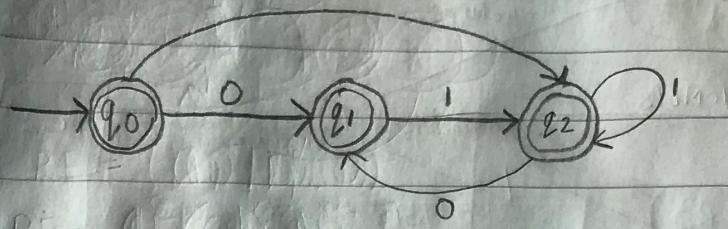
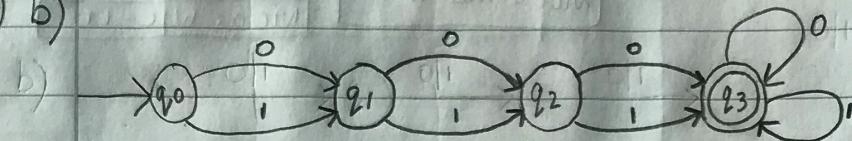


1) a)



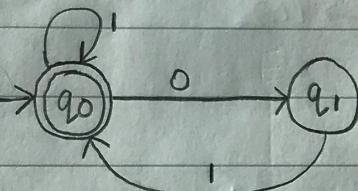
$$RE = (1|01)^* 0?$$

1) b)



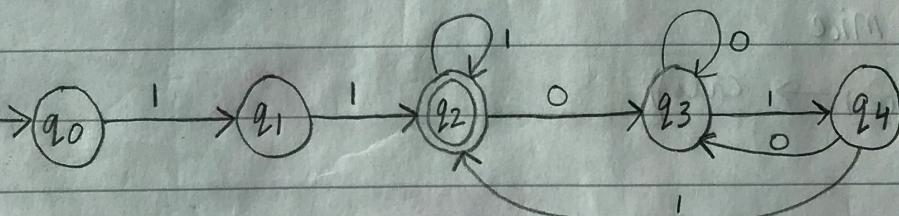
$$RE = (0|1)(0|1)(0|1)(0|1)^*$$

1) c)



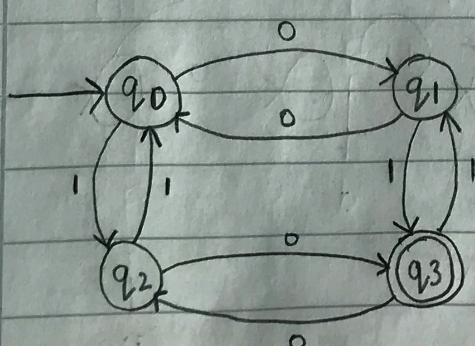
$$RE = (1|01)^*$$

1) d)



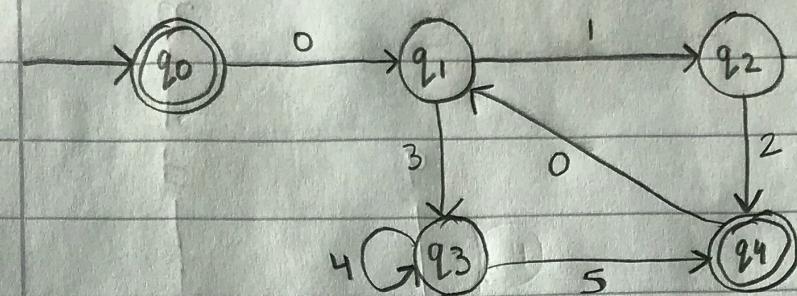
$$RE = 11(1^*(0^*1)^*1)^*$$

1) e)



$$RE = ((00|11)^* (10|01) (00|11)^* (10|01) (00|11)^* | (00|11))^* (10|01) (00|11)^*$$

2)



