

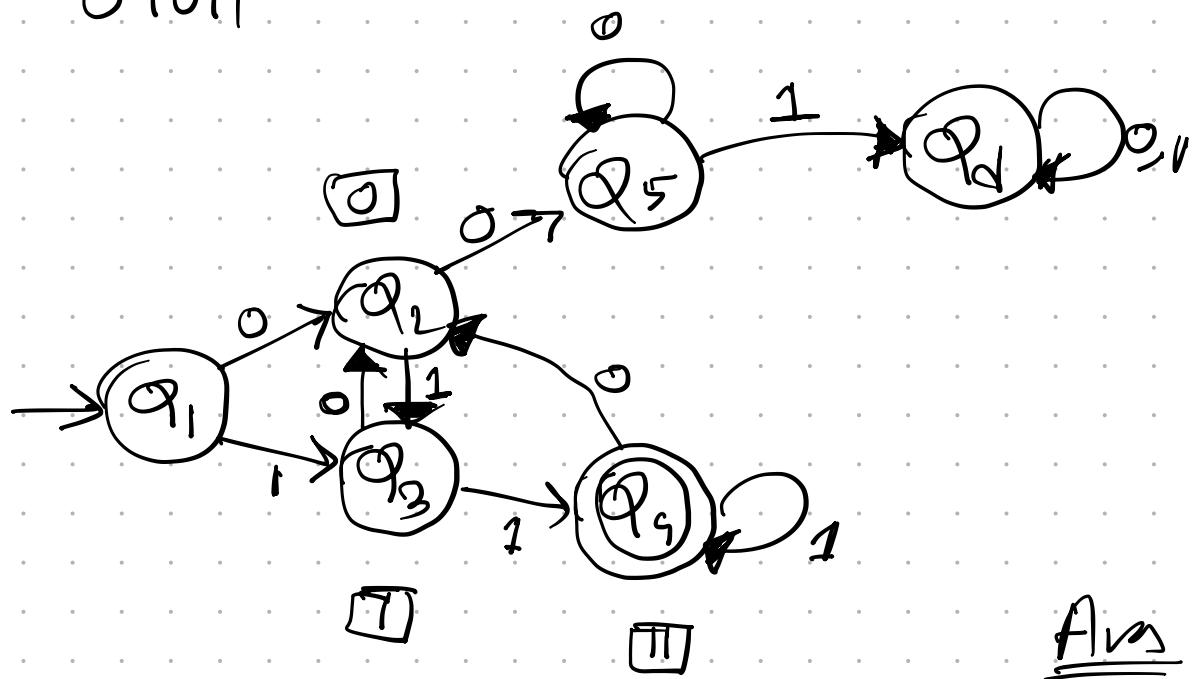
Fall - 2029

11 α Doesn't contain 001 as substring  
but ends with 11.  $\Sigma = \{0, 1\}$

Ans:

<u>A</u>	<u>V</u>
11	
1011	
0111	
0111	...
01011	

<u>N/A</u>
001
0011
1100



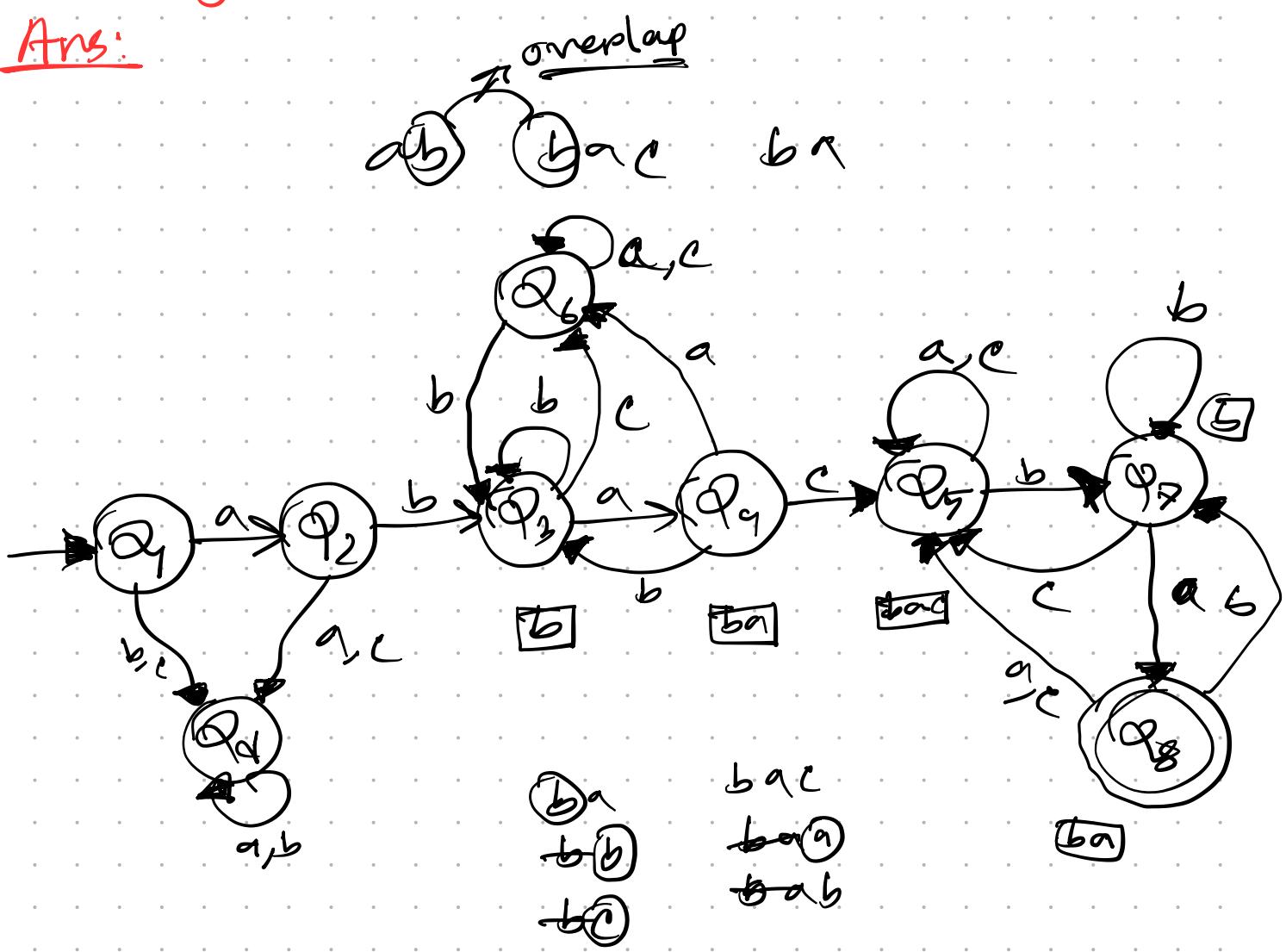
Ans

✓

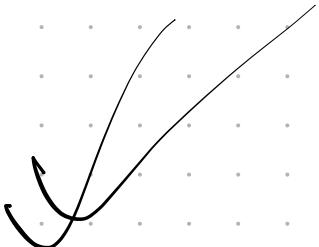
11  
+ 0  
+ 1

11b1 Starts with "ab". Contains "bac" as substring and ends with "ba". ( $\Sigma = \{a, b, c\}$ )

Ans:

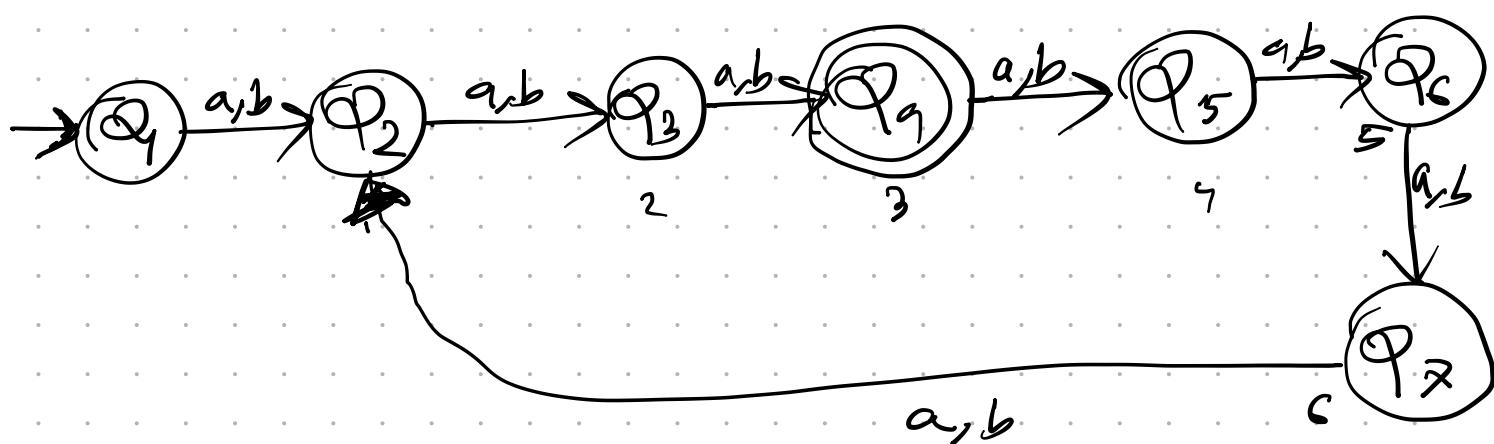
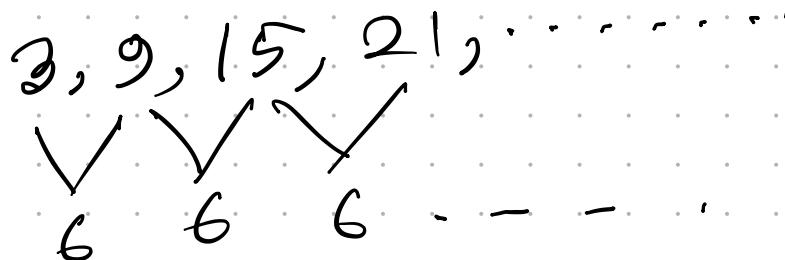


$\Theta_a$   
 $\Theta_b$   
 $\Theta_c$   
 $\Theta_{ba}$   
 $\Theta_{ab}$   
 $\Theta_{ac}$   
 $\Theta_{bc}$   
 $\Theta_{abc}$



