Computer Science 455

First Hour Exam

Name ________________________________
I. Some basics.

a. (10 pts.) Give a brief definition of a database and of a database management system, including some descriptive detail (i.e., a one sentence answer will probably not receive full credit).

b. (5 pts.) What are some of the problems solved by a database management system?
c. (20 pts.) Give brief definitions for the following:

key

foreign key

entity integrity

referential integrity

data independence
d. (10 pts) What is a data model? Using your definition, give brief (one sentence) descriptions of each of the three data models (hierarchical, network/CODASYL, and relational) we have studied so far.
e. (15 pts.) Consider the following entity-relationship diagram:

From this diagram, construct a relational schema, clearly identifying keys and any foreign keys in each table (write them down separately – don’t simply circle them).
Questions following are with respect to the SPJ database:

S(SNO, SNAME, STATUS, CITY)
P(PNO, PNAME, COLOR, WEIGHT, CITY)
J(JNO, JNAME, CITY)
SPJ(SNO, PNO, JNO, QTY)

a. (10 pts.) Using both EASYALG and SQL, write queries to find the names (only) of RED parts.

EASYALG

SQL
b. (10 pts.) Using both EASYALG and SQL, write queries to find the names of projects (j.jname) using part number P2.

EASYALG

SQL
c.  (10 pts.)  (SQL only) Write a query to find the names of projects (j.jname) using a RED part.

d.  (10 pts.) Briefly describe the three basic file organizations.