Q.1 Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer)

Ans- Business Process Model:- A Business Process Model (BPM) is a visual representation of business processes, workflows, and activities. It helps in understanding, analyzing, and improving processes. BPMN (Business Process Model and Notation) is commonly used.

Goal:- Mobile app, facilitate farmers to buy seeds, pesticides, and fertilizers to help farmers and gain profit out of it.

Inputs:- Application, Farmers contact details, Seed, pesticides and fertilizers companies' contracts or contact, Delivery vendor details.

Resources:- Application development team, Farmers, Delivery vendors, Seed, pesticides and fertilizers company's details.

Output:- Is the Mobile application which will give all details like, which product of seed, pesticides and fertilizers – Price, uses, direction to use, payment and shipping details etc. so farmers can get farming related products online and easily at their door.

Activities:-

1. To build Mobile application which will have all necessary functions,

2. Order details **3.** Payment methods **4.** Delivery details **5.** Product feedback.

The value-created to the end customer-farmers will aet Agriculture products online within short time frame and it will be direct from companies hence price will be low as compare to market rate.

Value created for the end customers- This project helps many farmers who face the problem of getting good quality fertilizers, pesticides, seeds, and other farming products. It acts as a link between farmers and manufacturers. It helps both of them. It gives accessibility to farmers who live in remote areas.

Q.2. 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.

Ans- SWOT:- SWOT Analysis is a strategic tool Business Analysts use to evaluate a business, project, or process. It helps identify key internal and external factors that influence decision-making.

Strengths- Online shopping, Delivery at town, within short Time, Affordable price, all products in one application, multiple payment option, Product review details, Feedback option.

Weaknesses- Town distance to delivery of items, Farmers may have difficulties in app handlings, Internet connectivity issue, Unavailability of agree products.

Opportunity- Farmers will get all Agricultural product in town by online through online shopping, Agricultural products companies will get new market.

Threats- Climate change would affect the estimated delivery time, it can be agricultural companies who provide low quality products to farmers, insufficient budget,

Q.3. 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.

Ans- Feasibility Study:- A Feasibility Study is a critical assessment conducted by a Business Analyst (BA) to determine the viability of a proposed project, solution, or business initiative. It helps stakeholders decide whether to proceed with the project by evaluating multiple factors, including technical, financial, operational, and legal aspects.

Technology- Mr. Karthik will use JAVA technology to build this application with the help of software development team.

Budget- Two Crores INR

Time- 18 months

Software- JAVA application

We required technical team to create app and professional JAVA developers.

We required data for agriculture farmers and professional advisers for farming.

The team needed –

1. Product manager

2. Technical team

3. Java developer

4. Tester

The time required for the production is a maximum of 3 months for collecting data and arranging and complaining about the software

Q.4. 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

Ans- Mr. Karthik needs to hand over the GAP analysis report to Mr. Henry, So as of now AS-IS: The current situation is farmers are not getting the products on time as per their requirement due to distance of shops and availability of the products on shop, so they can bear the loss. But while doing GAP analysis TO-BE: future process while introducing the online app for local farmers to buy the best quality product in the easily available period as well the advance tech. of doing farming in their preferred language will help profit-making and time-saving.

Q.5. List down different risk factors that may be involved (BA Risks And process/Project Risks)

Ans-

BA Risk:

1. Improper information at requirement gathering

2. The period for project development

3. Choosing improper elicitation technique

4. soil and climate study for crops

5. Change requests given by stakeholder in last phase.

6. Multilanguage input for the whole Indian farmer

7. coding and java developer coordination are important

8. Easy payment gateway as well proper connect with delivery channel partner

Process/Project Risks:

1. Seeds quality and quantity in fare prices

2. Not a proper Awareness of the app among the farmers can cause the failure

3. Advice for farming should be according to land and climate

4. Portal handling for the product is cost-efficient for the farmer to buy.

5. For understanding the app function and its working module should be easy for the farmer to understand.

Q.6. Perform stakeholder analysis (RACI Matrix) to find out the key stakeholders who can take Decisions and who are the influencers.

Ans- RACI Matrix means- The **RACI Matrix** (Responsible, Accountable, Consulted, and Informed) is a project management tool used by Business Analysts to clarify roles and responsibilities within a project. It ensures that every task, decision, or deliverable has clearly defined ownership, which helps prevent confusion and improves efficiency.

