COEPD – Traditional Development

Capstone Project1 – Part -1/3 – 100 Marks - Pass 60 %

14 Questions

Instructions to follow:

1.Copy paste (either image, diagram or text) is not entertained. If done, the document will not be evaluated.

2.After submission of the answers of this prep exam, you should be prepared to attend viva and justify your answers in the prep exams. If in Viva, participant is NOT justifying the answers, Viva will be repeated until Candidates justify 60% correctness.

3.Mentor calls are scheduled only if the participant have submitted their task at least for one time.

(should apply their knowledge in this task first)

4.For attempting prep exams participant should be thorough on the topics using their references.

5.Please format the document properly (Always have a question no., question and answer).

6.Have a consistent format (Font name: Arial/ Calibri -Font size 12, Font Color: Black).

7.Few Questions are related to the case study, check Questions thoroughly before you answer.

8.Answers should be elaborated in detail (not as per the allotted marks).

9.Please focus on learning and applying the knowledge as this knowledge will be helpful in contributing at your BA job.

10.In the evaluation, students must answer all questions and should be able to justify at least 60% content and correctness of each answer.

# Online Agriculture Products Store

Mr. Henry, after being successful as a businessman and has become one of the wealthiest persons in the city. Now, Mr. Henry wants to help others to fulfil their dreams. One day, Mr. Henry went to meet his childhood friends Peter, Kevin and Ben. They live in a remote village and do farming. Mr. Henry asked his friends if they are facing any difficulties in their day-to-day work.

Peter told Mr. Henry that he is facing difficulties in procuring fertilizers which are very important for farm. Kevin said that he is also facing the same problem in-case of buying seeds for farming certain crops. Ben raised his concern on lack of pesticides which could help in greatly reducing pests in crops.

After listening to all his friends’ problems, Mr. Henry thought that this is a crucial problem faced not only by his friends but also by so many other farmers. So, Mr. Henry decided to make an online agriculture product store to facilitate remote area farmers to buy agriculture products. Through this Online Web / mobile Application, Farmers and Companies (Fertilizers, seeds and pesticides manufacturing Companies) can communicate directly with each other.

The main purpose to build this online store is to facilitate farmers to buy seeds, pesticides, and fertilizers from anywhere through internet connectivity. Since new users are involved, Application should be user friendly.

This new application should be able to accept the product (fertilizers, seeds, pesticides) details from the manufacturers and should be able to display them to the Farmers. Farmers will browse through these products and select the products what they need and request to buy them and deliver them to farmers location.

Mr. Henry has given this project through his Company SOONY. In SOONY Company, Mr Pandu is Financial Head and Mr Dooku is Project Coordinator. Mr. Henry , Mr Pandu , and Mr Dooku formed one Committee and gave this project to APT IT SOLUTIONS company for Budget 2 Crores INR and

18 months Duration under CSR initiative. Peter, Kevin and Ben are helping the Committee and can be considered as Stakeholders share requirements for the Project.

Mr Karthik is the Delivery Head in APT IT SOLUTIONS company and he reached out to Mr Henry through his connects and Bagged this project. APT IT SOLUTIONS company have Talent pool Available for this Project. Mr Vandanam is project Manager, Ms. Juhi is Senior Java Developer, Mr Teyson, Ms Lucie, Mr Tucker, Mr Bravo are Java Developers. Network Admin is Mr Mike and DB Admin is John. Mr Jason and Ms Alekya are the Tester. And you joined this team as a BA.

## Question 1 – BPM - 5 Marks

Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer)

**Business Process Model for Online Agriculture Store**

**1.Goal:**
To provide a seamless online platform for customers (farmers, retailers, etc.) to purchase agricultural products such as seeds, fertilizers, tools, and equipment.

**2. Inputs:**

* Customer orders (products selected for purchase)
* Payment details
* Inventory data (stock levels, product details)
* Supplier information (for restocking and deliveries)
* Delivery address and contact details

**3. Resources:**

* Website/Application platform for users to browse and purchase products
* Warehouse for storing agricultural products
* Delivery partners for product shipping
* Customer support team for handling queries and issues
* Suppliers/vendors for product procurement
* Payment gateway system for secure transactions

**4. Outputs:**

* Confirmation of orders to customers
* Processed and shipped products (delivered to customers)
* Invoices/Receipts
* Customer feedback or ratings on purchased products

**5. Activities:**

* Customer logs in and browses available agricultural products
* Customer selects products and adds them to the cart
* Customer checks out and enters payment and delivery details
* Payment is processed and verified
* Order is confirmed and sent to the warehouse for packaging
* Shipping and delivery are arranged based on the customer's location
* Customer receives products, and post-purchase support is offered (if needed)

**6. Value Created for the End Customer:**

* Convenient access to a wide variety of agricultural products without leaving home
* Timely delivery of products directly to the farm or home
* Competitive pricing and potential discounts/offers
* Easy-to-use platform for quick purchasing decisions
* Customer support for product-related inquiries and post-purchase assistance

## Question 2 – SWOT - 5 Marks

Mr Karthik is doing SWOT analysis before he accepts this project. What Aspects he Should consider as Strengths, as Weaknesses, as Opportunity and as Threats.

