Q: What is the .NET Framework?

A: A Microsoft software development platform that provides libraries, runtime, and tools for building Windows applications.

Q: What is the CLR?

A: The Common Language Runtime is the execution engine of .NET, handling memory management, security, and exception handling.

Q: What is the difference between .NET Framework and .NET Core?

A: .NET Framework is Windows-only, while .NET Core (and later .NET 5+) is cross-platform and open-source.

Q: What is the Base Class Library (BCL)?

A: A collection of reusable classes for common tasks like collections, I/O, networking, and XML.

Q: What is the difference between managed and unmanaged code?

A: Managed code runs under CLR supervision, while unmanaged code runs directly on the OS without CLR services.

- Architecture

Q: What is the Common Type System (CTS)?

A: Defines how data types are declared and used across all .NET languages, ensuring consistency.

Q: What is the Common Language Specification (CLS)?

A: A set of rules that all .NET languages must follow to ensure interoperability.

Q: What is an assembly in .NET?

A: A compiled unit (DLL or EXE) containing IL code, metadata, and resources.

Q: What is the Global Assembly Cache (GAC)?

A: A machine-wide repository for shared assemblies used by multiple applications.

Q: What is Just-In-Time (JIT) compilation?

A: The process of converting IL code into native machine code at runtime.

- Features

Q: What is garbage collection in .NET?

A: Automatic memory management that reclaims unused objects.

Q: What is the difference between value types and reference types?

A: Value types store data directly (e.g., int), while reference types store references to objects (e.g., class).

Q: What are namespaces in .NET?

A: Logical groupings of classes to organize code and avoid naming conflicts.

Q: What is the difference between early binding and late binding?

A: Early binding resolves method calls at compile time, while late binding resolves them at runtime.

Q: What is the difference between strong and weak references?

A: Strong references prevent garbage collection, while weak references allow objects to be collected.

- ASP.NET & ADO.NET

Q: What is ASP.NET?

A: A framework for building dynamic web applications using .NET.

Q: What is ADO.NET?

A: A data access technology for interacting with databases.

Q: What is the difference between DataSet and DataReader?

A: DataSet is disconnected and in-memory, while DataReader is connected and forward-only.

Q: What is Web.config??

A: A configuration file for ASP.NET applications containing settings like connection strings and security.

Q: What is the difference between ASP.NET Web Forms and MVC?

A: Web Forms use event-driven programming, while MVC separates concerns into Model, View, and Controller.

- Advanced

Q: What is WPF in .NET?

A: Windows Presentation Foundation, a UI framework for building rich desktop applications using XAML.

Q: What is LINQ?

A: Language Integrated Query, a feature that allows querying collections, databases, and XML using C# syntax.

Q: What is Entity Framework?

A: An ORM that maps database tables to .NET objects, simplifying data access.

Q: What is the difference between synchronous and asynchronous programming?

A: Synchronous code executes sequentially, while asynchronous code allows non-blocking operations using async/await.

Q: What is the difference between .NET Framework and Mono?

A: Mono is an open-source implementation of .NET, designed to run applications cross-platform before .NET Core.