

Answer ANY THREE of the following questions (3x5M=15M)

1. What are the regular languages represented by the following regular expressions and also construct the minimal DFAs corresponding to those regular languages?(5 MARKS)

- a. $(ab)^*a^*b^*(ab^*)^*b^*a^*(ab)^*$
- b. $b^*(ab)^*a^*(ba^*)^*b^*a^*(ab)^*$

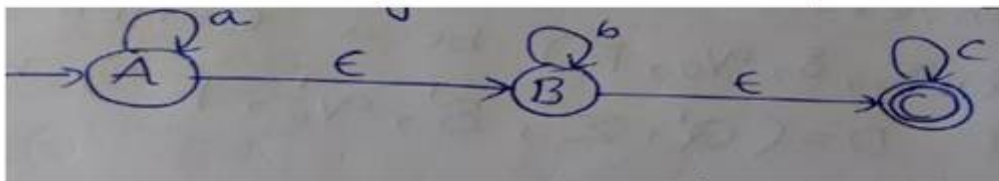
2. What are the regular languages represented by the following regular expressions and also construct the minimal DFAs corresponding to those regular languages?(5 MARKS)

- a. $(000)^*(0000)^*0^*(10^*1 + 0)^*(000)^*(0000)^*$
- b. $(111)^*(11)^*1^*(01^*01^*0 + 1)^*(111)^*(11)^*$

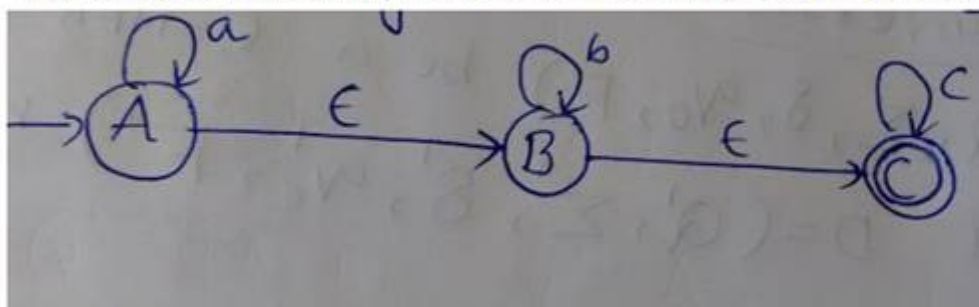
3. What are the regular languages represented by the following regular expressions and also construct the minimal DFAs corresponding to those regular languages?(5 MARKS)

- a. $(000)^*(0000)^*0^*(10^*1 + 0)^*(000)^*(0^*((0^*1)^* + 0^*)^*)^*$
- b. $(111)^*(11)^*1^*((0^*1^*01^*0^*)^* + (0^*1)^*)^*(111)^*(11)^*$

4. Convert the following finite automata into equivalent NFA?



5. Convert the following finite automata into equivalent DFA?



6. Convert the MINIMAL DFA of the formal language $L = \{w\alpha\beta \mid \alpha, \beta \in \{a, b\} \text{ and } w \in \{a, b\}^*\}$ into equivalent regular expression?