**SWOT Analysis for Mr. Karthik**

**Strengths:**

* **Experience and Expertise**: If Mr. Karthik has experience in the relevant field, this would be a significant strength.
* **Strong Team/Resources**: If he has access to a skilled team or strong resources, it would help in executing the project effectively.
* **Established Reputation**: If his company has a good reputation in the industry, it will attract customers and partners.
* **Technology and Tools**: If the project uses advanced or proprietary tools that ensure efficiency and scalability, this can be considered a strength.

**Weaknesses:**

* **Limited Experience in New Areas**: If the project involves areas where Mr. Karthik has less experience, it could pose challenges.
* **Resource Constraints**: Limited resources such as budget, manpower, or time can make the project difficult to manage.
* **Dependence on External Partners**: If the project requires third-party vendors or partners for critical tasks, it can create uncertainty or delays.
* **High Costs**: If the project requires a significant initial investment or ongoing maintenance costs, it could lead to financial strain.

**Opportunities:**

* **Market Expansion**: If the project allows entry into new or growing markets, it could open up new revenue streams.
* **Innovative Solutions**: If the project involves innovation, new technologies, or modern solutions, it could position Mr. Karthik’s business as a leader in the field.
* **Strategic Partnerships**: The project might create opportunities to form strategic alliances with other companies, enhancing market reach or capabilities.
* **Growing Demand**: If the project targets a sector or service that is experiencing growth (e.g., agriculture, tech, etc.), there could be a surge in demand.

**Threats:**

* **Competition**: If there are many competitors in the market or new entrants, the project may face intense competition for customers and resources.
* **Economic Downturn**: Economic factors such as recessions or market instability can impact the viability or profitability of the project.
* **Regulatory Changes**: Potential changes in laws or regulations could negatively impact the project’s operation or require expensive adjustments.
* **Technological Disruptions**: Emerging technologies could render the project’s solutions obsolete or less competitive.

## Question 3 – Feasibility study - 5 Marks

Mr Karthik is trying to do feasibility study on doing this project in Technology (Java), Please help him with points (HW SW Trained Resources Budget Time frame) to consider in feasibility Study.

**Feasibility Study for Mr. Karthik's Project in Java**

**1. Hardware (HW) Considerations:**

* **Server Requirements:** Determine if the current infrastructure supports the demand of the project, especially if the project involves large-scale applications (e.g., cloud servers, on-premises servers, or distributed systems).
* **Processing Power:** Ensure the hardware has enough processing power to handle Java-based applications, especially if the system needs high CPU usage (e.g., for real-time data processing).
* **Storage Space:** Verify the storage capacity needed for the application data, databases, logs, backups, etc.
* **Network Requirements:** Evaluate the need for high-speed networking equipment, especially for cloud-based solutions or large data transfers.

**2. Software (SW) Considerations:**

* **Java Development Tools:** Ensure availability of Java development environments (e.g., IDEs like IntelliJ IDEA, Eclipse) and libraries (e.g., Spring, Hibernate) required for the project.
* **Database Management Systems (DBMS):** Determine the database technology to be used (e.g., MySQL, PostgreSQL, Oracle), which will be critical for storing application data.
* **Operating System Compatibility:** Verify that the hardware and operating system (e.g., Windows, Linux, macOS) can support Java applications without compatibility issues.
* **Third-party Integrations:** If the project requires third-party tools or frameworks, such as payment systems or API integrations, consider their compatibility and dependencies on Java.

**3. Trained Resources:**

* **Java Development Team:** Ensure the project has skilled Java developers who are proficient in the necessary Java technologies (e.g., core Java, Java EE, Spring, Hibernate).
* **Quality Assurance (QA) Team:** Make sure there are testers who understand Java-based applications and can perform testing for functionality, performance, and security.
* **Project Management and Support:** If necessary, ensure the availability of trained project managers and IT support staff who are familiar with Java-based project workflows.
* **Training Needs:** If resources lack specific Java knowledge required for the project, factor in the time and cost needed for training or hiring additional experts.

