Roll Number: _____

Thapar University, Patiala

Computer Science & Engineering Department

BE-CSE (6th Sem.) Mid Semester *UCS-701: Theory of Computations*

March 13, 2015

Time: 2 Hours; MM: 30 Name of Faculty: Shalini Batra

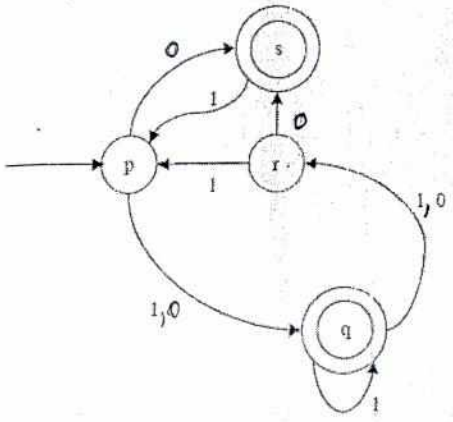
Note: All questions are compulsory. Make suitable assumptions, with reasoning, where ever required.

Q1. Give the DFA for

i) L1 ={w Є{0,1}*: first and last character of w are the same } (3)

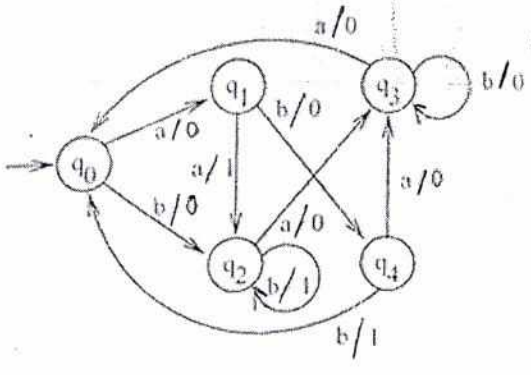
ii) L2 = {w Є{0,1}*: Length of w is odd but not multiple of 3} (3)

Q2a) Convert the following NFA to DFA: (3)



b) Give the NFA for L1 ={w Є{0,1}*: w either starts with 00 or ends with 11 (or both)} (3)

Q3a) Convert the following Mealy machine to Moore Machine: (3)



b) Given a regular expression L_1: b*a*, Find the complement of L_1 (3)

P.T.O

Q4.a) Give the Regular Expression for DFA represented in the form of the table :- (3)

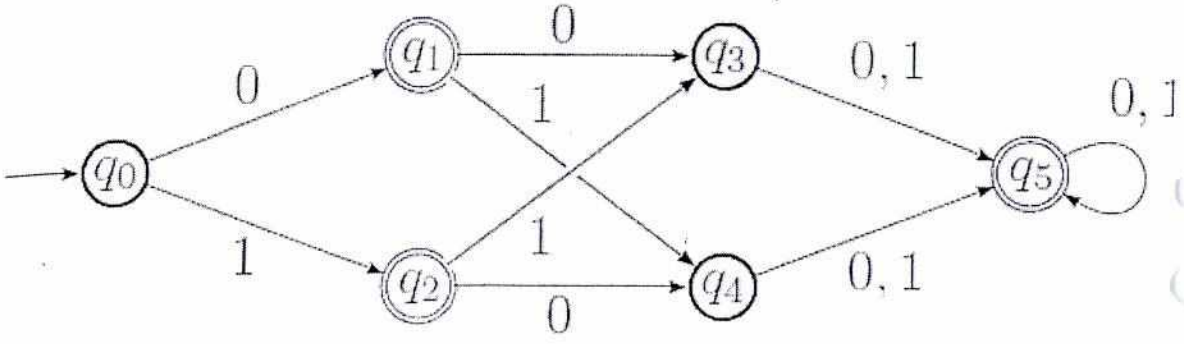
State/ Input	0	1
→q1	q1	q2
q2	q2	q3
*q3	q3	q2

b) Give the Regular Expression for DFA represented in the form of the table :- (3)

State/ Input	0	1
→ *q1	q2	q1
q2	q3	q3
*q3	q1	q2

Q5. a) Draw the NFA for the language L= ($aa^*(ab + a)^*$) using Thomson Construction. **(No DFA required)** (3)

b) Minimize the following DFA, if possible: (q0 is the start state and q1,q2,q5 are final states). (3)



GOOD LUCK