

# Assignment - 01 (Part-B)

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Course Title : Automata & Computability

Course Code : CSE331

Section : 20

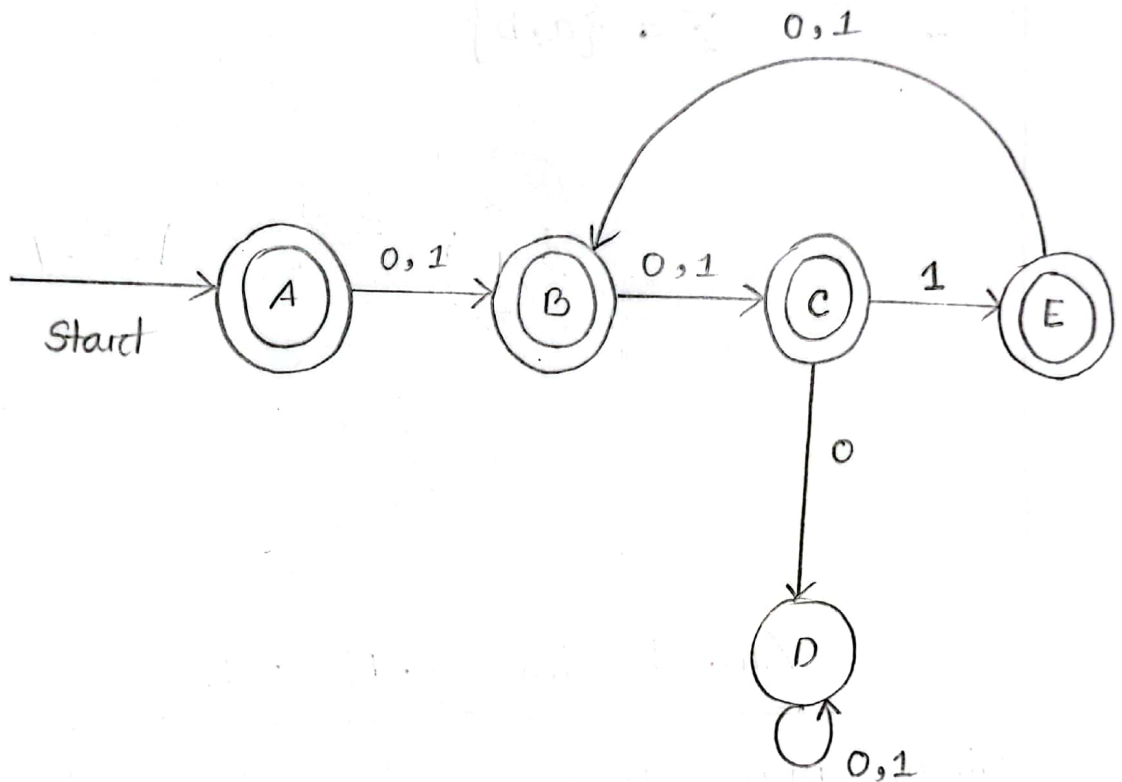
No. of group member : 01 (solo)

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## Part - B

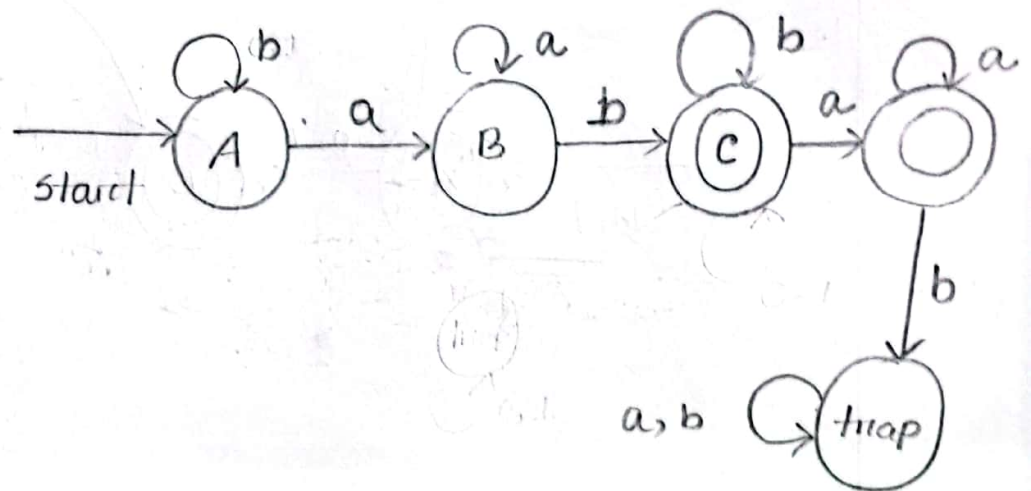
Ans. to the Q. NO - 11 (a)

