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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)**

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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. **(4)**
(b) Backup and Recovery Techniques **(4)**
(c) Serializable and Non Serializable Transactions **(4.5)**

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END TERM EXAMINATION

SECOND SEMESTER [BCA] MAY 2018

Paper Code: BCA 110 ***Subject: Database Management System***

Time : 3 Hours ***Maximum Marks :75***

Note: Attempt any five questions including Q. No.1 which is compulsory.

Q1. Answer the following: **(5x5=25)**

a) Draw and explain the architecture of DBMS. Compare it with file system.
b) Explain the role of E-R model in database design.
c) How can the two tables be joined using left outer and right outer joins?
d) What problems are encountered if data is not stored in normalized table?
e) List the problems associated with two phase locking protocol.

Q2. a) Discuss the advantages and disadvantages of DBMS. **(6.5)**
b) Why is relation database approach better than earlier methods? **(6)**

Q3. a) Construct an E-R diagram for a hospital management system with a set of doctors and a set of patients. With each patient, a series of various tests and examinations are conducted. On the basis of preliminary report patients are admitted to a particular specialty ward. **(6)**
b) Construct appropriate tables for the above E-R diagram. **(6.5)**

Q4. a) Explain the differences among external, internal and conceptual schemas. **(4.5)**
b) Related with database, explain the following terms: **(8)**
i) Data integrity ii) Concurrency iii) Data independence
iv) Referential integrity

Q5. Consider the following relational schema: **(2.5x5=12.5)**
Emp (empno, ename, job, sal, comm., hiredate, deptno)
Dept (deptno, dname, location)

Give an expression in SQL for the following Queries:

a) Find the names of employees who work in deptno 10 and 20.
b) Increase the salary by Rs 1500 for the employees who are 'CLERK'.
c) Display the details of employees who work in same deptno as of the employee 'SMITH'.
d) Create the table Dept.
e) Display total salary of employees of each deptno and display those deptno whose total salary is more than Rs. 30000.

Q6. Differentiate between: **(2.5x5=12.5)**

a) Primary Key and Foreign Key
b) View and Indexes
c) Serializable and non serializable transactions
d) 2NF and 3CNF
e) Data and Metadata

Q7. a) Explain the CODD's rules of RDBMS. **(6)**
b) Discuss the timestamp ordering techniques for concurrency control. **(6.5)**

Q8. a) Discuss the different types of transaction failures that may occur in database environment. **(5)**
b) What is checkpoint? Explain the different recovery techniques when database crashes. **(7.5)**

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END TERM EXAMINATION

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SECOND SEMESTER [BCA] MAY 2019

Paper Code: BCA-110 *Subject: Database Management System*

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 **(any five)**:- **(5x5=25)**

(a) Explain advantage of database management system over file processing system.

(b) Explain sub class, super class, Specialization and Generalization with example and appropriate diagram.

(c) Explain DDL, DML. Give three sql commands each for DDL and DML.

(d) What do you mean by relationship cardinality? Explain its type with suitable example

(e) What do you mean by data constrain? Define Domain Constraint, Entity integrity constraint, Referential integrity constraint.

(f) Explain ACID properties of Transaction in DBMS.

(g) Draw an ER diagram for library management system. Make assumptions as required.

UNIT-I

Q2 (a) Explain different types of attributes with example-composite, derived, multi-valued. **(6)**

(b) Discuss three tier architecture of database management system with diagram. **(6.5)**

Q3 (a) Explain different types of keys with example. Differentiate between super key, candidate key, primary key and foreign key. **(6)**

(b) Explain physical and logical data independence with diagram. **(6.5)**

UNIT-II

Q4 (a) Consider the following relations **(10)**

Customer {CustId, CusName, Address, State}
Parts {Partnum, Description, Price}
Order {OrderNo, Name, Partnum, Qty, CustId}
Write Relational Algebra query for each of the following

- Find all customers who have placed order for part description "Tyres".
- Find customer name, address of customers who have purchased partnum 10 and quantity ordered is more than 100.
- Find customer name, address of those customer residing in State="Delhi".
- Find all order no, name, partnum of all orders placed by customer id=101.
- Find all customer name who have placed order for product with price more than 500.

(b) Explain views in DBMS with example. **(2.5)**

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END TERM EXAMINATION

SECOND SEMESTER [BCA] JULY 2023

Paper Code: BCA-108 ***Subject: Database Management System***

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt five questions in all including Q.No. 1 which is compulsory. Select one question from each unit.

Q1. Answer the following (**any five**) **(5x5=25)**

(a) Explain advantage of database management system over file processing system.

(b) Explain the role of E-R model in database design.

(c) Differentiate between serializable and non- serializable transactions.

(d) What problems are encountered if data is not stored in normalized table?

(e) Explain DDL and DML. Give three commands each for DDL and DML.

(f) What is data independence? What are two forms of data independence? Explain with the help of an example.

(g) What is the difference between strong and weak entity sets? Why sometimes weak entity sets are needed in database design.

UNIT-I

Q2. a) Describe the three – schema architecture. Why do we need mappings between schema levels? How does different schema definition language support this architecture? **(6)**

b) A database is being constructed to keep track of the teams and games of a sports league. A team has a number of players, not all of whom participate in each game. It is desired to keep track of the players participating in each game for each team, the positions they played in that game, and the result of the game. Design an ER diagram for this application, stating any assumptions you make. Choose your favourite sport (e.g., soccer, baseball, football) **(6.5)**

Q3. a) Explain different types of keys with example. Differentiate between Primary key, candidate key and super key. **(6.5)**

b) Illustrate the use of SUM (), AVG (), COUNT (), MIN (), MAX (). **(6)**

UNIT –II

Q4. a) Consider the following relations

Customer (CustId,CusName,Address,State)
Parts (PartNum,Description,Price)
Order(OrderNo,Name,Partnum,Qty,CustId)

P.T.O.

BCA-108
P 1/2

Write query for each of the following: **(2x4=8)**

i) Find all customers who have placed order for part description "Tyres".

ii) Find customer name, address of customers who have purchased Partnum 10 and quantity ordered is more than 100.

iii) Find the customer name, address of those customers residing in state ="Delhi"

iv) Find all customer names that have placed order for product with price more than 500.

b) Explain stored procedure and triggers in DBMS with example. **(4.5)**

Q5. a) What are the integrity constraints? Explain each of them. **(6.5)**

b)"NULL value concept is useful one but a large use of NULL VALUE in implemented database is not desirable " .Comment. **(6)**

UNIT-III

Q6. a) Describe Full Join and Division Operation relational algebraic operations giving one an example of each **(6.5)**

b) Define the following terms: **(1.5x4=6)**

(i) Normalization (ii) MVD

(iii)FFD (iv) BCNF

Q7. a) Explain Codd's rules in RDBMS. **(6)**

b) What are set operations? Explain each with the help of an example. When two tables are said to be union compatible? How are the results ordered in union compatible? **(6.5)**

UNIT -IV

Q8. a) What is a transaction? Explain ACID properties of a transaction. **(3+3=6)**

b) Discuss the different types of transactions failures that may occur in database environment. **(6.5)**

Q9 a) Explain 2 phase locking scheme for data recovery. How two-phase Locking helps in maintaining integrity in the database? **(6.5)**

b) Explain Discretionary Access Control [Grant/Revoke] methods for database security. **(6)**

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