MULTIPLE CHOICE QUESTIONS   1 x 30 = 30

1. Data if arranged relationally and processed, it then becomes
   a. Information
   b. Text
   c. Symbol
   d. Table

2. In Database, data is stored in
   a. Table

   b. Files

   c. Excel

   d. Windows.

3. The following are functions of a DBMS except _____ .

   a. creating and processing forms

   b. creating databases

   c. processing data

   d. administrating databases

4. In Relational Database Model, _____ are created.
   a. Relations
   b. Objects
   c. Class
   d. Graph

5. An ERD shows the relationship between
   a. Data
   b. Files
   c. Entities
   d. Attributes

6. Each entity has a set of properties. The properties are called
   a. Tuples
   b. Domain
   c. Class
   d. Attributes

7. If a relation is in 3NF, then it is also in
    a. 1NF
    b. 2NF
    c. Table
    d. Database

8. The goal of normalization is to ____
    a. Increase number of relation
    b. Increase redundancy
    c. Efficiently store data
    d. None of these

9. In the _____ normal form, a composite attribute is converted to individual attributes.
    a. First
    b. Second
    c. Third
    d. Fourth

10. The Relational Algebra is a _____ Query language.
    a. Structured
    b. Procedural
    c. Logical
    d. Relational

11. In Relational Algebra, Unary Operator takes _____ input.
    a. Single
    b. Two
    c. More than two
    d. None

12. Select, Project and Rename operations are called
    a. Binary Operators
    b. Unary Operators
    c. Ternary Operators
    d. None of the above

13. Which System Database stores intermediate results and Temporary Data?
    a. master
    b. model
    c. msdb
    d. tempdb

14. Which datatype should be used if you need to store Date Of Birth?
    a. DATE
    b. VARCHAR
    c. DECIMAL
    d. TEXT

15. Which SQL statement is used to update data in a Table?
    a. MODIFY
    b. SAVE AS
    c. SAVE
    d. UPDATE

16. With SQL, how do you select all the records from a table named "Persons" where the value of the column "FirstName" is "Peter"?
    a. SELECT [all] FROM Persons WHERE FirstName = 'Peter'
    b. SELECT * FROM Persons WHERE FirstName = 'Peter'
    c. SELECT * FROM Persons WHERE FirstName <> 'Peter'
    d. SELECT [all] FROM Persons WHERE FirstName LIKE 'Peter'

17. With SQL, how do you select all the records from a table named "Persons" where the value of the column "FirstName" starts with an "a"?
    a. SELECT * FROM Persons WHERE FirstName LIKE 'a%'
    b. SELECT * FROM Persons WHERE FirstName = 'a%'
    c. SELECT * FROM Persons WHERE FirstName LIKE '%a'
    d. SELECT * FROM Persons WHERE FirstName = '%a%'

18. A table "Sales" has columns "Product" and "Price". To list the Product and its average Price from table, only if the average price is more than 5000, ordered by price descending,
    a. Select Product, AVG(Price) AveragePrice From Sales Group By Product Having AVG(Price) > 5000 Order By AVG(Price) Desc
    b. Select Product, AVG(Price) AveragePrice From Sales Group By Product Where AVG(Price) > 5000 Order By AVG(Price) Desc
    c. Select Product, AVG(Price) AveragePrice From Sales Having AVG(Price) > 5000 Group By Product Order By AVG(Price) Desc
    d. Select Product, AVG(Price) AveragePrice From Sales Where AVG(Price) > 5000 Group By Product Order By AVG(Price) Desc

19. Conceptual Data Model defines _____ the system contains.
    a. What
    b. Which
    c. Why
    d. How

20. The client in a Client–Server Architecture is primarily responsible for the presentation of data to the
    a. User
    b. Server
    c. Database

    d. File

21. _____ System captures and maintains transaction data in a database.
    a. OLTP
    b. OLAP
    c. Both a and c
    d. None of a and c

