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)

Answer:

Goals-To build online Web/ Mobile Application store is to facilitate farmers to buy seeds, pesticides, and fertilizers from anywhere through internet connectivity.

Inputs-

a) Farmers Needs: Problems in accessing fertilizers, seeds, and pesticides.

b) Manufacturers Product Details: Information about available fertilizers, seeds, and pesticides (e.g- prices, quantity, and delivery options).

c) Budget and Time frame: Rs 2 Crore and 18 months for development.

Resources-

a) SOONY committee (Mr. Henry, Mr. Pandu, and Mr. Dooku) and farmer stakeholders (Peter, Kevin, and Ben)

b) APT IT SOLUTIONS team (BA, project manager, developers, network admin, DB admin, testers)

c) IT infrastructure for application development

d) Software tools (Java)

Output: Delivery of seeds, fertilizers, and pesticides will be smooth,Seamless communication between farmers and manufacturers,User-friendly web/mobile application.

Activities: Application should be able to accept details of seeds from manufacturer. Customer should be able to purchase fertilizers, seeds, and pesticides through internet. Registration of customer, Payment though online.

Value created to the end Customer: Easy access to agricultural products from remote locations. For Manufacturer Increased sales opportunities through direct customer access.

Question 2 – SWOT - 5 Marks

Mr. Karthik is conducting a SWOT analysis before deciding to accept this project. What aspects should he consider as strengths, weaknesses, opportunities, and threats?

Answer:

Strengths:

a) Clear Goal and Vision-The project has a well-defined purpose (solving farmers' challenges in procuring agricultural products).

b) Dedicated Budget and Timeline: Budget of Rs2 Crore INR and a clear time frame of 18 months.

c) Stakeholder Support: Active involvement of farmers (Peter, Kevin, Ben) to provide direct insights.

Weakness:

a) Complex Requirements: High learning curve for farmers unfamiliar with online platforms.

b) Dependence on Internet Connectivity:Remote farmers may face challenges due to inconsistent or no internet access.

c) Tight Timeline:Although 18 months seems sufficient, delays in requirement gathering or implementation can impact delivery.

Opportunity:

a) Social Impact:Improving the lives of farmers by addressing their key challenges.

b) Market Expansion: Expand to other regions or countries facing similar issues.

c) Strengthen APT IT SOLUTIONS' Portfolio:Success in this project can position the company as a leader in the market.

Threats: Unpredictable Stakeholder Requirements: Farmers may change requirements mid-project, causing scope creep.

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.

Answer: Below are the points Mr. Karthik should consider for the feasibility study:

a) Hardware requirement:

Server Hardware: Ensure sufficient server capacity to host the application.

User Devices: Farmers and manufacturers will access the application via mobile phones, tablets, or PCs. The application should support diverse hardware specifications.

b) Software resources: Java, Operating system
c) Trained resources:

Java Developers: Ensure the team is skilled in Java, Spring Framework, and RESTful API development.
Database Administrators: Skilled in database design and management to handle large-scale data.
Network Administrators: Experts to ensure secure and reliable network connectivity.
Testers: Professionals proficient in manual and automated testing for quality assurance.
Business Analysts (BA): To gather and analyze requirements and ensure project alignment.

d) Budget: 2 crore
e) Time frame

Project Duration: 18 months as agreed.
Milestones:
Requirement Gathering and Analysis: 2 months
Design and Prototyping: 3 months
Development: 8 months
Testing and Quality Assurance: 3 months
Deployment and Go-Live: 2 months

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

Answer:

Objective: To compare the current (AS-IS) process with the proposed future (TO-BE) process to identify gaps and highlight how the new solution will address the issues faced by farmers and stakeholders.

