Final paper

Theory Of Automata

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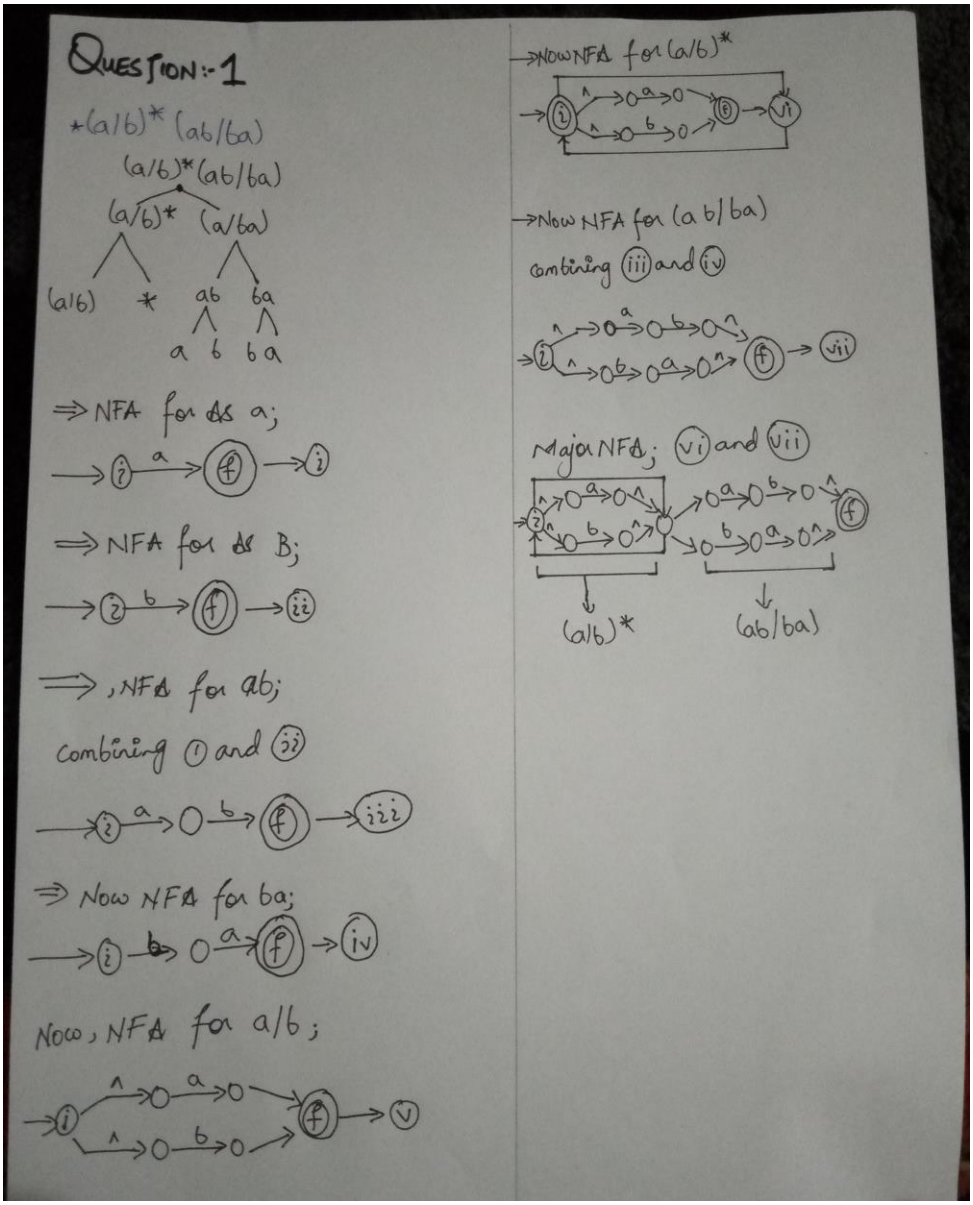
Question no 1

Parse the given RE into its Individual / Atomic Symbols and then design an NFA.

(a / b)* (ab / ba)



Question no 2

Design RE for each of the following.

i. RE for all the optional words over {a b}.

Ans) **(a/b)***

ii. RE for all the optional words over {a b} with an Even Number of "a".

Ans) **b*(ab*a)+b***

iii. RE for all the optional words over {a b} with an Odd Number of "a".

Ans) **b*a(b*a b*a b*)***

iv. RE for all the optional words over {a b} where Last symbol must be "b".

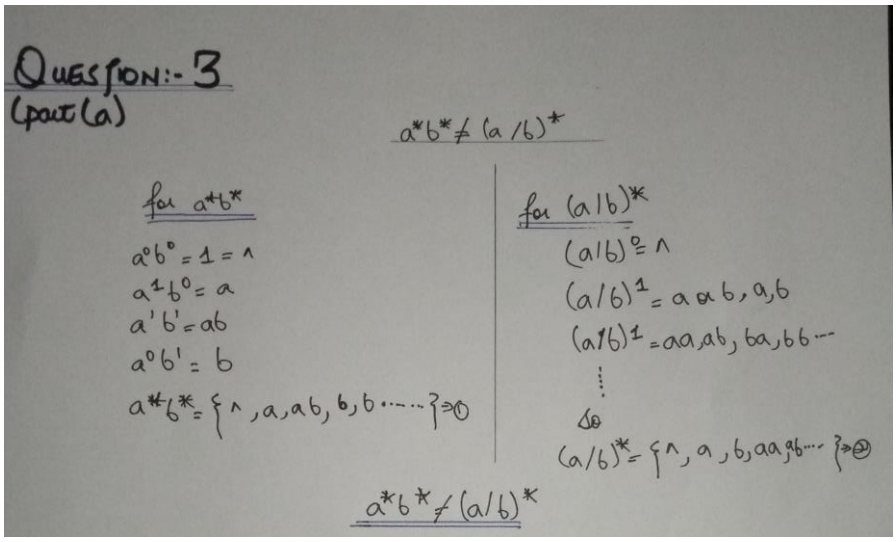
Ans) **(a+b)*b**

v. RE for all the optional words over {a b} where First symbol must be "b".

Ans) **b(a+b)***

Question no 3

(a). Prove that (a / b)* != a*b*



(b). Derive language descriptions (statements) for the following RE.

i. (a / b) (a / b) b (a / b)*

Ans) Language for these are {a,b} which starts with "aa" or "ba" or "bb" followed by b can be end with any letter

ii. (a / b)* b (a / b) (a / b)

Ans) L={a,b} where string starts with any letter followed by "b" and ends with "aa" or "ab" or "ba" or "bb"

iii. (a / b)* (aa /bb)

Ans) L={a,b} where last symbol must be two 'a' and two b's

Stirng must end with 'aa' or 'bb'

iv. (aa / bb) (a / b)*

Ans) L={a,b} where first symbol must be 'aa' or 'bb' string must start with 'aa' and 'bb'

Question no 4

Design NFA for the following without Parsing.