Non-Linear D. None of the Above

9) Which of the following is NOT an application of a Stack data structure?
   A. Stack Machine C. Evaluation of an Expressions
   B. Recursion D. Creates a folder

10) A linked list in which last node pointing to the first node is known as _____.
   A. Singly linked list C. Circular linked list
   B. Doubly linked list D. None of the above

[PTO]

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Q-2 Give Answers for the following:(Any SIX) [12]

1 Differentiate malloc() and calloc().
2 List out operations that can be performed on pointers.
3 Differentiate: structure and union.
4 Explain typedef in brief with suitable example.
5 Differentiate: printf and fprintf.
6 List out different applications of data Structure.
7 What is a Linked List? How is it represented?
8 Define : Circular Queue and Priority Queue.

Q- 3 A) Define pointer variable. 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. [3]

OR

Q- 3 A) Explain pointer arithmetic with example. [5]

B) Write note on: pointer to pointer [3]

Q- 4 A) What is structure? Explain its definition, declaration and assigning values to members of structure. [5]

B) Explain array within structure using suitable example. [3]

OR

Q- 4 A) What is union? Explain its storage representation. How a member of union is assigned an initial value? Explain in brief with example. [5]

B) Explain array of structures using suitable examples. [3]

Q- 5 A) Describe the usage and limitation of function **getc** and **putc** with example. [5]

B) Explain the **getw** and **putw** function with example. [3]

OR

Q- 5 A) Explain the all the modes of file management with example. [5]

B) Explain **fprintf** and **fscanf** function with example. [3]

Q- 6 A) Write a short note on primitive data structure operations. [5]

B) Write a short note on linear data structure. [3]

OR

Q- 6 A) Write a short note on non linear data structure. [5]

B) Write down advantages of data structure. [3]

Q- 7 A) Write an algorithm to **insert** an element at the **beginning** of a Singly linked list. [4]

B) Write an algorithm to **delete** an element from a Singly linked list. [4]

OR

Q- 7 A) Write an algorithm to **insert** an element at the **ending** of a Singly linked list. [4]

B) Write an algorithm to **insert** an element into a Singly linked list that maintains **ascending order** of elements. [4]

Q- 8 A) Explain a QUEUE with an example. Write along with for various operations performed over a queue. [5]

B) Write an algorithm to insert an element into a Stack. [3]

OR

Q- 8 A) Explain a STACK with an example. Write along with for various operations performed over a stack. [5]

B) Write an algorithm to delete an element from a simple queue. [3]

—— X ——