[917] SEAT No._____

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SARDAR PATEL UNIVERSITY

Master of Computer Applications (MCA)

Semester – II ATKT External Examination

PS02CMCA22 (Data Structures and Advanced Programming Concepts)

24th October 2018, Wednesday

Time: 10:00 a.m. to 1:00 p.m. **Max Marks:** 70

Q-1 Choose the most appropriate option for each question: [8]

1. Which of the following is non-linear data structure?

   A. Array B. Tree
   C. String D. Stack

2. Before inserting into stack one must check the condition_____

   A. Underflow B. Maximum Element
   C. Overflow D. Last Element

3. The number of leaf nodes in a complete binary tree of depth N is

   A. 2^N B. 2^N+1
   C. $2^{N+1}-1$ D. $2^{N+1}+1$

4. A linear list in which the last node points to the first node is ……..

   A. singly linked list B. doubly linked list
   C. circular linked list D. All of these

5. In C++ Program, inline functions are expanded during ____.

   A. Run Time B. Compile Time
   C. Code Time D. Debug Time

6. Derived class pointer cannot point to _____ class.

   A. base B. subclass
   C. child D. None of these

7. _____ refers to the act of representing essential features without including the background details or explanations.

   A. Inheritance B. Data Hiding
   C. Abstraction D. Polymorphism

8. If the base class has constructors with arguments, then it is _____for the derived class to have a constructor.

   A. Optional B. Suggestional
   C. Mandatory D. None of these

Q-2 Answer the following questions (Any Seven): [14]

1. List out Big-O functions and describe any one.
2. Give the difference between singly and doubly link list.
3. What is B+ tree?
4. Explain Hash table.
5. Define the following: 1) Encapsulation 2) Abstraction
6. What is a friend function?
7. List the features of procedural programming.
8. Explain Objects and Classes.
9. What is dynamic memory allocation? Explain its need.

Q-3 Answer the following questions:

A. Explain stack with peep, push and pop operation. [6]

B. What is Queue? Explain any two operations of Queue. [6]

OR

B. Explain the singly linked lists. Also write algorithms for insert and display operations performed on singly linked lists. [6]

Q-4 Answer the following questions:

A. What is Tree? Draw a In-order and Pre-order traversal tree for ((A*B)+(C/D)) [6]

B. Write a note on Sequential file organization. [6]

OR

B. Briefly explain B Tree [6]

Q-5 Answer the following questions:

A. Explain Function Overloading with code snippet [6]

B. Write a short on different types of constructors available in C++ with code snippet. [6]

OR

B. Explain exceptional handling with example. [6]

Q-6 Answer the following questions:

A. Explain the order of destructor execution in multilevel inheritance with a C++ Program. [6]

B. Write a short on pointers to the derived class. Explain the concept of virtuality with it. [6]

OR

B. Explain Binary Operator Overloading with code snippet [6]

—X—

(2)