CSE 105 Review Quiz 7

This is an *individual* review quiz. You should not discuss questions or share answers with other students in the class. If you are unsure about the correct solution for a question, review the book and the lecture. If you are still unsure, make an educated guess.

Scores translate to participation points as follows:
4 or 5 points = 2 participation points
2 or 3 points = 1 participation points
0 or 1 points = 0 participation points

The deadline is Sunday 11/17 at midnight.

* Required

1. Email address *

2. First name *

3. Last name *

4. UCSD PID *

Consider the Turing machine M with state diagram as depicted below. \( \Sigma=\{0,1,2\}, \Gamma=\{0,1,2,X,Y,Z\} \). \( q_{\text{acc}} \) is the accept state.

State Diagram:
5. Q1: Which of the following input strings are accepted by M? *

Check all that apply.

- [ ] 0122
- [ ] 001122
- [ ] 0112
- [ ] 00122
- [ ] 0022
- [ ] 00111222
6. Q2: Which among the following are the set of states visited for the input string "012"? *
   Mark only one oval.
   - \{q0, q1, q2, q3, q4, q5, q6\}
   - \{q0, q1, q2, q3, q4, q5, q6, q_{acc}\}
   - \{q0, q1, q2, q3, q4, q_{acc}\}
   - \{q0, q1, q2, q3, q4, q5\}

7. Q3: Which of the following statements about M's configurations are correct? The configurations are in the format u<space>q<space>v. *
   Check all that apply.
   - XYY q4 1ZZ yields XYY Y q5 ZZ
   - XXYYY1 q5 ZZ2 yields XXYYY1ZZ q6 Z
   - XYXY q6 ZZ yields XYY1Z q6 Z
   - q3 X00Y1Z yields X q0 00Y1Z

8. Q4: What is the language recognized by M? *
   Mark only one oval.
   - \{0^{i} 1^{j} 2^{k} | i < j < k, i >= 0\}
   - \{0^{i} 1^{j} 2^{k} | i <= j < k, i>=0\}
   - \{0^{i} 1^{j} 2^{k} | i <= j <= k, i>0\}
   - \{0^{i} 1^{j} 2^{k} | i < j <= k, i>0\}

9. Q5: Let \( L1 = \{a^n b^2 n c^3 n | n>0\} \). Which of the following statements are true? *
   Mark only one oval.
   - L1 is Turing recognizable but not decidable
   - L1 is Turing decidable but not recognizable
   - L1 is Turing recognizable and decidable
   - L1 is neither Turing recognizable nor decidable