**4. Budget Considerations:**

* **Initial Investment:** Calculate the initial cost for acquiring the necessary hardware, software licenses, and other infrastructure needs.
* **Ongoing Maintenance Costs:** Account for software updates, bug fixes, performance optimization, and server upkeep.
* **Resource Costs:** Factor in salaries for the Java developers, QA personnel, and other project staff, as well as any training or recruitment costs.
* **Licensing Fees:** If using any third-party Java libraries or software that require licenses, include those costs in the budget.

**5. Time Frame:**

* **Project Planning & Design:** Estimate the time needed for initial planning, requirements gathering, and system design.
* **Development Timeline:** Determine how long the actual coding and application development will take, considering the complexity of the project.
* **Testing and QA:** Account for time to thoroughly test the system in different environments and for various use cases.
* **Deployment & Go-Live:** Estimate the time to deploy the system, migrate data (if needed), and ensure it’s running smoothly after go-live.
* **Post-Launch Support:** Include time for post-launch bug fixes, user feedback collection, and necessary enhancements.

## Question 4 – Gap Analysis - 5 Marks

Mr Karthik must submit Gap Analysis to Mr Henry to convince to initiate this project. What points

(compare AS-IS existing process with TO-BE future Process) to showcase in the GAP Analysis

Mr. Karthik needs to compare how things are done now (AS-IS) with how they could be done in the future (TO-BE). Here’s a simple way to explain the gaps:

**1. Current Process vs. Future Process:**

* **AS-IS (Now):** Customers have to call or visit stores to place an order.
* **TO-BE (Future):** Customers can order anytime from an easy-to-use online website.

**Gap:** The current way is slower and less convenient. The future system will make ordering faster and easier.

**2. Handling Orders:**

* **AS-IS (Now):** Orders are written down by hand or on paper.
* **TO-BE (Future):** Orders will be processed automatically by a computer.

**Gap:** The current process is slow and can have mistakes. The future system will make it faster and more accurate.

**3. Managing Stock:**

* **AS-IS (Now):** People check inventory by hand, which can lead to mistakes like running out of stock.
* **TO-BE (Future):** The system will automatically track inventory and update stock levels.

**Gap:** The current way is messy and leads to stock problems. The future system will keep track of everything automatically.

**4. Saving Money:**

* **AS-IS (Now):** People spend a lot of time doing manual work, which costs more.
* **TO-BE (Future):** Computers will handle the work, saving time and money.

**Gap:** Right now, we need more people and resources. The future system will save money by doing things faster.

**5. Making Decisions:**

* **AS-IS (Now):** It’s hard to make fast decisions because we don’t have clear data.
* **TO-BE (Future):** The system will give us clear reports and data, helping us make decisions faster.

**Gap:** Right now, we guess more. In the future, we’ll have exact information to help us decide.

Question 5 – Risk Analysis - 10 Marks

List down different risk factors that may be involved (BA Risks And process/Project Risks)

**1. Business Analyst Risks:**

* **Misunderstanding Requirements:**
If the Business Analyst doesn't understand what the customer wants, the project could go in the wrong direction. This can happen if the requirements are not clear or change often.
* **Communication Problems:**
If the Business Analyst doesn't communicate well with the team or the customer, it can cause confusion, mistakes, and delays in the project.
* **Missing Important Details:**
Sometimes, the Business Analyst might miss important details in the requirements, which can cause problems later when the project is being built.

**2. Project/Process Risks:**

* **Delays in Timeline:**
Sometimes, projects take longer than planned due to unexpected problems like not enough resources or issues with technology. This can delay the delivery of the project.
* **Budget Overrun:**
The project might cost more than planned. This could happen if things take longer or if there are unexpected costs (like extra staff or tools needed).
* **Poor Quality of Work:**
Sometimes, the work done might not meet the expected standards. This could be because of lack of proper testing, rushing to finish, or miscommunication.
* **Scope Creep:**
This happens when the project keeps getting new tasks or features added to it, which can cause the project to get bigger and harder to finish on time.
* **Technical Issues:**
Problems with the technology being used (like bugs in the software, system crashes, or tools not working) can slow down the project and cause unexpected delays.

**3. Team-Related Risks:**

* **Lack of Skilled Team Members:**
If the team doesn’t have the right skills or experience, they might not be able to do the job properly, leading to mistakes or delays.
* **Team Members Leaving:**
Sometimes, people leave the project or company during the process. This can be a risk because it may take time to train new people or find replacements.
* **Low Morale:**
If the team isn’t motivated or stressed out, it can affect their work and slow down the project.

**4. External Risks:**

* **Changes in Market or Customer Needs:**
If the market changes or the customer suddenly needs something different, the project might have to change. This can be risky if it's too late in the project to make big changes.
* **Regulation Changes:**
New laws or rules could be introduced during the project that could change how things need to be done.
* **Competition:**
If a competitor launches a better product or service, it could affect the success of the project.

