ORACLE SQL REVISION TOUR AND DATABASE FUNDAMENTALS

Q1. (a)Define the term candidate key and foreign key with respect to database.
(b) Define the term primary key and alternate key with respect to database.

Ans. (a) CANDIDATE KEY- All attribute combinations inside a relation that can serve as a primary key are candidate keys as they are candidates for primary key position.
FOREIGN KEY- A non-key attribute, whose values are derived from the primary key of some other table, is known as foreign key in its current table.
(b)PRIMARY KEY- This refers to a set of one or more attributes that can uniquely identify tuples within the relation.
ALTERNATE KEY- A candidate key, that is not primary key, is called an alternate key.

Q2. Differentiate between DDL and DML commands. Give one example of each type of command.
Ans: The Data Definition Language (DDL) commands, as the name suggests, allow you to perform tasks related to data definition. That is, through these commands, you can perform tasks alter and drop schema objects, grant and revoke privileges etc.
The Data Manipulation Language (DML) commands, as the name suggests, are used to manipulate data. That is, DML commands query and manipulate data in existing schema objects.

Q3. Name the keyword used to (i) assign a value as no data (ii) avoid duplicate rows in SQL query.
Ans: (I) NULL (ii) UNIQUE

Q4. What is a view? Why does view not requires any physical storage?
Ans. A view is a virtual table that can be thought of as an SQL SELECT statement that selects data from a single table or joined table(s), but can be accessed as though it were a single table.
A view does not require physical storage because a view is a virtual table that does not exist in reality, but is a logical definition of a set of relative columns, usually from multiple tables.

Q5. Define SQL. Name the different SQL subcategories.
Ans: The Structure Query Language (SQL) is a language that enables you to create and operate on relational databases. It is a standard relational database language.SQL command is divided into following categories:
(i) Data Definition Language (DDL) Commands
(ii)Data Manipulation Language (DML) Commands
(iii) Transaction Control Language (TCL) Commands
(iv) Session Control Commands
(vi)System Control Commands

Q6. Differentiate between single row functions and multiple row functions of SQL. Give examples of both.
Ans:
1. SINGLE ROW FUNCTONS- It work with a single row at a time. A single row function returns a result for every row of a queried table. For example Lower () function.
   Select lower (ename) from EMP;
2. MULTIPLE ROW FUNCTIONS- It work with data of multiple rows at a time and return aggregated value. For example MAX () function
   Select max (salary) from EMP where deptno = 30;

Q7. Explain the IN operator of SQL, specifying its syntax and usages.
Ans: The IN operator selects values that matches any value in the given list of values. Example
SELECT * FROM members WHERE city in ('DELHI','MUMBAI','CHENNAI');

Q8. Differentiate between commit and rollback command of SQL.
Ans: COMMIT- Ends the current transaction by saving database changes and starts a new transaction.
ROLLBACK- Ends the current transaction by discarding database changes and starts a new transaction.

Q9. Explain the difference between the SUBSTR and INSTR functions of SQL with the help of an example.
Ans. SUBSTR function extracts substring from a given string.

Example: Select SUBSTR ('ABCDEFG', 3, 4) from dual;
Output: CDEF
INSTR function search for given second string into the given first string.
Example: Select INSTR ('CORPOTATE FLOOR','OR', 3, 2) from dual;
Output: 14

Q10. What are group functions of SQL? Name any two group functions of SQL.
Ans: Group functions work with data of multiple rows at a time and return aggregated value.
Example MAX (), MIN ().

Q11. State the difference between SQL and PL/SQL.
Ans: The Structure Query Language (SQL) is a language that enables you to create and operate on relational databases. It is a standard relational database language.
PL/SQL is a procedural extension of SQL that offers language constructs similar to those in imperative programming language.PL/SQL allow a its users to develop complex database applications that require the usage of control structures and procedural elements such as procedures, functions, modules etc.

Q12. What is the DEFAULT option of CREATE TABLE command?
Ans: A default value can be specified for a column using the DEFAULT caluse.When a user does not enter a value for the column; automatically the defined default value is inserted in the field.

```
Create table employee
        (Ecode   integer     not null primary key,
         Ename    char (20) not null,
         Grade     char (2)   default = 'E1');
```

Q13. How do we restrict duplicate rows in SQL SELECT query? Give example.
Ans: we restrict duplicate rows in SQL SELECT query by using DISTINCT keyword.
Example: Select distinct (city) from suppliers.

Q14. What is Null value? What is the result of an arithmetic operation containing NULL value.?
Ans: If a column in a row has no value then column is said to be null. An arithmetic operation containing NULL value evaluates to null

Q15. What is the use of sub-query? Which query gets execute first, the parent or the sub-query?
Ans: A sub query refers to a query statement that appears inside another SQL statement.
Sub-query executes first then parent query is executed.

Q16. What is normalization? Define second normal form
Ans: The normalization process helps in attaining good database design thereby avoiding undesirable things like depiction of information, inconsistent information, loss of information.
A relation R is said to be in second normal form (2NF) if and only if it is in 1NF and every non- key attribute is fully dependent on the primary key

Q17. What is the need for normalization? Define third normal form.
Ans: A relation R is said to be in third normal form (3NF) if and only if it is in 2NF and every non- key attribute is non-transitively dependent on the primary key.

