Code: IT4T2

II B.Tech - II Semester – Regular / Supplementary Examinations October-2020

DATABASE SYSTEMS
(INFORMATION TECHNOLOGY)

Duration: 3 hours   Max. Marks: 70

PART – A

Answer **all** the questions.   All questions carry equal marks

                                                   11 x 2 = 22

1.
   a) List out any four differences between file processing system and DBMS.
   b) Outline the abstraction method given to the users who do not need all the information?
   c) Relate SQL commands with an example for the following (i) wants to enable the definition of a relation (ii) Wants to modify the relation instance.
   d) List two reasons why null values might be introduced into the database?
   e) What is a foreign key constraint? Why such constraints are important?
   f) Differentiate Simple, Composite, Multi valued attributes.
   g) What are the problems caused by the redundancy?
   h) List features of designing a database for a large enterprise.
   i) List the possible transaction states.
   j) Identify the benefits and limitations of strict two-phase locking mechanism.

k) Mention the advantages of using a query language instead of custom programs to process data.

PART – B

Answer any *THREE* questions.   All questions carry equal marks.

3 x 16 = 48 M

2. a) Explain the difference between two-tier and three-tier architectures. Which is best? Why?   8 M

b) List the various kinds of keys that can be imposed on relation and differentiate one with another with an example.   8 M

3. a) Discuss about aggregate functions with syntax and example queries.   8 M

b) Given schema **Instructor** (*id, name, dept_name, sal*), **Teaches** (*id, course_id, sec_id, semester, year*). **Construct SQL** and **Relation Algebra** Statements for the following queries.   8 M
   i.   List name and salary details of the Instructors who are working in IT department and whose salary is not more than 80000.
   ii. Find the average salary of instructors in each department.

iii. Find the names of Instructors working in IT department along with the course_id what they teaches.

iv. Give the name and salary details of the highest salaried Instructor.

4. a) What are the uses of Views and Triggers in SQL? List and explain the types of triggers in SQL.   8 M

b) List the components of E-R model and Construct an ER diagram that captures the following description.
A company database needs to store information about employees (identified by *ssn*, with *salary* and *phone* as attributes); departments (identified by *dno*, with *dname* and *budget* as attributes); and children of employees (with *name* and *age* as attributes). Employees *work* in departments; each department is *managed by* an employee; a child must be identified   uniquely by *name* when the parent (who is an employee; assume that only one parent works for the company) is known. We are not interested in information about a child once the parent leaves the company.   8 M

5. a) What is functional dependency? Explain computing closures of F with suitable examples.   6 M

b) Explain any Three Normal forms with an example for each.
                    10 M

6. a) List and Explain ACID properties of transaction
management. 7 M

b) Explain these terms: *conflict-serializable schedule, view-serializable schedule, strict schedule and Two-phase locking protocol.* 9 M