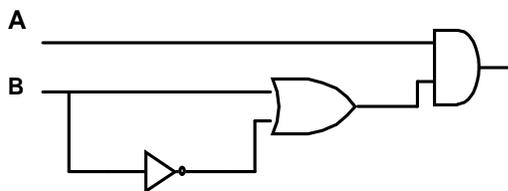


**1. Digital Electronics**



List all of the following statements that are true about the circuit above.

- a. It is TRUE for all possible inputs.
- b. It is FALSE for all possible inputs
- c. It is TRUE only when the two inputs are different.
- d. It is sometimes TRUE when the two inputs are different.
- e. It is FALSE whenever B is TRUE.

**2. Prefix/Postfix**

Convert the following postfix expression into prefix.

AAB + CAB / - / \*

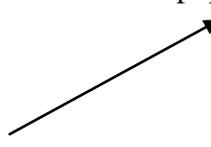
**3. Prefix/Postfix**

The volume of a sphere is given by the formula  $V = \frac{4}{3} \pi R^3$ . Translate the formula, as written above, into prefix.

**4. Data Structures**

Consider the following operations on an initially empty queue. If a POP is now performed, what value would be popped?

- |          |          |
|----------|----------|
| PUSH (B) | PUSH (D) |
| PUSH (I) | POP (X)  |
| PUSH (N) | PUSH (S) |
| POP (X)  | POP (X)  |



**5. Data Structures**

Insert the key "VULCAN" into the following binary search tree. What is the new external path length?

