

BRAC University
Dept. of Computer Science and Engineering
Spring 2024
CSE331-12
QUIZ - 1(A)

Time: 20 minutes

Marks: 20

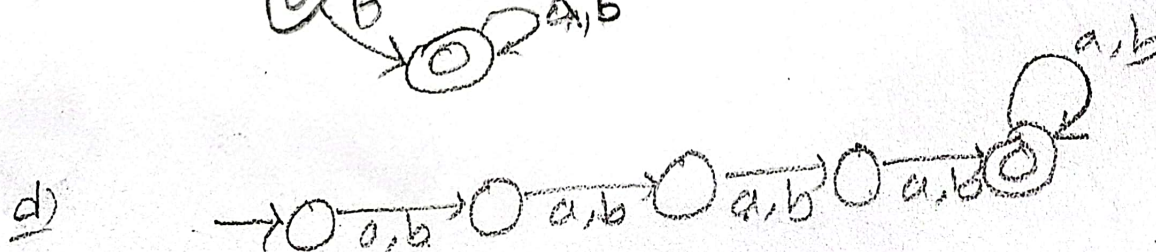
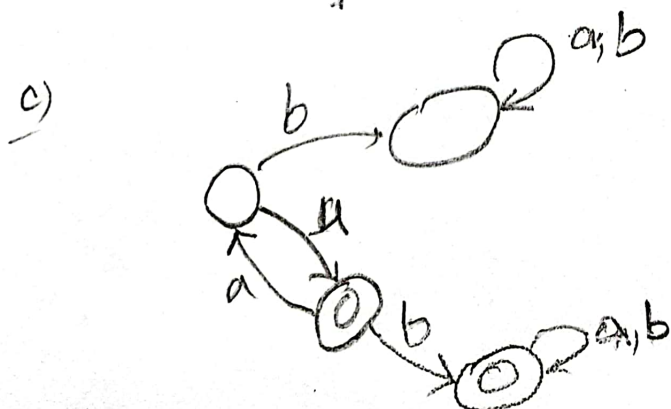
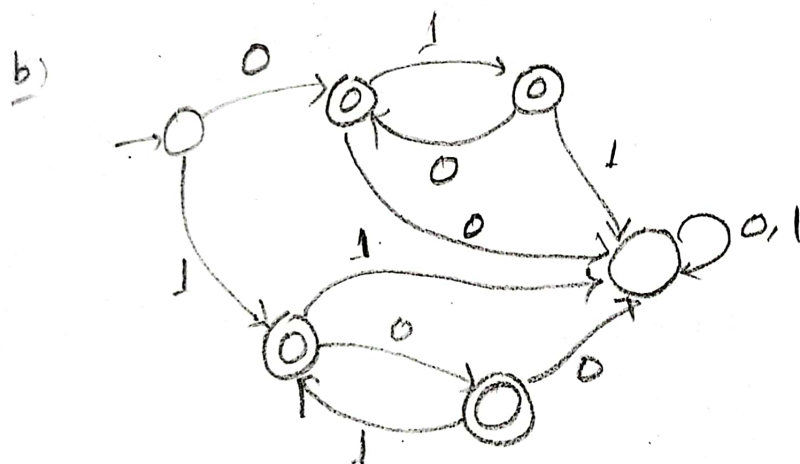
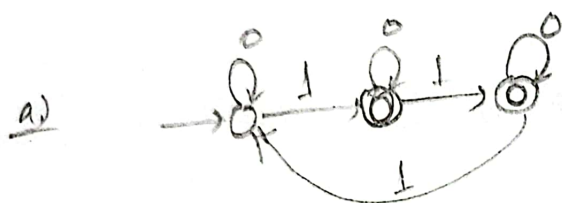
Name: _____

ID: _____

Section: _____

1. Construct DFAs that recognize the following languages.

- | | |
|--|---|
| a. $L = \{ w \in \{0,1\}^* : \text{the count of "1" in } w \text{ is not a multiple of 3} \}$ | 6 |
| b. $L = \{ w \in \{0,1\}^* : 0\text{'s and } 1\text{'s alternate in } w \}$ | 4 |
| c. $L = \{ w \in \{a,b\}^* : w \text{ starts with "a"}^n \text{ where } n \text{ is a odd number (a}^n \text{ means } n \text{ consecutive a's)} \}$ | 4 |
| d. $L = \{ w \in \{a,b\}^* : \text{the length of } w \text{ is more than three} \}$ | 6 |



