

SSN COLLEGE OF ENGINEERING, KALAVAKKAM
Department of Computer Science and Engineering
UCS1503 - Theory of Computation
V - Sem A, B - Section
Assignment – 1
Due Date 10.09.2022

1. Construct a DFA and NFA that recognizes the language $C = \{w \in \Sigma^* \mid w = saba \text{ for some string } s \in \Sigma^*\}$

Also check the following words for both NFA & DFA

i) bbabab

ii) baba

2. Construct a DFA and NFA for $E = \{w \in \Sigma^* \mid w \text{ begins with } b \text{ and ends with } a\}$

Also check the following words for both NFA & DFA

i) bbabab

ii) baba

3. Construct the equivalent DFA following NFA given in transition table:

i)

	inputs	
states	0	1
$\rightarrow p$	{p,q}	{p}
q	{r}	{r}
r	{s}	-
*s	{s}	{s}

ii)

	inputs	
states	0	1
$\rightarrow p$	{q,s}	{q}
*q	{r}	{q,r}
r	{s}	{p}
*s	-	{p}

iii)

	inputs	
states	0	1
$\rightarrow *q_0$	{q ₀ ,q ₁ }	{q ₁ }
q ₁	{q ₀ }	{q ₀ ,q ₁ }

4. Construct the equivalent NFA for the ε -NFA given in the following transition table:

i)

	inputs		
states	ε	a	b
$\rightarrow p$	{q}	{p}	-
q	{r}	-	{q}
*r	-	-	{r}

ii)

	inputs			
states	ε	a	b	c
$\rightarrow 0$	{1,2}	{0}	-	
1	{3}	-	{2}	
2	-	-	{3}	
*3	-	-	-	{3}