Assignment 1

The due date for submitting this assignment has passed.

1. Which of the following Boolean expressions is equivalently true to \((x \land y)\)?
   - \((x \lor y)\)
   - \((x' \lor y')\)
   - \((x' \land y')\)
   - \((x' \land y)\)
   No, the prover is incorrect.
   Hint:
   Answer:
   1 point

2. A time variable function evaluates to True whenever the input variables \(x, y\) and \(z\) are assigned \(0, 0, 1\) respectively. If \(x, y\), and \(z\) are independent, which of the following is a sum of products form for the Boolean function?
   - \((x \land y)\)
   - \((x' \land y \land z)\)
   - \((x \land y' \land z)\)
   - \((x' \land y' \land z')\)
   No, the prover is incorrect.
   Hint:
   Answer:
   1 point

3. Which of the following is not a complete set of connected?
   - \([A(x), \neg A(x)]\)
   - \([B(y), \neg A(\neg y)]\)
   - \([C(x) \land x(x)]\)
   - \([D(x) \land x(x)]\)
   No, the prover is incorrect.
   Hint:
   Answer:
   1 point

4. An ancient tale had two kinds of villains, knights, who always tell the truth, and knaves, who always lie. So, we encounter three persons: P, Q, and R. Which of the following is an example of such an answer?
   - If P is true and R is a knave, then P is a knight.
   - If Q is a knave and R is a knave, then Q is a knave and R is a knight.
   - If R is a knave, then P is a knave.
   No, the prover is incorrect.
   Hint:
   Answer:
   1 point

5. Which of the following is the negation of \(\forall x (x \lor y)\)?
   - \(\exists x (x \land y)\)
   - \(\forall x (x \land y)\)
   - \(\exists x (x \land y)\)
   - \(\exists x (x \land y)\)
   No, the prover is incorrect.
   Hint:
   Answer:
   1 point

6. Determine the truth value of each of the following statements where \(B = \{7, 3, 4\}\) is the domain of discourse.\(\forall x (x^2 < 2y)\) and \(\forall y (x + y > 1 \lor x = 2y)\)
   - \(B \land B = \{7, 3, 4\}\)
   - \(B \land B = \{7, 3, 4\}\)
   - \(B \land B = \{7, 3, 4\}\)
   - \(B \land B = \{7, 3, 4\}\)
   No, the prover is incorrect.
   Hint:
   Answer:
   1 point

7. Which of the following is true in Propositional Logic?
   - \(A \land B \land C\)
   - \(A \land B \land C\)
   - \(A \land B \land C\)
   - \(A \land B \land C\)
   No, the prover is incorrect.
   Hint:
   Answer:
   1 point

8. Pick the statement out.
   - \(A \land B \land C\)
   - \(A \land B \land C\)
   - \(A \land B \land C\)
   - \(A \land B \land C\)
   No, the prover is incorrect.
   Hint:
   Answer:
   1 point