## Question 6 – Stakeholder Analysis (RACI Matrix) - 8 Marks

Perform stakeholder analysis (RACI Matrix) to find out the key stakeholders who can take Decisions and Who are the influencers

The **RACI Matrix** is a simple way to figure out who does what in a project. It helps us see who makes decisions, who influences the project, and who is involved in different tasks. Here’s a breakdown of the **RACI** model:

* **R** = Responsible: The person who does the work.
* **A** = Accountable: The person who makes decisions and has the final say.
* **C** = Consulted: People who provide input and advice (influencers).
* **I** = Informed: People who need to be kept updated but don't directly participate.

**Key Stakeholders in the Project:**

Let’s use some typical roles in the project:

1. **Project Manager (Mr. Karthik)**
	* **R:** Ensures that the project is on track and tasks are completed.
	* **A:** Makes final decisions on project direction and approvals.
	* **C:** Consulted on high-level decisions or major changes.
	* **I:** Informed of the progress and any issues that need resolution.
2. **Business Analyst (BA)**
	* **R:** Gathers requirements, analyzes needs, and helps define project scope.
	* **A:** Accountable for ensuring that requirements are clearly defined and understood.
	* **C:** Consulted by the team for clarifications or adjustments on requirements.
	* **I:** Informed of the overall project progress and key updates.
3. **Client/Customer**
	* **R:** Provides feedback and approves the requirements or deliverables.
	* **A:** Accountable for final approval of the project scope and deliverables.
	* **C:** Consulted regularly for feedback, suggestions, or changes.
	* **I:** Informed about the project status and any major changes.
4. **Development Team**
	* **R:** Responsible for writing code, building the system, and implementing technical solutions.
	* **A:** Accountable for the quality of work and meeting deadlines.
	* **C:** Consulted when there are questions about technical requirements or issues.
	* **I:** Informed about any changes to the project that affect their work.
5. **Quality Assurance (QA) Team**
	* **R:** Responsible for testing the system and ensuring it works as expected.
	* **A:** Accountable for the testing process and results.
	* **C:** Consulted about issues found during testing and any needed fixes.
	* **I:** Informed about project status and deadlines to plan testing.
6. **Project Sponsor**
	* **R:** Responsible for providing overall support and resources for the project.
	* **A:** Accountable for ensuring the project stays aligned with company goals and objectives.
	* **C:** Consulted for high-level decisions, especially if something requires additional funding or resources.
	* **I:** Informed about major milestones or risks that need their attention.

**RACI Matrix Example for the Project:**

| **Task/Role** | **Project Manager** | **Business Analyst** | **Client** | **Development Team** | **QA Team** | **Project Sponsor** |
| --- | --- | --- | --- | --- | --- | --- |
| **Define Requirements** | A | R | C | I | I | I |
| **Develop System** | I | C | I | R | I | I |
| **Test the System** | I | I | I | C | R | I |
| **Approve Deliverables** | I | C | A | I | I | C |
| **Monitor Project Progress** | A | C | I | I | I | C |
| **Provide Resources** | C | I | I | I | I | A |

**Key Insights:**

* **Decision-Makers (Accountable - A):**
The **Project Manager** and **Client** are the main decision-makers. They make final calls on direction and approvals.
* **Influencers (Consulted - C):**
The **Business Analyst**, **Development Team**, and **Project Sponsor** provide input, feedback, or suggestions. They influence decisions but do not make final calls.
* **Responsible Workers (Responsible - R):**
People who are actively doing the work are **Development Team** (coding and building the system), **Business Analyst** (gathering and defining requirements), and **QA Team** (testing).
* **Informed People (Informed - I):**
These are stakeholders who need to stay updated about progress but don’t participate directly in tasks. The **Project Sponsor** and others are kept informed throughout the project.

## Question 7 – Business Case Document - 8 Marks

Help Mr Karthik to prepare a business case document

A **Business Case Document** helps explain why a project is important, how it will benefit everyone, and what it will cost. Here's how Mr. Karthik can create it:

**1. Executive Summary:**

This part explains the main idea of the project in a few sentences.

**Example:**

* **Project:** Creating an Online Agriculture Store
* **Problem:** Farmers and customers have trouble finding and buying agricultural products easily.
* **Solution:** Build an online store where farmers can buy products, and customers can buy fresh farm items.
* **Goal:** Make it easier for people to buy farm products quickly and easily.

**2. Project Objectives:**

What does the project aim to achieve?

