1. Graph Theory   1.

After drawing the following directed graph, how many pairs of
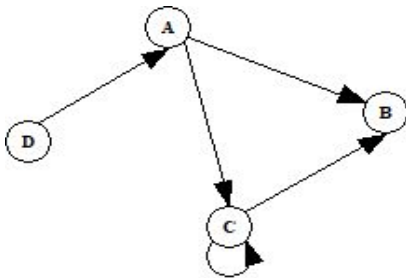different vertices have no edge in either direction between them?

      Vertices: {A, B ,C, D, E, F} and
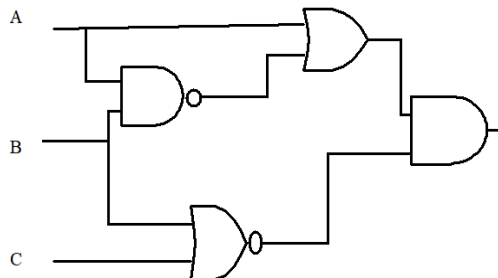   Edges: {AB, FD, CC, EA, FE, AC, DB, FA, CB, EE, BD}

2. Graph Theory   2.

How many more paths of length 3 are there than of length 2 in this
directed graph?

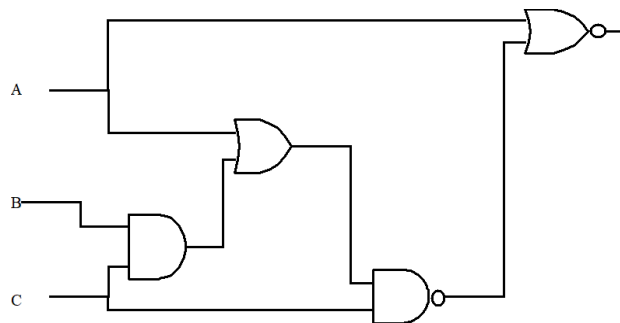**3. Digital Electronics**   3.

Simplify the Boolean expression represented by the following
digital circuit. Perform all indicated operations.

4. Digital Electronics

How many ordered triples make the Boolean expression represented by this digital circuit TRUE?

5. Assembly Language

What is output when this program is executed?

```
      X   DC    8
      Y   DC    15
TOP   LOAD  X
      MULT  X
      SUB   Y
      BL    L
      LOAD  X
      SUB   =1
      STORE X
      LOAD  Y
      SUB   =1
      STORE Y
      BU    TOP
  L   PRINT X
      END
```