Computer Algorithm

Tutorial No.-06 on Unit 5

1. Explain relationship between P, NP, NP-Complete and NP-Hard problems

   Draw and Explain commonly believed between P, NP, NP-Complete and NP-Hard problems
2. What is non-deterministic algorithm? Explain non-deterministic search and sorting algorithms
3. Write note on- Cook's Theorem
4. Define/Differntiate/Compare the following:
   a. Deterministic and non-deterministic algorithm
   b. Decision and Optimization problems
   c. P and NP Problems
   d. NP-Hard and NP-Complete problems
   e. Satisfiability and Reducibility
5. Explain NP-Hard graph problems

   List and Explain NP-Hard graph problems
6. Explain Clique decision problem and Node cover decision problem.

   Assume that Node cover decision problem is NP-hard; prove that Clique decision problem is also NP-Hard using reducibility.

   Show that, the clique decision problem (CDP) is reducible to the node cover decision problem (NCDP).
7. Explain Directed Hamiltonian cycle (DHC) problem and travelling salesperson decision problem (TSP).

   Assume that travelling salesperson decision problem (TSP) is NP-hard; prove that Directed Hamiltonian cycle (DHC) is also NP-Hard using reducibility.

   Show that Directed Hamiltonian cycle (DHC) is reducible to the travelling salesperson decision problem (TSP).
8. Explain AND/OR graph decision problem.
9. Explain NP-Hard Scheduling Problems
10. Explain NP Hard code optimization problems.