**Example:**

* Make an easy-to-use online store for buying farm products.
* Ensure fast and safe delivery to customers.
* Help farmers sell products directly to customers.

**3. Benefits:**

What are the good things that will happen because of this project?

**Example:**

* **For Customers:** They can buy things online anytime, saving time and effort.
* **For Business Owners:** They will earn more money by reaching more people.
* **For Farmers:** They will have a bigger market to sell their products.

**4. Scope:**

What is included in this project and what is not?

**Example:**

* **Included:** Creating the website, payment system, managing products, and delivery.
* **Not Included:** Creating mobile apps or expanding to other countries.

**5. Cost Estimate:**

How much money will it cost to do the project?

**Example:**

* **Starting Costs:** Website setup, paying for the software, designing the site.
* **Ongoing Costs:** Paying for the website to stay online, customer service, and marketing.

**6. Risk Analysis:**

What could go wrong in this project and how can we stop it?

**Example:**

* **Risk 1:** The website might take longer to build.
**Solution:** Plan time carefully and check the progress often.
* **Risk 2:** Customers might not use the website at first.
**Solution:** Advertise the website and ask for customer feedback to improve it.

**7. Timeline:**

How long will it take to finish the project?

**Example:**

* **Month 1-2:** Gather information and plan the website.
* **Month 3-5:** Build and test the website.
* **Month 6:** Launch the website and start promoting it.
* **Ongoing:** Keep improving and helping customers.

**8. Stakeholders:**

Who are the key people involved in this project?

**Example:**

* **Project Sponsor:** Mr. Henry (CEO of the company)
* **Project Manager:** Mr. Karthik (to oversee the project)
* **Development Team:** People who build the website
* **Customers:** People who will use the website to buy products

**9. Conclusion:**

Summarize why this project is a good idea.

**Example:** The Online Agriculture Store will make it easier for everyone to buy and sell farm products. This will help the business grow, give customers a better shopping experience, and help farmers sell their products directly. The project is a great investment.

Question 8 – Four SDLC Methodologies - 8 Marks

The Committee of Mr. Henry , Mr Pandu , and Mr Dooku and Mr Karthik are having a discussion on Project Development Approach.

Mr Karthik explained to Mr. Henry about SDLC. And four methodologies like Sequential Iterative Evolutionary and Agile. Please share your thoughts and clarity on Methodologies

Mr. Karthik is explaining to Mr. Henry and others about different ways to develop a project. These ways are called **SDLC Methodologies**. SDLC stands for **Software Development Life Cycle**, which is a process used to design, develop, and test software. There are different approaches to follow, and Mr. Karthik explained four of them: **Sequential**, **Iterative**, **Evolutionary**, and **Agile**. Here’s a simple breakdown of each one:

**1. Sequential (Waterfall) Methodology:**

* **What It Is:**
This method is like following a straight line step-by-step. You finish one step before moving on to the next. Think of it like a recipe — you do each step in order, and if you miss something, you can’t go back easily.
* **How It Works:**
You start with planning, then design, build, test, and finally, launch. Each step is done once and in order.
* **When to Use It:**
Good when you know exactly what you want from the start and don’t expect much change during the project.
* **Example:**
If you're building a simple website where the design and requirements are clear from the beginning.

**2. Iterative Methodology:**

* **What It Is:**
This method breaks the project into smaller parts or "iterations". You work on one part, then improve it over time. After each iteration, you check how things are going and make changes.
* **How It Works:**
You repeat the steps of designing, building, and testing in cycles. After each cycle, you can go back and improve the parts that didn’t work well.
* **When to Use It:**
Useful when you’re not sure about everything at the start and need to adjust along the way.
* **Example:**
If you're building an online store, and after each version, you add new features or make changes based on feedback.

**3. Evolutionary Methodology:**

* **What It Is:**
In this method, you keep improving the project over time, starting with a basic version. The project grows and evolves as new ideas or feedback come in.
* **How It Works:**
You build a small, simple version first, then continue to improve it over time. It’s like planting a seed and watching it grow, adding more features as needed.
* **When to Use It:**
Great when the project requirements are unclear or will change over time.
* **Example:**
Creating a mobile app that will get updates regularly based on user feedback and changing needs.

**4. Agile Methodology:**

* **What It Is:**
Agile is all about flexibility and teamwork. The project is divided into small parts, and teams work in short bursts of time called "sprints". At the end of each sprint, a working version of the product is ready. Teams meet often to talk about what went well and what can be improved.
* **How It Works:**
You focus on small chunks of the project at a time, release something quickly, get feedback, and make changes. It’s very flexible, so things can change as you go.
* **When to Use It:**
Perfect for projects where the needs may change often or when there’s a lot of uncertainty about what the final product will look like.
* **Example:**
If you’re building a social media app and want to release early versions, get feedback, and keep improving the app with each update.

