B. E. (Fourth Semester) EXAMINATION, 2006
(CS + IT)
DATA STRUCTURE USING ‘C’
(CS-402)

Time : Three Hours ] [ Maximum Marks : 100

Note : Attempt five questions in all. Question No. 1 is compulsory. All questions carry equal marks.

1. (i) Linked lists are not suitable for which of the following problems ?
   (a) Insertion sort
   (b) Binary search
   (c) Radix sort
   (d) Polynomial manipulation

   (ii) The number of edges in a regular graph of degree ‘d’ and ‘n’ vertices is :
   (a) Maximum of n, d
   (b) n + d
   (c) nd
   (d) $\frac{nd}{2}$

   (iii) A machine took 200 sec. to sort 200 names, using bubble sort. In 800 sec. it can approximately sort :
   (a) 400 names

P. T. O.
(b) 800 names
(c) 750 names
(d) 600 names

(iv) A machine needs a minimum of 100 sec. to sort 1000 names by quick sort. The minimum time needed to sort 100 names will be approximately:
(a) 50.2 sec.
(b) 6.7 sec.
(c) 72.7 sec.
(d) 11.2 sec.

(v) Stack is useful for implementing:
(a) radix sort
(b) breadth first search
(c) recursion
(d) depth first search

(vi) The minimum no. of colors needed to color a graph of n (>3) vertices and 2 edges is:
(a) 4
(b) 3
(c) 2
(d) 1

(vii) The no. of binary trees with 3 nodes which when traversed in post-order gives the sequence A, B and C is:
(a) 3
(b) 9
(c) 7
(d) 5
(viii) Consider the graph given below, which of the following is a valid topological sorting?

```
A
\downarrow
B
\downarrow
D
\downarrow
C
```

Fig. 1

(a) A B C D  
(b) B A C D  
(c) B A D C  
(d) A B D C

(ix) Consider the graph given below which of the following is a valid strong component?

```
A
\downarrow
B
\downarrow
D
\downarrow
C
```

(a) A, C, D  
(b) A, B, D  
(c) B, C, D  
(d) A, B, C