



UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)
उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी (नैनीताल)

MCA 3RD YEAR 5TH SEMESTER ASSIGNMENT

Last Date of Submission: 15/01/2016

Course Title: Formal Languages and Automata

Course Code: MCA-18

Year: 2015-16

Maximum Marks: 40

Section 'A' contains 08 short answer type questions of 5 marks each. Learners are required to answers 4 questions only. Answers of short answer-type questions must be restricted to 250 words approximately.

1. Explain the use of finite automata with the help of an example.
2. Differentiate between NFA and DFA.
3. Define recursive language.
4. Define Turing machine and halting machine.
5. State the Pumping lemma for CFG.
6. Generate the CFG for the language $L = \{0^*1^*\}$.
7. What is finite automata? Explain.
8. What is an application of finite automata?

Section 'B' contains 04 long answer-type questions of 10 marks each. Learners are required to answers 02 questions only.

1. Define the following with suitable example:
 - a. Context-Free Grammar
 - b. Regular Languages
 - c. Pushdown Automata
2. Explain the closure properties of context free languages.
3. Write short notes on the following:
 - a. Universal Turing machine
 - b. Post Correspondence Problem
 - c. Multiple track Turing machine

4. Explain the following:
- Deterministic finite automata
 - Nondeterministic finite automata

