ASSIGNMENT - 3

Research and compare SDLC models suitable for engineering projects. Present findings on Waterfall, Agile, Spiral, and V-Model approaches, emphasizing their advantages, disadvantages, and applicability in different engineering contexts.

1. Waterfall Model:
Advantages:
Sequential and easy to understand.
Well-suited for projects with stable requirements.
Documentation is thorough and extensive.

Disadvantages:
Little room for change once development starts.
Testing occurs only after the development phase, which can lead to significant rework if issues are found.
Customer feedback is typically delayed until the end.

Applicability: Best suited for projects with clear and well-defined requirements, where changes are unlikely.

2. Agile Model:
Advantages:
Flexible and adaptable to changes throughout the development process.
Promotes collaboration between cross-functional teams.
Allows for frequent iterations and continuous improvement.

Disadvantages:
Requires active involvement and commitment from the customer.
Documentation may be minimal, which could lead to a lack of clarity.
Not suitable for projects with strict regulatory or compliance requirements.

Applicability: Ideal for projects where requirements are expected to evolve, and there's a need for rapid development and delivery.

3. **Spiral Model:**
Advantages:
Incorporates risk management throughout the development process.
Allows for incremental releases with each spiral iteration.
Suitable for large and complex projects with changing requirements.

Disadvantages:
Can be time-consuming and costly due to the iterative nature.
Requires expertise in risk analysis and management.
Documentation may become extensive and hard to manage.

Applicability: Best suited for large-scale projects with high risk and evolving requirements, such as complex engineering systems.

4.V-Model:

Advantages:
Emphasizes testing throughout the development lifecycle.
Provides a systematic and structured approach to development.
Helps in early detection and rectification of defects.

Disadvantages:
Sequential nature may lead to delays in project delivery.
Changes in requirements may require rework across multiple stages.
Can be rigid and less adaptable to changes compared to Agile.

Applicability: Suitable for projects with well-defined requirements and where testing plays a critical role, such as safety-critical systems in engineering.