Introduction to Computation Theory

Quiz 3 – In-class (20 pts)

Answer all questions

1. [10 pts] The following are the state diagrams of two DFAs, M1 and M2. Answer the following questions about each of these machines:
   1. [1 pts] What is the start state?

**M1 -> Starts at q1**

**M2 -> Starts at q1**

* 1. [3 pts] What is the set of accept states?

**M1 -> {q2}**

**M2-> {q1, q4}**

* 1. [1 pts] What sequence of states does the machine go through on input aabb?

**M1: q1->q2, q2->q3, q3->q1, q1->q1**

**M2: q1->q1, q1->q1, q1->q2, q2->q4**

* 1. [1 pts] Does the machine accept the string aabb?

**M1: No, q1 is not an accept state.**

**M2: Yes, q4 is an accept state.**

* 1. [1 pts] Does the machine accept the string ε?

**M1: No, could not get to accept state from empty string**

**M2: Yes, can get to an accept state from empty string**

* 1. [2 pts] Give the formal description of the machines M1 and M2

**M1: {Q,∑,**

1. [6 pts] The formal description of a DFA *M* is ({q1, q2, q3, q4, q5}, {u, d}, δ, q3, {q3}), where δ is given by the following table. Give the state diagram of this machine.



1. [5 pts] Give state diagrams of DFA recognizing the following language {w| w contains an even number of 0s, or contains exactly two 1s}, the alphabet is {0,1}