- **R**: Responsible – Individuals who perform the task or activity.
- **A**: Accountable – The decision-maker who owns the task and ensures completion.
- **C**: Consulted – People whose opinions are sought; subject matter experts and advisors.
- **I**: Informed – Individuals kept up-to-date on progress and outcomes

Stakeholder	Role	Responsibilities	RACI Role
Mr. Henry	Project Sponsor	Final decision-maker, approves funding, and sets the vision for the CSR initiative.	A
Mr. Pandu	Financial Head (SOONY)	Monitors project budget and ensures financial feasibility.	C
Mr. Dooku	Project Coordinator (SOONY)	Coordinates between stakeholders, tracks progress, and resolves conflicts.	R/A
Peter, Kevin, and Ben	Stakeholders (Farmers)	Provide input on requirements, validate deliverables to ensure usability.	C/I
APT IT Solutions	Project Delivery Organization	Delivers the project under agreed budget, timeline, and quality.	R
Mr. Karthik	Delivery Head (APT IT Solutions)	Oversees the project, ensures resources are available, and delivers the solution.	A
Mr. Vandanam	Project Manager (APT IT Solutions)	Manages day-to-day activities, timeline, and risk mitigation.	R
Ms. Juhi	Senior Java Developer	Leads technical development and ensures adherence to standards.	R
Java Development Team	Developers (APT IT Solutions)	Develops the platform's features (backend, frontend, APIs).	R

Mr. Mike	Network Administrator	Handles system deployment, infrastructure setup, and network security.	R
Mr. John	Database Administrator	Designs and maintains the database, ensures data integrity and performance.	R
Mr. Jason & Ms. Alekya	Testers	Perform testing to ensure quality, functionality, and performance.	R
Farmers (General Users)	End Users	Utilize the platform and provide feedback for continuous improvement.	I
Manufacturers	Product Suppliers	Provide product information and ensure timely delivery.	C/I

Q.7. Help Mr Karthik to prepare a business case document

Ans- Business case document prepared by Kartik.

Aim of the Project- The proposed project aims to develop an online agriculture product store to address challenges faced by farmers in remote areas. The platform will connect farmers directly with manufacturers of fertilizers, seeds, and pesticides, enabling them to procure quality products efficiently.

Current Problems- Farmers like Peter, Kevin, and Ben struggle to procure essential agricultural inputs due to:

- Limited access to quality products.
- Dependency on intermediaries leading to higher costs.
- Lack of product information and pricing transparency.

Primary Goal- To create a user-friendly online platform where farmers can purchase fertilizers, seeds, and pesticides directly from manufacturers.

- Provide a scalable and secure platform accessible to farmers in remote areas.
- Enhance transparency in pricing and product availability.
- Reduce costs by eliminating intermediaries.
- Facilitate timely delivery through an integrated logistics system.

Resources Required-

- Hardware Requirement- It needed high-performance development machines for developers like SSD, 8GB RAM, and multicore processors.

- Software Requirement-Java Spring boot for backend development. React and Angular for fronted development. My SQL for structured data. Git for source code management.
- Trained Resources- This project needs JAVA developers, frontend developers, database administrators, QA testers, a Project Manager, Support team.
- Budget- Budget should be divided in such a way that it covers all cost that in purchasing hardware, taking software licences, paying salaries to human resources.

Time Frame- 18 months as agreed in CSR initiative.

Requirement Gathering	-	2 months
Design	-	2-3 months
Development	-	8-10 months
Testing	-	3-4 months
Deployment	-	1 months

Key Stakeholders

- **SOONY Leadership:** Mr. Henry (Sponsor), Mr. Pandu (Financial Head), Mr. Dooku (Project Coordinator).
- **Farmers:** End users like Peter, Kevin, and Ben, along with other farmers in remote areas.
- **Manufacturers:** Suppliers of fertilizers, seeds, and pesticides.
- **APT IT Solutions:** Delivery team, including Mr. Karthik (Delivery Head), Mr. Vandanam (Project Manager), developers, testers, and admins.

Conclusion

The online agriculture store will bridge the gap between farmers and manufacturers, addressing procurement challenges and enhancing productivity. It aligns with SOONY's CSR objectives and has the potential to make a significant social and economic impact.

Q.8. 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

Ans.-

1. Sequential- This waterfall model is referred as a linear –sequential life cycle model. It is simple and classic life cycle model. In this waterfall model each phase must be completed and review is done and if project is good to continue, then only next phase will start or project can be discarded.

In this sequential –waterfall methodology below are the stages.

1. Requirement gathering

2. Requirement analysis

3. Design

4. Development- Coding

5. Testing

6. UAT

7. Configuration management

8. Deployment

2. Iterative- RUP (Rational Unified Process)- The Rational Unified Process is an iterative software development process framework. RUP is based on a set of building blocks describe what is to be produced, the skill required and step by step explanation how we can achieve or develop goal. It has four project life cycle phases **i)** Inception- what we build **ii)** Elaboration- del or design need to deliver **iii)** Contraction- implementation **iv)** Transition- delivery, defect correction, UAT.

