SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: | | | | | | | | | | | | | **Total number of pages:[1]**

May 2018

B.Tech. || CSE || 5th Sem

Design and Analysis of Algorithms

Subject Code:BTCS-503 2011-14 Batches

(Reappear)

Paper ID:

Time allowed: 3 Hrs **Max Marks: 60**

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**

PART A

(10x 2marks)

[All COs]

Q. 1. Short-Answer Questions:

(a) What is an Algorithm?
(b) What is difference between Polynomial and Exponential running time?
(c) What is topological sorting? Where it is required?
(d) Define Feasible and Optimal solution.
(e) Write time Complexity of Binary search.
(f) What are the applications of Divide and Conquer?
(g) What is the significance of the lower bound of an Algorithm?
(h) Define Convex Hull.
(i) What is Fast Fourier Transform(FFT) ?
(j) Define spanning tree.

PART B

(5×8marks)

Q. 2. What is meant by time and space complexity?Explain the heapsort algorithm. [CO1]

OR

Compare the performance of different algorithms for same problem.

Q. 3. Explain the algorithm for Knapsack problem using Greedy method. [CO2]

OR

What is Dynamic programming technique? Explain with one example.

Q. 4. What are Asymptotic notations? Describe all with the help of examples. [CO3]

OR

Explain in detail Quiksort algorithm.Also write its time complexity using asymptotic notations.

Q. 5. State string matching problem.Write Knuth Morris pratt algorithm. [CO4]

OR

Describe in detail Breadth-First search algorithm.

Q. 6. What are P, NP, NP-Hard and NP- Complete problems? Explain by example. [CO5]

OR

Explain Approaximation Vertex and Set Cover problem in detail.