1. **What Does This Program Do - Looping**
   When the following program is run, what is the last element of array B that is modified?
   ```plaintext
   FOR J = 5 TO 1 STEP –1
   FOR K = 3 TO 10 STEP 2
       B(J,K) = J + K
   NEXT K
   NEXT J
   ```

2. **Digital Electronics**
   Write the Boolean expression that is the exact translation of the following circuit:

3. **Digital Electronics**
   Find all ordered triplets (A,B,C) that make the following circuit TRUE.

4. **Graph Theory**
   How many different paths of length 2 exist in the following directed graph?

5. **Graph Theory**
   How many cycles exist in the following directed graph?
6. Digital Electronics
   Find all ordered pairs (A,B) that make the following circuit TRUE.
   ![Circuit Diagram]

7. Digital Electronics
   Translate the circuit to a Boolean expression and simplify.
   ![Circuit Diagram]

8. Boolean Algebra
   Simplify so that only AND and NOT symbols are used
   \[
   \overline{A \cdot (B + C)} + \overline{B \cdot (A + C)} + \overline{C \cdot (A + B)}
   \]

9. Graph Theory
   Which of the following are simple paths in the following diagram?
   A) ECAD  
   B) BCABD  
   C) EDCAB  
   D) CADCB  
   E) None of the above
   ![Graph Diagram]

10. Graph Theory
    Write the adjacency matrix for the following graph.
    ![Graph Diagram]