

UTTARAKHAND TECHNICAL UNIVERSITY  
BCA-302

BCA (III - Sem.) Odd Semester Examination-2015

DATABASE MANAGEMENT SYSTEM

Time : 3 Hours

Maximum Marks :70

UNIT - 1

Attempt any three question : (3\*7=21)

Q.1. What are the main differences between a file processing system and database management system? Explain super key, candidate key and primary key.

Q.2. What is data independence? What are the difference between logical data dependence and physical data dependence?

Q.3. What are the difference between data definition language and data manipulation languages? Give some examples of both.

Q.4. What do you mean by Entity and relation in ER model? Explain how a relation set is defined. Mention the steps to convert ER diagram into tables.

UNIT - 2

Attempt any two question : (2\*7=14)

Q.5. What is Integrity Constraints and Check Constraints? Explain with suitable Example.

Q.6. What is Relational Calculus? How it differs from relational algebra.

Q.7. Explain subclasses in the E-R Model and in Object Oriented Systems.

UNIT - 3

Attempt any three question (3\*7=21)

Q.8. Consider following schema for project database: Project (project\_no, project\_name, project\_manager) Employee (employee\_no, employee\_name) Assigned\_to(project\_no, employee\_no)

(a) Write sql DDL statement for implementation of project database. The sql statement should clearly indicate the primary key and foreign key

(b) Write following queries in relational algebra and sql:

(i) Get the details of employee working on both projects 'P1' and 'P2'.

(ii) List the name of employees working on project 'P1' but not on project 'P2'.

(iii) Delete the record of employee whose employee number is 'E1'.

(iv) List the names of employees who are working on a project for which 'E1' is the project manager.

Q.9. What are views? How they are defined? Explain with a suitable example.

Q.10. What are triggers? How are they different from the assertions. Discuss the case where the triggers and assertions are used.

Q.11. How does Tuple-oriented relational calculus differ from domain-oriented relational calculus? Explain by giving examples.

#### UNIT - 4

Attempt any two question (2\*7=14)

Q.12. What are normal forms? What is the motivation behind normalizing a database? Discuss the first and second normal form. Define and explain the functional dependency with a suitable example.

Q.13. Define forth normal form. Consider a relational schema  $R = (A, B, C, D, E)$ . Let  $M$  be the following set of multivalued dependencies:  $(A \twoheadrightarrow BC, B \twoheadrightarrow CD, E \twoheadrightarrow AD)$  Given a lossless join decomposition of schema  $R$  into forth normal form. Justify your answer.

Q.14. Write short notes on any two of the following: (a) Cursors (b) BCNF (c) Group/aggregate functions