Solution

BRAC University
Dept. of Computer Science and Engineering
Spring 2024
CSE331-12
QUIZ - 1(B)

Time: 20 minutes

Marks: 20

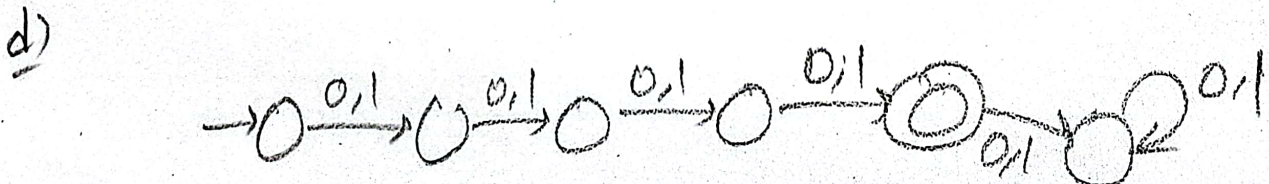
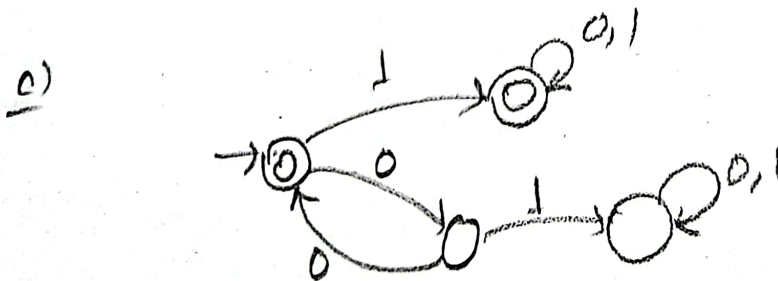
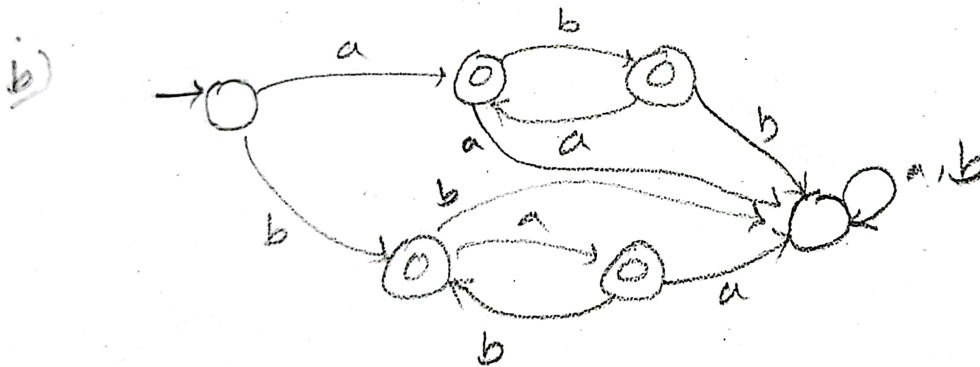
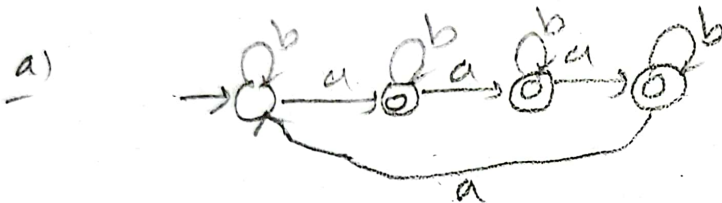
Name: _____

ID: _____

Section: _____

1. Construct DFA's that recognize the following languages.

- | | |
|---|---|
| a. $L = \{w \in \{a,b\}^* : \text{the count of "a" in } w \text{ is not a multiple of 4}\}$ | 6 |
| b. $L = \{w \in \{a,b\}^* : \text{a's and b's alternate in } w\}$ | 4 |
| c. $L = \{w \in \{0,1\}^* : w \text{ starts with "0"}^n \text{ where } n \text{ is a even number (0}^n \text{ means } n \text{ consecutive 0's)}\}$ | 4 |
| d. $L = \{w \in \{0,1\}^* : \text{the length of } w \text{ is exactly four}\}$ | 6 |



