EVENING

14 JUN 2018

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

Univ. Roll No. .....

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

Time Allowed: 3 Hours **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]

Q. 1.

(a) Define non-deterministic algorithms.

(b) What is minimum-cost spanning tree?

(c) What are time and space complexities?

(d) What are big oh, omega and theta asymptotic notations?

(e) What is the difference between NP-hard and NP-complete problems?

(f) What is Breadth First Search?

(g) Define dynamic programming.

(h) What is lower bound?

(i) What do you know about NP-completeness of 3SAT?

(j) What are convex hulls in computational geometry?

Section – B

[Marks: 05 each]

Q.2. Explain Dijkstra's shortest path algorithm in graphs.

Q.3. How divide and conquer technique is used in quicksort algorithm?

Q.4. What are the greedy strategies for the Knapsack Problem?

Q.5. Explain Knuth-Morris-Pratt algorithm.

Q.6. Explain the commonly believed relationship among P, NP, NP-complete and NP-hard problems.

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

Q.7. Explain the role of approximation algorithms in solving various problems.

Q.8. Write a note on Fast Fourier Transform (FFT) and its applications.

Q.9. Explain the depth first spanning tree by giving a suitable example.

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