11 c Légalia has input length divisible by 3 but not divisible by  $2^k \sum = 2a, b, k$

Avg



C

Avg

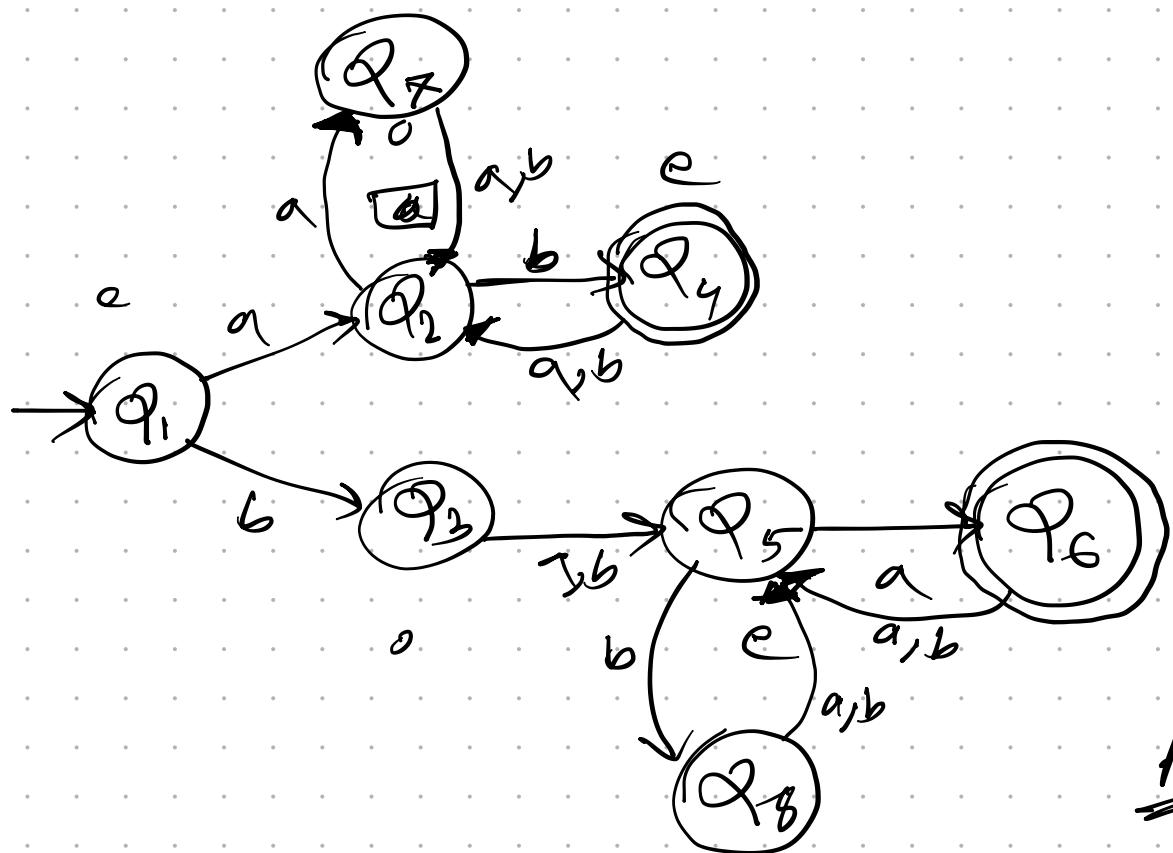
# Summer - 29

II

a) starts and ends with different symbol, having even length strings when starts with "a" or odd length strings when starts with "b".  $\Sigma = \{a, b\}$

Ans:

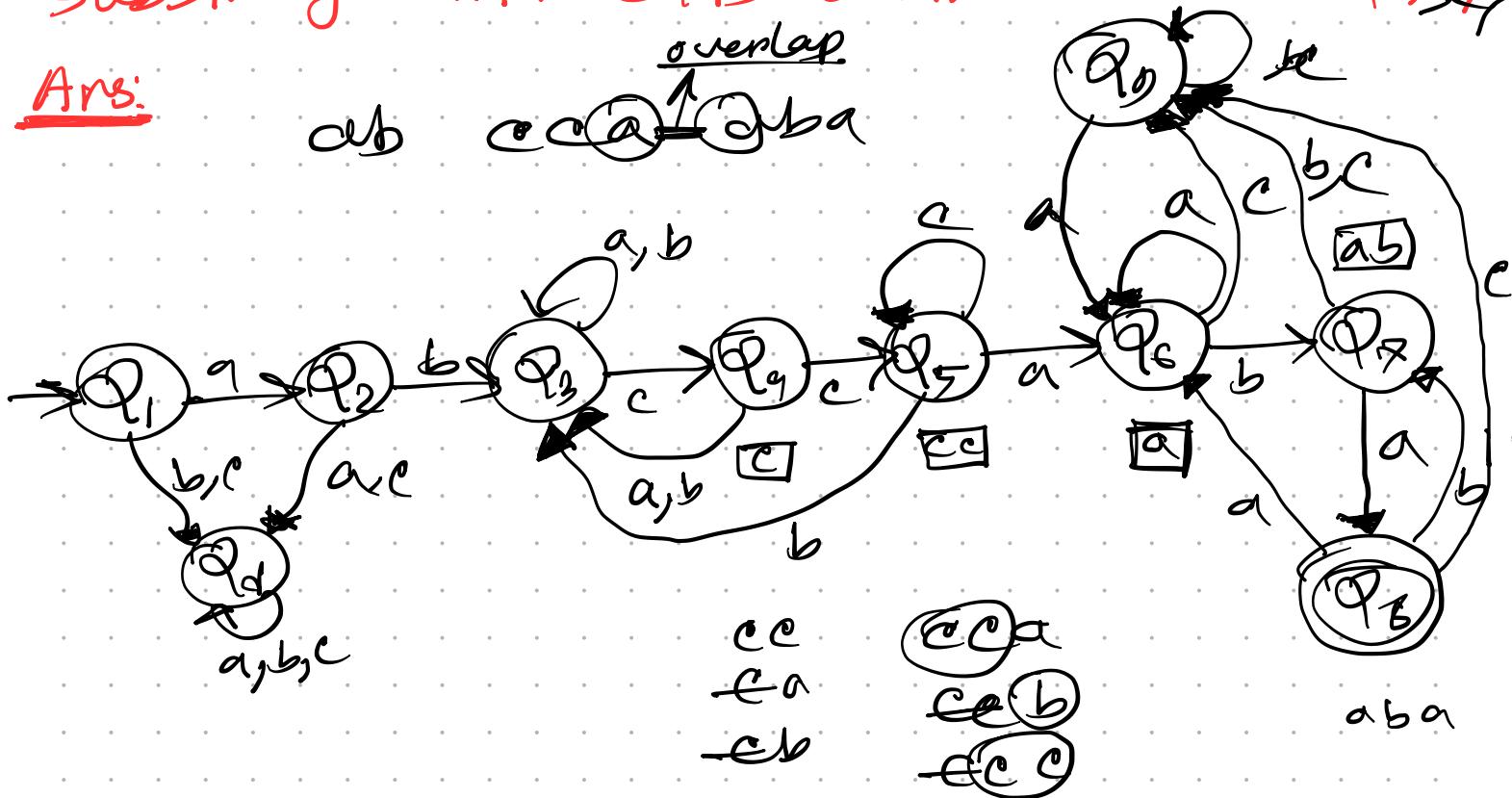
even for a }      odd for b }      different start-ending



Ans

LLB starts with "ab", contains "cca" as substring and ends with "aba".  $\Sigma = \{a, b, c\}$

Ans:



aba  
aba  
ab  
ab  
ab  
ab  
ab  
ab

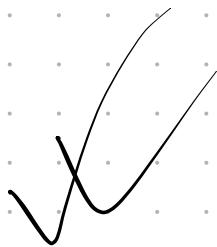
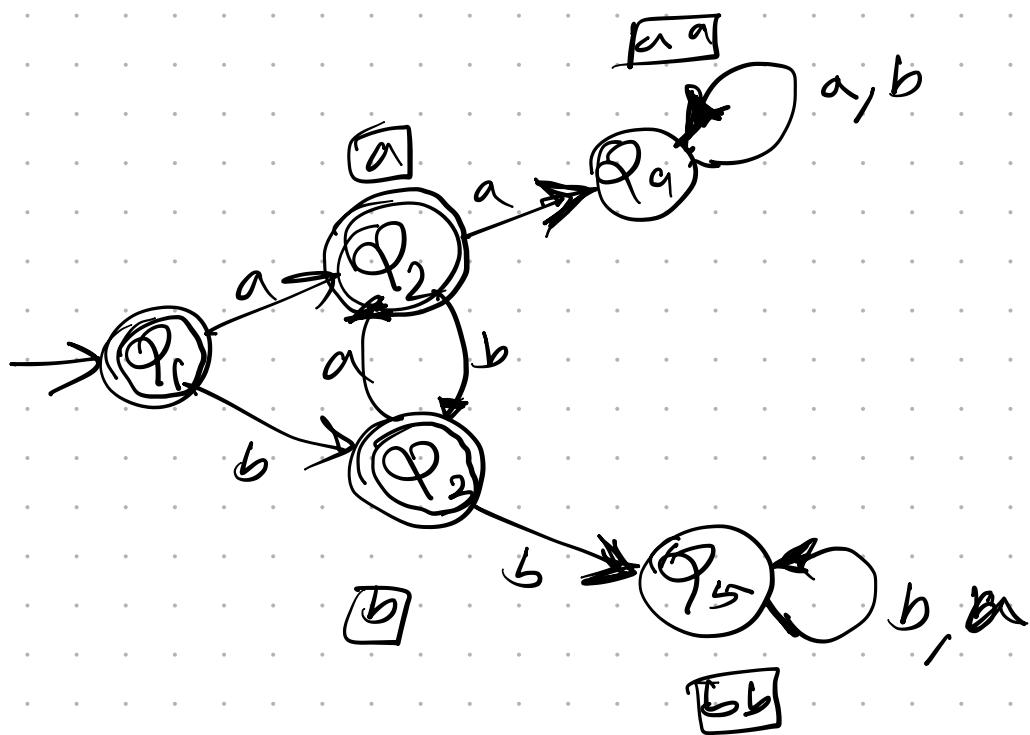
ab  
a  
a  
a  
b  
b  
b  
c  
c  
c

