
QUIZ 2 - Logical Equivalence (EXAMPLE QUIZ 2 FOR 2016)

MA 240, Instructor: Jeffrey Horn, Fall 2014

NAME:

INSTRUCTIONS

Answer the questions as directed. Note that each question clearly indicates whether there might be multiple answers to choose, or only a single answer. Feel free to write scratch work in the empty spaces for possible partial credit, but do not obscure your choices for the answers!

Question 1

Which of the following is equivalence to $p \oplus q$? Circle ALL correct choices.

1. $\overline{p \vee q}$
2. $\overline{p \wedge q} \wedge \overline{\overline{p \wedge q}}$
3. $\overline{p} \oplus \overline{q}$
4. $(p \vee q) \wedge \overline{p \vee q}$
5. $(\overline{p} \wedge q) \oplus (p \wedge \overline{q})$
6. $(\overline{p} \wedge q) \vee (p \wedge \overline{q})$

Question 2

Next to each of the following compound propositions, write the correct label, one of "Tautology," "Contradiction," or "Contingency."

1. $(p \wedge q \wedge \overline{r}) \vee (\overline{p} \wedge \overline{q} \wedge r)$
2. $p \wedge q \wedge \overline{r} \wedge \overline{p} \wedge \overline{q} \wedge r$
3. $(p \vee q \vee \overline{r}) \vee (\overline{p} \vee \overline{q} \vee r)$
4. $p \wedge q \wedge \overline{r} \wedge \overline{p} \wedge \overline{q} \wedge r$

Question 3

Which of the following is equivalent to the negation of $(\overline{a} \vee b) \wedge \overline{c}$? Choose ONE answer.

1. $(\overline{a} \wedge \overline{b}) \vee c$
2. $(a \vee \overline{b}) \vee c$
3. $(\overline{a} \wedge \overline{b}) \vee \overline{c}$
4. $(a \wedge b) \vee c$
5. $(a \wedge \overline{b}) \vee \overline{c}$
6. $(a \wedge \overline{b}) \vee c$
7. $(a \wedge \overline{b}) \vee c$