**7. Define the "integrity rules"?**

There are two Integrity rules.

1. **Entity Integrity:** States that "Primary key cannot have NULL value"
2. **Referential Integrity:** States that "Foreign Key can be either a NULL value or should be Primary Key value of other relation.

**8. What is extension and intension?**

1. **Extension:** It is the number of tuples present in a table at any instance. This is time dependent.
2. **Intension:** It is a constant value that gives the name, structure of table and the constraints laid on it.

**12. What is a view? How it is related to data independence?**

A view may be thought of as a virtual table, that is, a table that does not really exist in its own right but is instead derived from one or more underlying base table. In other words, there is no stored file that direct represents the view instead a definition of view is stored in data dictionary.   
  
Growth and restructuring of base tables is not reflected in views. Thus the view can insulate users from the effects of restructuring and growth in the database. Hence accounts for logical data independence.

**13. What is Data Model?**

A collection of conceptual tools for describing data, data relationships data semantics and constraints.

**29. What is VDL (View Definition Language)?**

It specifies user views and their mappings to the conceptual schema.

**30. What is SDL (Storage Definition Language)?**

This language is to specify the internal schema. This language may specify the mapping between two schemas.

**32. What is DML (Data Manipulation Language)?**

This language that enable user to access or manipulate data as organised by appropriate data model.

1. **Procedural DML or Low level:** DML requires a user to specify what data are needed and how to get those data.
2. **Non-Procedural DML or High level:** DML requires a user to specify what data are needed without specifying how to get those data.

**38. What is Relational Algebra?**

It is procedural query language. It consists of a set of operations that take one or two relations as input and produce a new relation.

**39. What is Relational Calculus?**

It is an applied predicate calculus specifically tailored for relational databases proposed by E.F. Codd. E.g. of languages based on it are DSL ALPHA, QUEL.

**40. How does Tuple-oriented relational calculus differ from domain-oriented relational calculus?**

1. The **tuple-oriented calculus** uses a tuple variables i.e., variable whose only permitted values are tuples of that relation. E.g. QUEL
2. The **domain-oriented calculus** has domain variables i.e., variables that range over the underlying domains instead of over relation. E.g. ILL, DEDUCE.
3. **54. What is system catalog or catalog relation? How is better known as?**
4. A RDBMS maintains a description of all the data that it contains, information about every relation and index that it contains. This information is stored in a collection of relations maintained by the system called metadata. It is also called data dictionary.

**53. What is indexing and what are the different kinds of indexing?**

Indexing is a technique for determining how quickly specific data can be found.   
Types:

1. Binary search style indexing
2. B-Tree indexing
3. Inverted list indexing
4. Memory resident table
5. Table indexing

**55. What is meant by query optimization?**

The phase that identifies an efficient execution plan for evaluating a query that has the least estimated cost is referred to as query optimization.

**56. What is durability in DBMS?**

Once the DBMS informs the user that a transaction has successfully completed, its effects should persist even if the system crashes before all its changes are reflected on disk. This property is called durability.

**57. What do you mean by atomicity and aggregation?**

1. **Atomicity:** Either all actions are carried out or none are. Users should not have to worry about the effect of incomplete transactions. DBMS ensures this by undoing the actions of incomplete transactions.
2. **Aggregation:** A concept which is used to model a relationship between a collection of entities and relationships. It is used when we need to express a relationship among relationships.

**58. What is a Phantom Deadlock?**

In distributed deadlock detection, the delay in propagating local information might cause the deadlock detection algorithms to identify deadlocks that do not really exist. Such situations are called phantom deadlocks and they lead to unnecessary aborts.

**59. What is a checkpoint and When does it occur?**

A Checkpoint is like a snapshot of the DBMS state. By taking checkpoints, the DBMS can reduce the amount of work to be done during restart in the event of subsequent crashes.

**60. What are the different phases of transaction?**

Different phases are  
1.) Analysis phase,  
2.) Redo Phase,  
3.) Undo phase.

**63. What is a query?**

A query with respect to DBMS relates to user commands that are used to interact with a data base. The query language can be classified into data definition language and data manipulation language.

**64. What do you mean by Correlated subquery?**

Subqueries, or nested queries, are used to bring back a set of rows to be used by the parent query. Depending on how the subquery is written, it can be executed once for the parent query or it can be executed once for each row returned by the parent query. If the subquery is executed for each row of the parent, this is called a correlated subquery.