**Summary of the Four Methodologies:**

| **Methodology** | **Approach** | **Best For** |
| --- | --- | --- |
| **Sequential** | Step-by-step, like a recipe | Projects with clear, fixed requirements |
| **Iterative** | Small parts repeated and improved | Projects where details aren’t clear from the start |
| **Evolutionary** | Start simple and grow over time | Projects that need continuous improvement |
| **Agile** | Flexible, with short sprints and teamwork | Projects that need frequent changes and quick feedback |

**Conclusion:**

Each methodology is like a different way to drive a car. Some people prefer driving straight with a clear route (Sequential), while others like adjusting along the way (Agile). The choice depends on the project and how clear the goals and changes are. Mr. Karthik explained all these approaches to help Mr. Henry and the committee understand how different projects can be handled in the best way possible.

Question 9 – Waterfall RUP Spiral and Scrum Models – 8 Marks

They discussed models in SDLC like waterfall RUP Spiral and Scrum . You put forth your understanding on these models

**1. Waterfall Model:**

* **What It Is:**
The Waterfall model is like a step-by-step approach where you do each task one after another, and once a step is finished, you move on to the next. Think of it like walking down a staircase — you can’t go back once you’ve taken a step.
* **How It Works:**
You first plan everything, then design the solution, build it, test it, and finally launch it. Each step happens in order.
* **When to Use It:**
Best for projects where everything is clear from the start and unlikely to change.
* **Example:**
If you’re building a simple website and you already know exactly what it should look like and do.

**2. RUP (Rational Unified Process):**

* **What It Is:**
RUP is a more flexible model where you divide the project into phases. You go through each phase, but you can return to a phase to make improvements. It’s like building something and then checking every part to make sure it’s good before moving forward.
* **How It Works:**
The project is divided into four main phases: **Inception** (understanding what is needed), **Elaboration** (designing the solution), **Construction** (building it), and **Transition** (delivering it). You can revisit each phase to improve.
* **When to Use It:**
Good for larger projects where you need careful planning, but also flexibility to change things if needed.
* **Example:**
If you’re creating a large online store, you need to plan the store, design it, build it, and then release it, while checking each step along the way.

**3. Spiral Model:**

* **What It Is:**
The Spiral model is like taking many small steps in a circular pattern. Each cycle includes planning, designing, building, and testing, and each time you complete a cycle, the project gets better and better. It’s a process of constant improvement.
* **How It Works:**
You go through cycles, each one helping you improve the project. After each cycle, you review and plan again based on what you learned.
* **When to Use It:**
Useful for projects that are complex or have uncertain requirements. It helps you manage risks and adapt as the project moves forward.
* **Example:**
When creating a mobile app, you might first create a basic version, test it with users, and improve it based on their feedback. Each version gets better with each cycle.

**4. Scrum Model:**

* **What It Is:**
Scrum is a part of Agile methodology, focusing on teamwork and delivering small parts of the project in short bursts called “sprints.” After each sprint, the team reviews the work and plans for the next sprint.
* **How It Works:**
The team works in short cycles, typically 2-4 weeks, where they complete small tasks, review progress, get feedback, and then plan the next set of tasks. It’s all about working together and making quick improvements.
* **When to Use It:**
Great for projects that need quick results and constant feedback. It allows teams to adjust quickly if things change.
* **Example:**
If you’re building a website feature like a shopping cart, the team might work for two weeks to develop and test a basic version, then review it and improve it in the next sprint.

**Summary of the Models:**

| **Model** | **Approach** | **Best For** |
| --- | --- | --- |
| **Waterfall** | Step-by-step, one at a time | Projects with clear and fixed requirements |
| **RUP** | Phases that can repeat | Large projects needing planning and flexibility |
| **Spiral** | Cycles of planning and improvement | Complex projects with uncertain needs or high risks |
| **Scrum** | Short bursts with feedback | Projects needing quick changes and constant review |

**Conclusion:**

Each of these models helps in different ways. **Waterfall** is great for clear projects, while **RUP**, **Spiral**, and **Scrum** are more flexible for changing or uncertain projects. Mr. Karthik explained these models to Mr. Henry and the committee so they could choose the best way to manage their project.

When the APT IT SOLUTIONS company got the project to make this online agriculture product store, there is a difference of opinion between a couple of SMEs and the project team regarding which methodology would be more suitable for this project. SMEs are stressing on using the V model and the project team is leaning more onto the side of waterfall model. As a business analyst, which methodology do you think would be better for this project?

