

# THEORY OF COMPUTATION

## DEPARTMENT OF COMPUTER ENGINEERING

Subject : TOC

ASSIGNMENT NO – 06

Unit : V

### THEORY QUESTION

1. Write a short note on **Post Correspondence Problem**.
2. What are **Tractable and Intractable problems**? Explain it.
3. Differentiate between **P-class problems and NP-class problems**.
4. What is **Travelling Salesman Problem**? Justify that it is a NP-class Problem.
5. Write a short note on **Node-Cover Problem**.
6. What is **Polynomial Time Reduction**? Explain it with suitable example.
7. Explain **class P with two examples**.
8. Explain **Satisfiability problem with example**.
9. How the **Kruskal's Algorithm** can be solved by using Turing Machine.
10. Prove that **Satisfiability problem** is NP-Complete.
11. Difference between **P and NP Class**.
12. What do you mean by **Polynomial Time Reduction**? Explain with suitable example.
13. What do you mean by **NP-Problems**? Justify that Travelling Salesman problem is NP Problem.
14. Explain the **Vertex Cover Problem in the context of polynomial time reduction**. Justify with suitable example.
15. Write short notes on **Undecidability**.
16. Define and explain **Recursive and Recursively enumerable languages**.
17. What is **Kruskal's algorithms**. How can we solve this problem using Turing Machine.
18. What is **Clique Problem**? Show that it is a NP-Complete Problem
19. Justify that the **SAT Problem is NP-Complete**
20. **Prove that  $ATM = \{ \langle m, w \rangle \mid M \text{ is a TM and accepts } w \}$  is undecidable.**  
**AREX =  $\{ \langle R, W \rangle \mid R \text{ is a regular expression that generates string } w \}$  is a decidable language.**

\*\*\*\*\* **Best of Luck** \*\*\*\*\*