A correlated subquery can be easily identified if it contains any references to the parent subquery columns in its WHERE clause. Columns from the subquery cannot be referenced anywhere else in the parent query. The following example demonstrates a non-correlated subquery.

Example: Select \* From CUST Where '10/03/1990' IN (Select ODATE From ORDER Where CUST.CNUM = ORDER.CNUM)

**65. What are the primitive operations common to all record management systems?**

Addition, deletion and modification.

**66. Name the buffer in which all the commands that are typed in are stored?**

'Edit' Buffer.

**67. What are the unary operations in Relational Algebra?**

PROJECTION and SELECTION.

**68. Are the resulting relations of PRODUCT and JOIN operation the same?**

No.  
**PRODUCT**: Concatenation of every row in one relation with every row in another.  
**JOIN**: Concatenation of rows from one relation and related rows from another.

**70. Name the sub-systems of a RDBMS.**

I/O, Security, Language Processing, Process Control, Storage Management, Logging and Recovery, Distribution Control, Transaction Control, Memory Management, Lock Management.

**71. Which part of the RDBMS takes care of the data dictionary? How?**

Data dictionary is a set of tables and database objects that is stored in a special area of the database and maintained exclusively by the kernel.

**72. What is the job of the information stored in data-dictionary?**

The information in the data dictionary validates the existence of the objects, provides access to them, and maps the actual physical storage location.

**73. How do you communicate with an RDBMS?**

You communicate with an RDBMS using Structured Query Language (SQL).

**74. Define SQL and state the differences between SQL and other conventional programming Languages.**

SQL is a nonprocedural language that is designed specifically for data access operations on normalized relational database structures. The primary difference between SQL and other conventional programming languages is that SQL statements specify what data operations should be performed rather than how to perform them.

**75. Name the three major set of files on disk that compose a database in Oracle.**

There are three major sets of files on disk that compose a database. All the files are binary. These are

1.) Database files   
2.) Control files  
3.) Redo logs

The most important of these are the database files where the actual data resides. The control files and the redo logs support the functioning of the architecture itself. All three sets of files must be present, open, and available to Oracle for any data on the database to be useable. Without these files, you cannot access the database, and the database administrator might have to recover some or all of the database using a backup, if there is one.

**76. What is database Trigger?**

A database trigger is a PL/SQL block that can defined to automatically execute for insert, update, and delete statements against a table. The trigger can e defined to execute once for the entire statement or once for every row that is inserted, updated, or deleted. For any one table, there are twelve events for which you can define database triggers. A database trigger can call database procedures that are also written in PL/SQL.

**77. What are stored-procedures? And what are the advantages of using them?**

Stored procedures are database objects that perform a user defined operation. A stored procedure can have a set of compound SQL statements. A stored procedure executes the SQL commands and returns the result to the client. Stored procedures are used to reduce network traffic.

**78. What is Storage Manager?**

It is a program module that provides the interface between the low-level data stored in database, application programs and queries submitted to the system.

**79. What is Buffer Manager?**

It is a program module, which is responsible for fetching data from disk storage into main memory and deciding what data to be cache in memory.

**80. What is Transaction Manager?**

It is a program module, which ensures that database, remains in a consistent state despite system failures and concurrent transaction execution proceeds without conflicting.

**81. What is File Manager?**

It is a program module, which manages the allocation of space on disk storage and data structure used to represent information stored on a disk.

**82. What is Authorization and Integrity manager?**

It is the program module, which tests for the satisfaction of integrity constraint and checks the authority of user to access data.

**83. What are stand-alone procedures?**

Procedures that are not part of a package are known as stand-alone because they independently defined. A good example of a stand-alone procedure is one written in a SQL\*Forms application. These types of procedures are not available for reference from other Oracle tools. Another limitation of stand-alone procedures is that they are compiled at run time, which slows execution.

**84. What are cursors give different types of cursors?**

PL/SQL uses cursors for all database information accesses statements. The language supports the use two types of cursors  
1.) Implicit  
2.) Explicit

**85. What is cold backup and hot backup (in case of Oracle)?**

1. **Cold Backup:** It is copying the three sets of files (database files, redo logs, and control file) when the instance is shut down. This is a straight file copy, usually from the disk directly to tape. You must shut down the instance to guarantee a consistent copy. If a cold backup is performed, the only option available in the event of data file loss is restoring all the files from the latest backup. All work performed on the database since the last backup is lost.
2. **Hot Backup:** Some sites (such as worldwide airline reservations systems) cannot shut down the database while making a backup copy of the files. The cold backup is not an available option.