Q18. What is the difference between private synonym and public synonym?

Ans: Private synonyms are the synonyms created by a user for personal use e.g. for assigning shorter names to the objects created by the user himself.
Public synonyms are those that are created by a user and that can be used by all other users of that database

Q19. What do you mean by three tier computing model?
Ans: In three Tiers computing model a middle tier exists between clients and the database server. This middle tier consists of an application server that contains the application logic. Clients in this model are thin clients where much of application logic and processing power is not needed.

Q20. What is a data dictionary?
Ans: The data dictionary is collection of tables and related views that enable you to see the inner workings and structure of the Oracle database. By querying these tables and views, DBAs are able to obtain information about every object and every user of the database.

Q21. What is transaction?
Ans: A transaction is one logical unit of work consisting of one or more logically related statements.

Q22. Explain any two object privileges.
Ans: Select: Permits the grantee of this object privileges to access the data in a table, sequence, view.
Update: Permits the grantee of this object privilege to update data into a table or view.

Q23. What is a sequence?
Ans: A sequence is a database object that generates integers according to specified rules at the time the sequence was created. They are used to generate primary keys automatically.

Q24. What are indexes?
Ans: Index is a sorted list of data from one or more columns in the table that are commonly used as selection criteria. Indexes are the files that keep track of location of each row or group of rows in the table.

Q25. What is distributed database?
Ans: A distributed database is a database stored and running on a collection of machines that do not have shared memory that appears to its users like a single database on a single computer.

Queries based on tables

Q1:

Table: Flight

Column name	Data Type	Size	Constraint	Description
Flight_No	NUMBER	4	PRIMARY KEY	Flight number
Origin	VARCHAR2	30	NOT NULL	Place of origin of flight
Destination	VARCHAR2	30	NOT NULL	Destination of flight
Seats	NUMBER	3		Number of seats available
Flt_Date	DATE			Date of flight
Rate	NUMBER	7,2		Rate of ticket on the flight

(a) Write the SQL command to create the table **FLIGHT** including all constraints.
(b) Write the SQL command to display the details of all the details of all the flights whose **Destination** is the sane as the destination of Flight_No **9001**.

Table: Hospital

Column name	Data Type	Size	Constraint	Description

P_No	NUMBER	4	PRIMARY KEY	Patient Number
Patient_name	VARCHAR2	30	NOT NULL	Name of the patient
Department	VARCHAR2	20		Department to which patient is admitted
Doc_name	VARCHAR2	30	NOT NULL	Name of the doctor
Dt_Birth	DATE			DOB of patient
Consultation_Fee	NUMBER	5,2		Consultation fees

(a)Write the SQL command to create the table **HOSPITAL** including all constraints.

(b) Write the SQL command to display the details of all the patients whose date of birth is after Ist Jan 2000 department wise.

Table : Employee

Column name	Data Type	Size	Constraint	Description
Emp_ID	NUMBER	8	PRIMARY KEY	Employee's identification number
First_Name	VARCHAR2	25	NOT NULL	First name of employee
Last_Name	VARCHAR2	25		Last name of employee
Date_Join	DATE			Date of joining
Basic_Sal	NUMBER	8,2		Basic Salary
Dept_ID	NUMBER	3		Department Number

(a)Write the SQL command to create the table **EMPLOYEE** including all constraints.

(b)Write the SQL command to display first name, date of joining and department id of employees who are hired between March 20, 1991 and Dec 31, 1991 in ascending order of date of joining.

(c)Write the SQL command to create a view, which contains EMP_ID and Bonus where Bonus is 12% of the Basic_Sal.

Table: Student

Column name	Data Type	Size	Constraint	Description
RollNumber	NUMBER	2	PRIMARY KEY	Student's Roll number
Name	VARCHAR2	25	NOT NULL	Name of Student
Class	VARCHAR2	3		Class of Student
Stream	VARCHAR2	15		Stream opted by Student
TotalMarks	NUMBER	8,2		Total marks scored by the student
Grade	VARCHAR2	1	Can be 'A' or 'B' or 'C'	Grade scored by the student

a) Write SQL command to display Roll numbers, names, Total marks and grades of all the students in "Nonmedical" stream sorted by Total marks in descending order.

b) Write SQL command to create a view consisting of all students in "Medical" stream and who have scored "A" grade.

Table: Sales

Column name	Data Type	Size	Constraint	Description
SNum	NUMBER	6	PRIMARY KEY	SalesPerson's Identification number
SFName	VARCHAR2	25	NOT NULL	First Name of SalesPerson
SLName	VARCHAR2	25	NOT NULL	Last Name of SalesPerson
City	VARCHAR2	10		City where SalesPerson works
Sales	NUMBER	9,2		Sales achieved by SalesPerson
Comm	NUMBER	8,2		Commission earned by SalesPerson

a) Write the SQL command to create the above table with constraints.
b) Write the SQL command to create a view consisting of all the SalesPersons working in Delhi City.
c) Write SQL command to display each city along with total sales in that city.