DFA of strings that have 1 as every 3rd symbol.  $\Sigma = \{0, 1\}$



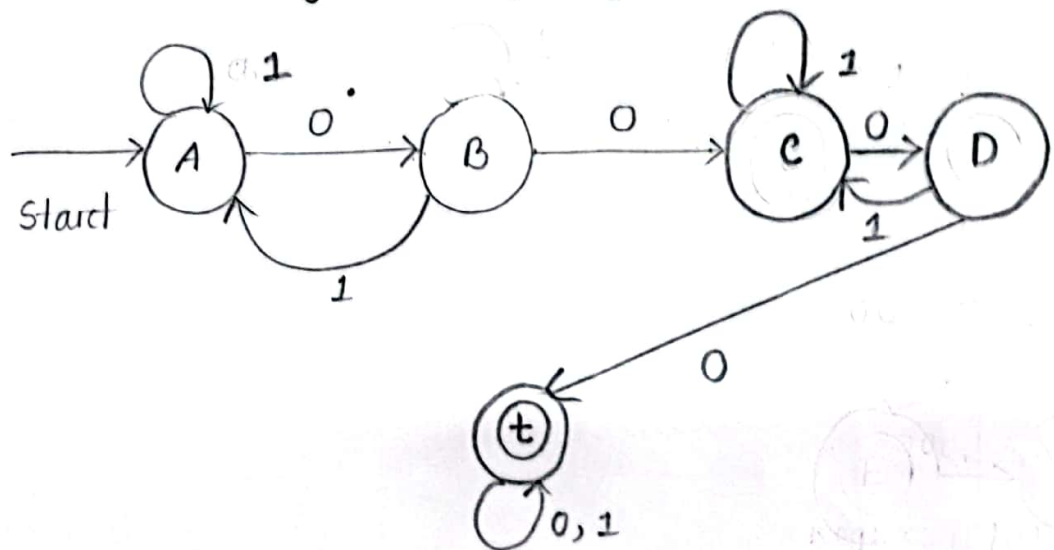
Ans. to the Q. NO - 12 (a)

Given, DFA that accepts exactly one "ab".  
 $\Sigma = \{a, b\}$



Ans. to the Q. NO - 13

Given, DFA that accepts at least two "00" as a substring.  $\Sigma = \{0, 1\}$ .

