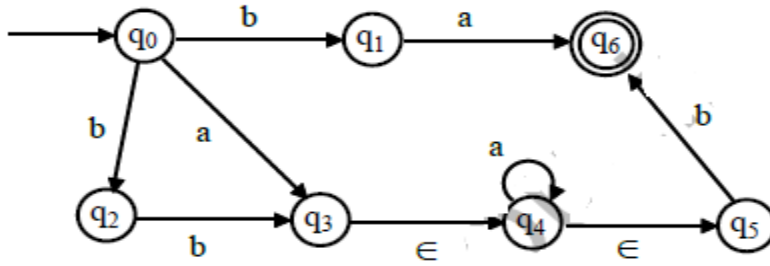


(Last date of Submission:- 15-01-2018)

1. Construct an NFA without E-moves corresponding to the following NFA.



2. Convert following NFA to DFA

P. S.	N. S.	
	a = 0	a = 1
→ q ₀	q ₀ , q ₁	q ₂
q ₁	q ₀	q ₁
⊙ q ₂	q ₁	q ₀ , q ₁

3. Consider the mealy machine given by following transition table. Construct a moore machine equivalent to this given mealy machine.

P. S.	N. S.			
	a = 0	O / P	a = 1	O / P
→ q ₁	q ₃	1	q ₂	0
q ₂	q ₁	1	q ₄	1
q ₃	q ₂	0	q ₁	1
q ₄	q ₄	1	q ₃	0

4. Give a **nondeterministic finite automaton** on that accepts the language generated by the expression
 - A) $[(a+b)^*(a+b)^*]^*$
 - B) $[aa(aa+bb)+(ab+ba)ba]^*$
 - C) $[001(0+1)+(0+1)]^*00$
 - D) $00+11$
 - E) $101+111+000$
5. Give a nondeterministic **finite automaton** for accenting Strings of a and b containing **aba** as substring
6. Prove that following Language is not Regular using Pumping Lemma $\{a^n b^{n+1} \mid n > 0\}$
7. Write all **Closure Properties of Regular Grammar**
8. Construct **DFA** accepting the strings of zero's and One's Contating 101 and substring and not containing 111 as substring
9. Give a **finite automaton** for accenting Strings having even no of 0's and odd no of 1's
10. Solve the following using **Ackerman's** function
 - a) $A(0,1)$
 - b) $A(1,1)$
 - c) $A(2,1)$
 - d) $A(2,2)$