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S.E Sem –IV(2021-22 Even sem)

AOA Sample questions

Ch 1:Introduction

1. Explain asymptotic notation with example
2. Explain/short note (on) recurrence relation with example
3. Explain masters method with example
4. Solve following problem using masters method
   i)$7T(n/2)+18\ n^2$
   ii)$9T(n/3)+4n^6$

5. Explain selection sort algorithm and derive it's complexity

6.Explain insertion sort algorithm and derive it's complexity

7.Determine the frequency count for all statement in the following algorithm statement

(example below. similar example can be ask)

```
A()
{ int I;
for(I=1; I2<=n ; i++)
{ Print("x") }
```

Ch 2- Divide and conquer

1.Write an algorithm for selection sort and insertion sort. Do the analysis and find complexity

2. Give general method for divide and conquer strategy. Explain merge sort and quick sort with example by using divide and conquer and its analysis

3. Explain binary search with example by using divide and conquer its analysis

4. Explain min- max algorithm with example by using divide and conquer its analysis

5. Explain Stassen's matrix multiplication its analysis

6. Apply quick sort to sort the list { **E,X,A,M,P,L,E}** by using divide and conquer its analysis

7.one way to sort a file of n records is to scan the files first merging consecutive pairs of size one, then merging pairs of site two etc. Write an algorithm which carries out this process. Show how your algorithm works on data set keys(100,300,150,450,250,350,200,400,500)

7).Sort the following numbers using quick sort. Also derive complexity of Quick sort

50,31,71,38,77,81,12,33

9) Apply merge sort algorithm 14,25,4,12,25,14 by using divide and conquer analysis using master's method

10)

Ch 3.Greedy Method

1.Explain knapsack problem with example using greedy approach

2.Explain Prim's and Kruskal algorithm with example using greedy approach

3.Explain single source shortest path algorithm with example using greedy approach

4. Explain how job sequencing with deadline can be solved using greedy approach.

5. Explain optimal storage on tape algorithm using greedy approach

6Apply job sequencing algorithm and find feasible solution for

i)N=4, (P1,P2,P3,P4)=(100,10,15,27) and (d1,d2,d3,d4)=(2,1,2,1)

ii)n=7 ,(P1,P2,P3,P4,P5,P6,P7) =(3,5,20,18,1,6,30) and (d1,d2,d3,d4,d5,d6,d7) =(1,3,4,3,2,1,2)

8.Apply Prims algorithm(graph will provide)

9. Apply Kruskal algorithm (graph will provide)

10. Solve the problem using optimal storage on tapes n=3, (L1,L2,L3)=(5,10,3)

11 Solve fractional knapsack problem for the following: n=6,

P=(18,5,9,10,12,7) W=(7,2,3,5,3,2)

And similar …….