Ans

II neither contain two consecutive "a" nor two consecutive "b".  
 $\Sigma = \{a, b\}$

Aus:

nIA:  $a \ a$   
 $b \ b$



$aa$   
 ~~$a b$~~

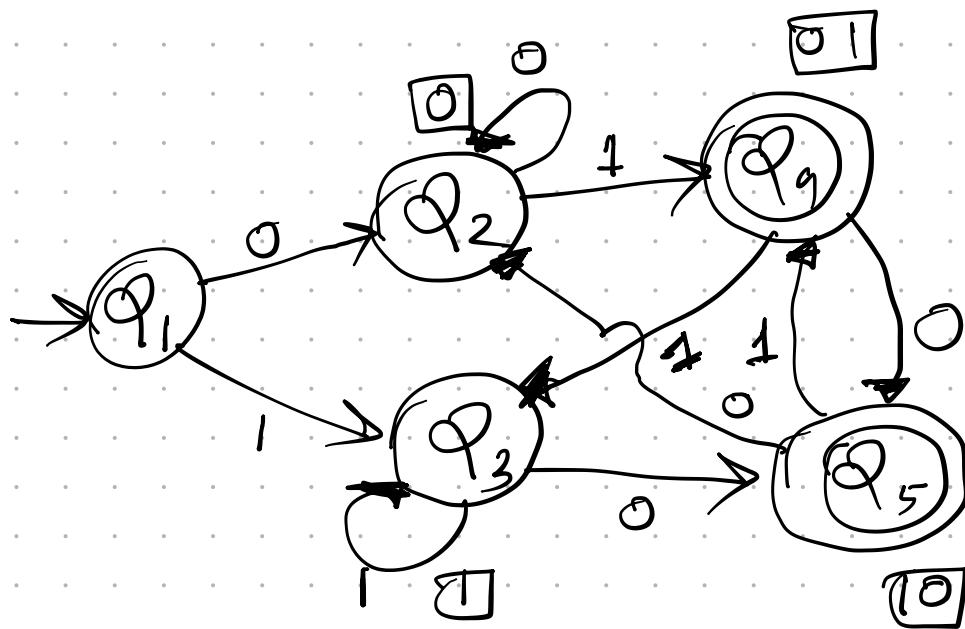
$bb$   
 ~~$b a$~~

$a a$   
 $b b$

# Spring - 29

II at  $\rightarrow$  Overlap type

II b1 ends with either "01" or "10"  
 $\leq = 20, 14$

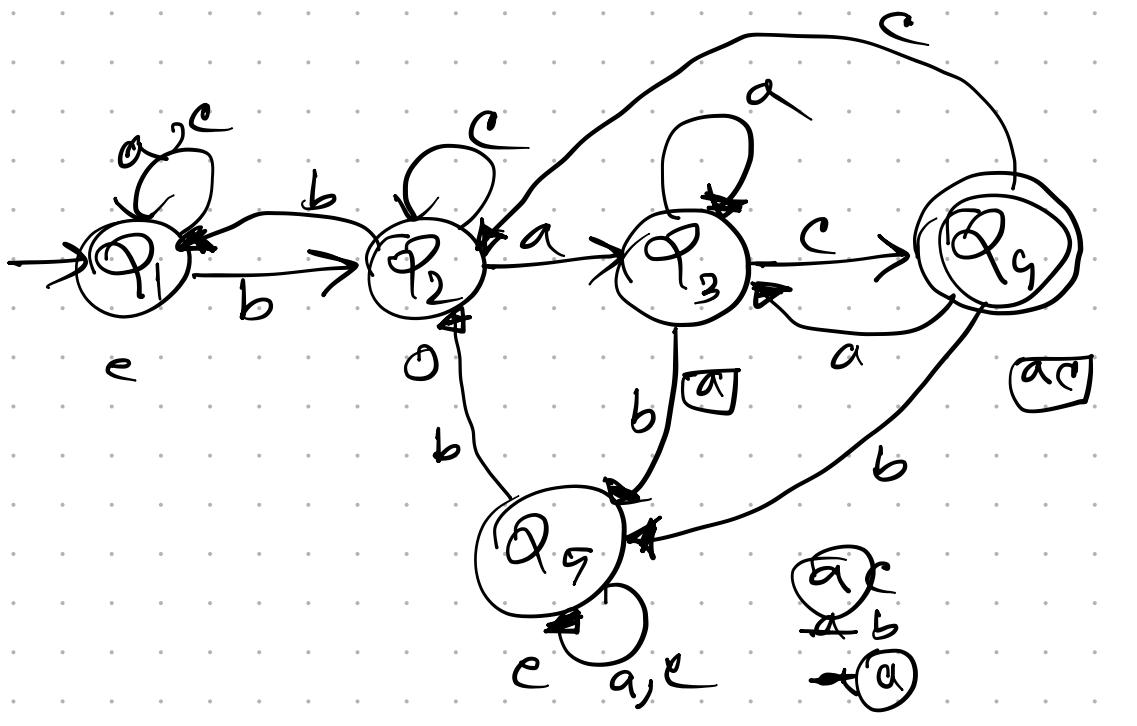


$$\frac{01}{\cancel{0}\cancel{0}} \quad \frac{10}{\cancel{+}\cancel{1}}$$

$$\begin{array}{c} 01 \\ \cancel{0}\cancel{10} \\ \cancel{0}\cancel{+1} \\ \hline 10 \\ \cancel{+}\cancel{1} \\ \hline 00 \end{array}$$

14 contains an odd number of "b" and ends with "ac"  $\Leftarrow a, b, c$ .

