

## DBMS Question & model answer-2018

01.

- I. Define the following term. (05\*02=10 Marks)
- A. Meta Data-  
a set of data that describes and gives information about other data.
  - B. Data processing-Data processing is the conversion of data into usable and desired form(information). This conversion or “processing” is carried out using a predefined sequence of operations either manually or automatically.
  - C. DBMS-  
A software system that enables users to define, create and maintain the database and which provides controlled access to the database.
  - D. System catalog-  
The system catalogue stores meta-data including the schemas of the databases.
  - E. Data Abstraction –  
A data model is used to hide storage details and present the users with a conceptual view of the database.
- II. List four (04) main Characteristics of the Database Approach. (01\*04=04 Marks)
- Self-describing nature of a database system.
  - Insulation between programs and data
  - Data Abstraction
  - Support of multiple views of the data
- III. List five (05) common uses of database. (01\*05=05 Marks)
- Supermarkets
  - Insurance
  - Credit Cards/Banking
  - Libraries
  - Travel Agents
  - Universities
- IV. Explain the different between hierarchical data base model and Network model. (02\*03=06 Marks)

Hierarchical database model

- A **hierarchical database model** is a data model in which the data is organized into a tree-like structure. The data is stored as **records** which are connected to one another through **links**. A record is a collection of fields.

#### Network model

- While the hierarchical database model structures data as a tree of records, with each record having one parent record and many children, the network model allows each record to have multiple parent and child records, forming a generalized graph structure.

(Total 25Marks)

02.

- I. Give five(05) example for DBMS. (01\*05=05 Marks)
  - MSAccess
  - MySQL – freeware (Windows & Unix)
  - McKoi – freeware, Java based.
  - Oracle
  - SQL Server
- II. Briefly explain four (04) disadvantage of DBMS. (02\*04=08 Marks)
  - Complexity- Databases are complex hardware and software systems. ...
  - Cost for hardware and software
  - Security issue.
  - Cost of staff training
- III. Give four (04) features of relational DBMS. (01\*04=04 Marks)
  - 2-D tables (rows and columns representing records/tuples and fields/attributes)
  - Dynamic links among tables
  - Easy and flexible to design and use
  - Data independence
- IV. Explain five component of DBMS environment. (01\*05=05 Marks)
  - **Hardware**  
Can range from a PC to a network of computers.
  - **Software**  
DBMS, operating system, network software (if necessary) and also the application programs.
  - **Data**  
Used by the organization and a description of this data called the schema.

- **Procedures**

Instructions and rules that should be applied to the design and use of the database and DBMS.

- **People**

Data Administrator (DA), Database Administrator (DBA), Database Designers (Logical and Physical), Application Programmers, End Users (naive and sophisticated)

V. Define the term Data Redundancy. (03 Marks)

Data redundancy is a condition created within a database or data storage technology in which the same piece of data is held in two separate places

(Total 25Marks)

03.

I. Explain the following terms in MS Access. (02\*04=08 Marks)

A. Table - A table is where data is stored and a table lives within a database.

B. Queries- A **query** is a request for data results, and for action on data

C. Forms- A form in Access is a database object that you can use to create a user interface for a database application.

D. Report- A report is an object in Microsoft Access that is used to display and print your data in an organized manner.

II. Give suitable MS Access data type for each field for the following customer table.

(01\*04=04 Marks)

ID	<b>A.Number</b>
Name	<b>B.ShortText/ Long text</b>
Address	<b>C. ShortText/ Long text</b>
Phone number	<b>D.Number</b>

III. Briefly explain the following terms in Entity Relationship diagram. (02\*03=06Marks)

A. Entity

An Entity is generally a real-world object which has characteristics and holds relationships in a DBMS

B. Relationship

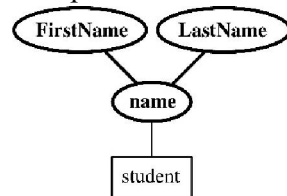
When an Entity is related to another Entity, they are said to have a relationship. For example, A Class Entity is related to Student entity, because students study in classes, hence this is a relationship.

C. Attribute

An attribute is a property or descriptor of an entity, for example, Customer Name is an attribute of the entity Customer.

IV. Draw the notation for the following with appropriate example. (02\*03=06Marks)

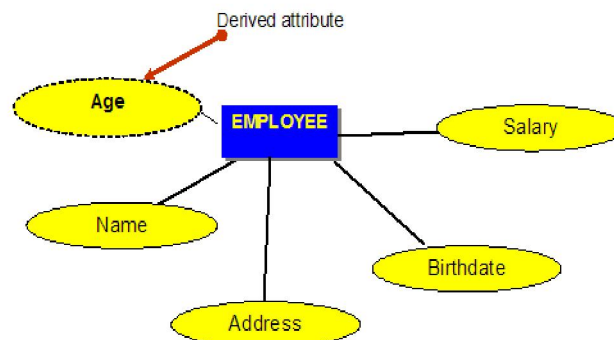
A. Composite attributes



B. Multivalued attributes



C. Derived attribute



V. What is Entity Relationship modal? (01Marks)

An entity relationship model, also called an entity-relationship (ER) diagram, is a graphical representation of entities and their relationships to each other, typically used in computing in regard to the organization of data within databases or information systems.

