Exam 3 Study Guide

I. The exam covers Units 10 through 13:
   a. Singular Sentences
   b. Simple General Sentences
   c. Categorical Propositions
   d. Quantifier Negation Equivalencies (Q.N. and C.Q.N)
   e. Categorical Propositions with Complex Subjects and Predicates

II. Be able to:
   a. Recognize correct statements of Q.N. and C.Q.N. equivalencies
   b. Translate from English sentences into symbolic expressions
   c. Translate from symbolic expressions into English sentences
   d. Derive C.Q.N. equivalencies using Q.N. equivalencies and Rules of Replacement

III. Review the following pages and exercises for the exam:
   a. Exercise 2, pp. 210–11
   b. Exercises 3, 4, pp. 223–24
   c. Exercise 3, p. 245
   d. Exercises 5–7, pp. 246–48
   e. Exercises 1–3, 7–8, pp. 258–62

Sample Exam Questions

I. Quantifier Equivalencies: Indicate whether the following expressions of Quantifier Equivalence are correct (TRUE) or incorrect (FALSE)

T/F 1. ¬(x) ¬φ x :: (∃x) φ x

T/F 2. ¬(x) (φ x ⊃ ψ x) :: (∃x) (φ x · ¬ψ x)

T/F 3. ¬A ≡ ¬I
For this exam you will need a #2 Pencil and a blue “bubble sheet.”

More Sample Exam Questions

II. Translation (English to symbols): For each of the following English sentences, select the correct symbolization from the list below.

\( S_x \equiv x \) is a senior; \( P_x \equiv x \) will be pleased; \( L_x \equiv x \) PASSES logic; \( F_x \equiv x \) is free; \( A_x \equiv x \) is anxious to graduate; \( d = Dave; \) \( m = Martha \)

4. Dave is a Senior but Martha isn’t.
   A. \( D_x \cdot \sim M_m \)  
   B. \( S_d \cdot \sim S_m \)  
   C. \( (\forall x)(D_x \cdot \sim M_x) \)  
   D. \( D_s \cdot \sim M_s \)

5. Not all seniors are anxious to graduate.
   A. \( (\exists x)(\sim S_x \cdot A_x) \)  
   B. \( (\exists x)(S_x \cdot A_x) \)  
   C. \( \sim (\forall x) S_x \supset A_x \)  
   D. \( \sim (\exists x) (S_x \supset A_x) \)

\( L_x \equiv x \) is a Logician; \( F_x \equiv x \) is Friendly; \( R_x \equiv x \) is Rich

6. \( \sim (x)((R_x \cdot L_x) \supset F_x) \)
   A. Some rich logicians are friendly.  
   B. All rich logicians are friendly.  
   C. There are no rich logicians who are friendly.  
   D. Not all rich logicians are friendly.

III. Translation (symbols to English): For each of the following symbolic expressions, select the correct translation from the list of English sentences below.

\( W_x \equiv x \) is a whale; \( F_x \equiv x \) is a fish; \( M_x \equiv x \) is a mammal;

7. \( \sim (\exists x)(F_x \cdot W_x) \)
   A. Some fishes are whales.  
   B. Some whales are fishes.  
   C. No fishes are whales.  
   D. Not all fishes are whales.

IV. Logical Equivalence: Some or all of the following logical formulas are correct symbolizations of the English sentence below. For each formula, mark T if it is a correct symbolization; otherwise, mark F.

\( \text{No one who masters logic is either lazy or careless.} \)

\( P_x \equiv x \) is a Person; \( M_x \equiv x \) Masters logic; \( L_x \equiv x \) is Lazy; \( C_x \equiv x \) is Careless

T/F 8. \( \sim (x)((P_x \cdot M_x) \supset (~L_x \cdot ~C_x)) \)
T/F 9. \( (x)((P_x \cdot (L_x \lor C_x)) \supset ~M_x) \)

V. Deriving Quantifier Negation Equivalencies: Use Q.N. Rules and some Rules of Replacement to show how the following categorical propositions are equivalent.

10. \( \sim (\exists x)(S_x \cdot P_x) \rightarrow (\forall x)(S_x \supset ~P_x) \)