Solution

BRAC University
Dept. of Computer Science and Engineering
Spring 2024
CSE331-09
QUIZ - 1(A)

Time: 20 minutes

Name:

ID:

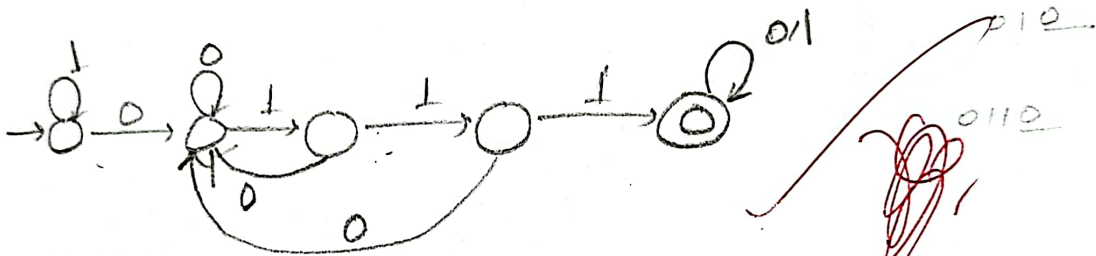
Marks: 20

Section:

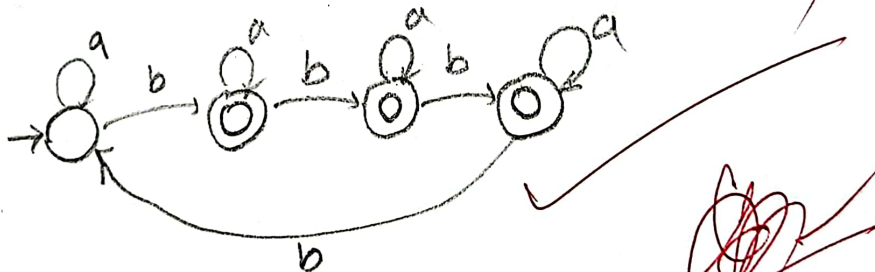
1. Construct DFAs that recognize the following languages.

- | | |
|--|---|
| a. $L = \{w \in \{0,1\}^* : w \text{ contains "0111" as a substring}\}$ | 6 |
| b. $L = \{w \in \{a,b\}^* : \text{the count of "b" in } w \text{ is not a multiple of 4}\}$ | 6 |
| c. $L = \{w \in \{a,b\}^* : w \text{ contains "a" only at odd position}\}$ | 4 |
| d. $L = \{w \in \{0,1\}^* : \text{the decimal value of } w \text{ is one more than multiple of 2}\}$ | 4 |

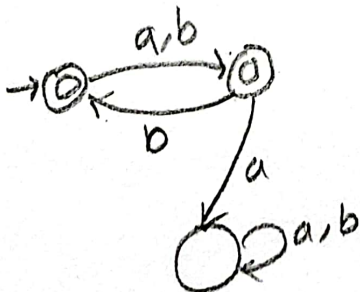
a)



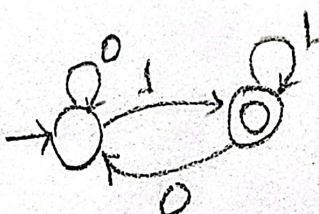
b)



c)



d)



Solution

BRAC University
Dept. of Computer Science and Engineering
Spring 2024
CSE331-09
QUIZ - 1(B)

Time: 20 minutes

Name:

ID:

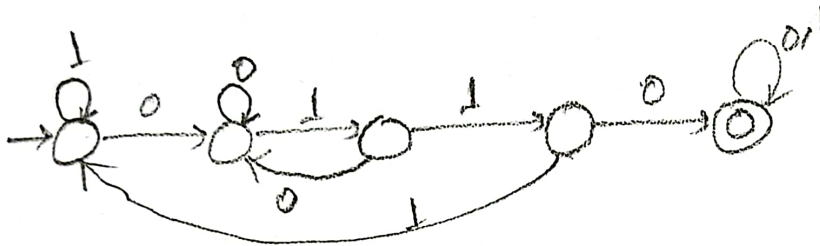
Marks: 20

Section:

