UKA TARSADIA UNIVERSITY

BCA/Integrated M.Sc. (IT)/MCA (Integrated) (1stSemester)

Subject :030010102/060010102/060060102-Database Management Systems (Theory)

Time : **10 a**m to **1** pm Date : **30/05/**20**15**

Duration : 3Hours **Max. Marks : 60.**

Instructions:

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks allocated to that question.
5. Draw diagrams/figures whenever necessary.

SECTION - 1

Q-1 (A) Answer the following. **[04]**

I) How super key differs from candidate key?

II) Which symbol is used to represent weak entity in E-R diagram?

III) Which type of user interacts with the database by an application program?

IV) Secondary storage, like the hard drive, isn't directly accessible to the CPU like primary storage. What is another name for secondary storage?

Q-1 (B) Answer the following in brief. (Any 3) **[06]**

I) Give one advantage and one disadvantage of main memory.

II) What do you mean by one-to-one mapping cardinality? Write an example for the same.

III) Write down four advantages of file organization.

IV) List down any four purposes of database.

Q-2 Answer the following. **[10]**

A) The Motor Vehicle Branch administers driving tests and issues driver's licenses. Any person who wants a driver's license must first take a learner's exam at any Motor Vehicle Branch in the province. If he/she fails the exam, he can take the exam again any time after a week of the failed exam date, at any branch. If he passes the exam, he is issued a license (type = learner's) with a unique license number. A learner's license may contain a single restriction on it. The person may take his driver's exam at any branch any time before the learner's license expiry date (which is usually set at six months after the license issue date). If he passes the exam, the branch issues him a driver's license. A driver's license must also record if the driver has completed driver's education, for insurance purposes.

Create an E-R diagram following these steps.

1. Find out the entities in the specification.
2. Find out the relationships among the entities.
3. Figure out attributes of the entities and (if any) of the relationships.
4. Figure out constraints between entities and relationships.

OR

A) You are required to make an Entity Relationship Diagram (ERD) of a simple Online ShoppingSystem. The ERD must be drawn according to the following system requirements.

1. Customer must orders one or more items. Each customer is identified by his/her name. The postal address and email address of the customer are also required for the correct placement of order.
2. Items have their name and price to be shown to the customers.
3. Shopping carts are created by the orders of the customers.
4. Shopping carts contain at least one item.
5. An Order must have at least one requested item.
6. Not all items have customers. This shows that the items have not many customers.
7. Distinct companies produce distinct items which are differentiated by the company's name.
8. Payment must be made via credit cards. The payment process has to be done after the credit card's verification.

The respective attributes of each entity and the cardinalities among the relationship must be shown in the diagram.

Create an E-R diagram following these steps.

I. Identify Entities and find out their respective attributes.
II. Identify the role of each entity according to the given system requirements.
III. Find out the relationship between the entities.

B) Draw and explain three schema architecture of database.

OR

B) List types of users in database and explain how different users interact with the database system.

Q-3 Answer the following in detail. (Any 2) **[10]**

A) What do you mean by strong and weak entity? How they differ from each other? Give an example of weak entity set in and E-R Diagram.

B) Explain INSERT and UPDATE anomalies in detail with suitable examples.

C) Explain the concept of specialization in detail with suitable example.

SECTION - 2

Q-4 (A) Answer the following. **[04]**

I) What do you mean by dependency preservation?

II) Which clause is used to filter the grouped data?

III) How do you eliminate duplicate values in DB2 SELECT?

IV) How do you insert NULL in a column?

Q-4 (B) Answer the following in brief. (Any 3) **[06]**

I) What is the use of ORDER BY clause? Explain with suitable example.

II) List any four aggregate functions available in DB2.

III) Write four needs of normalization.

IV) List pattern matching operators

Q-5 Answer the following. **[10]**

A) Consider the following tables:
EMP(EMPNO, ENAME, JOB, SALARY, HIREDATE, DEPTNO)
DEPARTMENT(DEPTNO, DNAME, LOCATION)

1. Display employee details that are having job "CLERK" or "MANAGER".(Don't use OR operator) **[1]**
2. Display average salary of employees who are "CLERK". **[2]**
3. Display number of employees working in the department named "ACCOUNTING". **[2]**

OR

A) Consider the following tables:
PRODUCT_MST(PROD_NO, PROD_NAME, RATE, PROD_DESC)
SALES_DTL(ORD_NO, ORD_DATE, CUSTOMER_ID, CUSTOMER_NAME, PROD_NO, QTY) **[1]**

1. List the product details that are having product name starts with either 'A' or 'P'.
2. Display average product rate for the products with their PROD_NO>2. **[2]**
3. Display number of products sold on "14/01/2014". **[2]**

B) Describe what is meant by transitive dependency and describe how this type of dependency relates to 3NF. Provide an example to illustrate your answer.

OR

B) Describe what is meant by full-functional dependency and describe how this type of dependency relates to 2NF. Provide an example to illustrate your answer.

Q-6 Answer the following in detail. (Any 2) **[10]**

A) List any three DDL commands and explain any one of them in detail with its use, syntax, description and example.

B) List CODD rules. Explain any three of them in detail.

C) What do you mean by sub query? Explain the use of sub query with UPDATE command with suitable example.