Roll No. .....................

# 24362

## B. Tech. 6th Semester (CSE)

## Examination – May, 2014

### Analysis and Design of Algorithms

### Paper : CSE-306-F

Time : Three hours ]                    [ Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions taking at least *one* question from each Section. Question No.1 is *compulsory*.

1. (a) Define algorithm.                        10 × 2

   (b) Define Big Theta Notations ?

   (c) Define feasible and optimal solution.

   (d) What do you mean by Amortized Analysis ?

   (e) Define feasible and optimal solution.

   (f) Write any *two* characteristics of Greedy Algorithm ?

(g) Define principle of optimality.

(h) Define a planar graph.

(i) What are the searching techniques that are commonly used in Branch-and-Bound method ?

(j) What is approximate solution ?

## SECTION – A

**2.** (a) What is an algorithm ? Explain the property of an algorithm. $2 \times 10$

(b) What do you mean by complexity of an algorithm ? Explain the notations used to denote the complexity of an algorithm.

**3.** Explain the following : $2 \times 10$

(a) Selection sort.

(b) Disjoint Sets.

## SECTION – B

**4.** What do you mean by dynamic Programming ? Explain O/I knapsack problem by using dynamic programming. 20

**5.** (a) What is minimum spanning tree ? Explain. $2 \times 10$

(b) Explain the job sequencing with deadlines.

## SECTION – C

**6.** What is branch and bound method ? Solve the travelling salesperson problem with branch and bound method by taking a suitable example. 20

**7.** What is backtracking ? Solve 8 queens problem with back tracking.                                            20

## SECTION – D

**8.** (a)  What are NP Hard and NP Complete problems ?

$2 \times 10$

(b)  Explain Cook's theorem.

**9.** Explain the following :                          $2 \times 10$

(a)  NP hard Graph.

(b)  NP scheduling problems.

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