Solution:

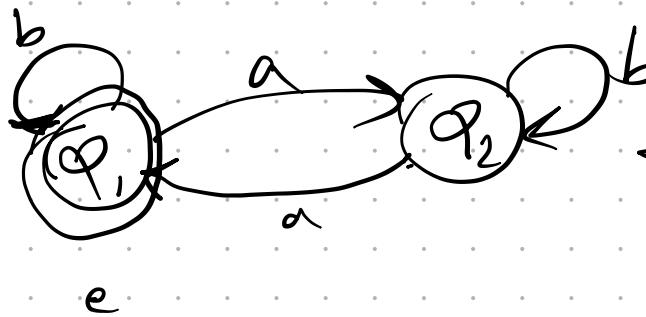


ac  
a-c-a  
a-b  
a-c-c

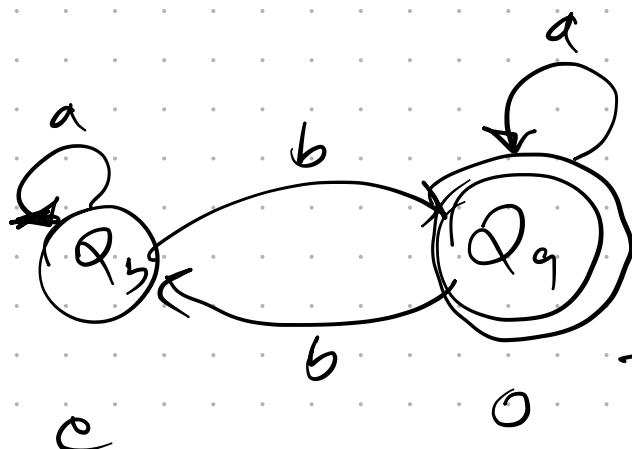
Fall - 23

Q1 accept strings that has even no of "a" and odd number of "b" over Alphabet  $\{a, b\}$ .

Solution:

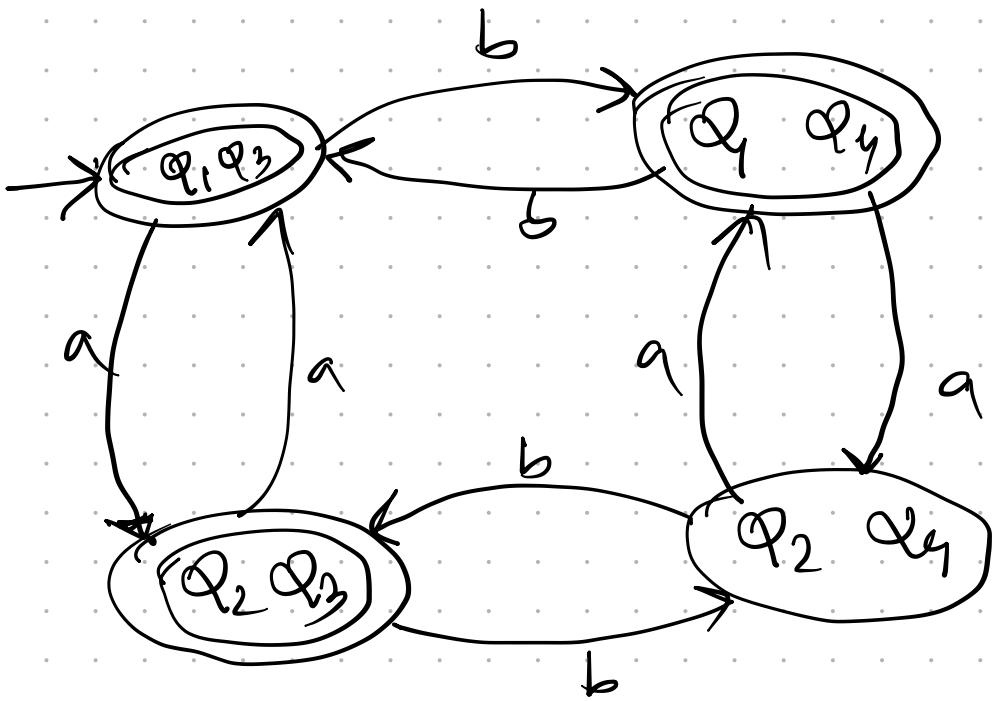


I	a	b
states	$q_1$	$q_2$
*	$q_2$	$q_1$
$q_2$	$q_1$	$q_2$
$q_1$		



I	a	b
states	$q_3$	$q_9$
*	$q_9$	$q_3$
$q_3$	$q_9$	
$q_9$		

	$a$	$b$
$\xrightarrow{*} q_1, q_3$	$q_2, q_3$	$q_1, q_4$
$\xrightarrow{*} q_1, q_4$	$q_2, q_4$	$q_1, q_3$
$\xrightarrow{*} q_2, q_3$	$q_1, q_3$	$q_2, q_4$
$q_2, q_4$	$q_1, q_4$	$q_2, q_3$

