

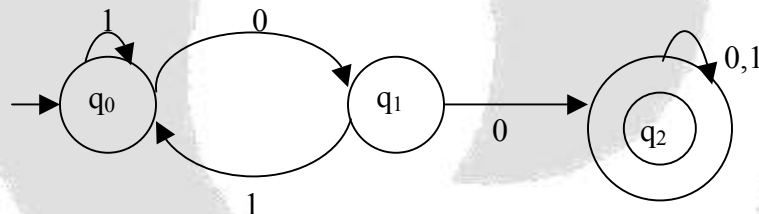


Q.1 Answer the following (Questions for 2 Marks):

- 1) Define Closure of set
- 2) Define Directed Graph
- 3) Define Derivation Tree
- 4) Define Language
- 5) Define FSM equivalence
- 6) What is NFA with ϵ -moves?
- 7) Define Moore Machine
- 8) Given the difference between FSM and TM

Q.2 Answer the following (Questions for 4 Marks):

- 1) Explain operations on sets.
- 2) Explain the concept of tree.
- 3) Give the important features of basic machine.
- 4) Write a short note on Non-regular languages.
- 5) Give the important features of FSM.
- 6) Give the notations for Initial state and Final state.
- 7) Prove that “every FA can be represented by using TG (Transition Graph), but not every TG satisfies the definition of a FA”.
- 8) For the DFA, in the following figure, give regular expression



Q.3 Answer the following (Questions for 6 Marks):

- 1) Explain the concept of Relation. Give and explain the properties of relations.
- 2) Prove that every FA can be represented by using TG, but not every TG satisfies the definition of a FA.
- 3) Explain Binary adder as an example of FSM.

Q.4 Answer the following (Questions for 8 Marks):

- 1) Write a note on NFA (Non-Deterministic Finite Automata)
- 2) Construct Moore machine to determine the residue (remainder) mod 3 for binary number
- 3) Design Mealy machine to find out 2's complement of a given binary number.