Aspect	**AS-IS (Existing)**	**TO-BE (Future)**
Procurement Process	Manual, time-consuming, and costly	Online, quick, and cost-efficient
Communication	Indirect via middlemen	Direct communication via the platform
Product Availability	Limited to local suppliers	Broad access to multiple manufacturers
Pricing Transparency	No clarity in pricing	Transparent pricing on the platform
Ease of Access	Restricted due to geographical barriers	Accessible from anywhere with the internet

Question 5 – Risk Analysis - 10 Marks

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

Answer:

1. BA (Business Analyst) Risks

a. Requirements Gathering Risks:

- Misunderstanding the requirements shared by stakeholders.
- Difficulty in gathering complete and accurate requirements due to farmers' limited technical knowledge or language barriers.
- Scope creep due to unclear or changing requirements during the project lifecycle.

b. Communication Risks:

- Ineffective communication between stakeholders (farmers, manufacturers, and committee members) and the project team.

c. Documentation Risks:

- Errors or gaps in requirement documentation leading to incorrect development.

d. User Adoption Risks:

- Farmers may find it challenging to adapt to the new platform if the user interface is not intuitive.

2. Process/Project Risks

a. Technical Risks:

- Compatibility issues with hardware or software used by farmers and manufacturers.
- Bugs or glitches in the application due to insufficient testing.

b. Resource Risks:

- Unavailability or shortage of skilled developers, testers, or administrators during the project timeline.

c. Time and Budget Risks:

- Risk of exceeding the allocated 18-month timeline due to unforeseen challenges.
- Budget overrun due to unexpected costs in software licenses, third-party integrations, or hardware upgrades.

d. Stakeholder Risks:

- Misalignment of expectations among stakeholders (farmers, manufacturers, and committee members).
- Lack of stakeholder engagement or delays in providing critical inputs.

e. Security and Data Privacy Risks:

- Risk of data breaches or unauthorized access to sensitive information, such as user data and financial transactions.

f. Operational Risks:

- Inadequate internet connectivity in remote areas affecting farmers' access to the platform.
- Logistical challenges in ensuring timely delivery of products to remote locations.

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.

Answer:

The RACI matrix is a responsibility assignment chart used to identify roles and responsibilities for stakeholders in the project. The roles are:

- **Responsible (R):** The person(s) who do the work to complete the task.
- **Accountable (A):** The person who makes the final decision and is ultimately responsible.
- **Consulted (C):** The person(s) whose opinions are sought before decisions or actions.
- **Informed (I):** The person(s) who are kept up-to-date on progress but not directly involved in the task.

Stakeholder	Project Initiation	Requirement Gathering	Development	Testing	Decision Making	Implementation	Feedback
Mr. Henry (Sponsor)	A	C	I	I	A	I	C
Mr. Pandu (Financial Head)	C	I	I	I	C	I	I
Mr. Dooku (Project Cord.)	C	C	I	I	R	C	C
Peter, Kevin, Ben (stakeholders)	C	C	I	I	I	I	R
Mr. Karthik (Delivery Head)	R	A	C	I	A	C	C
Mr. Vandanam (Project Manager)	C	R	A	C	C	R	C
Juhi, Teyson,Lucie, Tucker, Bravo(Java Developers)	I	I	R	C	I	R	I
Mr Mike(Network Admin)	I	I	C	R	I	R	I
Mr John(DB Admin)	I	I	R	C	I	R	I
Jason, Alekya(Testers)	I	I	C	R	I	I	C

Question 7 – Business Case Document - 8 Marks

Help Mr Karthik to prepare a business case document

Answer:

Project Name	Online Agricultural Product Store
Project Sponsor. - Mr. Henry.	Project Manager - Mr. Vanadanam

Date of approval.	
About Business	Our aim is to bridge the gap between the manufacturers, sellers and farmers as farmers can buy the products from any where to their place
Current Problems	Many times there is lack of products at the retail stores in the farmers localities leading to wastage of time in delivery and product procurement
Proposed Solution	Development of an application for the case of products purchase and selling.
Resources Required	Development team, Testers, admin like database & Network , BA & PM
Technology Adoption	Stakeholders involved in the business process would have to use application after development
Costs	Estimated Costs upto 1 cr
Return on Investment	1st year 0 INR 2nd year 1 crore 3rd year 2 crore
Stakeholders	Identifying those impacted by proposed solution. Interviewing the Influencers. Reviewing the project environment.
Risks	Right Now the project looks straight forward but there are still some unknown surrounding implementations. There is also the risk of that project doesn't meet the or customer needs.

