**Assignment Three**

**Problem Six**

Figure 3-13 shows the development of entity clusters for the Pine Valley Furniture E-R Diagram. In Figure 3-13b, explain the following:

1. Why is the minimum cardinality next to the DOES BUSINESS IN associative entity coming from CUSTOMER zero?

One of the subtypes of customer is National Customer which does not participate in the DOES BUSINESS IN associative entity, which allows for the potential of zero when the supertypes and subtypes becomes a single cluster.

1. What would be the attributes of ITEM (refer to Figure 2-22)?

The key attributes are Product ID and Product Line ID while the other attributes are product line name, product description, product finish, and product standard price.

1. What would be the attributes of MATERIAL (refer to Figure 2-22)?

The primary keys are Material ID and Vendor ID while the other attributes are Vendor Name, Vendor Address, Supply Unit Price, Material Name, Material Standard Cost, and Unit of Measure.

**Problem Sixteen**

Develop an EER model for the following situation using the traditional EER notation, the Visio notation, or the subtypes inside supertypes notation, as specified by your instructor.

An Internal school of technology has hired you to create a database management system to assist in scheduling classes. After several interviews with the president, you have come up with the following list of entities, attributes, and initial business rules:

* Room is identified by Building ID and Room No and also has a Capacity. A room can either be a lab or a classroom. If it is a classroom, it has an additional attribute called Board Type.
* Media is identified by MType ID and has attributes of Media Type and Type Description. Note: Here we are tracking type of media (such as a VCR, projector, etc.) not the individual piece of equipment. Tracking of equipment is outside the scope of this project.
* Computer is identified by CType ID and has attributes Computer Type, Type Description, Disk Capacity, and Processor Speed. Please note: As with Media Type, we are tracking only the type of computer, not an individual computer. You can think of this as a class of computers (e.g. PIII 900MHZ).
* Instructor has identifier EMP ID and has attributes Name, Rank, and Office Phone.
* Timeslot has identifier TSIS and has attributes Day of Week, Start Time, and End Time.
* Course has identifier Course ID and has attributes Course Description and Credits. Courses can have one, none, or many prerequisites. Courses also have one or more sections.
* Section has identifier Section ID and attribute Enrollment Limit.

After some further discussions, you have come up with some additional business rules to help you create the additional design:

* An instructor teaches one, none, or many sections of a course in a given semester.
* A instructor specifies preferred time slots.
* Scheduling data are kept for each semester, uniquely identified by semester and year.
* A room can be scheduled for one section or no section during one time slot in a given semester of a given year. However, one room can participate in many schedules, one schedule, or not schedules; one time slot can participate in many schedules, one schedule, or no schedules; one section can participate I many schedules, one schedule or, no schedules. Hint: can you associate this to anything that you have seen before?
* A room can have one type of media, several types of media, or no media.
* Instructors are trained to use one, none, or many types of media.
* A lab has one or more computer types. However, a classroom does not have any computers.
* A room cannot be both a classroom and a lab. There also are no other room types to be incorporated into the system.

