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Uni. Roll No. .....

EVENING

17 DEC 2018

Program/ Course: B.Tech.(5th sem)
Name of Subject: Design and Analysis of Algorithms
Subject Code: BTCS-503
Paper ID: A2099

Time Allowed: 03 Hrs **Max. Marks: 60**

NOTE:

1) **Section-A** is **compulsory**
2) Attempt any **four** questions from **Section-B** and any **two** questions from **Section-C**
3) Any missing data may be assumed appropriately

Section – A

[Marks: 02 each]

Q1.

a) Differentiate Greedy method and Dynamic programming design technique.
b) Compare space and time complexity.
c) State subset sum problem.
d) Explain basic principle of Divide and Conquer method.
e) Define Big-oh notation and discuss its significance.
f) State the principle of optimality.
g) Discuss P and NP problem classes.
h) Give the average, worst and best case time complexity of Quicksort algorithm.
i) State Cook's Theorem.
j) Discuss deterministic and non-deterministic algorithms.

Section – B

[Marks: 05 each]

Q2. Solve the following knapsack problem using greedy method:

Capacity of knapsack = 60, number of items= 4

Item	Weight	Value
I1	20	50
I2	10	40
I3	5	60
I4	35	80

Q3. Explain dynamic programming technique and how is it used to solve knapsack problem.

Q4. Discuss P, NP, NP-hard and NP- complete problems along with their relationship.

Q5. Write a detailed note on Fast Fourier Transform (FFT).

Q6. Discuss Kruskal's algorithm for finding minimum cost spanning tree.

Section – C **[Marks: 10 each (05 for each sub-part, if any)]**

Q7. Discuss merge sort algorithm for sorting an array and use it to sort the following array.

23, 5, 6, 78, 4, 6, 8, 10, 32, 3.

Q8. Explain Discuss Strassen's algorithm for matrix multiplication.

Q9. Explain string matching. Discuss one algorithm for string matching

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