

# SQL Server DBA Interview Questions & Answers (L1 - 3 Years Experience)

## 1. Basic SQL Server Concepts

**Q: What is SQL Server, and what are its main components?**

A: SQL Server is a Relational Database Management System (RDBMS) by Microsoft. Main components: - Database Engine: Stores, processes, and secures data. - SQL Server Agent: Automates jobs and schedules tasks. - SSMS: GUI tool to manage databases. - SQL Browser: Helps client apps connect to instances.

**Q: Different SQL Server editions?**

A: - Enterprise → Full features, large-scale apps. - Standard → Medium-sized apps. - Express → Free, 10GB limit. - Developer → Enterprise features for development.

**Q: Difference between Instance and Database?**

A: Instance → A running copy of SQL Server. Database → Container of structured data. One instance can host multiple databases.

**Q: Primary Key, Foreign Key, Unique Key?**

A: - Primary Key → Uniquely identifies a record, cannot be NULL. - Unique Key → Ensures uniqueness, allows one NULL. - Foreign Key → Maintains relationship between tables.

**Q: Clustered vs Non-Clustered Index?**

A: - Clustered Index → Physically sorts table data (one per table). - Non-Clustered Index → Logical ordering, uses pointers.

## 2. Backup & Recovery

**Q: Types of Backups**

A: 1. Full → Entire database. 2. Differential → Changes since last full backup. 3. Transaction Log → Point-in-time recovery. 4. Copy-Only → Independent backup.

**Q: How to take a backup using T-SQL?**

A: `BACKUP DATABASE TestDB TO DISK='C:\Backups\TestDB.bak' WITH INIT, STATS=10;`

**Q: How to restore a database?**

A: `RESTORE DATABASE TestDB FROM DISK='C:\Backups\TestDB.bak' WITH REPLACE;`

**Q: Recovery Models**

A: - Full → Logs saved, supports point-in-time recovery. - Simple → Logs auto-truncated, less storage. - Bulk-Logged → Fewer logs during bulk ops.

### 3. Performance Tuning & Monitoring

**Q: Steps to fix slow queries**

A: 1. Check execution plan. 2. Look for missing indexes. 3. Update statistics. 4. Reduce joins/subqueries. 5. Check blocking/deadlocks.

**Q: How to view Execution Plan in SSMS?**

A: Press Ctrl + M before executing the query.

**Q: Find long-running queries**

A: `SELECT session_id, start_time, status, blocking_session_id, wait_type, cpu_time, total_elapsed_time, text FROM sys.dm_exec_requests CROSS APPLY sys.dm_exec_sql_text(sql_handle);`

### 4. Security & User Management

**Q: Authentication Modes**

A: - Windows Authentication → Uses AD credentials. - SQL Server Authentication → Uses SQL username/password.

**Q: Create Login & User**

A: `CREATE LOGIN Rishi WITH PASSWORD='StrongPass123'; USE TestDB; CREATE USER Rishi FOR LOGIN Rishi;`

**Q: Grant & Revoke Permissions**

A: `GRANT SELECT, INSERT ON Employees TO Rishi; REVOKE INSERT ON Employees FROM Rishi;`

### 5. Troubleshooting & Maintenance

**Q: Check SQL Server Version**

A: `SELECT @@VERSION;`

**Q: Check Uptime**

A: `SELECT sqlserver_start_time FROM sys.dm_os_sys_info;`

**Q: Check Last Backup Time**

A: `SELECT database_name, MAX(backup_finish_date) FROM msdb.dbo.backupset GROUP BY database_name;`

**Q: *Check Error Logs***

A: EXEC xp\_readerrorlog;