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Roll No

IT-5001 (CBGS)**B.E. V Semester**

Examination, November 2018

Choice Based Grading System (CBGS)**Theory of Computation***Time : Three Hours**Maximum Marks : 70*

- Note:** i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Design finite automata for the given regular expression $(a + b)^*abb$.
b) Differentiate between Mealy and Moore Machine.
2. a) Mention the closure properties of Regular languages.
b) Explain Myhill-Nerode method of Minimization.
3. a) State and prove the pumping lemma theory of Regular language.
b) Define Two way finite Automata with suitable example.
4. a) Define left most derivation, right most derivation and parse tree with suitable example.
b) Convert the following grammar into GNF.
 $S \rightarrow AA / 0$
 $A \rightarrow SS / 1$.

5. a) Explain Chomsky classification of languages with suitable example.
b) What is ambiguity in Grammar? Show that the given grammar is ambiguous.
 $E \rightarrow E + E / E * E / 2 / 3 / 4$.
6. a) Design PDA to accept $\{WW^R / W \in \{0,1\}^*\}$, where W is a word and W^R is reverse of word.
b) Design PDA corresponding to given CFG
 $S \rightarrow aSa$
 $S \rightarrow bSb$
 $S \rightarrow c$
7. a) Construct a Turing Machine that accepts the language $L = \{a^n b^{2n}\}$.
b) What do you mean by Turing Machine? Explain multiple tapes Turing machine.
8. Write short notes (any three):
a) Recursive and Recursively enumerable language
b) Halting problem
c) NP complete Vs NP hard
d) CNF
e) NPDA
