2018-09-14

ECE20002-01 Discrete Mathematics, 2018 Fall

Quiz 1

Your name: _____ Your team number : _____

1. State the contrapositive and the inverse of each of the following conditional statements.

(a) I will not come to class if there is no quiz (2 points)

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(b) If a positive integer has no divisor other than 1 and itself, the number is prime (2 points)

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2. Determine whether each of the following compound proposition is satisfiable (2 points)

(a) $(p \to q) \wedge (q \to \neg p) \wedge \neg(p \vee q)$ _____

(b) $(\neg q \to p) \wedge (p \to q) \wedge (p \wedge q)$ _____

3. Determine the truth value of each of the following statements where universe is all positive integers (3 points).

(a) $\exists \mathrm{n}\, \forall \mathrm{m}\, (\mathrm{m}^2 \geq n)$ _____

(b) $\forall \mathrm{n}\, \exists \mathrm{m}\, (\mathrm{n} + \mathrm{m} = 0)$ _____

(c) $\forall \mathrm{m}\, \exists \mathrm{n}\, (\mathrm{nm} < \mathrm{m}^2)$ _____

4. Let $L(x, y)$ be the statement "x loves y" where the domain of x and y are all people in the world.
Give two quantifier statements to mean "There is no body whom no body loves". (1 point)

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