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

Answer:

Here is an explanation of the four SDLC methodologies: **Sequential, Iterative, Evolutionary, and Agile**—to provide clarity and support the discussion on choosing the best approach for the project:

1. Sequential Methodology (Waterfall Model)

Overview:

This is a linear and step-by-step approach where each phase of the project (Requirement Gathering, Design, Development, Testing, Deployment) must be completed before moving to the next phase.

Advantages:

- Clearly defined stages make it easy to manage.
- Works well for projects with well-understood and fixed requirements.
- Easy to document and track progress.

Disadvantages:

- Not flexible if requirements change during the development process.
- Late testing phase can delay the discovery of critical issues.

2. Iterative Methodology(RUP)

Overview:

The project is developed through repeated cycles (iterations). Each iteration delivers a working prototype of the product, gradually improving it in subsequent cycles.

Advantages:

- Early delivery of a functional version of the product.
- Allows refinement based on feedback after each iteration.
- Easier to manage risks as they are identified earlier.

Disadvantages:

- Requires strong communication and collaboration.
- May require more time..

3. Evolutionary Methodology(Spiral)

Overview:

This approach combines iterative and incremental development but focuses on developing a system progressively through prototypes or modules based on feedback and changing requirements.

Advantages:

- High adaptability to evolving requirements.
- Stakeholder involvement ensures alignment with business goals.

Disadvantages:

- Requires more time to converge to a complete solution.
- Needs constant feedback and may lead to scope creep.

4. Agile Methodology

Overview:

Agile promotes a collaborative and incremental approach with short development cycles called sprints. It focuses on delivering functional increments of the product rapidly.

Advantages:

- Highly adaptable to changing requirements.
- Encourages customer and stakeholder involvement throughout the project.
- Focuses on quick delivery of usable components.

Disadvantages:

- Requires experienced team members.
- Demands constant communication.

Recommendation for the Project:

Considering the **remote area farmers' online agriculture product store**, an **Agile Methodology** is the most suitable choice due to the following reasons:

1. **Evolving Requirements**: Farmers and companies may need changes in functionality during the development cycle based on feedback.
2. **Frequent Delivery**: Agile ensures regular delivery of usable features like product catalog, ordering system, and user interfaces.
3. **Collaboration**: Agile allows continuous involvement of stakeholders like Peter, Kevin, Ben, and the committee members, ensuring the product meets user expectations.

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
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?
Answer:
The V-Model is the best choice.
Reasons for Choosing the V-Model:
Alignment with Quality Goals:
Testing is integrated with each phase, ensuring early identification of defects.
Requirement Stability:
The requirements (product catalog, order placement, and delivery functionality) are clear and unlikely to change significantly.
Risk Mitigation:
V-Model's parallel testing approach minimizes risks by catching issues early in development.
Fixed Timeline and Budget:
The structured nature of the V-Model ensures adherence to the 18-month timeline and budget constraints.

Question 10 – Waterfall Vs V-Model - 5 Marks

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

Answer:

Aspect	**Waterfall Model**	**V-Model (Verification and Validation Model)**
Definition	A sequential design process where each phase must be completed before the next phase begins.	A sequential model that integrates testing at every phase, ensuring validation at all stages.
Testing Phase	Testing is conducted only after the implementation phase is completed.	Testing is performed simultaneously with the corresponding development phase.
Emphasis	Focuses on completing the phases in a linear manner.	Focuses on early defect detection and validation through continuous testing at every stage.
Flexibility	Not flexible; changes are difficult to accommodate once a phase is completed.	Relatively inflexible but ensures high-quality output through rigorous testing.
Error Detection	Errors are often detected late in the lifecycle, during the testing phase.	Errors can be detected early due to simultaneous testing and development activities.
Documentation	Requires detailed documentation at the end of each phase.	Requires detailed documentation for both development and testing phases.
Risk Management	Risk of rework is higher due to late discovery of defects.	Lower risk due to early validation and defect detection.
Best Fit Projects	Suitable for projects with stable and well-defined requirements.	Best suited for projects with stable requirements where high quality is a priority.

