



SB-1443

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

March / April – 2011

303 : Advance 'C' & Data Structure

Time : Hours]

[Total Marks : 70

**Instructions :**

(1)

नीचे दशांशवले निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी.  
Fillup strictly the details of signs on your answer book.

Name of the Examination :  
**S. Y. B. C. A. (Sem. 3)**

Name of the Subject :  
**303 : Advance 'C' & Data Structure**

Subject Code No. : **1 4 4 3** Section No. (1, 2, ....) : **Nil**

Seat No. : 

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Student's Signature

- (2) All questions are compulsory.
- (3) Figures to the right indicate full marks.
- (4) Mention your option clearly.

1 Answer in short : (any ten) 10

- (i) List out the limitations of singly linked list.
- (ii) What is simulation?
- (iii) List out computer application of stack.
- (iv) List out disadvantages of link list.
- (v) Define data structure.
- (vi) Find the address of 6<sup>th</sup> element of an array A [10]. A is an array of floating point numbers and base address is 700.
- (vii) Define the following terms :
  - (a) Path
  - (b) Forest
- (viii) Define terminal & non-terminal node with example.
- (ix) What is critical node in a height balanced tree?
- (x) Give linked list representation of the polynomial  $4X^3+2X^2+2X+4Y^2+Y^2$

(xi) Give the output of following :

```
main()
{
  int b[] = {10,20,30,40,50};
  int i, *k;
  k=b;
  for (i=0; i<=4; i++)
  {
    printf("%d", *k);
    k++
  }
}
```

2 (a) Write a recursive function that generate first N fibonacci number S. Also explain what is recursion. 7

(b) Explain D-queue with example. Write an algorithm to insert and delete in input restricted D-queue. 8

OR

(b) Convert into Postfix. 8

(i)  $A+(B*C-(D/E)*G)*H$

(ii)  $(A-B)*X+Y/(F-C*E)+D$

3 (a) Explain Lifo structure in detail. Write an algorithm for all its operations. 7

(b) Write an algorithm to sort element of given array using quick sort. 8

OR

(b) Write a program to convert infix expression to prefix expression. 8

4 (a) Define AVL tree. Explain possible cases during the insertion of new node into it. 7

(b) Explain 2-3 tree with example. Also explain how to search an element from 2-3 tree with proper data tracing. 8

OR

4 (a) Answer the following : 8

(i) Draw tree for following traversal sequence.

Inorder : EACKFHDBG

Preorder : FAEKCDHGB

(ii) Give expression tree for following :

$(a+b) * (c-d)/e$

5 Write short notes : (any two) 15

(i) Pointers

(ii) Heap sort

(iii) Tower of Hanoi

(iv) Priority Queue.