

①

Name # Asad Amin

ID # 6962

Paper # Compiler Construction

Department # BS(CS) 6<sup>th</sup> Semester

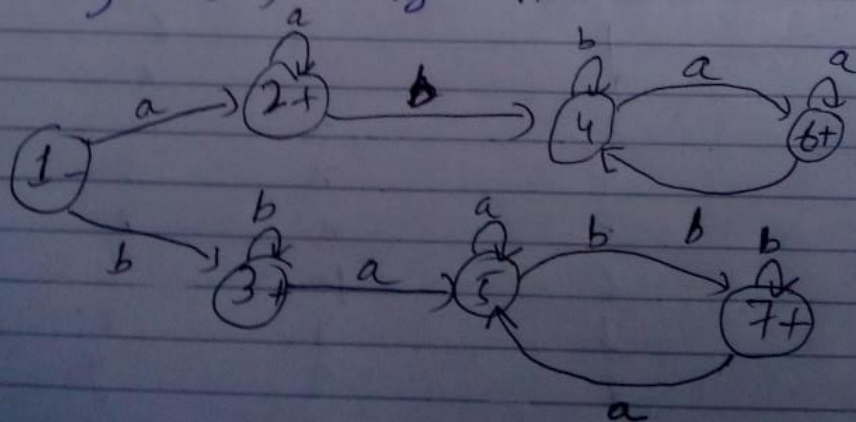
Date # 22/06/20

Q No 1 Build an FA accepting the language  $L$  of strings, defined over  $\Sigma = \{a, b\}$ , beginning with and ending with 'a' in same letters.

Ans The Language  $L$  may be expressed by the following regular expression

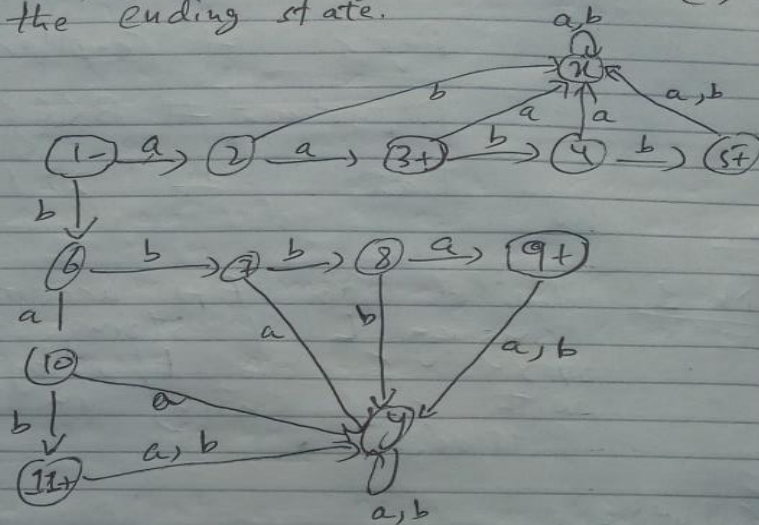
$$(a+b)^* a + b(a+b)^* b$$

This Language  $L$  may be accepted by the following FA.



(2)

Q No 6 Draw a transition table for the diagram given in figure 2 (-) is starting state and (+) is the ending state.



Ans

Transition table :-

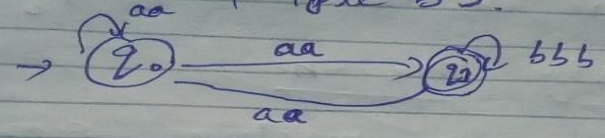
States	a	b
1-	2	6
2	3+	x
3+	x	4
4	x	5+
5+	x	x
6	10	7
7	y	8
8	9+	y
9+	y	y
10	y	11+
11+	y	y
x	x	x
y	y	y

for  
ques 2  
is

(3)

Q No 2

An FA which has quadrature  
a's or triple b's.



Q No 3

Construct regular expression of the  
following language over the alphabet  
 $\Sigma = \{a, b\}$

(i) All words having even length

Ans  $((a+b)(a+b))^*$

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

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

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

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

(iv) All words having starts with double  
a or quadruple b.

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

(4)

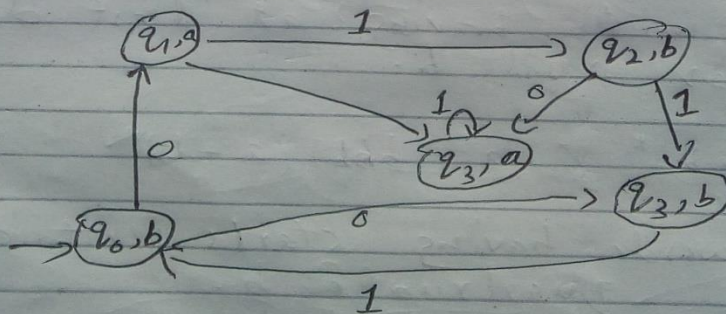
Q No 4 Distinguish between Moore and Mealy machine and convert the following Mealy machine to Moore in the following figure.

Mealy Machine :-

- (1) A mealy machine generates an output based on its current state and output signal for each transition edge.
- (2) A mealy machine will have the same number or fewer states than a moore machine.

Moore Machine :-

- (1) The output of Moore machine depends on the machines current state; transitions are not directly dependent upon input.
- (2) A moore machine can have more number of states than a Mealy machine.



Mealy to Moore Conversion