Unit II

3. Suppose that we have the following four tuples in a relation S with thre attribute ABC : (1, 2, 3), (4, 2, 3), (5, 3, 3), (5, 3, 4). Which of the following functional ($\rightarrow$) and multi-valued ($\rightarrow\rightarrow$) depedencies can you infer does not hold over relation S ? Also suggest a candidate key for this relation :

(i) A $\rightarrow$ B

(ii) A $\rightarrow\rightarrow$ B

(iii) BC $\rightarrow$ A

(iv) BC $\rightarrow\rightarrow$ A

(v) B $\rightarrow$ C

(vi) B $\rightarrow\rightarrow$ C. **12+3**

4. (a) What do you mean by query optimization ? Give various types of it. **7**

(b) Describe Log based recovery technique in detail. **8**

CC-346

B. Sc. (Hons.)

EXAMINATION, Dec. 2017

(Third Semester)

(Dual Degree) (Main & Re-appear)

MATHEMATICS

MAT-321-H

Database Management and Oracle

Time : 3 *Hours*]   [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Consider following database :

   employee (person-name, street, city)

   works (person-name, company-name, salary)

   company (company-name, city)

   manages (person-name, manager-name)

   Write the following queries in relational algebra.

   (i) Find the names of all employess who work for First Bank Corporation.

   (ii) Find the names and cities of residence of all employees who work for First Bank Corporation.

   (iii) Find the names, street address, and cities of residence of all employees who work for First Bank Corporation and earn more than $ 10,000 per annum.

   (iv) Find the names of all employees in this database who live in the same city as the company for which they work.

   (v) Find the names of all employees who live in the same city and on the same street as do their managers.

   (vi) Find the names of all employees in this database who do not work for First Bank Corporation.

   (vii) Find the names of all employees who earn more than every employee of Small Bank Corporation.

   (viii) Assume the companies may be located in several cities. Find all companies located in every city in which Small Bank Corporation is located. **15**

2. (a) Why relational model is called relational ? Give mathematical foundation of it. **7**

   (b) Compare relational algebra and relational calculus. **8**

Unit III

5. (a) What are various types of Keys that can be used in SQL ? Give syntax for each in SQL ? **8**

(b) Describe step by step procedure to create a master detail form. **7**

6. What are various integrity constraints in oracle ? Explain in detail. **15**

Unit IV

7. What are triggers ? What are their types ? Give syntax in SQL for each type. **15**

8. Write short notes on the following : **15**

(i) SQL report writer

(ii) Declarative integrity constraints.