(Total 25Marks)

04.

I. Explain the following DBMS language. (02\*04=08 Marks)

A. DCL

DCL is short name of Data Control Language which includes commands such as GRANT and mostly concerned with rights, permissions and other controls of the database system.

GRANT - allow users access privileges to database

REVOKE - withdraw users access privileges given by using the GRANT command

B. TCL

TCL is short name of Transaction Control Language which deals with a transaction within a database.

COMMIT - commits a Transaction

ROLLBACK - rollback a transaction in case of any error occurs

SAVEPOINT - to rollback the transaction making points within groups

SET TRANSACTION - specify characteristics of the transaction

C. DML

DML is short name of Data Manipulation Language which deals with data manipulation and includes most common SQL statements such SELECT, INSERT, UPDATE, DELETE

D. DDL

DDL is short name of Data Definition Language, which deals with database schemas and descriptions, of how the data should reside in the database.

CREATE - to create database and its objects like (table, index, views, store procedure, function, and triggers)

ALTER - alters the structure of the existing database

DROP - delete objects from the database

II. What is the functionality of the following SQL command? (01\*04=04Marks)

A. UPDATE- updates existing data within a table

B. INSERT - insert data into a table

C. SELECT- retrieve data from a database

D. DELETE - Delete all records from a database table

III. What is stand for SQL? (01Marks)

Structured Query Language

IV. Below table give the information about employee database .

### Employee

Eno	Ename	Egender	Eaddress	Esalary(Rs)
1	Maryam	F	colombo	50000
2	Kamal	M	Kandy	40000
3	Sampath	M	Ampara	30000

Write the SQL statement to perform the following

- A. Insert the following details in to Employee table. (03Marks)

Eno-4                      Eaddress – Colombo  
 Ename-Alex                      Esalary -35000  
 Egender –M

**INSERT INTO Employee VALUES (4,'Alex','M','colombo',35000);**

- B. Display all Eno and Ename. (03Marks)

**SELECT Eno,Ename  
 FROM Employee;**

- C. Display the Female (F) employee name. (03Marks)

**SELECT Ename, Egender  
 FROM Employee  
 WHERE Egender='F';**

- D. Display the Eno and Esalary of employee whose name start with M. (03Marks)

**SELECT Eno, Esalary, Ename  
 FROM Employee  
 WHERE Ename Like 'M\*';**

(Total 25Marks)

05.

- I. Define the term Normalization. (03Marks)

Normalization is a process of organizing the data in database to avoid data redundancy, insertion anomaly, update anomaly & deletion anomaly.

- II. Briefly explain the following terms. (03\*02=06Marks)

A. Transitive dependency(03Marks)

Attribute is dependent on another attribute that is not part of the primary key.  
Requires the decomposition of the table containing the transitive dependency.

B. Partial dependency(03Marks)

Partial dependency means that a nonprime attribute is functionally dependent on part of a candidate key. (A nonprime attribute is an attribute that's not part of any candidate key.)

III. Write down three (03) rules for the first Normal Form (1NF).

Rule 1: Single Valued Attributes- Each column of your table should be single valued which means they should not contain multiple values

Rule 2: Attribute Domain should not change - This is more of a "Common Sense" rule. In each column the values stored must be of the same kind or type.

Rule 3: Unique name for Attributes/Columns- This rule expects that each column in a table should have a unique name. This is to avoid confusion at the time of retrieving data or performing any other operation on the stored data.

(01\*01=03Marks)

IV. Briefly explain the following terms.

(02\*03=06 Marks)

A. 2nd Normal Form

Second normal form (2NF) is the second step in normalizing a database. 2NF builds on the first normal form (1NF).

A database is in second normal form if it satisfies the following conditions:

It is in first normal form

All non-key attributes are fully functional dependent on the primary key

B. 3<sup>rd</sup> Normal Form

A database is in third normal form if it satisfies the following conditions:

It is in second normal form

There is no transitive functional dependency

V. Convert the following table UNF to 1NF.

(01\*05=05 Marks)

Student no	name	subject
121	Sajeer	C,C++
122	Nimal	Java
123	Ayies	VB,Java

Student no	name	subject
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121	Sajeer	C
121	Sajeer	C++
122	Nimal	Java
123	Ayies	VB
123	Ayies	Java

VI. List 02 Advantage of normalizing table. (01\*02=02 Marks)

- Better performance
- Fast queries
- Reduce insertion anomaly, update anomaly & deletion anomaly

(Total 25Marks)