MAU22C00: TUTORIAL 20 PROBLEMS
TURING MACHINES

1) Consider the language over the binary alphabet $A = \{0, 1\}$ given by $L = \{0^m 1^{2m} \mid m \in \mathbb{N}\}$.

(a) Write down the algorithm of a Turing machine that recognizes L. Process the following strings according to your algorithm: ϵ, 01, 011, and 010.

(b) Draw the transition diagram of the Turing machine from part (a) carefully labelling the initial state, the accept state, the reject state, and all the transitions specified in your algorithm.