Comparison of SDLC Models for Engineering Projects

1. Waterfall Model

- **Advantages**:
  - Easy to understand
  - Structured and clear stages
  - Extensive documentation
- **Disadvantages**:
  - Inflexible to changes
  - Late error detection
  - High risk for long projects
- **Best for**: Stable requirements, like construction projects.

2. Agile Model

- **Advantages**:
  - Flexible to changes
  - Frequent stakeholder feedback
  - Early and continuous delivery
- **Disadvantages**:
  - Complex management
  - Less documentation
  - Risk of scope creep
- **Best for**: Dynamic projects, like software development.

3. Spiral Model

- **Advantages**:
  - Strong risk management
  - Flexible and iterative
  - Regular customer feedback
- **Disadvantages**:
  - Complex and costly
  - Time-consuming
- **Best for**: Large, high-risk projects, like aerospace.

4. V-Model

- **Advantages**:
  - Clear structure
  - Early error detection
  - Emphasizes verification and validation
- **Disadvantages**:
  - Inflexible
  - High upfront planning required
- **Best for**: Projects needing rigorous testing, like medical device development.