Code: 9A05407

R09

B.Tech II Year II Semester (R09) Regular & Supplementary Examinations June 2014

FORMAL LANGUAGES & AUTOMATA THEORY

(Computer Science & Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

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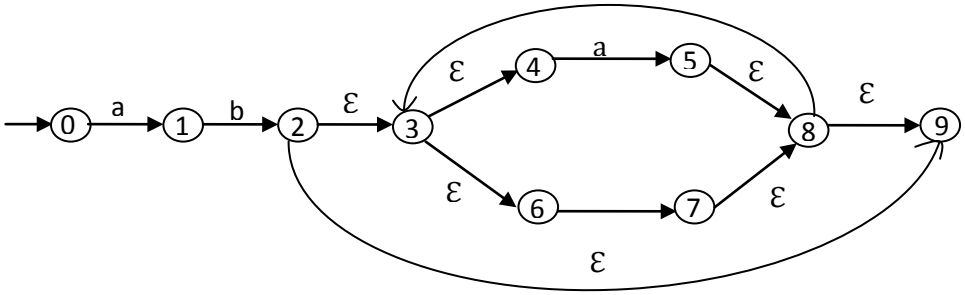
1 Define DFA (Deterministic Finite Automata) and discuss its performance in detail with a suitable example.

2 Convert the following NFA with ε to NFA without ε.
(a) Conversion steps.
(b) Converting NFA with ε to NFA without ε.



3 (a) Discuss the applications of a regular expression.
(b) Explain and prove if L_1 and L_2 are two languages then $L_1 U L_2$ is regular.

4 (a) Write the procedure for the conversion of right linear grammar to left linear grammar.
(b) Explain the properties of deviation trees.

5 (a) State and prove pumping lemma for context free languages.
(b) Using pumping lemma, prove that $L = \{a^i b^i c^i / i >= 1\}$ is not a CFL.

6 (a) Distinguish between finite automata and PDA.
(b) Construct PDA for $L = \{ a^i b^j c^j / i,j >= 1\}$. Show the moves of the PDA for the string.

7 (a) Design a TM for computing factorial of a given number n.
(b) What are the modifications that can be done to the basic model of a TM? Discuss any two in brief.

8 Prove that PCP is undecidable.

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