CS 202 Midterm 1 Grading Guidelines

Question 1: Not much chance for partial credit here. Note that the inverse (~p->~q) and the contrapositive (~q->~p) do not receive any credit.

Question 2: If they don't have the parenthesis, give 2 points (as that changes what it means). If they do it via conditionals (i.e. p->q ^ q->p), then give 2 points. If they miss the parenthesis and have conditionals, only have one point. Any other solutions, give partial credit based on how well they did.

Question 3: This tested both negating quantifiers and DeMorgan's Law. If they negated the quantifiers properly, but didn't DeMorganize it, take off 1 point. Other partial credit as you see fit (it will depend on what the answers are, and I can't tell that from here).

Question 4: This also tests whether they know the terminology of 'proposition' and 'propositional function'. Give partial credit based on how well they seem to know the concepts, but don't be too kind, either.

Question 5: If they did not label each step, then take off 7 points right off the bat. If they forgot to label a few steps, take off a proportionate amount of those 7 points. Note that steps such as rearranging, or removing parenthesis, do not need labeling - just when they apply the logical equivalence rules. The rest of the 10 points is based on how well they did the logical equivalence chain. If they made a simple mistake early on, and progressed as far as they could otherwise, only take off a few points (although if they made a simple mistake and progressed only a step or two, take off more).

Question 6: They should have grasped this concept for full credit, even if they don't explain it well. Give them partial credit based on how good their explanation is.

Question 7: This question tested three things: whether they knew 1-to-1, onto, and inverse functions. Give partial credit based on how well they seem to grasp these concepts.

Question 8: This question tested that they knew what a power set was, and that they knew what cardinality was. Again, give partial credit based on how well they seemed to grasp these concepts. 2 points for understanding power sets, 2 points for understanding cardinality.

Question 9: If they did 2(5x+2)+3=10x+7, then they did it in reverse order, and only get 2 points. If they supplied a value instead, and the value was correct, give them two points. If they supplied a value AND they did it in reverse order, give them 1 point.

Question 10: Two points for each. They only have to list those two words (uniqueness and existence) - they don't have to go into an in-depth explanation.

Question 11: If they claim y is a variable, then they missed what the question was asking. Partial credit based on how good their answer was.

Question 12: If they mixed up vacuous and trivial, only take off 2 points. Otherwise, it's two points for each.

Question 13: This question was meant to reward those who show up to class. If they have something similar (Star Trek, for example) that indicates that they were there, but aren't familiar with Star Wars, give them full credit.

Question 14: They only had to prove this by two of the three methods. Each one is worth 7 points, and give them a bonus point to make it a round 15. Three points for knowing understanding the proof method (i.e. that a direct proof you assume p is true and show that q must therefore be true), and 4 points if they did it properly. If they did it fine, then they obviously understand the proof method.

Question 15: There are three parts to this question. The first is properly selecting the Boolean variables (they can use any letters they choose): 3 points. The second is properly translating them into propositions: 5 points. The last part is the proof using rules of inference: 12 points. If they did not label their steps, take off 6 points from this 12. Otherwise, the 12 are allocated as to how well they did. If they made a simple mistake early on (such as translating the English to the Boolean propositions), and progressed as far as they could otherwise, only take off a few points (although if they made a simple mistake and progressed only a step or two, take off more).