

Student ID and Name:

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1. The negation of "Ali is happy and healthy" is:
  - a. Ali is neither happy nor healthy
  - b. Ali is not happy or Ali is healthy
  - c. Ali is happy or Ali is healthy
  - d. Ali is not happy or Ali is not healthy
2. The correct implication for  $\forall x (P(x) \vee Q(x)) \dots \forall x P(x) \vee \forall x Q(x)$  is
  - a.  $\rightarrow$
  - b.  $\leftarrow$
3. The statements  $\forall x \exists y P(x,y)$  and  $\exists y \forall x P(x,y)$  are equivalent
  - a. True
  - b. False
4. The negation of "All students are honest" is :
  - a. All students are dishonest
  - b. Some students are dishonest
  - c. There is exactly one student who is honest
  - d. All of the above
5. The expression  $(\neg p \wedge (p \rightarrow q)) \rightarrow \neg q$  is a tautology
  - a. True
  - b. False
6. Let domain of x be integers. If the predicate  $\forall x (P(x) \wedge Q(x))$  is true, we can conclude:
  - a.  $P(10) \wedge Q(20)$
  - b.  $P(10) \vee Q(20)$
  - c.  $P(10) \wedge Q(10)$
  - d. All of the above

Section 1.3 (Propositional Equivalences): 10, 12

Section 1.4 (Quantifiers): 8, 10

Section 1.5 (Nested Quantifiers): 10

**Important Note: Do not use the printed version of the textbook. Use the e-version of 7th edition. For problems with multiple parts, Do only parts b and c.**