Code No: 45014 **R07** **Set No - 1**

III B.Tech I Semester Regular Examinations,Nov/Dec 2009
Formal Languages and Automata Theory
Computer Science And Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Eliminate ε -productions from the grammar G given as
   A→ aBb | bBa
   B→ aB | bB | ε
   (b) Convert the following grammar to Greibach Normal Form
   S → ABA | AB | BA | AA | B
   A → aA | a
   B → bB | b [8+8]

2. Construct LR(0) items for the grammar given find it?s equivalent DFA.
   $S^{|}$ → S
   S → AS | a
   A → aA | b [16]

3. (a) Show that L = {ww | w ε {a, b}*} is not regular.
   (b) Is L = {a^{2n} | n>= 1} regular? [8+8]

4. Design Turing Machine for L = { 0^n 1^n 0^n | n ≥ 1 } [16]

5. (a) Construct a grammar G generating {xx | x ε {a, b}*}
   (b) Construct a grammar generating L = {wcw^R | w ε {a, b}* } [8+8]

6. (a) Write the steps in construction of minimum automaton.
   (b) Discuss about Finite Automata with outputs in detail. [8+8]

7. (a) Explain the procedure to convert Context Free Grammar to Push Down Automata
   (b) Convert the following Context Free Grammar to Push Down Automata
   S→ aAA
   A→aS | bS | a [8+8]

8. (a) Construct DFA and NFA accepting the set of all strings not containing 101 as a substring.
   (b) Draw the transition diagram of a FA which accepts all strings of 1's and 0's in which both the number of 0's and 1's are even.
   (c) Define NFA with an example. [6+6+4]

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