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Total No. of Pages: 02
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B. Tech (Sem.-5th)

RELATIONAL DATABASE MANAGEMENT SYSTEMS-I
Subject Code: BTCS-502
Paper ID: [A2098]

Time: 3 Hrs.   **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATE:

1. **Section –A, is Compulsory.**

2. **Attempt any four questions from Section-B.**

3. **Attempt any two questions from Section-C.**

Section –A   (10x2=20)

Q.1. Answer the following questions.

(a)   Define data independence.

(b)   What is hashing?

(c)   What is variable length record?

(d)   List different types of data models.

(e)   What are different normal forms?

(f)   How does Boyce-Codd normal form (BCNF) differ from 3NF?

(g)   What do you mean by isolation? Why is it important?

(h)   What is two phase locking?

(i)   Define firewall

(j)   What is meant by granting and revoking privilege?

Section –B   (4x5=20)

Q.2. Compare file system and data base management systems.

Q.3. Explain the difference between dense versus sparse indexes.

Q.4. What is the importance of functional dependencies in database design? Explain.

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Q.5. Discuss how serializability is used to enforce concurrency control in database system. Why is serializability considered too restrictive as a measure of correctness for schedules?

Q.6. What do you mean by threat in a database environment? List the potential threats that could affect a database system.

Section –C   (2x10=20)

Q.7. A university has an entity COURSE with a large number of courses in its catalog. The attributes of COURSE include COURSE-NO, COURSE-NAME and COURSE-UNITS. Each course may have one or more different courses as prerequisites or may not be pre-requisite, Similarly, a particular course may be a prerequisite for any number of course or may not be pre-requisite for any other course. Draw an E-R diagram for this course.

Q.8. A relation database is given with the following relation.

EMPLOYEE (EMP_NAME, STREET, CITY)

WORKS (EMP_NAME, COMPANY_NAME, SALARY)

COMPANY (COMPANY_NAME, CITY)

MANAGES (EMP_NAME, MANAGER_NAME)

Give a relational algebra for each of the following queries.

(a) Find the company with most employees.

(b) Find the company with smallest pay roll

(c) Find the name of all employees who work for ABC Co.

(d) Find the names of all employees who do not work for ABC Co.

Q.9. What is the difference between discretionary and mandatory access control? Explain with an example.

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