

$$2+2=4$$

SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No:

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Total number of pages :[2]

Total number of questions:06

MCA/ 5th Sem

Design & Analysis of Algorithms

Subject Code: MCA-502

(RP)

Paper ID : M/18

2015 batch

Time allowed: 3 Hrs

Max Marks: 60

Important Instructions:

- All questions are compulsory
- Assume any missing data

**PART A (2×10)**

Q. 1. Short-Answer Questions:

- What do you mean by data structure?
- What is Big 'Oh' notation?
- Define direct recursive and indirect recursive algorithms
- What do you mean by time complexity and space complexity of an algorithm?
- Define Branch-and-Bound method?
- What is NP hard problem?
- Define a heap.
- Define randomization.
- Give the complexity of heapsort.
- What is asymptotic efficiency of algorithms?

**PART B (8×5)**

- Q. 2. Describe binary search tree with three traversal patterns. Give a suitable example with neat diagram for all three traversal of binary search trees. CO1
- OR
- Explain tradeoff between time-space complexity. CO1
- Q. 3. Explain breadth-first search(BFS) algorithm in detail. CO2
- OR
- Describe quick sort algorithm in sorting a list of elements. Is it stable? CO2
- Q. 4. What is Merge sort? Is insertion sort better than the merge sort? Discuss . CO3
- OR
- Write the algorithm for Iterative binary search . CO3
- Q. 5. Write a short note on greedy strategy to solve a problem. CO4
- OR
- What is divide and conquer strategy? Explain with a suitable example problem. CO4
- Q. 6. Give an example of NP-complete problem. Differentiate between NP hard and NP complete problems CO5
- OR
- Explain Dijkstra algorithm in detail. CO5