Question 11 – Justify your choice - 3 Marks
As a BA, state your reason for choosing one model for this project

Answer: For this project, I recommend using the **Agile Methodology**, and here's why:

Reasons for Choosing Agile:

1)User-Friendliness and Adaptability:

The application needs to be user-friendly and cater to both l and farmers with minimal technical knowledge. Agile allows for continuous feedback from stakeholders (farmers and companies) during iterative development, ensuring user needs are met effectively.

2)**Changing Requirements**:

In this project, farmers' and manufacturers' requirements may evolve as the application develops. Agile accommodates changes during the project lifecycle, unlike rigid models like Waterfall.

3)Early and Continuous Feedback:

Agile enables frequent releases (sprints) of functional features. This ensures that stakeholders like Mr. Henry, Peter, Kevin, and Ben can review the product iteratively, ensuring alignment with their expectations.

4)**Collaboration**:

Agile emphasizes close collaboration between the development team, stakeholders, and the committee, fostering transparency and quicker resolution of issues.

5)Risk Management:

By delivering incremental features, Agile reduces risks associated with late detection of defects or mismatched expectations. Early testing and feedback loops help address these risks.

6)Time and Budget Constraints:

Agile prioritizes features based on value. If the budget (2 Crores INR) or timeline (18 months) becomes tight, critical features can be delivered first, ensuring a usable product is available on time.

Question 12 – Gantt Chart - 5 Marks
The Committee of Mr. Henry, Mr. Pandu, and Mr. Dooku discussed with Mr. Karthik and finalized 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.
Answer:

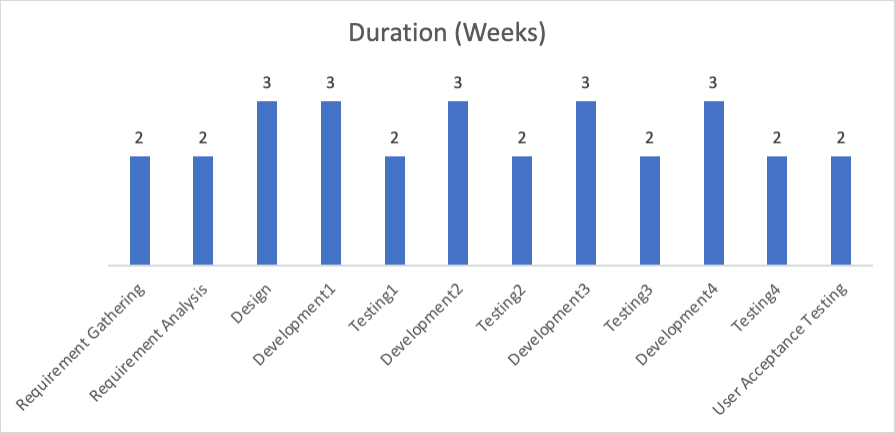
To create a Gantt chart for the given project using the V-Model approach, I will include the phases: **Requirement Gathering (RG)**, **Requirement Analysis (RA)**, **Design**, **Development (D1, D2, D3, D4)**, **Testing (T1, T2, T3, T4)**, and **User Acceptance Testing (UAT)**. The resources—Project Manager (PM), Business Analyst (BA), Java Developers, Testers, Database Admin (DB Admin), and Network Admin (NW Admin)—will be assigned to specific tasks based on their roles.