3. Evolutionary- This spiral model gives more emphases placed on risk analysis. The spiral model has four phases: **1.** Planning, **2.** Risk analysis, **3.** Engineering, **4.** Evaluation. This model is good for large and critical projects.

4. Agile- Scrum- This model can be implemented in which project the faster delivery is required. No documentation. There are 12 principles of this software – Late changes are accepted, all projects and business people should work together daily. Fast delivery of software. It has face to face conversation within Development

team.

Q.9. 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.

Ans-

1. **Waterfall -** Waterfall methodologies where each phase must be completed in its entirety before the next phase can being and at the end of each phase, a review takes place to determine if the project is on the right path whether or not continuous or discard the project.
2. **Rational unified process** is based on a set of building blocks or content elements describing what is to be produced the necessary skills required and the step-by-step explanation describing how specific development goals are to be achieved.
3. **Spiral** in the model gives more emphasis placed on risk analysis, it has four looks out to work planning, risk analysis, engineering, and evaluation.
4. **Agile scrum** in the scrum model where can implement either at the beginning of the project or when you sense that project is falling behind schedule.

The V model SDLC methodology would be best for this project. This is small project and V model works well for small project. In this project the requirements are very well understood. And in this V model, in each phase testing and review process done, so we will know the project is going on correct path or not.

Q.10. Write down the differences between waterfall model and V model

Waterfall model V-model

Ans- Waterfall Model:- The Waterfall Model is a sequential software development lifecycle (SDLC) model where each phase must be completed before moving to the next. It follows a linear approach, making it easy to manage but less flexible for changes.

V-Model:- The V-Model is an extension of the Waterfall Model, but it introduces parallel testing for each development phase, ensuring defects are identified early.

1. The waterfall model is simple. The V mode is intermediate.

2. The waterfall model is rigid. The V model is little flexible.

3. Re-usability of model is limited. V-model can be Re-use for some extent.

4. Waterfall model's steps move in a linear way. V-model's steps don't move in linear way.

5. The cost of Waterfall model is low. V model is expensive.

6. Waterfall model is a continuous process. V model is a simultaneous process.

7. In Waterfall model testing activities start after the development activities are over. In V-model testing activities start with the first stage.

8. Guarantee of success through Waterfall model is low. Guarantee of success through V-model is high.

9. Software made using Waterfall model, the number of defects is less in comparison of software made using V-model. Software made using V-model, the number of defects is greater in comparison of software made using Waterfall model.

10. Waterfall model is less used now-a-days in software engineering. V-model is widely used in software engineering.

Question 11 – Justify your choice

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

Ans-

I have chosen Agile Model for this project due to the following reasons:

1. **Dynamic Requirements:** The needs of farmers and agricultural companies may evolve as they start using the platform. Agile allows for iterative development, making it easier to adapt to changing requirements.
2. **Stakeholder Collaboration:** Peter, Kevin, and Ben, as key stakeholders, can provide continuous feedback throughout the development process, ensuring that the solution effectively addresses farmers' challenges.
3. **Faster Delivery of Features:** Agile enables the team to deliver the most essential features (such as online ordering of fertilizers, seeds, and pesticides) in early iterations, allowing farmers to benefit from the platform sooner rather than waiting for the entire project to be completed.

4. **Risk Mitigation:** Since the project is being developed under a Corporate Social Responsibility (CSR) initiative within 18 months, Agile helps in identifying and addressing risks early in the process, reducing the chances of project failure.
5. **Improved Quality:** Continuous testing and iterative releases in Agile ensure that defects are identified and resolved quickly, leading to a more stable and user-friendly platform.

Question 12 – Gantt Chart

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.

Ans- A Gantt chart is a project management tool that visually represents a project schedule, showing tasks, durations, dependencies, and progress over time.

Gantt Chart for Online Agriculture Products Store Project

Phase	JAN-MAR	APR-JUN	JUL-SEPT	OCT-DEC	JAN-MAR	APR-JUN
Requirement Gathering (RG)						
Requirement Analysis (RA)						
D1						
T1						
D2						
T2						
D3						
T3						
D4						
T4						
USER ACCEPTENCE						

Question 13 – Fixed Bid Vs Billing –

Explain the difference between Fixed Bid and Billing projects

Ans- 1. Fixed Bid Projects

A Fixed Bid project has a predefined scope, timeline, and cost, agreed upon before the project begins.

Key Features:

- The total cost is fixed regardless of the effort or time taken.
- The scope is well-defined at the beginning, with minimal changes allowed.
- Risk lies with the vendor if more effort or resources are needed.
- Best suited for small to medium-sized projects with clear requirements.

