

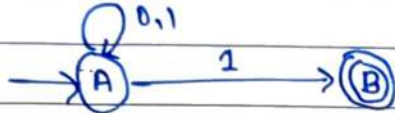
29/07/24  
MON.

### # ASSIGNMENT: NO: 2: (TWO):-

Convert the Given NFA to DFA.

(1)  $L = \{ \text{Set of all strings that end with '1'} \}$

$\Rightarrow L = \{ 1, 01, 11, 001, 011, 101, 111, 1011, 1001, 0001, 1111, \dots \}$



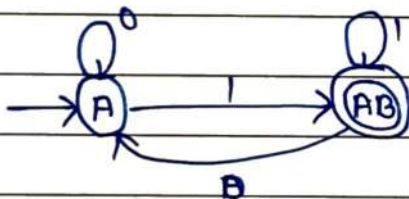
This is a NFA.

Now, state Transition Table:-

	0	1
$\rightarrow A$	A	$\{A, B\}$
$\textcircled{B}$	$\emptyset$	$\emptyset$

Now, for -DFA

	0	1
$\rightarrow A$	A	AB
$\textcircled{AB}$	A	AB

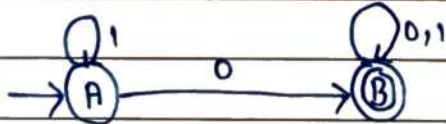


This is the required DFA.

(2)  $L = \{ \text{set of all string that contain '0'} \}$

$\rightarrow L = \{ 0, 10, 01, 001, 100, 110, 101, 1001, 0001, 1000, \dots \}$

The NFA for above -Language is:-



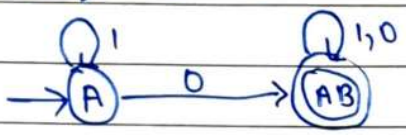
state Transition Table

	0	1
A	A, B	A
B	B	B

Now, By Using subset construction Method:-

	0	1
→ A	AB	A
(AB)	AB	AB

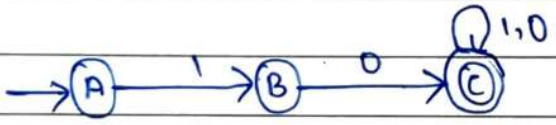
Thus, Required DFA is :-



(3.)  $L3 = \{ \text{Set of all string that start with '10'} \}$

→  $L3 = \{ 10, 101, 1011, 1010, 10110, 101111, 101010, \dots \}$

The NFA for above language is:-



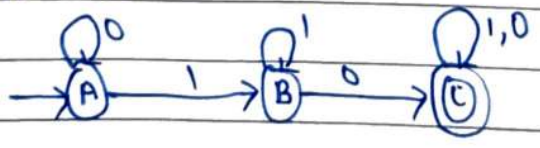
state transition Table:

	0	1
→ A	∅	B
B	C	∅
(C)	C	C

Now, By Using subset construction Method;

	0	1
→ A	∅	B
B	C	∅
(C)	C	C

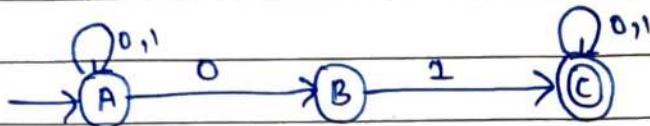
The Required DFA is



(4)  $L_4 = \{ \text{set of string that contain } 01 \}$

$\rightarrow L_4 = \{ 01, 101, 001, 1001, 1101, 10111, 1001101, \dots \}$

The required NFA is:-



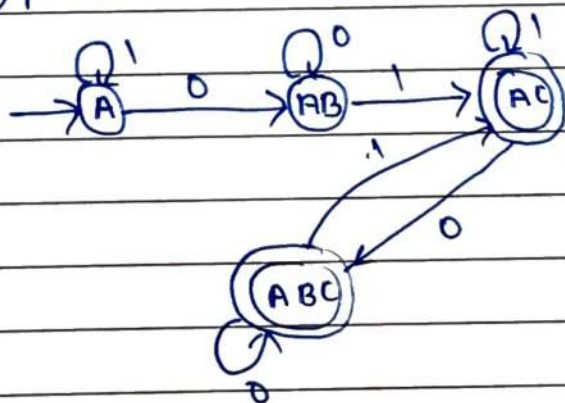
state Transition Table:-

	0	1
$\rightarrow A$	A, B	A
B	$\emptyset$	C
C	C	C

Now, By using subset construction method:-

	0	1
$\rightarrow A$	AB	A
AB	AB	AC
AC	ABC	AC
ABC	ABC	AC

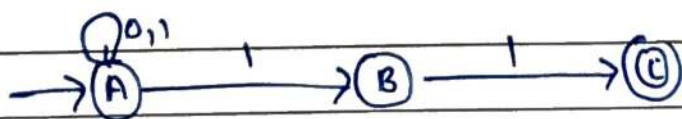
$\rightarrow$  (consider combined state)



(5)  $L_5 = \{ \text{set of all strings that end with } '11' \}$

$\rightarrow L_5 = \{ 11, 11011, 011, 111, 1111, 1011, 10011, 0011, \dots \}$

The NFA is:-



o State Transition Table:-

→	0	1
→A	A	A,B
B	$\emptyset$	C
ⓐ	$\emptyset$	$\emptyset$

Now, By Using Subset Construction Method:-

∴

	0	1
→A	A	AB
AB	A	ABC
ⓐ	A	ABC

o The Required DFA is:-

