Branch : CSE & IT Batch:Hinglish

Theory of Computation
Finite Automata

DPP-09

[MSQ]

1. Which of the following is/are correct?

(a) Transition function (δ) in mealy machine and moore machine is same.

(b) Output function (λ) in moore machine is $\lambda: Q \rightarrow \Delta$.

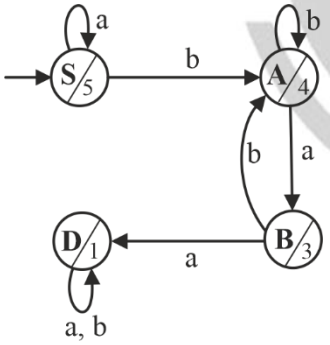
(c) Output function (λ) in mealy machine is $\lambda: Q \times \Sigma \rightarrow \Delta$.

(d) Output is associated with state in mealy machine.

[NAT]

2. Consider the following moore machine:

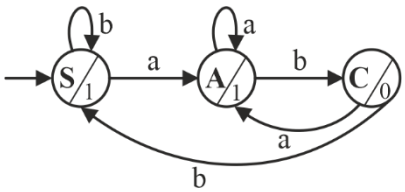
Moore machine:



On input "abbabb" the output will be___.

[MCQ]

3. Consider the following moore machine:



The above moore machine will produce

(a) 0 output for every occurrence of bab.

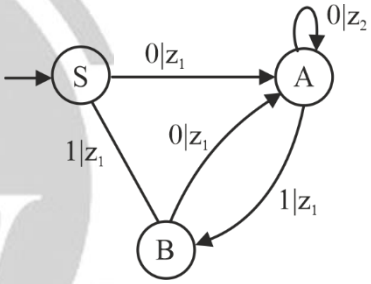
(b) 1 output for every occurrence of aa.

(c) 0 output for ever occurrence of ab.

(d) None of these.

[MCQ]

4. Consider the following mealy machine on $\Sigma = \{0, 1\}$



For input "010100" what will be the output?

(a) $z_1z_1z_1z_1z_1z_2$.

(b) $z_1z_2z_1z_2z_1z_2$.

(c) $z_1z_2z_1z_2z_1z_2$.

(d) None of these.

[MCQ]

5. Consider the following statements:

S_1: Mealy machine and moore machine both are equivalent.

S_2: For n length input moore machine produces (n + 1) length output.

Which of the following is correct?

(a) S_1 only.

(b) S_2 only.

(c) Both S_1 and S_2 are correct.

(d) None of these.

Answer Key

1. **(a, b, c)**
2. **(5544344)**
3. **(c)**
4. **(a)**
5. **(c)**

Hints and Solutions

1. (a, b, c)

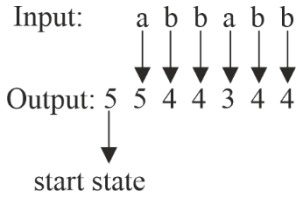
(a) True: $\delta: Q \times \Sigma \rightarrow Q$ Moore machine
$\delta: Q \times \Sigma \rightarrow Q$ Mealy machine

(b) True: $\lambda: Q \rightarrow \Delta$ Moore machine

(c) True: $\lambda: Q \times \Sigma \rightarrow \Delta$ Mealy machine

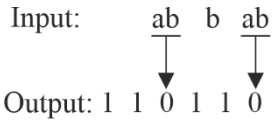
(d) False: In moore machine output is associated with state.
In mealy machine output is associated with transition.

2. (5544344)



Hence, (5544344) is correct.

3. (c)



Hence, option (c) is correct.

4. (a)

Input: 0 1 0 1 0 0
Ouput: z_1 z_1 z_1 z_1 z_1 z_1

5. (c)

S_1: Both are equivalent.
S_2: Moore machine generates 1 extra output.