

(2014-2015 学年第 2 学期)

适用专业年级: 软件工程 2013 级      学号:      姓名:

四川大学各级各类考试的监考人员，必须严格执行《四川大学考试工作管理办法》、《四川大学考场规则》和《四川大学监考人员职责》。有违反学校有关规定的，严格按照《四川大学教学事故认定及处理办法》进行处理。

**注意事项:** 1. 请务必将本人所在学院、姓名、学号、任课教师姓名等信息准确填写在试题纸和添卷纸上;  
2. 请将答案全部填写在本试题纸上;  
3. 考试结束, 请将试题纸、添卷纸和草稿纸一并交给监考老师。

A horizontal line of small, stylized airplane icons, each facing right, used as a decorative separator.

**1. Short Answers (30 marks, 5marks for each)**

- 1) Explain the distinctions among the terms primary key, candidate key, and superkey
- 2) What are the key characteristics that a transaction must satisfy? Explain at least two of them.
- 3) What is shared-mode lock and exclusive-mode lock?
- 4) What is the difference between physical and logical data independence.
- 5) How to recover the system from deadlock? What actions need to be taken? What problems can result in these actions?
- 6) What do you think are the major advantages and disadvantages of view?

## 2. Query with SQL (35 marks, 7 marks for each)

Write SQL statements in SQL to perform the following commands.

- (1) Find the names of all the teachers who are female, older than 40, worked in CS department and working more than 20 years

- (2) List the names of all the teachers and the corresponding numbers of students each of them teach.
- (3) Increase the working age of all teachers by one year.
- (4) Delete all the teaching records where the teacher's name contain 'Tom'
- (5) Find names of teachers who taught all the courses that teacher '001' taught

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### 3. Database design. (35 points)

Consider a bank management system below.

- 1) One bank can has multiple customers
- 2) One customer can has multiple bank cards
- 3) One bank can has many different kinds of cards
- 4) One card has one card number and a card type
- 5) One bank can has many different kinds of departments
- 6) One department has many employee
- 7) One department only has one manager

Please complete the following tasks

- 1) Sketch the E-R Diagram of the scenario (Marks:10)
- 2) Transform the E-R Diagram into a series of relational schemas satisfying the 3NF (Specify the corresponding primary keys and foreign keys). (Marks:10)
- 3) Find names of customers who have more than 2 cards in China Construction Bank (Marks:10)
- 4) Find names of employers who work in China Construction Bank(.Write the results of relational algebra expressions.(Mark:5)

注：试题字迹务必清晰，书写工整。

本题共 2 页，本页为第 2 页  
教务处试题编号：311-28