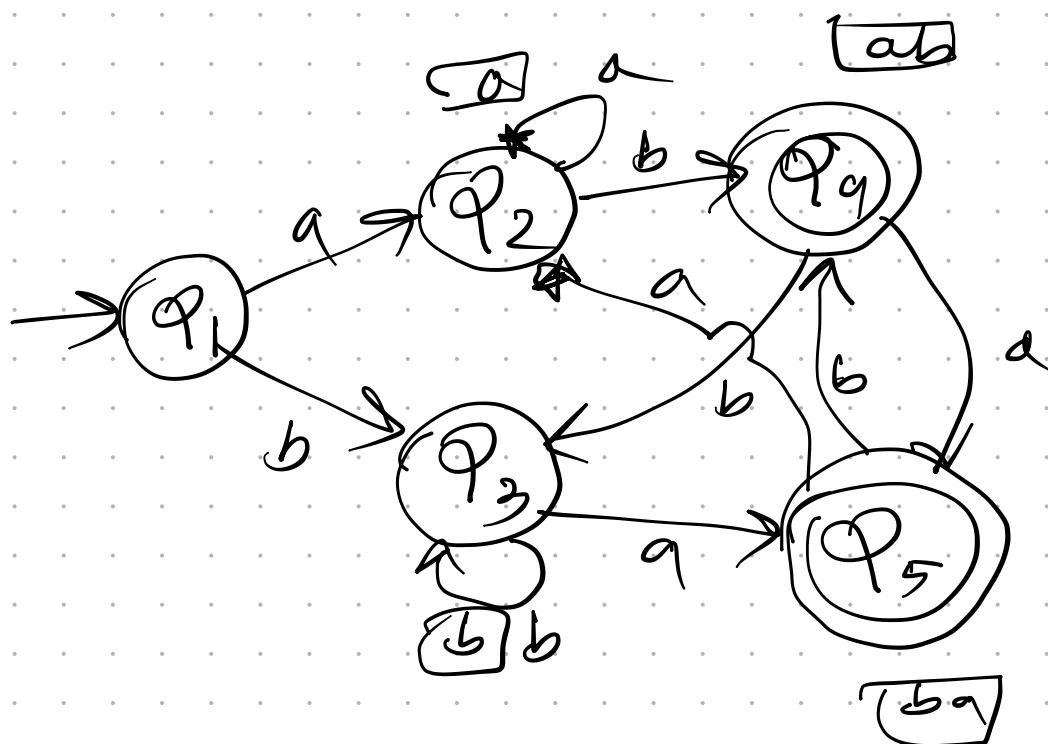


Ans

HCL Accepts any string where the last two symbols are different over the alphabet  $\{a, b\}$

Ans:

