BCA

(Please write your Exam Roll No.)          Exam Roll No. .03614.903.016

# END TERM EXAMINATION

### SECOND SEMESTER [BCA] MAY 2017

| Paper Code: BCA-110 | Subject: Database Management Systems |
|---|---|
| Time: 3 Hours | Maximum Marks: 75 |

**Note: Attempt any five questions including Q no.1 which is compulsory.
Select one question from each unit.**

Q1  Answer the following:-                                    **(5x5=25)**
 (a) What do you mean by functional dependency? Discuss with suitable example.
 (b) What is lock? What are the various types of locks used for concurrency control?
 (c) Describe any four main functions of a database administrator.
 (d) Define the following terms giving examples for each of them: Entity, attribute, role and relationship between the entities.
 (e) Differentiate between database management system and file system.

## UNIT-I

Q2 (a) Write a short note on three scheme architecture.          **(4.5)**
 (b) Explain different types of Data Independence.              **(3)**
 (c) Write a short note on the following:-                      **(5)**
  (i) Primary Kky
  (ii) Candidate key
  (iii) Super key
  (iv) Derived attribute
  (v) Multivalued attribute

Q3 (a) Explain the term Generalization and Specialization with suitable example.                                              **(4)**
 (b) Suppose you have a table for a dance studio. The attributes are dancer's identification number, dancer's name, dancer's address, dancer's telephone number, class identification number, day that the class meets, time that the class meets, instructor name, and instructor identification number. Assume that each dancer takes one class, each meets only once a week and has one instructor and each instructor can teach more than one class. Dancer (Dancer_ID, Dancer_Name, Dancer_Address, Dancer_Phone, Class_ID, Class_Day, Class_Time, Instructor_Name, Instructor_ID) Draw an entity-relationship diagram (ERD) for this database.          **(8.5)**

## UNIT-II

Q4 (a) Explain the SQL operators BETWEEN, AND, IN, LIKE and IS_NULL by taking suitable examples.                                   **(5)**
 (b) Discus various data types available in SQL.               **(4.5)**
 (c) SQL allows attributes to have a special value NULL, which is called the null value. What are three common interpretations that can be put on null values?                                            **(3)**

Q5 (a) What is a weak entity set? What are two principles sources of weak entity sets? Give examples to explain.                      **(6)**
 (b) What do you understand by referential integrity constraint and attribute-based check constraint?                              **(6.5)**

P.T.O.

BCA-110
P.1/2

[-2-]

## UNIT-III

**Q6** (a) Given the following relations:  **(6)**
Vehicle (reg-no, make, colour)
Person (eno, name, address)
Owner (eno, reg-no)
Write expressions in relational algebra to answer the following queries:
(i) List the names of persons who do not own any car.
(ii) List the names of persons who own only Maruti Cars.

(b) Differentiate between Data Definition Language (DDL) and Data Manipulation Language (DML).  **(3)**

(c) Write a short note on 3NF.  **(3.5)**

**Q7** (a) List the difference between Equijoin and Natural join. Give example of each join operation.  **(6)**

(b) What are the problems caused by data redundancies? Can data redundancies be completely eliminated when a database approach is used? Explain this with the help of an example.  **(6.5)**

## UNIT-IV

**Q8** (a) Describe Two Phase Locking protocol with suitable example.  **(6)**

(b) Describe Deadlock with suitable example and also explain about recovery from the deadlock.  **(6.5)**

**Q9** Write short notes on the following:-
(a) Time Stamp Based Concurrency Control.
(b) Backup and Recovery Techniques  **(4)**
(c) Serializable and Non Serializable Transactions  **(4)**
  **(4.5)**

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BCA-110
P-2/2

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