1. Construct DFAs that recognize the following languages.

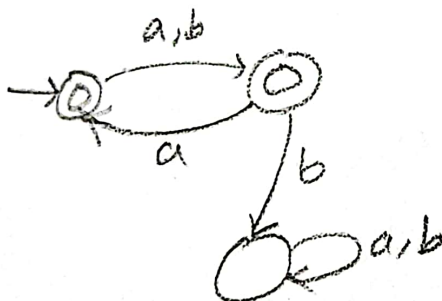
- | | |
|---|---|
| a. $L = \{w \in \{0,1\}^* : w \text{ contains "0110" as a substring}\}$ | 6 |
| b. $L = \{w \in \{a,b\}^* : w \text{ contains "b" only at odd position}\}$ | 4 |
| c. $L = \{w \in \{a,b\}^* : \text{the count of "a" in } w \text{ is not a multiple of 5}\}$ | 6 |
| d. $L = \{w \in \{0,1\}^* : \text{the decimal value of } w \text{ is multiple of 2}\}$ | 4 |

a)

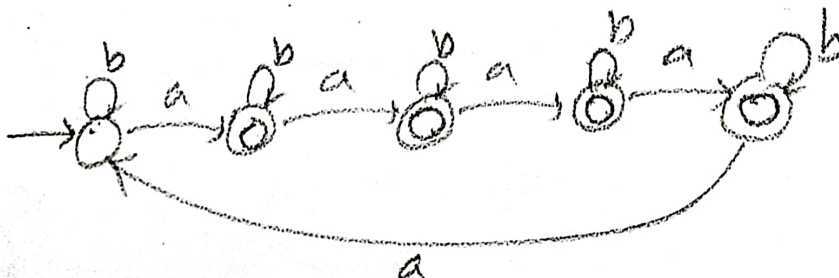


0110

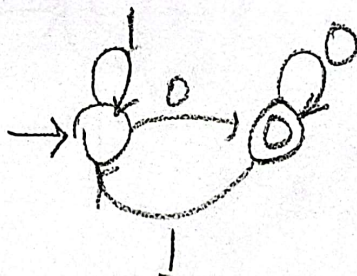
b)



c)



d)



Solution

BRAC University
Dept. of Computer Science and Engineering
Spring 2024
CSE331-08
QUIZ - 1(A)

Time: 20 minutes

Name:

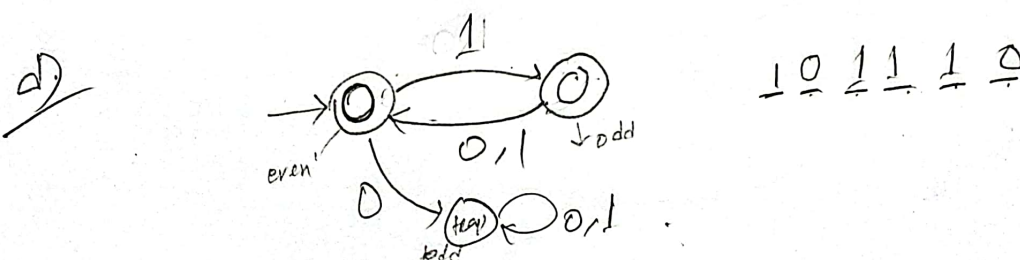
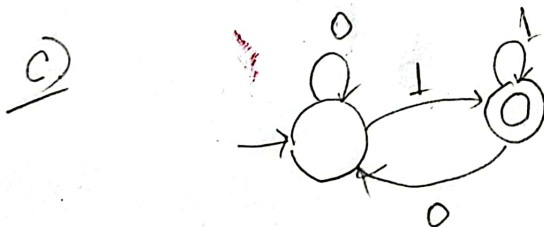
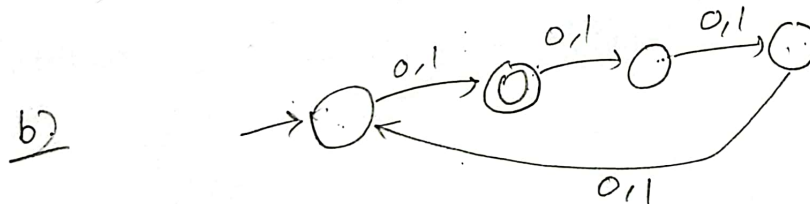
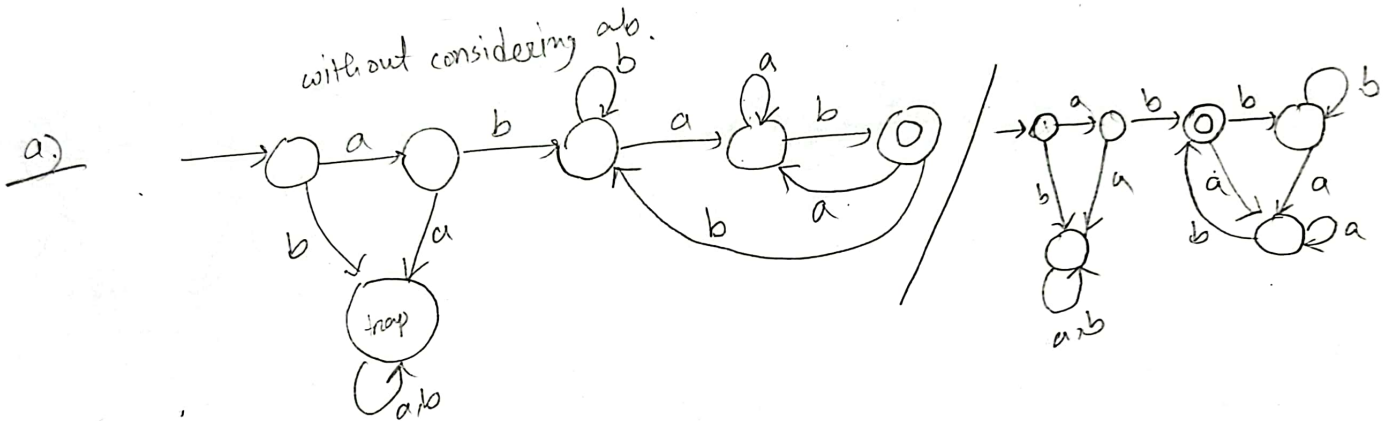
ID:

Marks: 20

Section:

1. Construct DFAs that recognize the following languages.

- | | |
|---|---|
| a. $L = \{ w \in \{a,b\}^* : w \text{ starts and ends with "ab"} \}$ | 6 |
| b. $L = \{ w \in \{a,b\}^* : \text{the length of } w \text{ is one more than the multiple of 4} \}$ | 6 |
| c. $L = \{ w \in \{0,1\}^* : \text{the decimal value of } w \text{ is odd} \}$ | 4 |
| d. $L = \{ w \in \{0,1\}^* : w \text{ contains "0" only at even position} \}$ | 4 |



Solution

BRAC University
Dept. of Computer Science and Engineering
Spring 2024
CSE331-08
QUIZ - 1(B)

Time: 20 minutes

Name:

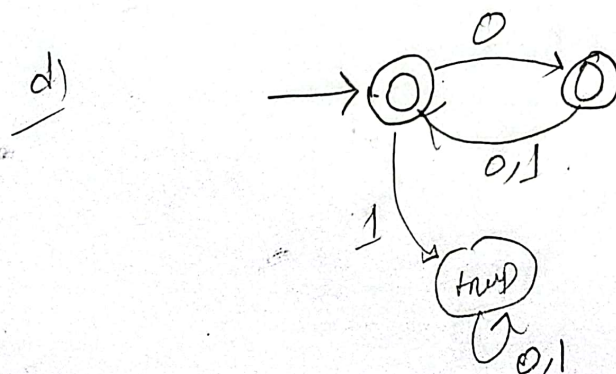
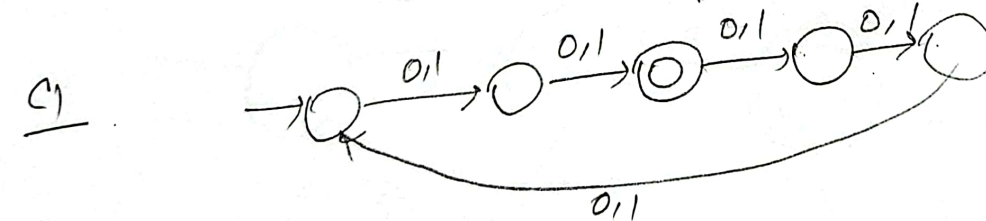
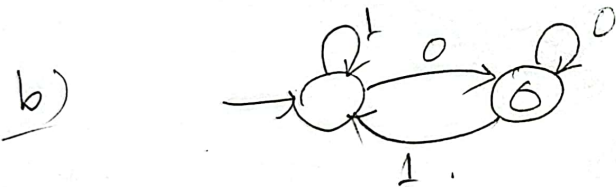
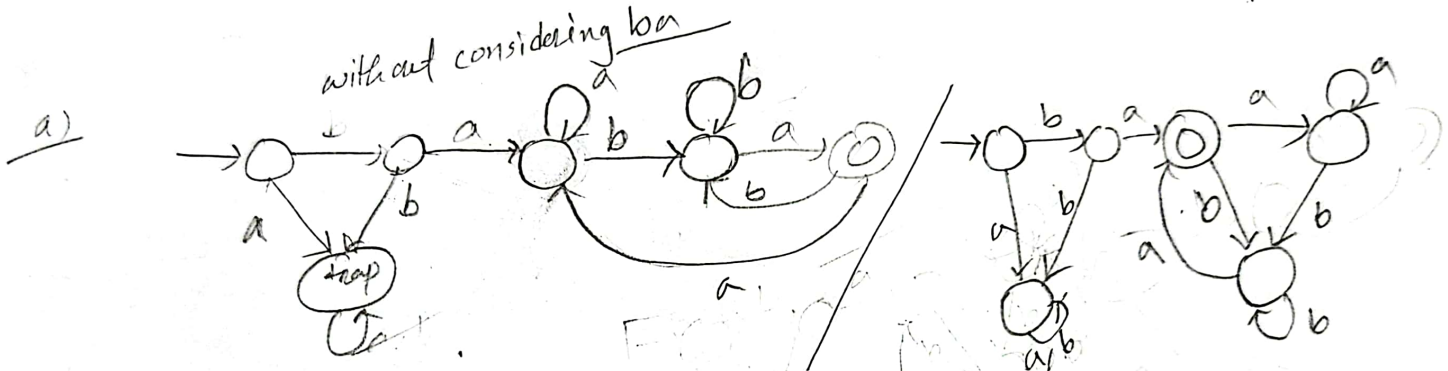
ID:

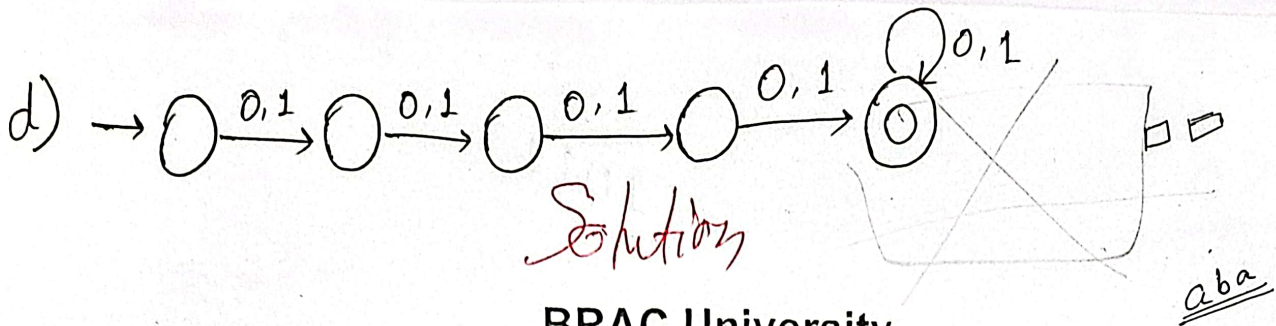
Marks: 20

Section:

