

## Viva questions from SQL

1. **What is SQL(Structured Query Language)? Procedural or non procedural? Advantages of SQL.**
2. **SQL vs. SQL\*PLUS**
3. **Components/ subsets of SQL - DDL (Data Definition Language– create, alter, drop), DML (Data Manipulation Language – insert, update, delete), DCL (Data Control Language- grant, revoke), DQL (Data Query Language - select)**
4. **What is a record, field, table in database?**
5. **Basic data types of SQL**
6. **Syntax and functioning of all commands like create, alter, rename, truncate, desc, insert, delete, drop, update, etc**
7. **Difference between truncate, delete, drop – Which is DDL or DML**
8. **Generic commands like select \* from tab**
9. **Create table from another table**
10. **Applying constraint though create and alter table - I/O Constraint (Primary Key, Foreign key(referential integrity – on delete set null, on delete cascade), Unique Key), Business Rule constraint(NOT NULL, CHECK). User defined name for constraints**
11. **Table vs. column level constraints. Why table level constraint required (composite primary key)?**
12. **Foreign key options – on delete cascade, on delete null**
13. **Checking contents of user\_constraints, user\_cons\_columns**
14. **select(order by, group by, having, distinct)**
15. **Arithmetic Operators ( +, -, \*, /, \*\*, ()), Logical Operators( AND, OR, NOT), Range Searching (between), Pattern Matching (LIKE% \_), IN, IS NULL**
16. **Pattern matching % (0 or more characters) \_ single character**
17. **Column alias, || operator**
18. **Oracle functions - Scalar(single row – string, number, date, conversion functions) vs. Aggregate(multiple row – sum, count, avg, min, max) functions**
19. **Built in Oracle table – DUAL – why required?**
20. **Difference between “having” and “where”**
21. **What are Subqueries(nested queries)?**
22. **Single vs. multiple row subqueries**
23. **Multiple row subqueries – IN, ANY, ALL**
24. **What are joins**
25. **Types of joins - Cross Join, Inner Join, Outer Join, Left outer/ left join, Right outer/ right join, Full outer/ full join**
26. **View – functioning, advantages**
27. **Updateable View vs. Read-Only View**
28. **Sequences, nextval, curval**

29. Creating **index**
30. Creating **synonyms**
31. Use of merge command
32. Transaction – rollback, commit, savepoint
33. Grant, revoke, create role

### VIVA Questions on PL/SQL

1. **PL/SQL – what is it, its features, and advantages.**
2. **Block structure of PL/SQL – declare, begin, exception (which compulsory)**
3. Variable types – sub data types of various data types.
4. PL/SQL operators - Arithmetic operators, Relational operators, Comparison operators, Logical operators, String operators, LIKE, BETWEEN, IN, NULL
5. Substitution variables to take input from user - &var / ‘&var’
6. Decision Making Structures - IF – THEN, IF-THEN-ELSE, IF-THEN-ELSIF, nested IF-THEN-ELSE, Case
7. Loops - Basic Loop, While Loop, For Loop, Nested Loop
8. Loop Control Statements – exit, exit when, goto, continue
9. **DML Operations in PL/SQL – why only 1 record fetched at a time – use of cursor**
10. **%type, %rowtype**
11. **What are cursors? Active set?**
12. **Implicit vs. explicit cursors**
13. Cursor attributes - %found, %notfound, %isopen,%rowcount
14. Declare cursor, open, fetch, close operations
15. Cursor for loops - For record\_name IN cursor\_name LOOP ..... END LOOP;
16. Cursor for update/ delete.....where current of
17. **What are exceptions?**
18. System-defined exceptions vs. User-defined exceptions(Using DBMS\_STANDARD.RAISE\_APPLICATION\_ERROR, raise\_application\_error(error\_number, message), pragma init)
19. **Standard exceptions like – no\_data\_found, too\_many\_rows, zero\_divide**
20. **What are triggers?**
21. Trigger – syntax, use
22. Trigger Components - Trigger Timing (**Before, after, insteadof** ), Triggering event/statement (Insert, update, delete), **Trigger Type( row(for each row), statement)**, Trigger Restriction (Boolean expression that must be true for trigger to fire), Trigger Action( PL/SQL code to be executed)
23. Using OLD and NEW Qualifiers with triggers
24. **What are procedures, functions and packages?**
25. Procedures & Functions – define, execute
26. **Parameter types – in, out, inout**

27. Procedures vs. functions
28. Checking errors – select \* from user\_errors
29. **Package specification – package body**, using package element (package name. element)
30. Advantages of using packages

### VIVA Questions based on theory syllabus

1. **What is a DBMS? What is RDBMS?**
2. **Advantages of DBMS.**
3. Difference between traditional file based systems and DBMS.
4. Difference between – physical/ logical(conceptual)/ view(external) level
5. Data Models – relational, hierarchical, network model
6. **Relational model – description, advantages, properties**
7. **Relational model terms – attributes, tuple, relation**
8. DBA responsibilities
9. RDBMS codd's rule
10. **ER Diagram – entity, attribute, relation (various symbols)**
11. **Single-valued vs. Multi-valued Attributes**
12. **Derived Attributes, composite attribute**
13. **What is a Null Value**
14. Descriptive attributes
15. What is a recursive relationship
16. Degree of relationship – unary, binary, ternary
17. Mapping cardinalities – one to one, one to many, many to one, many to many
18. **Concept of various Keys – super, candidate, primary, foreign, composite**
19. Concept of referential integrity
20. **Weak vs. strong entity set**
21. Generalization vs. specialization
22. Aggregation
23. **What is Functional Dependency?**
24. Definitions of Closure, minimal(canonical) cover of functional dependency
25. **What is normalization – advantages / disadvantages**
26. **What is decomposition? Desirable properties of decomposition.**
27. Normal forms definition – 1NF, 2NF, 3NF, BCNF,
28. Multivalued Dependency and 4NF
29. Join Dependency and 5NF
30. **What is a transaction? What are its ACID properties?**
31. What are various transaction states?
32. Serial vs. concurrent schedule
33. What is serializability?

**34. What are lock based protocols – 2PL**

35. Terms – **deadlock**, starvation, timestamp, rollback, commit, log, crash recovery, **checkpoints**, shadow paging

**36. What is an index? How useful?**

**37. Index – clustered, unclustered, dense, sparse, multilevel**

38. B & B<sup>+</sup> trees – concept, node structure, insertion(split), deletion(merge), advantages/disadvantages

39. Hashing – static, dynamic

40. Terms – overflow, collision, hash index

41. Data dictionary (system catalog)

42. What is a query?

43. Process of query evaluation and optimization (query evaluation plans)

44. Discretionary access control/ Mandatory access control

**45. Role based authority**

**46. Grant/ revoke**

**Note: Below is the given list of probable viva questions. Questions in bold are the most basic questions which every students should be able to answer.**