Name: \_\_Demetrius Johnson\_\_\_\_\_\_\_\_\_\_\_\_\_\_FEB 16, 2021\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*No calculators are allowed.* Show your work. The points for each problem are indicated. Problems with incomplete work may receive partial, or no credit.

***COs: [Question 1]***

**Points: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ / 15**

1. [10 pts] Draw a Turing Machine state transition diagram for the language of { all binary strings **containing** the substring 101} //obviously our input alphabet is binary {0, 1}
2. [5 pts] Give the configuration after applying the ***appropriate*** transition function, using the symbols a, b, c. Only apply the transition function **once**. PICK THE CORRECT TRANSITION FUNCTION, and apply it, giving your final configuration

Assume your **original configuration** is: **abbaq1bba**

**Transition functions available:**

* **δ(q1, a) = (q2, a, R)**
* **δ(q1, b) = (q3, c, L)**
* **δ(q3, a) = (q4, c, R)**