CECS 323

**Sample Final**

# Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Part I (1 pt each)

Match the term with the definition. Please write your answers to the **left** of the numbers.

1. Disjoint Specialization
2. Denormalization
3. Subquery
4. Overlapping Specialization
5. Subclass
6. Complete Specialization
7. Recursive Association
8. Generalization
9. Incomplete Specialization
10. BCNF

a.

b.

c.

d.

e.

f

g.

h.

i.

j.

Part II (2 pts each)

11. What is a database index? Why would you need one?

12. What does it mean for a transaction to be ACID? Define and describe each of the letters in ACID.

13. What are the criteria of each of the three normal forms as presented in the textbook?

14. Explain what a recursive relationship is

15. Demonstrate that you understand the difference between the concepts of “aggregation” and “composition” in database design.

Draw class diagrams for the following two relationships:

1. Universities and Departments

composition

1. Motorized vehicles and their parts

aggregation

Part III (3 pts each)

16. Consider a pizza sold at a restaurant. Model the relationship between a pizza and its ingredients.

Either aggregation or composition

1. Draw the class diagram
2. Draw the relation scheme.

17. Use the sample data below for the **COMPANY table to answer the questions**

|  |  |  |
| --- | --- | --- |
| company-id | parent-id | company-name |
| C1 | NULL | Big Monster Company |
| C2 | C1 | Smaller Monster Company |
| C3 | C1 | Other Smaller Company |
| C4 | C2 | Big Subsidiary |
| C5 | C2 | Small Subsidiary |
| C6 | NULL | Independent Company |

Recursive: all companies

1. Draw the class diagram.
2. Draw the relation scheme.

18 Many performers only marry other performers. This marriage can happen several times. Each performer must have a Screen Actors Guild membership card (SAGid) to be considered a performer.

Recursive w/ history

1. Draw the class diagram.
2. Draw the relation scheme.

19. I recently made my first visit to IKEA furniture store. All the furniture at IKEA comes in a box and you must assemble it from different parts. For example, the coffee table I purchased had a top, a shelf, and four legs. The chair had a back, a seat, two arms and four legs.

Aggregation; NOT composition – made of parts w/ name, purpose, location

Draw the class diagram and relation scheme for the build-it-yourself furniture enterprise.

20. Given the following relation:

**Student {Student Name (PK), Major, Course#1, ClassTime1, Location1, Course#2, ClassTime2, Location2, Course#3, ClassTime3, Location3}**

Provide an analysis relating to the following concepts:

1. 1st Normal Form
2. 2nd Normal Form
3. 3rd Normal Form
4. Choice of Primary Key
5. If you were to fix this relation, what would you do and why (consider everything you have learned this semester)