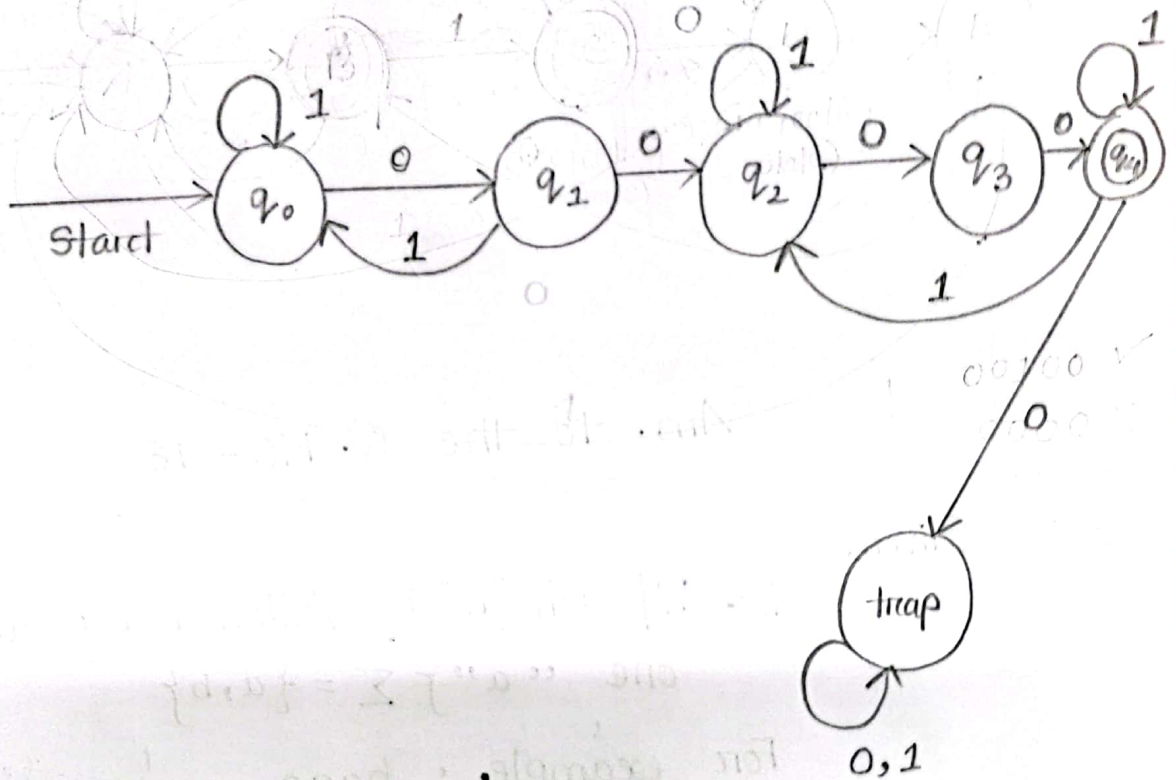


[P.T.O.]

Ans. to the Q. NO - 14 (a)

Given,

DFA that accepts exactly two "00"  
as a substring.  $\Sigma = \{0, 1\}$



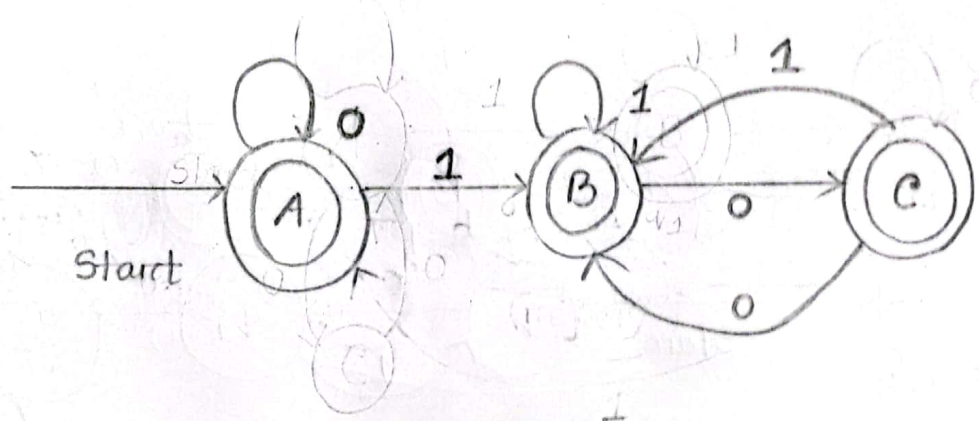
[P.T.O.]



