Name (PRINTED): ______________________

Student ID #: ______________________

Section # (or TA's: name and time) ______________________

CMSC 250 Quiz #3 ANSWERS Wednesday, Feb. 9, 2004

1. [16 pnts.] For each of the following, tell the translation of that argument using the propositions given. Also, for each of the following identify the ONE rule being applied or tell that it is not one of those rules listed in your textbook and on the "cheat sheet". Do not make any assumptions about meaning (in other words, assume "If you pass CMSC250, you will graduate." is a separate and independant statement from "If you graduated, you passed CMSC250".

   Propositions:
   G = "You graduated."
   D = "You passed CMSC250."
   C = "You passed CMSC311."

a.

If you graduated, you must have passed both CMSC250 and CMSC311.	$G \rightarrow (D \wedge C)$
You passed both CMSC250 and CMSC311.	$(D \wedge C)$
You graduated.	G

State the name of the rule that was applied here (or none): __________none __________

b.

You passed CMSC 250.	D
You passed CMSC 311.	C
If you pass CMSC 250, you will graduate.	$D \rightarrow G$
You will graduate.	G

State the name of the rule that was applied here (or none): __________MP __________

c.

You graduated.	G
You passed CMSC 250.	D
If you graduate, you must have passed CMSC250.	$G \rightarrow D$

State the name of the rule that was applied here (or none): __________none __________

d.

If you graduated, then you must have passed both CMSC250 and CMSC311.	$G \rightarrow (D \wedge C)$
It's not the case that you passed both CMSC250 and CMSC311.	$\sim (D \wedge C)$
You did not graduate.	$\sim G$

State the name of the rule that was applied here (or none): __________MT __________

↓ TURN OVER ↓

Prove each of the arguments on the next page using only the rules from Chapter 1 (These are the same as the rules on the handout attached). Make sure you are using only those rules. For each line, make sure you tell the statement known to be true, the rule used to get that statement, and the line numbers to which the rule was applied to get that statement.

2. [7 pnts.]

P1	$(R \vee P) \to (R \vee Q)$
P2	$\sim Q$
P3	$\sim R$
	$\sim P$

#	Statement	Rule	Lines Used
1	$\sim R \wedge \sim Q$	Conj Add	P2,P3
2	$\sim (R \vee Q)$	DeMorg	1
3	$\sim (R \vee P)$	MT	P1,2
4	$\sim R \wedge \sim P$	DeMorg	3
5	$\sim P$	Conj Simp	4

OR

#	Statement	Rule	Lines Used
1	$\vert P$	Assume	
2	$\vert R \vee P$	Disj Add	1
3	$\vert R \vee Q$	MP	P1,2
4	$\vert R$	Disj Syll	3,P2
5	$\vert R \wedge \sim R$	Conj Add	4,P3
6	$\sim P$	Closing Cond Wrld with contradiction	1-5

3. [7 pnts.]

P1	$(P \wedge \sim Q) \to \sim P$
P2	$\sim Q$
	$\sim P$

#	Statement	Rule	Lines Used
1	$\vert P$	Assume	
2	$\vert P \wedge \sim Q$	Conj Add	1,P2
3	$\vert \sim P$	MP	2,P1
4	$\vert P \wedge \sim P$	Conj Add	1,3
5	$\sim P$	Closing Cond. Wrld. with Contradiction	1-4

OR

#	Statement	Rule	Lines Used
1	$\sim (P \wedge \sim Q) \vee \sim P$	Alt Rep of $\to$	P1
2	$(\sim P \vee \sim\sim Q) \vee \sim P$	DeMorg	1
3	$(\sim P \vee \sim P) \vee \sim\sim Q$	Comm. and Assoc.	2
4	$\sim P \vee \sim\sim Q$	Idempotent	3
5	$\sim P \vee Q$	Double Neg	4
6	$\sim P$	Disj Syll	5,P2