$$RE = (0(12|34*5))^*$$

3) a) $S \rightarrow 00|000|00A00$
 $A \rightarrow 0A|1A|\epsilon$

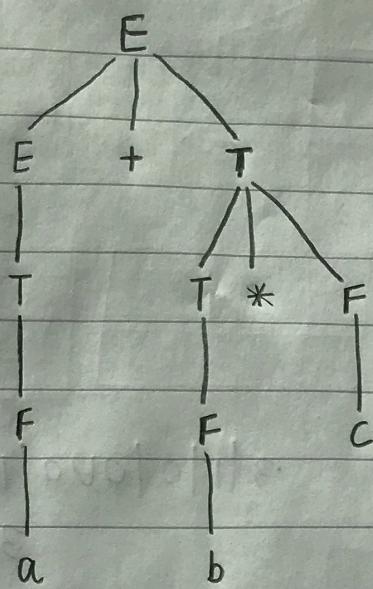
3) b) $S \rightarrow 0A|A$
 $A \rightarrow 1A|10A|\epsilon$

3) c) $S \rightarrow AAAAB$
 $A \rightarrow 0|1$
 $B \rightarrow AB|\epsilon$

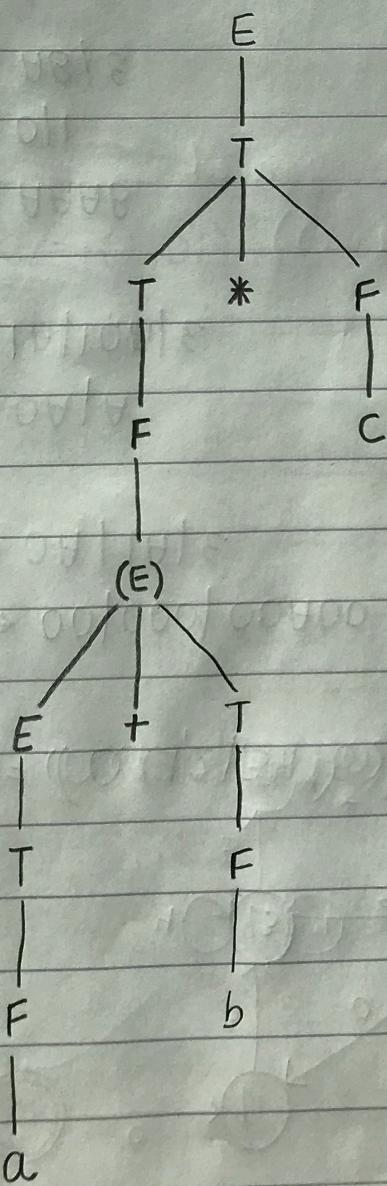
3) d) $S \rightarrow 0S11|011$

3) e) $S \rightarrow A|\epsilon$
 $A \rightarrow 1A1|0AO|011|\epsilon$

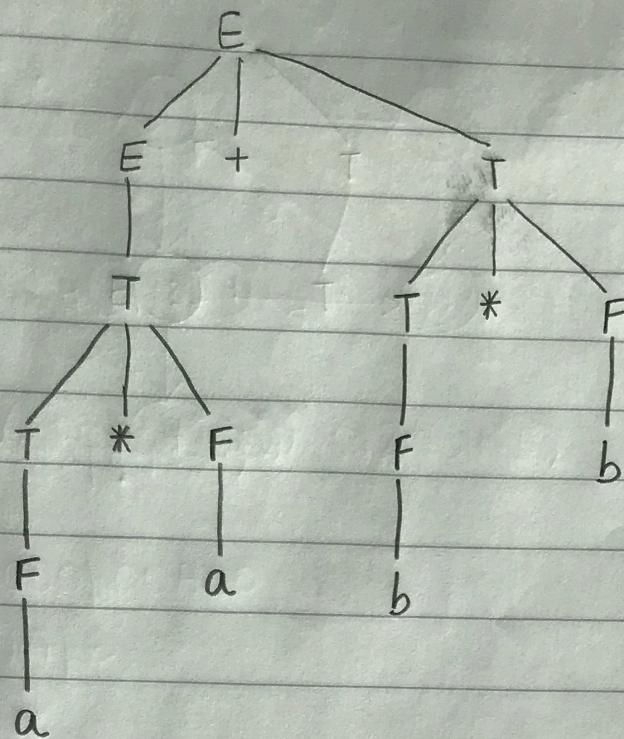
4) a)



4) b)



4) c)



5) We can make two parse tree from string 'bab'

