Birla Institute of Technology and Science-Pilani, Hyderabad Campus
Second Semester 2021-2022
Tutorial-3
Course No CS F351
Course Title: Theory of Computation

General Instructions: *Argue logically. Write it in a manner that explains your logic very clearly. Do not miss steps in between.*

1. Construct DFA for the following languages.

    (a) $L_1 = \{\omega \in \{0,1\}^* \mid \omega$ contains equal number of occurrences of 01 and 10$\}$

    (b) $L = \{x \in \{0,1,2\}^* \mid$ integer equivalent of ternary string on base 3 is divisible by 7$\}$

2. Construct NFA for the following languages.

    (a) $L = \{x \in \{0,1\}^* \mid x$ contains two 0s separated by a substring whose length is a multiple of 3$\}$

    (b) $L_1 = \{\omega \in \{a_0, a_1, a_2\} \mid \omega$ is a string in which at least one a_i occurs even number of times (not necessarily consecutive), where $0 \leq i \leq 2\}$