1. Construct DFAs that recognize the following languages.

- | | |
|---|---|
| a. $L = \{ w \in \{a,b\}^* : w \text{ starts and ends with "ba"} \}$ | 6 |
| b. $L = \{ w \in \{0,1\}^* : \text{the decimal value of } w \text{ is even} \}$ | 4 |
| c. $L = \{ w \in \{a,b\}^* : \text{the length of } w \text{ is two more than the multiple of 5} \}$ | 6 |
| d. $L = \{ w \in \{0,1\}^* : w \text{ contains "1" only at even position} \}$ | 4 |





BRAC University

Dept. of Computer Science and Engineering

Spring 2024

CSE331-10

QUIZ - 1(A)

Time: 20 minutes

Marks: 20

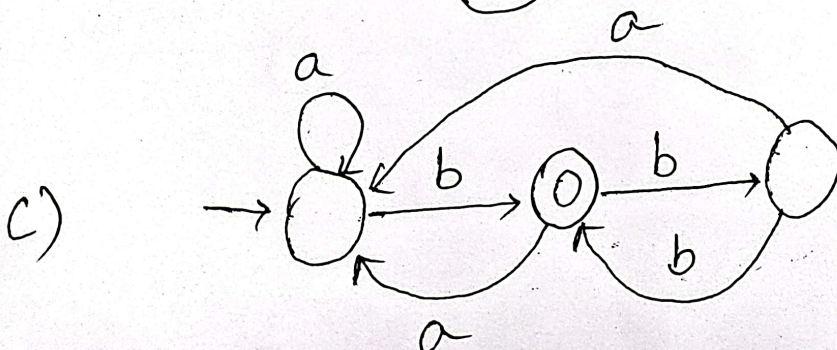
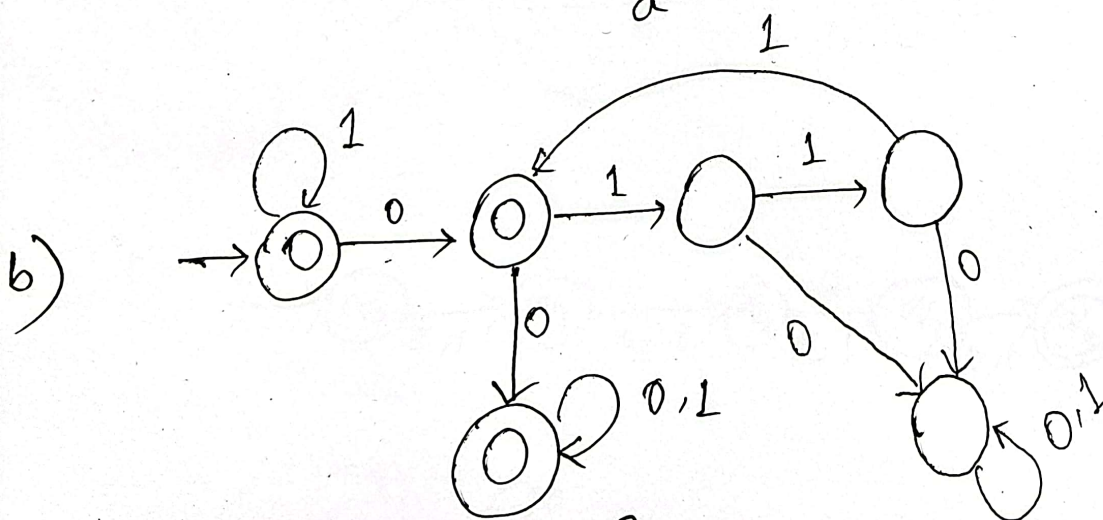
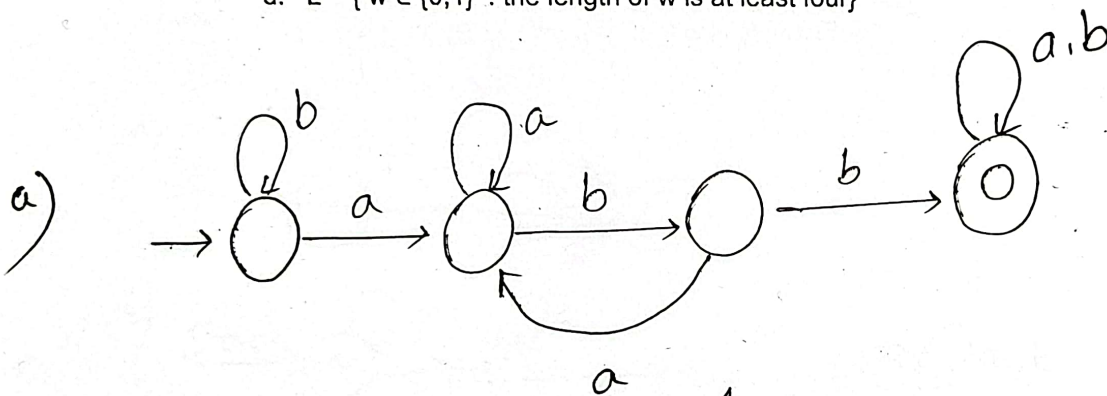
Name:

ID:

Section:

1. Construct DFAs that recognize the following languages.

- $L = \{ w \in \{a,b\}^* : w \text{ contains "abb" as a substring} \}$ 6
- $L = \{ w \in \{0,1\}^* : \text{number of 1's that follow the first 0 is multiple of 3} \}$ 4
- $L = \{ w \in \{a,b\}^* : w \text{ ends with "b"}^n \text{ where } n \text{ is a odd number (b}^n \text{ means } n \text{ consecutive b's)} \}$ 4
- $L = \{ w \in \{0,1\}^* : \text{the length of } w \text{ is at least four} \}$ 6



Solution

BRAC University
Dept. of Computer Science and Engineering
Spring 2024
CSE331-10
QUIZ - 1(B)

Time: 20 minutes

Marks: 20

Name:

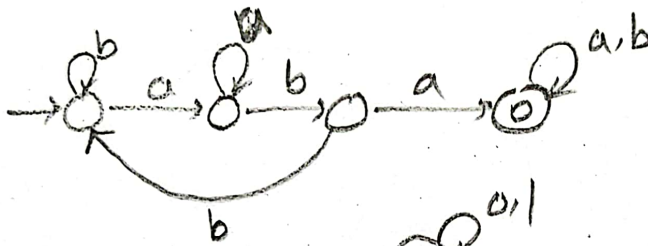
ID:

Section:

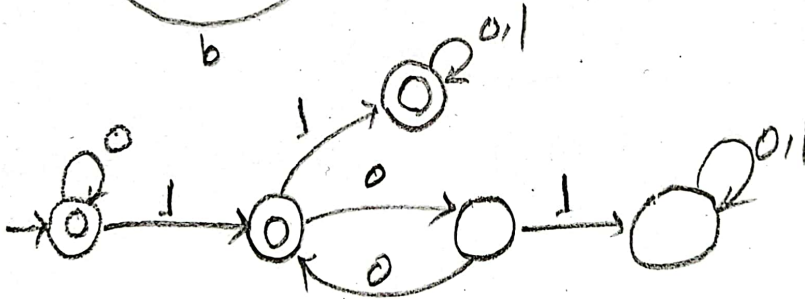
1. Construct DFAs that recognize the following languages.

- a. $L = \{w \in \{a,b\}^* : w \text{ contains "aba" as a substring}\}$ 6
- b. $L = \{w \in \{0,1\}^* : \text{number of 0's that follow the first 1 is multiple of 2}\}$ 4
- c. $L = \{w \in \{0,1\}^* : w \text{ ends with "1"}^n \text{ where } n \text{ is a even number (1}^n \text{ means } n \text{ consecutive 1's)}\}$ 4
- d. $L = \{w \in \{a,b\}^* : \text{the length of } w \text{ is at most three}\}$ 6

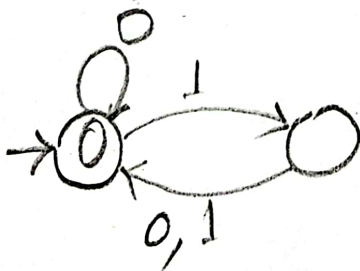
a)



b)



c)



d)