22. A DDBMS consists of a single logical _____ that is split into a number of fragments.
    a. Database
    b. File
    c. User
    d. System

23. The _____is designed to allow a single query to span multiple servers, without requiring all database servers to be capable of managing such multi-site execution strategies.
    a. Client-Server
    b. Collaborating Server
    c. Middleware Server
    d. Database Server

24. _____ property states either all transactions should be executed or none.
    a. Atomicity
    b. Consistency
    c. Isolation
    d. Durability

25. The _____ property states transactions should execute independently of one another.
    a. Atomicity
    b. Consistency
    c. Isolation
    d. Durability

26. Benchmarks are used for Database _____.
    a. Evaluation
    b. Creation
    c. Deletion
    d. Calculation

27. Data cleaning, transforming, and modeling data to discover useful information for business decision-making is called
    a. Data Collection
    b. Data Analysis
    c. Data Creation

d. Database

28. _____ is a method of data analysis to discover a pattern in large data sets using Databases or Data Mining Tools.
   a. Text Analysis
   b. Statistical Analysis
   c. Diagnostic Analysis
   d. Predictive Analysis

29. _____in Web Queries cover a broad topic
   a. Informational queries
   b. Navigational queries
   c. Transactional queries
   d. Connectivity queries

30. A _____ is a program or automated script which browses the World Wide Web in a methodical, automated manner.
   a. Virus
   b. Web Crawler
   c. MSSQL
   d. MySQL

Group B

ANSWER SHORT QUESTION   5 x 6 = 30

Attempt any 5 Questions out of 8.

1. How a Database Management System is advantageous over a Flat File System? (Unit 1 Introduction to Database Systems)
2. What is Project in Relational Algebra? Give an example.(Unit 3 Relational Algebra & Calculus)
3. Write a query to create a new table "EnergySource" to store the sources of Energy measured in TeraJoules, being used by a Country for domestic or commercial purpose, with the columns names Coal, Oil, Electricity, etc. The table should have a column "CountryId" as Foreign Key that stores Primary Key "Id" from table "Country". The default values for column "Year" should be Current Year and the data being inserted in column "Electricity" should be greater than Zero. (Unit 4 SQL)
4. What is a Logical Data Model?(Unit 5 And 6 Conceptual And Logical Design)
5. What are the advantages of Distributed Database Management System? (Unit 9 Distributed Architecture)
6. What are ACID properties? (Unit 10 Database Evaluation and Transaction)
7. What is Data Analysis? How many types of Data Analysis methods are you familiar with? Explain in short (Unit 11 Data Analysis)
8. What is Web Crawling?(Unit 12 Database and the World Wide Web)

ANSWER LONG QUESTION   20 x 2 = 40

Attempt any 2 Questions out of 3. (Case study is Compulsory)

1. CASE STUDY

   United Nations has data related to its 193 Member States. The data UN has data related to each of the nations like Population, Area, GDP, Energy Sources, Air Pollution, Agriculture, Industries and several other Human Development Indices for each year.

   A "Country" table would be required to store data such as Country Name, Capital, Area, Head of State, Continent, etc. Each Country uses Energy Sources to produce energy for domestic or commercial purpose. The data for produced energy sources such as Coal, Oil, Electricity, etc. measured in TeraJoules, would be stored for each year, in a table called "EnergySource". And each Energy Source would result in the emission of gases such as NOX, SO2, CO2, etc. measured in kiloton which would be stored in a table called "Emission".

   Create an ER Diagram to represent these. (Unit 2 Relational Data Model)

2. How many types of Database Technologies are you familiar with?Explain.(Unit 8 Database Technology)

3. Consider the following set of data that needs to be stored in table

Name	Address	Subject	Instructor
Anil Ghimire	Kathmandu	Programming, Database	Hari, Sulav
Prasan Subedi	Pokhara	Database	Sulav

   Break down the above data into appropriate tables using the 1, 2 and 3 Normal Forms (Unit 7 Normalization)

Good Luck