NATIONAL INSTITUTE OF TECHNOLOGY TIRUCHIRAPPALLI
CYCLE TEST 1 – January 2021 Session

DEPARTMENT	:	Computer Science and Engineering
DATE & TIME OF EXAM	:	1st March 2021 & 10.00 am
SUB CODE	:	CSPC41 – Automata and Formal Languages
SEMESTER & YEAR	:	IV / II / A section
DURATION	:	1 hr
MARKS	**:**	**20 marks**

1. Find a regular expression corresponding to the language over {0,1}* - The language of all strings containing both 101 and 010 as substrings. (2)

2. Draw a E-NFA recognizing the following language: 0 + 10* + 01*0 (2)

3. Draw a DFA corresponding to the language over {0,1}* - the set of all strings that begin or end with 00 or 11. (2)

4. Construct a NFA and then convert it to DFA for the following input E-NFA. (6)

	a	**b**	**ε**
➔ 1	Φ	Φ	{2}
2	{3}	Φ	{5}
3	Φ	{4}	Φ
4	{4}	Φ	{1}
5	Φ	{6,7}	Φ
6	{5}	Φ	Φ
* 7	Φ	Φ	{1}

5. Construct a RE for the following DFA using Kleene's theorem (4)

	a	**b**
➔ 1	2	2
* 2	3	3
* 3	4	4
4	1	2

6. Using the properties of DFA construct a DFA, whose string when interpreted will be a multiple of 6. (4)

Best Wishes