

① COMPILER CONSTRUCTION:-

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Q1. Construct regular expression

$$E = \{a, b\}^*$$

Ans: (i) All words having odd length
 $(a+b)(a+b)(a+b)^*$

(ii) All words having at least two a's and two b's.

$$(a+b)^*(aa)(bb)(a+b)^*$$

(iii) All words having at least triple a's or double b's.

$$(a+b)^*(aaa)(a+b)^* + (a+b)^*(bb)(a+b)^*$$

(iv) All words start with double a's or triple b's.

$$aa(a+b)^* + bbb(a+b)^*$$

(2)

Q2:- For figure 3 if q_0 is initial state, then draw a transition table for it?

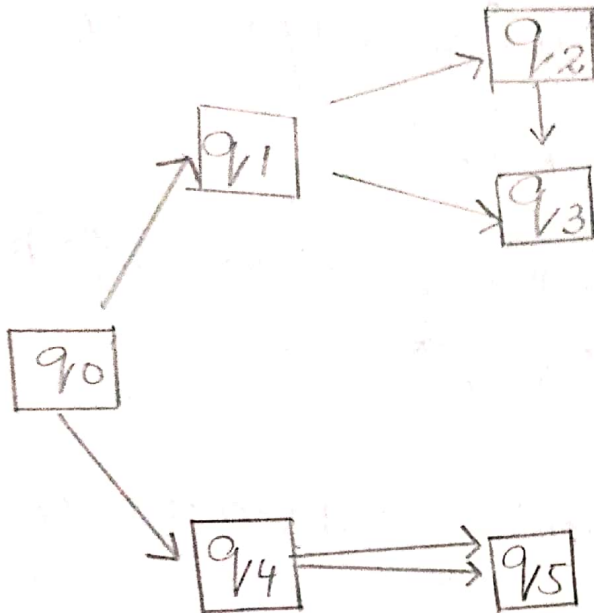


Figure.

| | a | b |
|-------|-------|-------|
| Q_0 | Q_4 | Q_1 |
| Q_1 | | Q_2 |
| Q_2 | Q_3 | |
| Q_3 | | Q_1 |
| Q_4 | | Q_5 |
| Q_5 | Q_4 | |

PS

Q Define what is finite Automaton. What can be the regular expression of given diagram given in figure 1?

Ans: Finite automata are used to recognize patterns. It takes the starting of symbol as input and changes its state accordingly when the desired symbol is found, then the transition occurs. All the time of transition the automata can either move to next state or stay in same state. Finite automata have two states, Accept state or reject state when input string is processed successfully and automata reached final state then it will accept.

* A finite Automata is a collection of 5 tuple.

(Q, Σ, q_0, F)

i- Q = It is the first set of states

(4)

2. Σ = first set of the input symbols.
3. q_0 = initial state.
4. F = final state.
5. δ = transition function Regular expression for given is $b(a+b)^* + a(a+b)^*$