

ADA- Sessional 1

Total points 30/30 ?

Total 30 marks. Time Duration - 1 hour.

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0 of 0 points

Students Name *

Shikhar Sharma

Branch *

- ☐ CSE -Morning
- ☐ CSE- Evening
- ☒ IT - Morning
- ☐ IT - Evening



Students Enrollment No. *

40315003118

Questions

30 of 30 points

All Questions are compulsory. No Internal Choice.

✓ $3n = o(n)^2$, (little oh)

1/1

☐ False☒ True

✓

✓ Which of the following is the longest common subsequence between the 2/2 strings "ABCDGH" and "AEDFHR" ?

☐ ABH☒ ADH☐ ADRE☐ ADHR

✓

✓ You are given a knapsack that can carry a maximum weight of 60. There 2/2 are 4 items with weights {20, 30, 40, 70} and values {70, 80, 90, 200}. What is the maximum value of the items you can carry using the knapsack?

☒ 160

✓

☐ 200

- ☐ 200
- ☐ 170
- ☐ 90

✓ Which of the following sorting algorithms is the fastest for sorting small arrays? 2/2

- ☐ Quick sort
- ☒ Insertion sort
- ☐ Shell sort
- ☐ Heap sort



✓ Which of the given options provides the increasing order of asymptotic complexity of functions f1, f2, f3 and f4? $f_1(n) = 2^n$; $f_2(n) = n^{3/2}$; $f_3(n) = n \log n$; $f_4(n) = n^{(\log n)}$ 2/2

- ☒ f3, f2, f4, f1
- ☐ f2, f3, f1, f4
- ☐ f3, f2, f1, f4
- ☐ f2, f3, f4, f1



✓ What is recurrence for worst case of QuickSort and what is the time complexity in Worst case? 2/2

- ☐ Recurrence is $T(n) = T(n-2) + O(n)$ and time complexity is $O(n^2)$
- ☒ Recurrence is $T(n) = T(n-1) + O(n)$ and time complexity is $O(n^2)$



- ☒ Recurrence is $T(n) = T(n-1) + O(n)$ and time complexity is $O(n^2)$ ✓
- ☐ Recurrence is $T(n) = 2T(n/2) + O(n)$ and time complexity is $O(n \log n)$
- ☐ Recurrence is $T(n) = T(n/10) + T(9n/10) + O(n)$ and time complexity is $O(n \log n)$

✓ $T(n) = 3T(n/4) + cn^2$, cost will be? 2/2

- ☐ n
- ☐ n^3
- ☒ n^2 ✓
- ☐ $n \log n$

✓ Consider the strings "PQRSTPQRS" and "PRATPBRQRPS". What is the length of the longest common subsequence? 3/3

- ☐ 9
- ☐ 8
- ☒ 7 ✓
- ☐ 6

✓ Floyd Warshall's Algorithm is used for solving _____? 1/1

- ☐ Single Source shortest path problems
- ☐ Network flow problems
- ☐ Sorting problems



☒ All pair shortest path problems



✓ Running time $T(n)$ where 'n' is the input size of the recursive algorithm given as : $T(n) = n^2 + T(n-1)$, if $n > 1$; $T(n) = d$ if $n < 1$. The order of the algorithm is 2/2

☐ n^2

☐ n

☒ n^3



☐ n^n

✓ What is the running time of the Floyd Warshall Algorithm? 1/1

☐ Big-oh(V)

☐ $\Theta(V^2)$

☐ Big-Oh(VE)

☒ $\Theta(V^3)$



✓ Consider the matrices P, Q, R and S which are 20×15 , 15×30 , 30×5 and $4/4$ 5×40 matrices respectively. What is the minimum number of multiplications required to multiply the four matrices?

☐ 6050



☐ 7500

☒ 7750



☐ 12000

✓ $T(n) = T(2n/3) + 1$. Cost will be

2/2

☐ $n \log n$

☒ $\log n$



☐ n^2

☐ n^n

✓ $2^n = w(n!)$, (little omega)

1/1

☐ True

☒ False



✓ Running time of an algorithm $T(n)$, where n is input size, is given by $T(n) = 2/2$
 $8T(n/2) + qn$, if $n > 1$ and $T(n) = p$ if $n = 1$, where p and q are constants. The
order of the algorithm is

☐ n^2

☐ n^n

☒ n^3



☐ n



✓ What approach is being followed in Floyd Warshall Algorithm?

1/1

- ☐ Greedy technique
- ☒ Dynamic Programming
- ☐ Linear Programming
- ☐ Divide and Conquer



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