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K-3733

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

October/November – 2012

303 - Advance 'C' & Data Structure

Time : **3** Hours] [Total Marks : **70**

Instruction :

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ SECOND YEAR B. C. A. (SEM. 3)

Name of the Subject :

☛ 303 - ADVANCE 'C' & DATA STRUCTURE

☛ Subject Code No. : 3 7 3 3 ☛ Section No. (1, 2,.....) : NIL

Seat No. :

Student's Signature

1 Answer the following questions : (any ten) **10**

(i) Explain the term primitive data structure.

(ii) Which condition is necessary for overflow in circular queue ?

(iii) Explain the concept call by reference by giving example.

(iv) What is self referential structure ? Explain with example.

(v) What are the advantages of Stack and Queue as compared to a Linked list ?

(vi) What is critical node in height balanced tree ?

(vii) Define leaf node and sibling with suitable example.

(viii) Why circular linked list is more efficient than singly linked list ?

(ix) Explain the term thread.

(x) Give the difference between UDF and library function.

(xi) 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

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 : **15**

(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