MCS11 — FORMAL LANGUAGES AND AUTOMATA THEORY

Time : Three hours　　　　　　　　Maximum : 75 marks

SECTION A — (5 × 6 = 30 marks)

Answer ALL questions.

1. (a) Define Reflexive and symmetric relations.

Or

(b) What is permutation? How many words can be formed by using all letters of the word 'ABC'?

2. (a) Define mealy machine.

Or

(b) Discuss the acceptance of a string by NFA and DFA.

3. (a) Explain the closure properties of Regular sets.

Or

(b) Define Chomsky normal form and Greibach normal form.

4. (a) Explain deterministic PDA.

Or

(b) Discuss about language accepted by a PDA.

5. (a) Explain TM for Palindrome recognition.

Or

(b) Discuss Instantaneous description of TM.

SECTION B — (3 × 15 = 45 marks)

Answer any THREE questions.

6. (a) Discuss propositions and logic briefly.

(b) How many combinations can be formed by letters a, b, c by taking two at a time?

7. Explain Moore machine and constructs DFA for a^* and NFA for ab^*.

8. (a) When a grammar is said to be ambiguous?

(b) Check whether a grammar with productions $S \to SS, S \to a$ is ambiguous or not.

(c) Explain parse tree with an example.

9. (a) Define CFG and PDA.

(b) Discuss PDA corresponding to a given CFG and CFG corresponding to a given PDA.

10. Explain basic structure and language of TM.