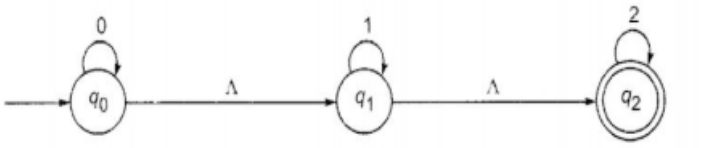
Dr. Shyama Prasad Mukherjee University, Ranchi
MSc. (IT), Semester - IV
Model Questions

Subject - Automata Theory
Paper- ECMIT402

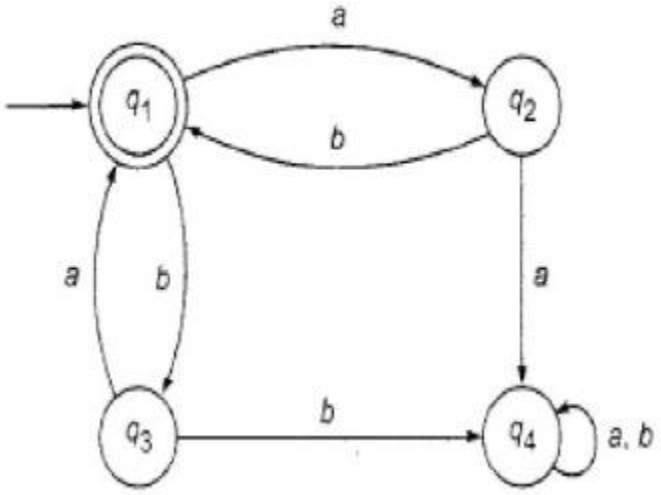
1. (a) What is the difference between NFA and DFA.

   (b) Construct a DFA which accepts set of all string ending with '01' over ∑= {0, 1}. Also draw its transition table.

2. Consider a finite automaton with null (Λ) moves, obtain an equivalent automaton without null (Λ) move.



3. What is Regular Expression? Find Regular Expression of the following transition diagram:



4. Write short notes on following:
   (a) Multi-tape Turing machine
   (b) Church Turing thesis
   (c) Ambiguity

5. State and prove Pumping lemma for regular sets.

6. What is Moore Machine? Convert following Mealy Machine to Moore Machine.

Present State	Next state			
	Input a=0		Input a=1	
	State	Output	State	Output
->q_0	q_3	0	q_1	1
q_1	q_0	1	q_3	0
q_2	q_2	1	q_2	0
q_3	q_1	0	q_0	1

7. (a) Define Pushdown Automata? Explain different ways by which we can Show acceptance in PDA.

   (b) Design PDA for L= $\{0^n 1^n : n >= 1\}$

8. What is Turing machine? Explain with the help of an example.