Here's the high-level Gantt chart plan:

Gantt Chart Representation

Phase	Duration (Weeks)	Resources	Description of Tasks
RG	2	PM, BA	Gather and document requirements from stakeholders.
RA	2	PM, BA	Analyze requirements and prepare specifications.
Design	3	PM, BA, Java Devs, DB Admin	Create system architecture and database design.
D1	3	Java Devs	Develop module 1 (e.g., Fertilizers).
T1	2	Testers	Test module 1 functionality and fix bugs.
D2	3	Java Devs	Develop module 2 (e.g., Seeds).
T2	2	Testers	Test module 2 functionality and fix bugs.
D3	3	Java Devs	Develop module 3 (e.g., Pesticides).
T3	2	Testers	Test module 3 functionality and fix bugs.
D4	3	Java Devs, NW Admin	Integration of all modules and setup for deployment.
T4	2	Testers	End-to-end testing of integrated system.
UAT	2	PM, BA, Testers, Stakeholders	Facilitate UAT and gather feedback for final fixes.

Visualization of the Gantt Chart



Phase	Duration (Weeks)
Requirement Gathering	2
Requirement Analysis	2
Design	3
Development1	3
Testing1	2
Development2	3
Testing2	2
Development3	3
Testing3	2
Development4	3
Testing4	2
User Acceptance Testing	2

Question 13 – Fixed Bid Vs Billing - 5 Marks
Explain the difference between Fixed Bid and Billing projects.
Answer:
Fixed Bid vs. Billing Projects

Aspect	**Fixed Bid Project**	**Billing (Time and Material) Project**
Definition	A project where the scope, timeline, and cost are fixed.	A project where billing is based on the actual time and resources used.
Budget	Predefined and agreed upon in the contract.	Variable, depending on the time and resources utilized.
Risk	Vendor bears most of the risk if project scope changes or unexpected delays occur.	Client bears the risk of scope creep or extended timelines.
Flexibility	Low; scope changes require renegotiation and are costly.	High; allows for ongoing changes and iterative development.
Best Suited For	Projects with clear, well-defined requirements and minimal changes expected.	Projects where requirements evolve over time or are uncertain at the start.
Client Control	Limited; client has less involvement after initial agreement.	High; client has regular involvement and control over the project.
Vendor Profitability	Depends on accurate estimation and efficient execution.	More predictable as it depends on actual effort spent.
Examples	Developing a product with fixed deliverables and features.	Providing ongoing software maintenance or agile development.

Question 14-Prepare 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

Answer:

1. Design Timesheet of a BA

Task	Hours/Week	Purpose
Requirement Gathering & Analysis (RG)	10	Collaborate with stakeholders to finalize requirements.
Document Creation	8	Prepare Functional Requirements Document (FRD).
Wireframes and Mockups	6	Create visual representation of application screens.
Stakeholder Meetings	4	Conduct requirement validation sessions.
Coordination with Design Team	4	Ensure UI/UX aligns with business requirements.
Review Sessions	4	Validate design deliverable.

2. Development Timesheet of a BA

Task	Hours/Week	Purpose
Requirement Clarifications	12	Support developers with requirement clarifications.
Change Request Management	6	Handle and document scope changes.
Collaboration with Developers	6	Ensure development aligns with business needs.
Peer Reviews	6	Review technical and functional designs.

3.Testing Timesheet of a BA

Task	Hours/Week	Purpose
Requirement Clarifications	12	Support developers with requirement clarifications.
Change Request Management	6	Handle and document scope changes.
Collaboration with Developers	6	Ensure development aligns with business needs.
Peer Reviews	6	Review technical and functional designs.

4. UAT Timesheet of a BA

Task	Hours/Week	Purpose
UAT Planning and Coordination	8	Organize UAT schedules and test environment setup.
UAT Test Case Validation	6	Verify UAT test cases align with business needs.
Support During UAT Execution	10	Address queries from end-users during testing.
Feedback Consolidation	6	Gather and document feedback for fixes/improvements.

5.Deployment and Implementation Timesheet of a BA

Task	Hours/Week	Purpose
Go-Live Planning	8	Prepare deployment checklist and plans.
User Training	10	Conduct sessions for end-users on application use.
Support During Go-Live	8	Address immediate post-deployment issues.
Post-Implementation Review	6	Gather feedback on implementation effectiveness.