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CS-06

PGDCA / MCA (I Year)

Term-End Examination

09994

June, 2012

CS-06 : DATABASE MANAGEMENT SYSTEM

Time : 3 hours *Maximum Marks : 75*

Note : *Question number 1 is* ***compulsory.*** *Attempt* ***any three*** *from the rest.*

1. (a) Assume the following requirements for a bank database : **10**

A large bank named "KBC" is an international bank having 28 branches overseas and around 182 branches in the country at different cities. Each branch offers services like banking, Loan services, Insurance and Trading. Further, Customer can select saving account/current account with single or join options in the banking. Bank offers Loan services like car loan, home loan, Education loan, etc. Similarly Bank provide different services in insurance and trading. Each Branch maintains the account details of the customers keep record of each transaction in each service by the customer to his/her account. All branches have

employees like staff, executive and managers. On the basis of the above specifications answer the following questions:

Design an ER diagram indicating all entities, attributers with keys and cardinality ratios.

(b) Find BCNF decomposition of the following relation scheme; R (Faculty, Dean, Department, Chairperson, Professor, Rank, Student). The relation satisfies the following functional dependencies. **10**

Faculty	→	Dean
Dean	→	Faculty
Department	→	Chairperson
Professor	→	Rank, Chair person
Department	→	Faculty
Student	→	Department, Faculty, Dean
Professor, Rank	→	Department, Faculty

(c) What are the deficiencies of relational database management systems that are overcome by object database management systems ? **6**

(d) With the help of an example, explain the inverted file organisation. **4**

2. (a) What is client/server based Database? Discuss the components of client/server computing. 5

(b) Explain the use of any three aggregate functions of SQL with an example for each. 6

(c) What are integrity constraints? Explain any two types of integrity contraints which can be imposed on relational databases. 4

3. (a) What are the different types of anomalies which a relational database can encounter. How normalisation helps in avoiding these anomalies. 5

(b) Consider the following relations (where primary keys are underlined):

Project (Project - code, Project - Name, Project - leader)

Employee (Emp - code, Emp - Name, Emp - Salary, Emp - Department)

Assinged - To (Project - code, Emp - code)

Write SQL queries for the following:

(i) List the Name of employees those are assigned to project code "A4532". 3

(ii) Increase the salary of employees by 5000/- Rupees those are working on project - code "B2316". 4

(iii) Insert a new Project named "HNS", Project - code "C 1479" under the project leader "Ramesh Singh" 3

4. (a) Explain the difference between Relational Model and other models of storage of data. Explain with an example, the process of conversion of hierarchical structure into Relation. 5

(b) How the views in databases are defined? Give the advantages and disadvantages of views. 5

(c) What is a join operation? How is it different from cartesian product in relational algebra? Explain with an example. 5

5. Write a short note (*150* words) on the following : **5x3=15**

(a) Distributed DBMS

(b) Index sequential File Organisation

(c) Difference between knowledge Base system and Database system.