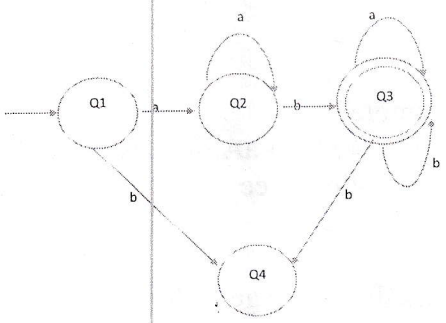
Seat Number: - _____

Duration: 2 1/2Hrs **H410A23TC** **Marks:- 75**

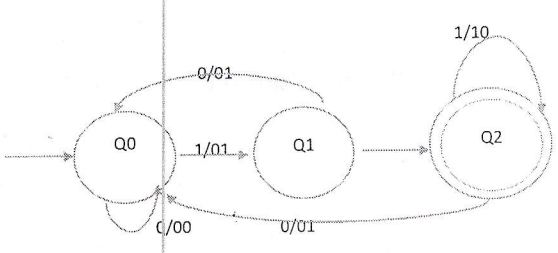
Note:- 1) All questions are compulsory.
2) Figures to the right indicate maximum marks.

QI) Attempt any 4 of the following **(20)**

1) What is automation? Types and Automation labels? Co1 (U)
2) Consider the transition system given in fig. Determine the initial states, the final state and the acceptability of 101011,111010 Co1 (R)



3) Write transition properties in brief Co1 (R)
4) Constructs a Moore Machine that takes set of all strings over {a,b} as input and print '1' as output for every occurrence of 'ab' as a substring. Co1 (A)
5) What is the output produced by machine shown in the figure

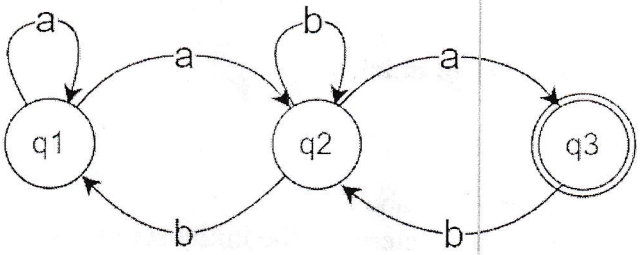


6) Explain Conversion of Mealy Machine into more machine with an example Co1 (R

QII) Attempt any 4 of the following **(20)**

1) How to generate grammar by language. Explain it with an example? Co2 (U)
2) What are the different operations performed on languages? Co2 (B)
3) Write Regular Grammar with an example Co2 (A)
4) Write the rules for regular expression? Co2 (A)
5) Prove that (1+00*1) + (1 + 00*1) (0 + 10 * 1) * is equal to 0*1 (0 +1 *1) C02 (A)

6) Find the regular expression for the following NFA Co2 (A)



QIII) Attempt any 4 of the following **(20)**

1) What is derivation tree? Explain with example?
2) Consider the Grammar G whole . Production are S → aAS|a A → sbA | ss|ba
   Show that S → aabbaa and Construct a derivations tree Co3 (A)
3) Write a note on CPG simplification Co3 (R)
4) Explain Turing Machine? Co3 (R)
5) Design a Turing machine which recognises the language L=01*0 Co3 (A)
6) What are the languages accepted by Linear Bound Automata. C03 (R)

QIV) Attempt any 5 of the following **(15)**

1) Design a DFA for language, L, L1 = Set of all strings that start with 0 Co 1(A)
2) Explain the type1 Grammar, which machine is used for type1? Co 1 (R)
3) For generating string 00110101 form grammar S → 0B/1A, A →0|0S|1AA, B→1/1S/0BB. Find Right most derivation Co2 (A)
4) Explain Reduction of CFG : C02 (R)
5) Write components of pushdown Automata Co3 (R)
6) What are the languages accepted by Linear Bound Automation with example Co3 CR