

Introduction to algorithm and analysis
Assignment 12 solution

① Answer — C

Explanation — Prim's algo is greedy algo. All other's are dynamic problem.

② Answer — C

Explanation — on divide and Conquer, the problem is divided into smaller non overlapping subproblems and optimal solution for each of the subproblem is found.

③ Answer — b.

④ Answer — b.

⑤ Answer — c.

⑥ Answer — d

Explanation — (i) is true because cycle detection can be done in polynomial time using DFS.

(ii) is true because P is subset of NP.

(iii) is true because NP complete is also NP and NP means non deterministic ~~prob~~ polynomial Solution exists.

⑦ a

⑧ Answer - d

⑨ Answer - b.

⑩ Answer - b.

Explanation - (a) incorrect because R is not NP. A NP-complete problem has to be in both NP and NP-hard. (b) correct because a NP complete problem S is polynomial time reducible to R. (c) incorrect because Q is not NP. (d) incorrect because there is no NP complete problem that is polynomial time Turing reducible to Q.