Siliguri Institute of Technology

Computer Science & Engineering Department

Year: 2ND Semester: 2ND Section: A

Paper Name: Formal Language and Automata Theory
Paper Code: PCC CS 403
Last Date of Submission: 27th April, 2023
Full Marks: 25
Assignment policy:

- Assignments must be submitted **in class** as hardcopy (A4 sheet) within the due date mentioned above.
- **No late submissions will be allowed.**
- **Each question will carry 5 marks.**

Assignment – I

1. Construct a FA for the language:
   $L = \{(ab)^i b^{2j} \mid i \geq 1 , j \geq 1\}$
   The minimum string generated by given language is abbb where i=1 and j=1.

2. Convert the NFA into equivalent DFA . The transition table of the NFA is given below:

Transition table		
Present state	**Next State Input**	
	a	**b**
->q_0	$\{q_0, q_1\}$	$\{q_0\}$
q_1	ϕ	$\{q_2\}$
q_2	ϕ	$\{q_f\}$
*q_f	ϕ	ϕ

3. Construct DFA for the regular expression r= 0 +11 +101*0

4. Construct a Moore Machine equivalent to the Mealy machine M given in the table:

Present State	**0**		**1**	
	Next State	**Output**	**Next State**	**Output**
->q_1	q_1	1	q_2	0
q_2	q_4	1	q_4	1
q_3	q_2	1	q_3	1
q_4	q_3	0	q_1	1

5. Minimize the following Finite Automata

Transition table		
Present state	**Next State Input**	
	a	**b**
->q_0	q_1	q_3
q_1	q_2	q_4
q_2	q_1	q_4
q_3	q_2	q_4
*q_4	q_4	q_4