Ans. to the Q. NO-15

Given,

$L = \{ \text{An even number of 0s follow the last 1 in } w \}$   $\Sigma = \{0, 1\}$

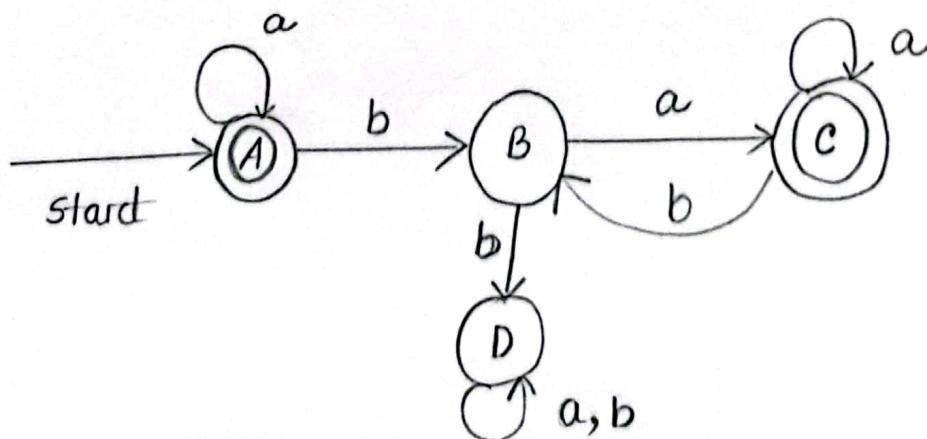


Ans. to the Q. NO-16

Given,

$L = \{ w \mid \text{each "b" is followed by at least one "a"} \}$   $\Sigma = \{a, b\}$

For example: baaa

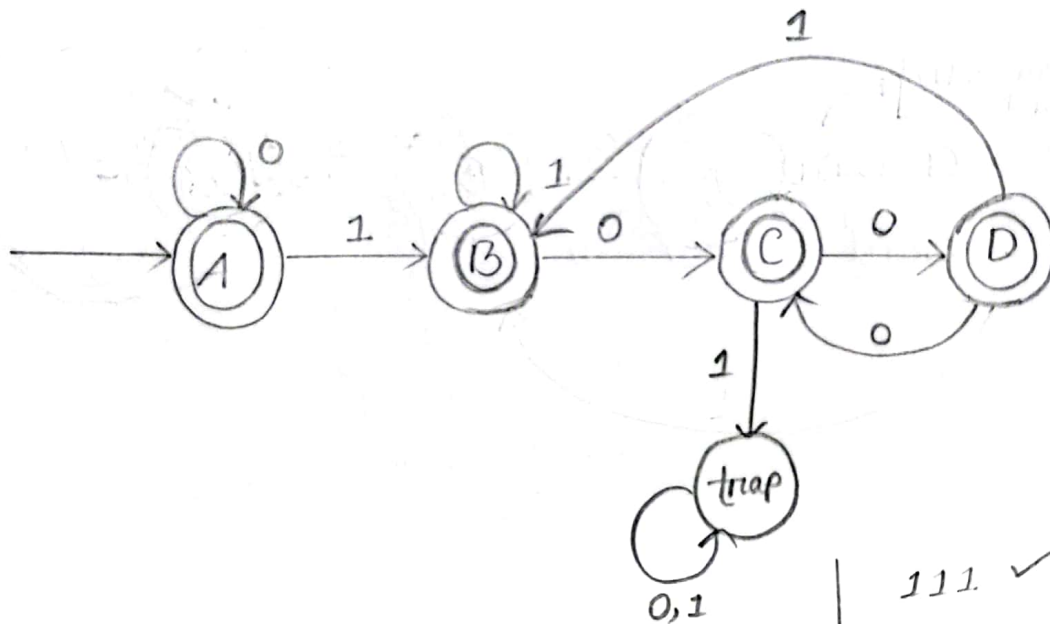


[P.T.O.]

Ans. to the Q. NO - 17

Given,

DFA where the set of binary strings where numbers of 0s between two successive 1s will be even.  $\Sigma = \{0,1\}$ .



