



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

MCA-16/MCA-11 3RD YEAR 5TH SEMESTER ASSIGNMENT

Last Date of Submission: 30/04/2017

Course Title: Formal Languages and Automata

Course Code: MCA-18

Year: 2016-17

Maximum Marks: 30/40

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

1. Define Nondeterministic Finite Automata.
2. What is the significance of pumping lemma?
3. Define grammar with example.
4. Give two applications of Turing Machine.
5. What do you mean by parsing in automata? Explain top-down & bottom-up parsing.
6. Define context free language.
7. What are recursively enumerable languages?
8. What is the basic difference between PDA and Turing Machines?

Section 'B' contains 04 long answer-type questions of 7/10 marks each. Learners are required to answer 02 questions only.

1. Explain Chomsky's classification of Languages.
2. Design a Turing Machine that can concatenate two strings.
3. What is the significance of the halting problem? Differentiate NP and P class.
4. Define ambiguity of grammar. Prove that $S \rightarrow S \mid S, S \rightarrow a$ is ambiguous.