ASSIGNMENT – 2

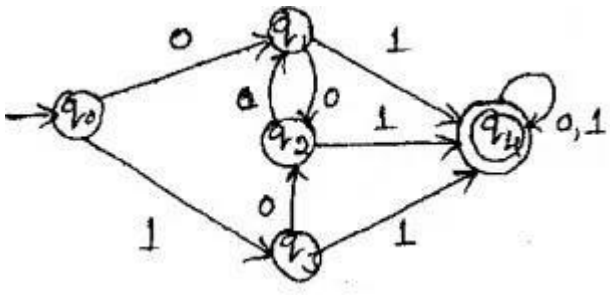
Theory of Computation (21CST-353)

SET-A (ODD UID'S)

1. Construct a CFG for the language of odd length palindrome string over {a, b}. [CO4]

2. Show that id+id*id can be generated by two distinct leftmost derivation in the grammar E->E+E | E*E | (E) | id [CO4]

3. Minimize the following DFA.(16) [CO2]



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4. Differentiate between Chomsky Normal Form and Griebach Normal Form[CO4]

5. Find a reduced grammar equivalent to the grammar G by removing useless [CO4] symbols whose productions are

$$S \rightarrow AB \mid CA, \qquad B \rightarrow BC \mid AB, \qquad A \rightarrow a, \qquad C \rightarrow aB \mid b$$

SET-B(EVEN UID'S)

1. Give steps to convert Moore to Mealy Machine and construct a Mealy Machine which Is equivalent to the Moore machine given by Table [CO2]

Present state	Next state		Output
	a = 0	a = 1	
$\rightarrow q_0$	q_3	q_1	0
q_1	q_1	q_2	1
q_2	q_2	q_3	0
q_3	q_3	q_0	0

2. Write the CFG for the language L= ($a^n b^n$ | n≥1) [CO4]

3. Let G be the grammar S->aB/bA,A->a/aS/bAA,B->b/bS/aBB. obtain parse tree for the string aaabbabbba [CO4]

4. The set of Regular languages are closed under following operations[CO3]

   a) Union

   b) Concatenation

   c) Kleene *

   d) Kleene +

   e) Intersection

   f) Difference

   g) Complement

   Justify with suitable example.

5. Explain the steps to remove null production from a CFG. Given a grammar [CO4]
   S-> aS | AB
   A->Λ
   B->Λ
   D->b
   Remove null productions and rewrite it.