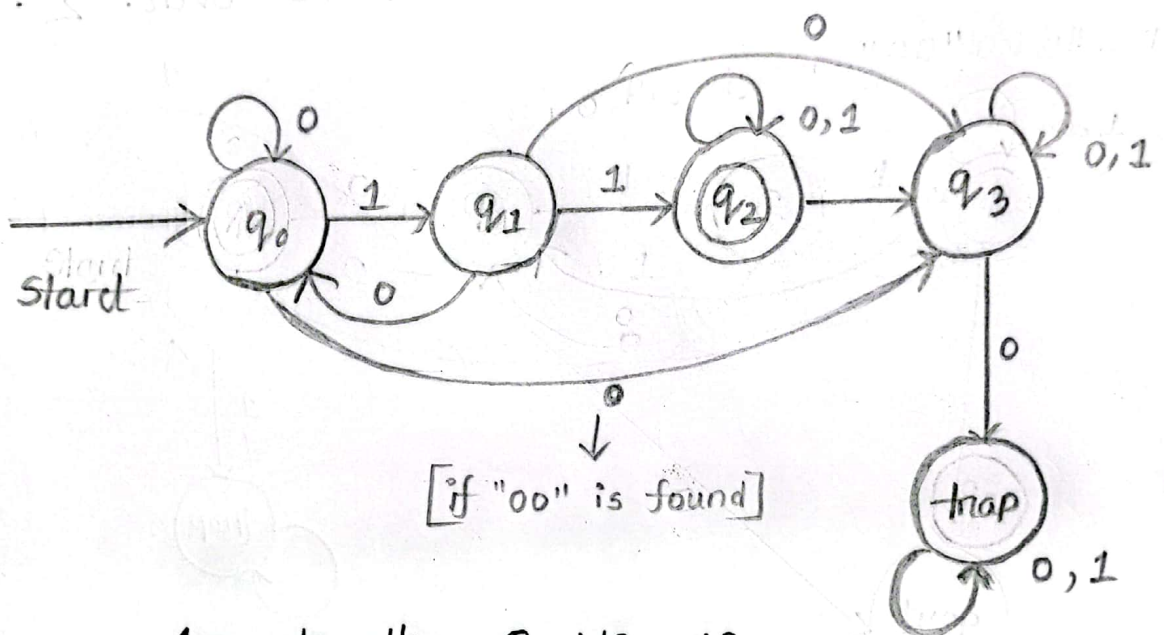
111	✓
1001	✓
101	×
000	✓

[P.T.O.]

Ans. to the Q. NO - 18

Given,

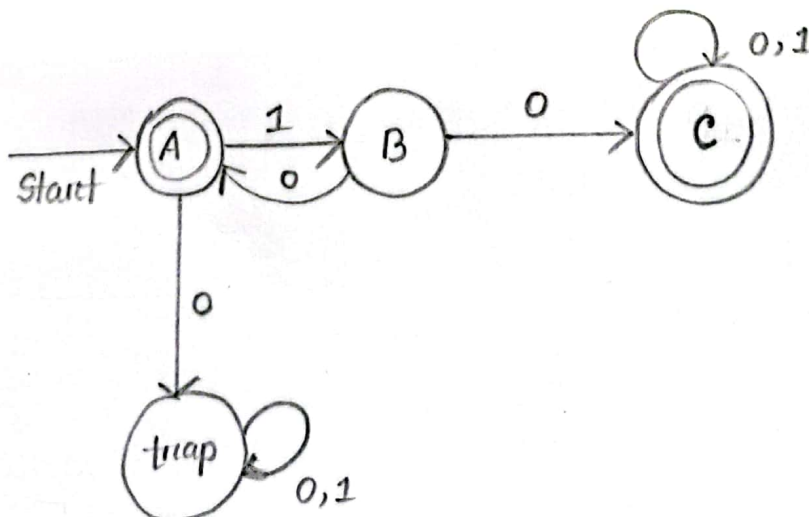
$L = \{ w \in \{0,1\}^* : \text{no } 00 \text{ appears as a substring before the first } 11 \text{ in } w \}$



