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

Paper ID : 2012279 Roll No.

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)

a) What is data model? List the types of data model used.

b) Give example for one to one and one to many relationship.

c) With an example show how a referential integrity can be implemented.

d) Write the purpose of trigger.

e) What is normalization?

f) Define the term ACID properties.

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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.

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

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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

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