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Total No. of Questions : 09] [Total No. of Pages : 02

Paper ID [CS307]

 (Please fill this Paper ID in OMR Sheet) MAY-08

B.Tech. (Sem. - 5th)

DESIGN OF ALGORITHM ANALYSIS & DESIGN (CS - 307)

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory**.
2) Attempt any **Four** questions from Section - B.
3) Attempt any **Two** questions from Section - C.

Section - A

(10 × 2 = 20)

Q1)

a) What are the various steps in the design of an algorithm?

b) Is $2n + 1 = 0\ (2n)$?

c) What is the worst case running time of Quick sort?

d) What is time complexity?

e) Define Non-deterministic algorithm.

f) What are the conditions under which backtracking can be used?

g) What is the order of Bubble Sort?

h) What is a NP-Hard problem?

i) What are Explicit & Implicit constraints?

j) Give brief concept of Divide & Conquer.

Section - B

(4 × 5 = 20)

Q2) Define Kruskal's algorithm.

Q3) What is algorithm? Write the various performance analysis techniques of algorithm. Discuss advantages and disadvantages of each.

Q4) Explain how to validate and analyze the algorithms.

Q5) What is Greedy Method? State and write algorithm for Knapsack problem using Greedy Method.

Q6) Write a string processing algorithm to identify whether a particular sequence of characters is there in the string or not.

Section - C

(2 × 10 = 20)

Q7) What are approximation algorithms? Define absolute approximation and E-approximation with example.

Q8) Explain the backtracking problem with 4 queens on a 4 × 4 chessboard.

Q9) What do you mean by complexity of an algorithm? Define time and space complexity with examples.