



**K-3733-R**

**Second Year B. C. A. (Sem. III) Examination**

**October/November – 2012**

**303 - Advance 'C' & Data Structure**

Time : 3 Hours]

[Total Marks : 70

**Instruction :**

नीचे दर्शाविए निशानीवाणी विगतो उत्तरवही पर अवश्य लખवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<b>SECOND YEAR B. C. A. (SEM. 3)</b>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<b>303 - ADVANCE 'C' &amp; DATA STRUCTURE</b>	<input type="text"/>
Subject Code No. : <input type="text"/> 3 <input type="text"/> 7 <input type="text"/> 3 <input type="text"/> 3	<input type="text"/>
Section No. (1, 2,.....): <input type="text"/> NIL	
	Student's Signature

- 1 Answer the following questions : (any ten) 10
- Explain the term primitive data structure.
  - Which condition is necessary for overflow in circular queue ?
  - Explain the concept call by reference by giving example.
  - What is self referential structure ? Explain with example.
  - What are the advantages of Stack and Queue as compared to a Linked list ?
  - What is critical node in height balanced tree ?
  - Define leaf node and sibling with suitable example.
  - Why circular linked list is more efficient than singly linked list ?
  - Explain the term thread.
  - Give the difference between UDF and library function.
  - Explain the row major representation of 2-D array with example.
- 2 (a) Explain recursion. How stack is used in recursive procedure ? To generate Fibonacci series which procedure is best whether recursive or non recursive ? Justify your answer. 8
- (b) List out the various application of stack. Write an algorithm to convert an infix expression into prefix expression. 7

**OR**

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**1**

**[Contd...**

- 2 (a) What do you mean by stack ? Write an algorithm to implement PEEP and POP operations. 8
- (b) Write a program that will perform different operations on array using call by reference. 7
- (i) Insert
- (ii) Update
- (iii) Delete
- (iv) Display

- 3 (a) Compare circular queue with simple queue. Write an algorithm for PUSH and POP operations of circular queue. 8
- (b) Write a program to perform push () and pop () operations for dynamic queue. 7

**OR**

- 3 (a) What is Deque ? List out the types of Deque. Write an algorithm to perform insertion operation in Input Restricted Deque. 8
- (b) Write a menu driven program to create linked list of student rollno and name, the program should perform the following tasks : 7
- (i) Adding a new student
- (ii) Deleting specific student
- (iii) Display student list

- 4 (a) Differentiate between internal sorting and external sorting. Write a program to sort a following array using Insertion Sort. 8
- 34, 41, 22, 46, 54, 29, 49, 36, 56, 52
- (b) Explain complete binary tree. Write an algorithm to insert a node in binary tree. 7

**OR**

- 4 (a) Compare Singly Linked List with Doubly Linked List. Write an algorithm to create Doubly Linked List. 8
- (b) What is tree traversal ? What are the different methods of tree traversal ? Write an algorithm for PREORDER and POSTORDER traversal. 7

5 Attempt any three :

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- (i) Divide and conquer
  - (ii) Height balanced tree
  - (iii) AVL tree
  - (iv) Differentiate Static and Dynamic memory allocation
  - (v) Convert to reverse polish notation
    - (a)  $A/(B-C+D) * E+F^G$
    - (b)  $a * (b+(c-a)/d)-c*d$
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