ab | ba



ab  
—  
a q

ab  
—  
a b q

Ans

# Summer - 23

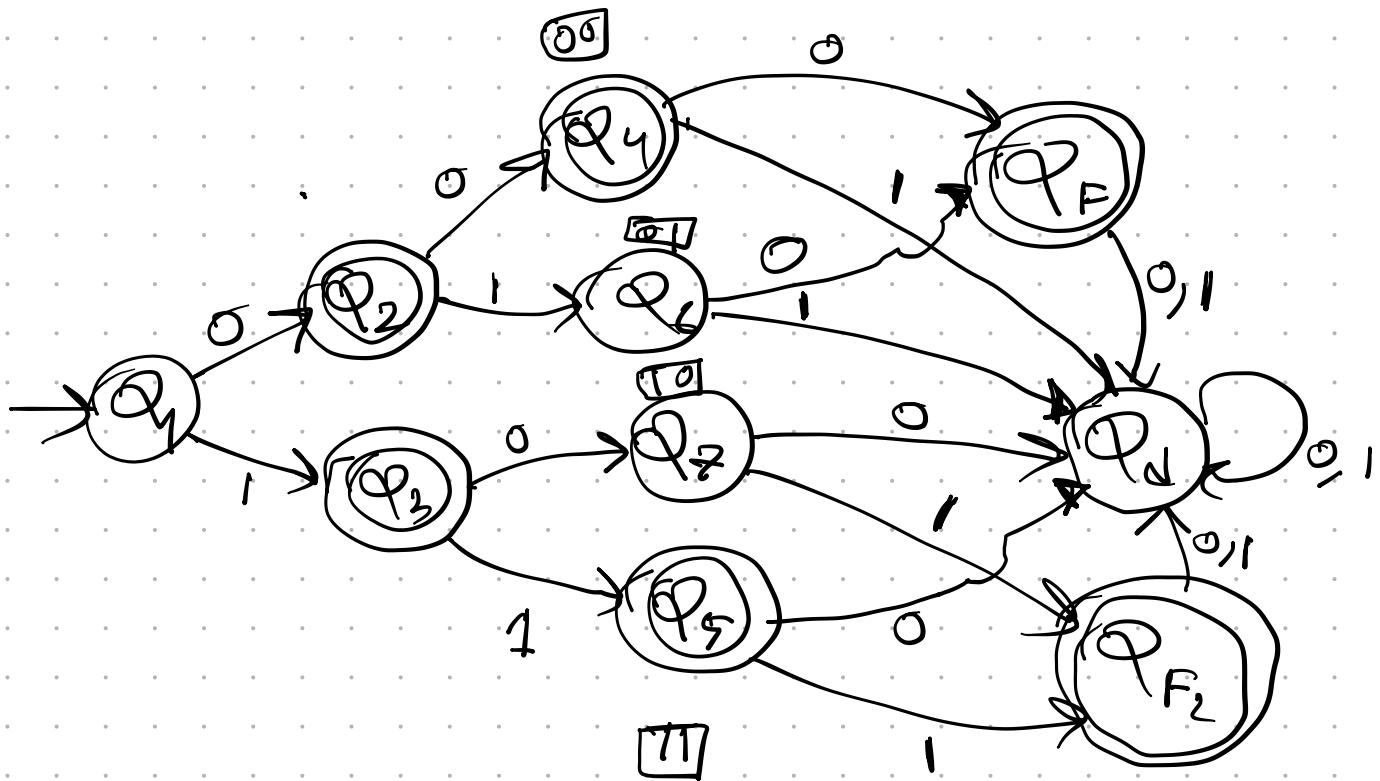
11 a) doesn't type

b) Mixed type

c) L =  $\omega | \omega$  is a palindrome with a max length of  $2^k | 2^{0,1} |$

Ans:

Ans: 0, 1, 00, 11, 000, 111, 010, 101



✓  
Ans

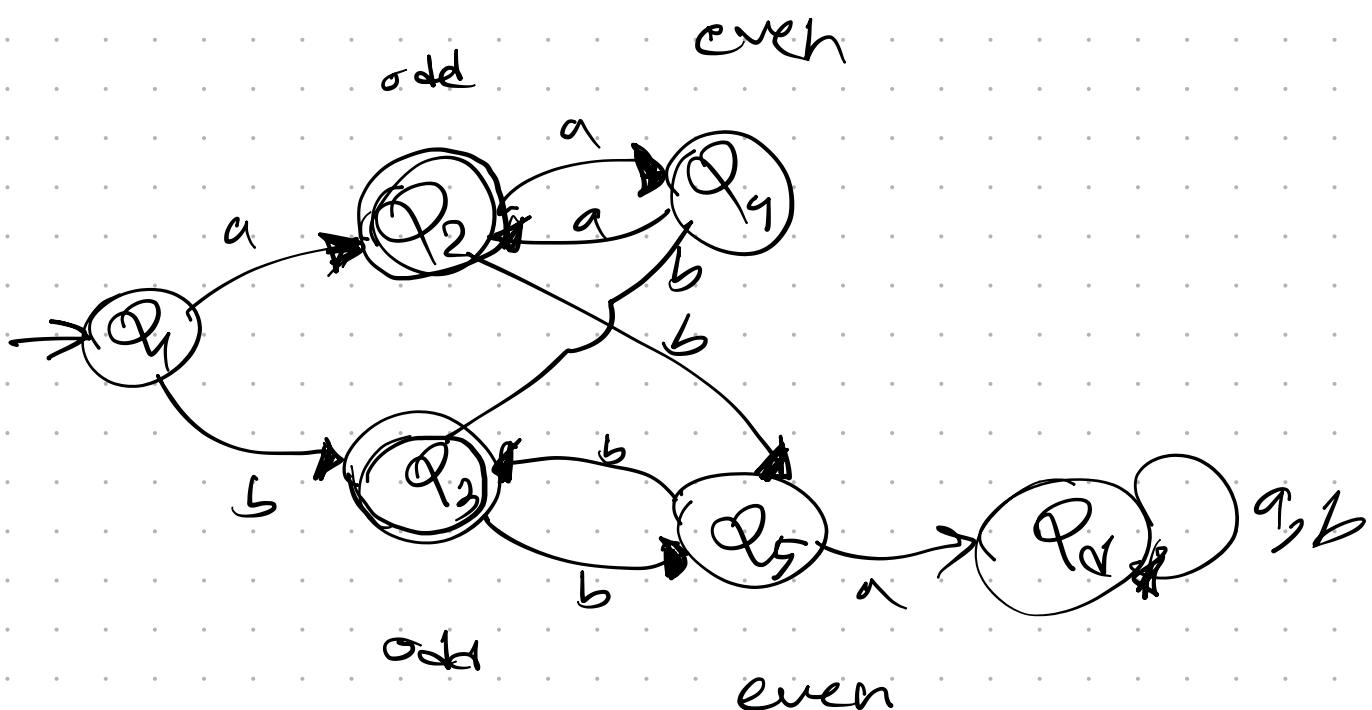
Q1  $L = \{a^i b^j \mid i \geq 0, j \geq 0, i+j \text{ is an odd number}\}$

$$S = \{a, b\}$$

### Solution:

~~even  $a + \text{odd } b = \text{odd}$~~

~~odd  $a + \text{even } b = \text{odd}$~~



RJD