Turn off cell phones, pagers, and anything that makes a noise.

Nothing is allowed on the desk top but the test, pens, pencils, erasers, and drinks.

Do not ask a question in a way that gives away the answer to the test question.

For multiple choice questions, please write your answer on the blank line to the left of the question.

**Multiple Choice Questions (5 points each)**

4 – 6 Multiple Choice Questions about Normalization, RDF, and OWL

7. (10 points) Diagram and create a table that is not in the first normal form. Clearly label the candidate key using an underline. Then clearly explain in words or on the diagram why it doesn’t satisfy the first normal form. Then normalize the table. Indicate the candidate keys and why it is now normalized.
8. (10 points) Diagram and create a table that is not in the second normal form. Clearly label the candidate key using an underline. Then clearly explain in words or on the diagram why it doesn’t satisfy the first normal form. Then normalize the table. Indicate the candidate keys and why it is now normalized.
9. (10 points) Diagram and create a table that is not in the third normal form. Clearly label the candidate key using an underline. Then clearly explain in words or on the diagram why it doesn’t satisfy the first normal form. Then normalize the table. Indicate the candidate keys and why it is now normalized.
10. Consider the following entities, create an OWL diagram (like the ones in Protégé) that represents the same concepts. Make sure you label the arcs on the graphs. HINT: We are making classes not individuals here.

Underlined fields signify a primary key. Italics signify a foreign key. All foreign keys cannot be NULL unless otherwise specified. You may choose the data types, but you must be consistent.

COURSE(CID, Dept, Title, CreditHrs)
SECTION(SectID, CourseID, SectionNumber, Semester, Year, InstructorID)
CLASS(SectID, StudentID, Grade). Grade can be NULL.