CSE-223 THEORY OF COMPUTATION

Finite State Systems, Basic Definitions Non-Deterministic finite automata (NDFA), Deterministic finite automata (DFA), Equivalence of DFA and NDFA Finite automata with Emoves, Regular Expressions, Equivalence of finite automata and Regular Expressions, Regular expression conversion and vice versa, Myhill-Nerode Theorem and minimization of finite Automata. Concept of basic Machine, Properties and limitations of FSM. Moore and mealy Machines, Equivalence of Moore and Mealy machines, Properties of Regular Sets: The Pumping Lemma for Regular Sets, Closure properties of regular sets. Context free grammar and ambiguity, reduced forms, Removal of useless symbols and unit production, Chomsky Normal Form (CNF), Griebach Normal Form (GNF). Introduction to Pushdown Machines, Application of Pushdown Machines, context free grammar to PDA and vice versa, Closure properties of CFL. Deterministic and Non-Deterministic Turing Machines, Design of T.M, Halting problem of T.M., PCP Problem. Chomsky hierarchies of grammars, Context sensitive grammar, unrestricted grammars, Context sensitive languages, Relation between languages of classes. Computability: Basic concepts, Primitive Recursive

Functions.

References:

1. Introduction to automata theory, language & computations Hopcroaft & O.D. Ullman, R Mothwani,
2. Theory of Computer Sc.(Automata, Languages and computation): K.L.P. Mishra & N. Chandrasekaran,
3. Introduction to formal Languages & Automata Peter Linz,
4. Fundamentals of the Theory of Computation- Principles and Practice Ramond Greenlaw and H. James Hoover
5. Introduction to the Theory of Computation Michael Sipser