Algorithm Mid exam: June 2014

1 answer all question NO. 1 to 5 contains 25% negative marks.no partial marking for first n-1 questions

Q1. Space complexity is same for

1. Isort and Qsort c. Msort and bubblesort e. none
2. Isort and Msort d. Bubblesort and Qsort

Q2.Suppose binary search is modified in this way

bs(A,lo,hi,k){

if(lo>hi)return -1;

mid = [random(lo,hi/2) U random(1+hi/2,hi)]; //U means mid can choose

if (A[mid]==k)return mid ;

else if (A[mid]<k)return bs(A,lo.mid-1,k);

else return bs(A,lo,mid-1,k);

}

Then order of worst case time complexity of bs(A,O,N,K) would be \_\_\_\_\_\_\_\_\_\_\_\_\_

Q3.what is time complexity of the given relation T(n) =T(n-3)+ n2🡨-n square

1. c. n2🡨-n square
2. N D. none

Q4 which algorithm(s) run for O(n2) in worst case

A base sort b. quick sort

c.bucket sort d. none

Q5.what is the complexity order of the given relation T(N) = T(n/2) + k\*(n/2)

A. 1 b. n2🡨-n square

C. N d. Logn

Q6. Consider the following algorithm

EP (x,y) {

If (y==0 ) return 1;

Else if (y%2==0){ z= EP (x,y/2); return z\*z;}

Else return OP(x,y);

}

Op(x,y) {if (y==1) return x;

Else return x\*EP(x,y-1);}

The time complexity and the space complexity of Ep(N) are \_\_\_\_\_\_\_\_

Q7.for each of the following condition pick the best sort,insertion ….

Quick sort in terms of actual execution times:

1. Sorting data in secondary memory
2. Sorting very small list
3. -----\_\_not seen in the photo
4. -------- \_\_not seen in the photo

Q 8 -------- \_\_not seen in the photo

Q9. A mini track can take 100kg max weight in one time. We have 3 couches,5 beds and 3 tables to transport from go down to show room the weights of each couch and bed and table was are 40kgs,30kgs and 10kgs respectively. The selling price of each couch, bed and table are $1000, $780 and $400 respectively. We can afford only one trip to using mini track from go down to show room which costs $ 400. To make max profit which item we should send with the mini track ? if u suggest a set of items. How much profit it will make in this trip in cluding transportation write result here calculation in another page (4pt)

Profit \_\_\_\_\_\_\_\_\_\_\_\_$

Q9. What is the worst case time complexity in linear open hashing? how can we reduce it ?

Q10. For a given instance of integer numbers quick and merge give increasing sorted sequence. Assume sort always choose the mid element as pivot. Show the merge and quick sort steps to sort given in

42,24,42,18, 17, 24,5,20