Name (PRINTED): ______________________

Student ID #: ______________________

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

CMSC 250 Quiz #2 ANSWERS Wednesday, Feb. 4, 2004

Write all answers legibly in the space provided. The number of points possible for each question is indicated in square brackets – the total number of points on the quiz is 30, and you will have exactly 15 minutes to complete this quiz.

1. [15 points] Create a complete truth table to determine if the following statement is a tautology. Use **1** for "true" and **0** for "false" to complete the truth table (rather than T and F).

   - $\sim ((p \wedge q) \wedge r) \vee (p \wedge \sim (r \vee q))$

				a	b		c	d	
p	q	r	$p \wedge q$	$(p \wedge q) \wedge r$	$\sim a$	$r \vee q$	$\sim (r \vee q)$	$p \wedge c$	$b \vee d$
1	1	1	1	1	0	1	0	0	0
1	1	0	1	0	1	1	0	0	1
1	0	1	0	0	1	1	0	0	1
1	0	0	0	0	1	0	1	1	1
0	1	1	0	0	1	1	0	0	1
0	1	0	0	0	1	1	0	0	1
0	0	1	0	0	1	1	0	0	1
0	0	0	0	0	1	0	1	0	1

2. [3 points] Your truth table shows it to be a tautology (circle one)? (**NO**)

3. [3 points]Indicate the location or locations in the truth table that led you to this conclusion and explain (in one sentence) why you reached this conclusion.

   The first line has a 0 (false value). It can only
   be a tautology if all of the lines have 1 (true value).

↓ TURN OVER ↓

4. [6 points] Given the following statements. Give the representation for each of the given compound statements using only the statement symbols and the $\wedge (and), \vee (or) and \sim (not)$ symbols. And the statements refer to some moment in time (that over time people can change their minds on who they like).

   - A = Alice likes Fred.
   - B = Bob likes Fred.
   - C = Carol does not like Fred.

   a. Alice, Bob and Carol like Fred. __________$(A \wedge B) \wedge \sim C$__________

   b. Alice and Bob don't like Fred, and Carol does like Fred. __________$\sim A \wedge \sim B \wedge \sim C$__________

   c. Alice likes Fred and exactly one of the other two also like Fred. __________$A \wedge ((B \wedge C) \vee (\sim B \wedge \sim C))$__________

5. [3 points] Give the alias under which you would like your grades posted. If you do not want your grades posted, give the alias "NONE". If you give an alias, it will only be known to the instructors, TAs and yourself. This way you will be able to keep track of your grades and how you compare to other students without revealing which student has which grades.

   __________any name here as long as it is answered __________