R09

Code No: 54055

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year II Semester Examinations, May - 2015
FORMAL LANGUAGES AND AUTOMATA THEORY
(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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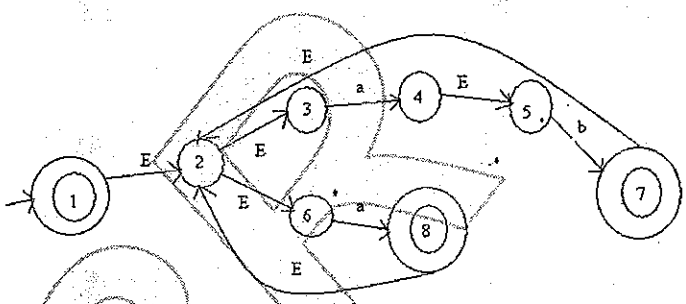
1.a) Explain the differences between NFA and DFA.
b) Design a DFA which accepts all strings ending with **101** over an alphabet {0,1}. [7+8]

2. For the following NFA with Є -moves convert it in to an NFA with out Є -moves and show that NFA with Є -moves accepts the same language. [15]



3. Consider two regular expressions r= 0*+1*, s=01*10*+1*0+(0*1)*
a) Find a string corresponding to r but not to s.
b) Find a string corresponding to s but not to r. [8+7]

4. Construct the Left Linear Grammar for the following Regular Expressions:
a) (11+0)* (00+1)*
b) 10+ (0+11)0*1. [7+8]

5. Convert the following grammar to Chomsky Normal Form.
S→ ABA
A→ aA | Є
B→ bB | Є and simplify the grammar. [15]

6. Design Push Down Automata for the language L={ ww^R | w Є (0+1)*}. [15]

7. Design Turing Machine which recognizes the words of the form
L = { 0^n1^n | n>=1}. [15]

8.a) State and explain Chomsky hierarchy of languages.
b) Write about Universal Turing Machine. [10+5]

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