

**Department of Computer Science & Engineering**  
**National Institute of Technology Srinagar**

Assignment No: 3

Due Date: 31/05/2020

**(Theory of Computation)**

- Q1. Obtain a RE to accept strings of 0's and 1's having no two consecutive zero's.
- Q2. Obtain a RE to accept words with two or more letters but beginning and ending with the same letter, where  $\Sigma = (a, b)$ .
- Q3. Obtain a RE to accept a string not ending with 001.
- Q4. Obtain RE for  $L = \{ a^n, b^m, c^p \mid n \leq 4, m \geq 2, p \leq 2 \}$ .
- Q5. Find DFA's to accept the following languages:
- (i)  $L(00^* + 010^* 01)$
  - (ii)  $L(0(0+1)^* 11)$
- Q6. Construct an NFA for the RE's
- (i)  $(0+1)^* (00+11) (0+1)^*$
  - (ii)  $10 + (0+11) 0^* 1$
- Q7. Obtain a CFG on (a, b) to generate a language  $L = \{ a^n w w^R b^n \mid w \in \Sigma^*, n \geq 1 \}$ .
- Q8. Obtain a CFG on (a, b) to generate a language  $L = \{ a^n b^m \mid m > n \text{ and } n \geq 0 \}$ .