## V2D1- Mar2024

Question 10 – Waterfall Vs V-Model - 5 Marks

20Write down the differences between waterfall model and V model.

**1. Basic Concept:**

* **Waterfall:** Steps are followed one by one in a straight line.
* **V-Model:** Development and testing happen side by side, like a "V" shape.

**2. Process Flow:**

* **Waterfall:** Follows a linear process: Plan → Design → Build → Test → Deploy.
* **V-Model:** Development and testing are planned together, with corresponding tests at each stage.

**3. Testing Stage:**

* **Waterfall:** Testing is done after the coding phase.
* **V-Model:** Testing happens alongside each development phase.

**4. Phases:**

* **Waterfall:** Has fewer phases, each is completed before moving to the next.
* **V-Model:** Has more detailed phases with corresponding testing stages for each development phase.

**5. Flexibility:**

* **Waterfall:** Changes are hard to make once a phase is completed.
* **V-Model:** Changes can be made earlier due to testing at each phase.

**6. Feedback:**

* **Waterfall:** Feedback can be received only after the testing phase.
* **V-Model:** Feedback is received after every phase as testing happens alongside development.

**7. Cost of Fixing Errors:**

* **Waterfall:** Fixing errors can be expensive and difficult after testing is done.
* **V-Model:** Fixing errors is easier and cheaper because testing happens during development.

**8. Development Sequence:**

* **Waterfall:** You complete each step in sequence, with no turning back.
* **V-Model:** Each development step has a matching testing step to verify it.

**9. Best For:**

* **Waterfall:** Simple projects with clear and fixed requirements.
* **V-Model:** Projects where you need detailed testing and high reliability.

**10. Time for Testing:**

* **Waterfall:** Testing only happens after the product is fully built.
* **V-Model:** Testing is done continuously throughout the project.

**11. Risk Management:**

* **Waterfall:** Risks are harder to address once the project is underway.
* **V-Model:** Risks are spotted earlier during testing at each phase.

**12. Documentation:**

* **Waterfall:** Heavy documentation is created at each phase.
* **V-Model:** Documentation is still important, but testing documents are created during development.

**13. Use of Resources:**

* **Waterfall:** Resources are used one phase at a time.
* **V-Model:** Resources are used for both development and testing at the same time.

**14. Changes in Requirements:**

* **Waterfall:** Difficult to make changes after the requirements are set.
* **V-Model:** Changes are easier to manage due to constant testing feedback.

**15. Communication:**

* **Waterfall:** Communication is mostly at the beginning and end of each phase.
* **V-Model:** Regular communication between development and testing teams throughout the project.

**16. Project Control:**

* **Waterfall:** Control is lost after moving past each phase.
* **V-Model:** Control is maintained because testing checks every development step.

**17. Speed:**

* **Waterfall:** Slower because testing only happens at the end.
* **V-Model:** Faster testing and feedback because it happens during each phase.

**18. Success Rate:**

* **Waterfall:** Has a higher risk of failure if any phase is missed.
* **V-Model:** Has a higher chance of success due to testing at every stage.

**19. Suitability for Large Projects:**

* **Waterfall:** Works best for smaller, straightforward projects.
* **V-Model:** Better for large projects with detailed testing needs.

**20. Maintenance:**

* **Waterfall:** Maintenance can be difficult because you can’t go back to earlier stages.
* **V-Model:** Maintenance is easier due to the continuous feedback and testing process.

Question 11 – Justify your choice - 3 Marks

As a BA, state your reason for choosing one model for this project

**V-Model (if chosen):**

* **Reason:**
I would choose the **V-Model** if the project needs **detailed testing at each phase** to make sure everything works as expected. This model is ideal for projects where quality and reliability are really important because it ensures every development phase has matching testing to catch issues early.
* **Example:**
If we are building a medical application where every part needs to be thoroughly checked for safety and accuracy, the V-Model would ensure that we test every step carefully during development.

### Question 12 – Gantt Chart - 5 Marks

The Committee of Mr. Henry, Mr Pandu, and Mr Dooku discussed with Mr Karthik and finalised on the V Model approach (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT)

Mr Vandanam is mapped as a PM to this project. He studies this Project and Prepares a Gantt chart with V Model (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT) as development process and the Resources are PM, BA, Java Developers, testers, DB Admin, NW Admin.

