

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2012279

Roll No.

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B.TECH

Regular Theory Examination (Odd Sem -V), 2016-17

DATABASE MANAGEMENT SYSTEM (DBMS)

Time : 3 Hours

Max. Marks : 100

Section - A

1. **Attempt all parts . All parts carry equal marks.**

Write answer of each part in short. (10×2=20)

- What is data model? List the types of data model used.
- Give example for one to one and one to many relationship.
- With an example show how a referential integrity can be implemented.
- Write the purpose of trigger.
- What is normalization?
- Define the term ACID properties.

- g) State the properties of transaction.
- h) What is serializability? How it is tested?
- i) Why is concurrency control needed?
- j) Define timestamp.

Section - B

2. Attempt any five questions from this section.

(5×10=50)

- a) Consider the following relational database
 employee (employee-name, street, city works
 (employee-name, company-name, salary) company
 (company-name, city) manages (employee-name,
 manager-name).

Give an expression in SQL to express each of the following queries:

- i) Find the names and cities of residence of all employees who work for XYZ bank.
- ii) Find the names, street address, and cities of residence of all employees who work for XYZ Bank and earn more than Rs. 10,000 per annum.
- iii) Find the names of all employees in this database who live in the same city as the company for which they work.

- b) Discuss about the deadlock prevention schemes.
- c) Explain the differences between physical level, conceptual level and view level of data abstraction.
- d) Explain embedded SQL and dynamic SQL in detail.
- e) Describe shadow paging recovery technique.
- f) Write down in detail about deadlock and serializability.

Section - C

Note: Attempt any 2 questions from this section.

(2×15=30)

- 3. a) What are the relational algebra operations supported in SQL? Write the SQL statement for each operation.
- b) Draw an E-R diagram for a small marketing company database, assuming your own data requirements.
- 4. a) Explain 1NF, 2NF, 3NF and BCNF with suitable example.
- b) Consider the universal relational schema R (A, B, C, D, E, F, G, H, I, J) and a set of following functional dependencies.

$$F = \{AB \rightarrow C, A \rightarrow DE, B \rightarrow F, F \rightarrow GH, D \rightarrow IJ\}$$

Determine the keys for R? Decompose R into 2nd Normal Form.

5. Explain the following protocols for concurrency control.
- i) Lock based protocols
 - ii) Time Stamp based protocols