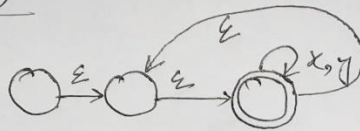Name: MD Nahid Hasan
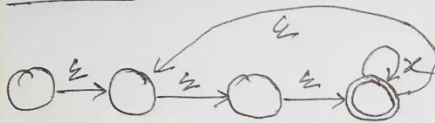
ID: 21-45018-2

1) $(x \cup y)^* \cup (x^* \cup y^*)x$ RE to NFA
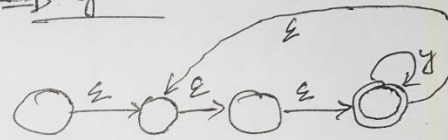
$\Rightarrow (x \cup y)^*$
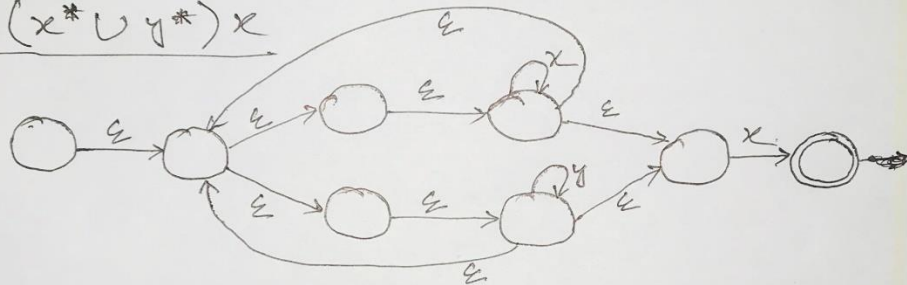

$\Rightarrow x^*$

$\Rightarrow y^*$

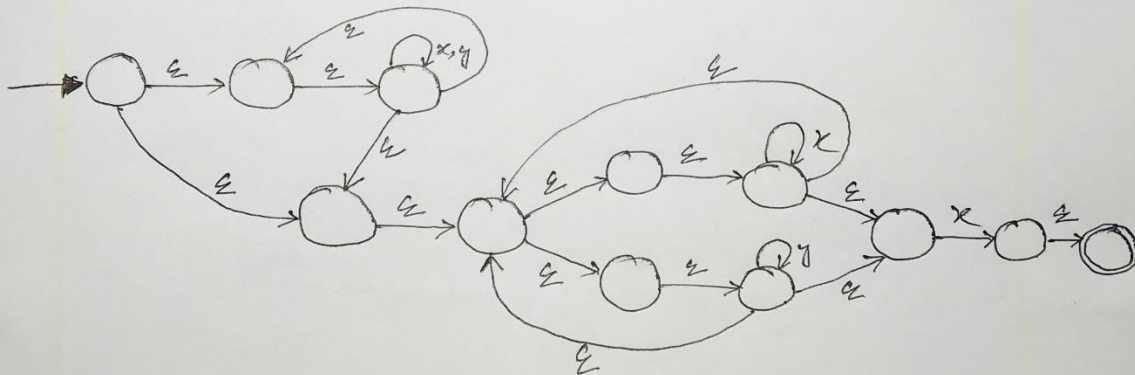$\Rightarrow (x^* \cup y^*)x$

$\Rightarrow (x \cup y)^* \cup (x^* \cup y^*)x$

(Ans)

2] {w | each a in w is followed by exactly three b}

$$= \{ abbb, abbbabbb, babbb, bbbabbbabbb, \cdots \}$$

$$= \{ (b*) \cup a(bbb)* \}$$

So, w can start with either zero or more b's __or it can__ start with a and followed by 3 b's.

3] ① cddcc (c∪d)*

$$= \{ w \mid w \text{ starts with substring "cddcc"} \overset{and}{\text{ ends with}} \\ \text{either c and .} \}$$

⑪ (c∪d) (c∪d)*

$$= \{ w \mid w \text{ starts with either c and d and ends with} \\ \text{either c and .} \}$$