Ans. to the Q. NO - 19

Given,

$L = \{ w \in \{0,1\}^* : \text{no } 00 \text{ appears as a subsequence before the first } 11 \text{ in } w \}$



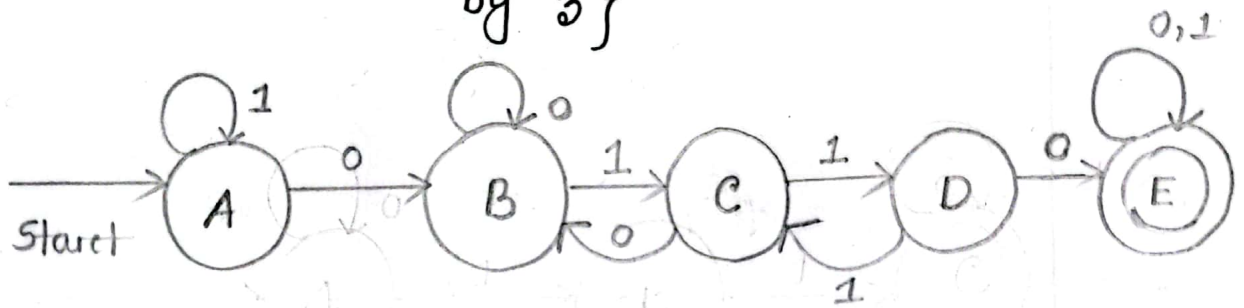
00 X  
 100 X  
 10 ✓  
 1010 ✓  
 0011 X

[P.T.O.]

Ans. to the Q. NO- 20(a)

Given,

$L = \{w \in \{0,1\}^* : w \text{ contains } 01^m0 \text{ as a substring where } m \text{ is divisible by } 3\}$

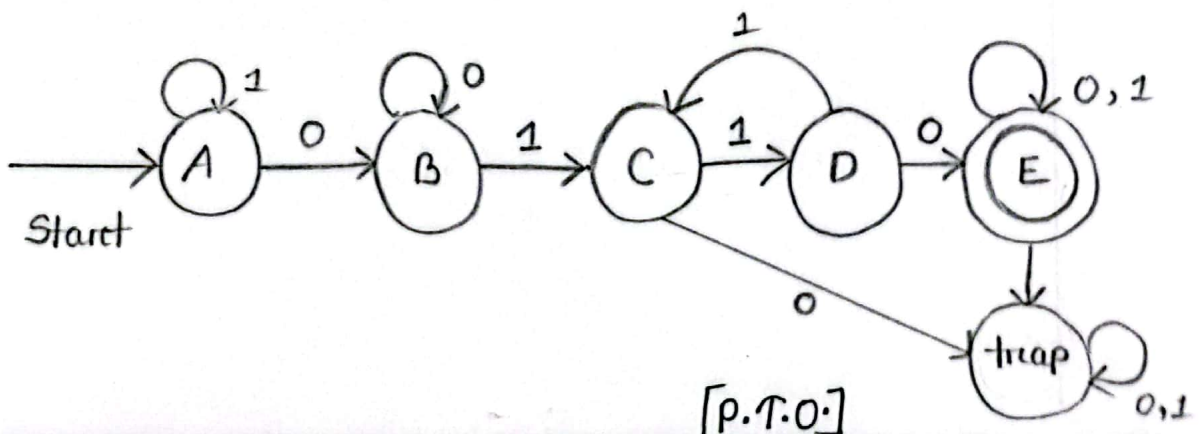


0111110 ✓  
01110 ✓  
111 X  
0100 X

Ans. to the Q. NO- 20(b)

Given,

$L = \{w \in \{0,1\}^* : w \text{ contains } 01^m0 \text{ as a substring where } m \text{ leaves a remainder of } 2 \text{ when divided by } 3\}$





## Answer to the Q. NO-21 (b)

Given,

$$L = \{ w \in \{0,1\}^* : w = 0^m 1^n \text{ where } m \text{ and } n \text{ are both even} \}$$

