1. **Introduction to Spring Framework 1.BeanFactory vs. ApplicationContext:**

• **Theory:**

**[1]What is BeanFactory?:-** *(1) A simple container for managing Spring beans :-*BeanFactory is the basic container in the Spring Framework that manages the lifecycle of beans using Inversion of Control (IoC) and Dependency Injection (DI). *(2) Pros and cons of using BeanFactory*:- **Pros:**

1. **Lightweight & Efficient** – Uses **lazy initialization**, loading beans only when needed, which saves memory.
2. **Faster Startup** – Since it loads beans only when requested, it has a lower startup time compared to ApplicationContext.
3. **Supports Dependency Injection (DI)** – Handles object creation and dependency management automatically.
4. **Good for Small Applications** – Suitable for lightweight, standalone applications.

**Cons:**

1. **Limited Features** – Lacks support for advanced features like event propagation, internationalization, and AOP.
2. **No Built-in Web Support** – Not recommended for **web applications**; ApplicationContext is preferred.
3. **Difficult to Work With in Large Applications** – Since beans are loaded lazily, debugging and managing dependencies in complex applications can be difficult.

**[2] What is ApplicationContext?:-** *(1) A more advanced container that includes features like event propagation, declarative mechanisms, and AOP support:-*ApplicationContext: An Advanced Spring Container

ApplicationContext is a more advanced Spring IoC container that extends BeanFactory and provides additional features such as:

Key Features:

✔ Event Propagation – Supports event handling within the Spring application.  
✔ Declarative Mechanisms – Supports declarative bean creation and dependency injection.  
✔ AOP (Aspect-Oriented Programming) Support – Enables integration with Spring AOP for cross-cutting concerns.  
✔ Internationalization (i18n) – Supports message sources for multilingual applications.  
✔ Eager Initialization – Loads all singleton beans at startup for better performance in large applications.

*(2) Differences between BeanFactory and ApplicationContext (e.g., lazy initialization in BeanFactory vs. eager initialization in ApplicationContext):-*