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ASSIGNMENT. THEORY OF AUTOMATA.

Q 1) Keeping in the view the Kleens theorem. Proof for any language S.

$S^+ = (S^+)^+$.

S=(a b)

S=(a b aa ab bb ba aaa aab aba abb bbb bba bab baa ….)

S^+=(a b aa ab bb ba aaa aab aba abb bbb bba bab baa ….)

$(S^+)^+$=(a b aa ab bb ba aaa aab aba abb bbb bba bab baa ….)

Here the $(S^+)^+$ gives all those strings which are gained by the concatenation of the strings of S^+.
So it is proved that $S^+ = (S^+)^+$.

Q2) How many words does S^* will have the of length 3, 4 and 5. If S= (ab ba)

Design S^* and then write answer on the basis of words of S^*.

S={ab ba}

Here we have 2 words In the language S. So the total number of words of length =n=2

So total words of length 2=2^2=4

total words of length 3=2^3=8

total words of length 2=2^4=16

Now we will design S^* for the length of 3 4 5

S^*={/\ ab ba abab abba baba baab abababab ababba abbaab abbaba bababa babaab baabba baabab abababab …. Bababababa…. }

SO, Total words of length 3= 0.

Total words of length 4 = 4.

Total words of length 5=0.

Q3) Fill in the blanks.

1. A dictionary is arranged in **ALPHABATIC** order.
2. + Is called **1/MORE** instances
3. * Is called **0/MORE** instances
4. ? Is called **0/1** instances
5. A formal language is a game of **SYMBOLS** on paper.
6. /\ is included in **KLEEN STAR** closure.
7. **DAD** Is a word whose reverse is equal to itself.
8. **CONCATENATION** Is an operation in which symbols are placed side by side.
9. {a b}={b a}for **REVERSE** operation.
10. Two words having same symbols in same order called **LEXICOGRAPHIC** words.