To show the V Model approach using a Gantt chart, we can break down the tasks and the people involved in each. Here's how the Gantt chart would look, step by step:

**Gantt Chart Structure:**

| **Task** | **Duration** | **Assigned to** |
| --- | --- | --- |
| **RG (Requirements Gathering)** | 1 week | BA, PM |
| **RA (Requirements Analysis)** | 1 week | BA, PM |
| **Design** | 2 weeks | Java Developers, BA |
| **D1 (Design Phase 1)** | 1 week | Java Developers |
| **T1 (Testing Phase 1)** | 1 week | Testers, BA |
| **D2 (Design Phase 2)** | 1 week | Java Developers |
| **T2 (Testing Phase 2)** | 1 week | Testers |
| **D3 (Design Phase 3)** | 1 week | Java Developers |
| **T3 (Testing Phase 3)** | 1 week | Testers |
| **D4 (Design Phase 4)** | 1 week | Java Developers |
| **T4 (Testing Phase 4)** | 1 week | Testers |
| **UAT (User Acceptance Testing)** | 2 weeks | PM, BA, Testers, Java Developers |

**Explanation of the Gantt Chart:**

* The **tasks** are shown in the first column, which include all the steps from RG to UAT.
* The **duration** shows how long each task will take.
* The **assigned to** column tells us who is responsible for each task. For example, the Business Analyst (BA) and the Project Manager (PM) are involved in the Requirements Gathering (RG) phase, while Java Developers and Testers are involved in the design and testing phases.

### Question 13 – Fixed Bid Vs Billing - 5 Marks

Explain the difference between Fixed Bid and Billing projects

**1. Fixed Bid Projects:**

* In this type of project, the cost is decided **before** the work starts.
* The client pays a fixed amount for the entire project, no matter how much time or effort it takes.
* Example: If you agree to paint a house for $500, the payment stays the same whether it takes 2 days or 5 days.

**Key Points:**

* The price is fixed.
* The team has to complete the project within the agreed cost and time.

**2. Billing Projects (Time and Material):**

* In this type, the client pays for the **time** and **resources** used.
* The cost depends on how many hours or days the team works and what materials are used.
* Example: If you charge $50 per day to paint a house, the client pays based on how many days it takes.

**Key Points:**

* Payment is flexible and depends on work done.
* Useful for projects where the scope might change.

**Main Difference:**

* **Fixed Bid:** Price doesn’t change, even if more work is needed.
* **Billing:** Price changes based on the time and effort spent.

Question 14 – Preparer Timesheets of a BA in various stages of SDLC - 20 marks

* Design Timesheet of a BA
* Development Timesheet of a BA
* Testing Timesheet of a BA
* UAT Timesheet of a BA
* Deployment n Implementation Timesheet of a BA

**1. Design Timesheet of a BA**

During the Design phase, the BA works on tasks like creating diagrams, workflows, and specifications.

| **Day** | **Task** | **Hours** |
| --- | --- | --- |
| Monday | Creating process flow diagrams | 4 |
| Tuesday | Writing functional specifications | 6 |
| Wednesday | Reviewing design documents with the team | 5 |
| Thursday | Updating documents based on feedback | 4 |
| Friday | Preparing final design handover | 3 |

**2. Development Timesheet of a BA**

During Development, the BA supports the developers by clarifying requirements.

| **Day** | **Task** | **Hours** |
| --- | --- | --- |
| Monday | Explaining requirements to developers | 3 |
| Tuesday | Reviewing development progress | 4 |
| Wednesday | Answering developer queries | 5 |
| Thursday | Assisting with technical documentation | 3 |
| Friday | Preparing weekly updates for stakeholders | 4 |

**3. Testing Timesheet of a BA**

In Testing, the BA ensures the application meets business needs and validates test cases.

| **Day** | **Task** | **Hours** |
| --- | --- | --- |
| Monday | Reviewing test cases | 4 |
| Tuesday | Performing system testing | 5 |
| Wednesday | Logging defects and coordinating fixes | 4 |
| Thursday | Validating resolved defects | 3 |
| Friday | Preparing test summary reports | 3 |

**4. UAT (User Acceptance Testing) Timesheet of a BA**

During UAT, the BA works closely with the client to confirm the system is ready.

| **Day** | **Task** | **Hours** |
| --- | --- | --- |
| Monday | Setting up UAT environment | 4 |
| Tuesday | Conducting UAT walkthroughs with users | 5 |
| Wednesday | Assisting users with testing | 6 |
| Thursday | Collecting feedback from users | 3 |
| Friday | Preparing UAT sign-off documents | 3 |

**5. Deployment and Implementation Timesheet of a BA**

During Deployment, the BA ensures a smooth system launch and provides support.

| **Day** | **Task** | **Hours** |
| --- | --- | --- |
| Monday | Coordinating with the deployment team | 5 |
| Tuesday | Verifying deployment activities | 4 |
| Wednesday | Conducting post-deployment checks | 5 |
| Thursday | Supporting users during go-live | 6 |
| Friday | Preparing deployment completion report | 3 |