Example (Related to Case Study):

If Mr. Henry hires a software development company to create the Online Agriculture Products Store under a Fixed Bid contract, he will agree on a fixed price for the entire project. The development team must complete the project within the agreed budget and timeframe (e.g., 18 months).

2. Billing (Time & Material) Projects

A Billing project follows a Time & Material (T&M) model, where payment is based on actual hours worked and resources used.

Key Features:

- Cost depends on the actual effort, time, and resources used.
- More flexible scope—changes can be accommodated throughout the project.
- Risk lies with the client as costs may increase if the project takes longer than expected.
- Best suited for long-term, evolving, or complex projects where requirements are not fully defined upfront.

Example (Related to Case Study):

If Mr. Henry opts for a Time & Material model, he will pay for the development team's actual hours worked and resources used over 18 months. If additional features or changes are required during the development phase, they can be accommodated, but the cost may increase.

Comparison Table:

Aspect	Fixed Bid	Billing (T&M)
Cost	Fixed, agreed upfront	Variable, based on actual work
Scope	Defined at the beginning	Flexible, can evolve
Risk	Vendor bears the risk	Client bears the risk
Flexibility	Limited changes allowed	High flexibility for changes
Best for	Well-defined, short-term projects	Evolving, long-term projects

Conclusion

For Mr. Henry's Online Agriculture Products Store, the best choice depends on project needs:

- Fixed Bid is ideal if the project scope is well-defined and won't change.
- Billing (T&M) is better if the project requires continuous improvements and flexibility.

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

➢ **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**

Ans-

1. Design Phase Timesheet of a BA

Activities:

- Conduct stakeholder meetings (Peter, Kevin, Ben, and Committee) to gather requirements
- Document Business Requirements Document (BRD)
- Create functional and non-functional requirement specifications
- Develop process flow diagrams and use case diagrams
- Collaborate with UX/UI designers for wireframes and user journey mapping
- Review and refine requirements with stakeholders
- Prepare initial acceptance criteria and validate with end-users

Date	Task	Hours Spent	Remarks
DD/MM/YYYY	Stakeholder requirement gathering	4 hrs	Meeting with Peter, Kevin & Ben
DD/MM/YYYY	BRD Documentation	5 hrs	Drafted business requirements
DD/MM/YYYY	Wireframe Review with UI Team	3 hrs	Discussed user journey

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2. Development Phase Timesheet of a BA

Activities:

- Support developers in understanding requirements
- Clarify business logic and workflows during development
- Update requirement documents based on technical constraints
- Participate in daily stand-up meetings
- Conduct periodic requirement validation sessions

Date	Task	Hours Spent	Remarks
DD/MM/YYYY	Requirement clarification with developers	3 hrs	Resolved queries on product categories
DD/MM/YYYY	Update BRD with minor changes	2 hrs	Revised based on feedback
DD/MM/YYYY	Stand-up meetings	1 hr	Addressed blockers

---

3. Testing Phase Timesheet of a BA

Activities:

- Prepare User Acceptance Test (UAT) scenarios
- Validate test cases written by QA team
- Perform functional and usability testing
- Log defects and track resolution

Date	Task	Hours Spent	Remarks
DD/MM/YYYY	Draft UAT test cases	4 hrs	Covered main workflows
DD/MM/YYYY	Functional Testing	5 hrs	Verified product ordering process
DD/MM/YYYY	Defect Triage Meeting	2 hrs	Discussed critical bugs with developers

---

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

Activities:

- Conduct UAT sessions with stakeholders
- Gather feedback from farmers and companies
- Work with the development team to address UAT issues
- Approve the system for deployment

Date	Task	Hours Spent	Remarks
DD/MM/YYYY	UAT with stakeholders	4 hrs	Conducted testing with farmers
DD/MM/YYYY	Bug tracking and resolution	3 hrs	Addressed feedback on UI
DD/MM/YYYY	Final Approval Documentation	2 hrs	Signed off for production

---

5. Deployment & Implementation Phase Timesheet of a BA

Activities:

- Ensure all business requirements are met in the deployed system
- Conduct training sessions for end-users (farmers, companies)
- Prepare user manuals and FAQs
- Provide post-implementation support for a smooth transition

Date	Task	Hours Spent	Remarks
DD/MM/YYYY	Conduct training for farmers	4 hrs	Explained how to place orders
DD/MM/YYYY	Post-go-live support	3 hrs	Assisted users with login issues
DD/MM/YYYY	Final documentation & closure	2 hrs	Submitted project closure report

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This timesheet ensures that the BA's role is tracked across all stages, ensuring a **smooth transition from requirement gathering to system implementation**.