**Question 1 – BPM –**

**Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs,**

**Activities, Value created to the end Customer)**

**1. Goal:**

To build this online store is to facilitate farmers to buy seeds, pesticides, and

fertilizers from anywhere through internet connectivity.

**2. Inputs:**

* **Supplier Information:** Product details, pricing, and stock availability from agricultural suppliers.
* **Customer Orders:** Purchase requests from farmers and agribusinesses.
* **Logistics Data:** Shipping and delivery information.
* **Technology Infrastructure:** E-commerce platform, payment gateway, and security systems.
* **Marketing & Customer Data:** Customer preferences, past purchases, and feedback.

**3. Resources:**

* **Human Resources:** IT staff, customer support, logistics team, and marketing personnel.
* **Technology & Systems:** E-commerce website, mobile app, inventory management, and data analytics tools.
* **Physical Resources:** Warehouses, delivery vehicles, and agricultural product inventory.
* **Financial Resources:** Investment for operations, supplier payments, and marketing expenses.

**4. Outputs:**

* **Products Delivered:** Seeds, fertilizers, pesticides, farming tools, and machinery.
* **Digital Services:** Online consultation, farming advice, and weather updates.
* **Customer Reports & Insights:** Order history, product recommendations, and demand forecasting.

**5. Activities (Business Processes):**

1. **Product Listing & Management:** Suppliers upload product details, and prices, and update stock levels.
2. **Customer Browsing & Ordering:** Farmers explore products, compare options, and place orders.
3. **Payment Processing:** Secure online transactions via credit/debit cards, mobile wallets, or bank transfers.
4. **Order Fulfillment & Packaging:** Items are picked, packed, and prepared for shipping.
5. **Shipping & Logistics:** Orders are dispatched, tracked, and delivered to customers.
6. **Customer Support & Query Resolution:** Assistance with product selection, order tracking, and returns.
7. **Feedback & Improvement:** Customers provide reviews, and data analytics help optimize offerings.

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

* **Convenience:** Easy access to agricultural products without visiting physical stores.
* **Time & Cost Savings:** Competitive pricing and doorstep delivery reduce travel and procurement costs.
* **Product Variety:** Wide range of quality agricultural products from multiple suppliers.
* **Expert Assistance:** Farming tips, product recommendations, and online consultations.
* **Reliability & Transparency:** Order tracking, secure payments, and verified product reviews.

**Question 2 – SWOT –**

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.

**Strengths-**

Market reach-Can serve farmers and agriculture business

Products-Various products like fertilizers, seeds, pesticides all can be available in one store

Payments- Various payments modes ( Wallets, Cash on Deliver , Credit card , Debit cardS)

**Weakness-**

Transport-Delay in Shipping in Remote and Rural areas.

Internet Availability- Stable internet required

Mobile friendly- Many of customer are not mobile friendly so problem in reaching large network

Quality- There may be quality regarding issues by farmers

**Opportunities**

Data – App can help reaching huge database and hence growing business

B2C-Farmers can sell products directly to business industries or customers without mediators helping gaining profit

Export – Farmers can export their products internationally

**Threat-**

Cheating- Competitors can make same clone app resulting into business loss

Hacking-Customer personal information can be hacked if security breach happens

Weather & Climate Risks-Demand and Supply can reduces farmers stable income

Inventory Management Issues-Need for warehouse facilities in rural areas, increasing operational costs.

Customer Service & After-Sales Support

**Question 3 – Feasibility study**

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.

**1. Hardware Requirements**

* Evaluate existing hardware infrastructure.
* Ensure servers support Java-based applications (preferably Linux/Windows servers).
* Consider whether on-premise or cloud (AWS, Azure, GCP) hosting is more feasible.
* Check for high availability, scalability, and load balancing if it's a large-scale application.
* Developer systems should have sufficient RAM (minimum 8GB recommended) and processing power.

**2. Software Requirements**

* Java Development Kit (JDK) – appropriate version (e.g., JDK 17 or latest LTS).
* Integrated Development Environment (IDE) – Eclipse, IntelliJ IDEA, or VS Code.
* Application server – Apache Tomcat, JBoss, or Spring Boot-based microservices.
* Database – MySQL, PostgreSQL, or Oracle.
* Build and Dependency tools – Maven/Gradle.
* Version control – Git (GitHub, GitLab, Bitbucket).
* Project management & collaboration – Jira, Confluence, Slack, etc.

**3. Trained Resources**

* Availability of skilled Java developers (backend, full-stack).
* Resources skilled in Java frameworks like Spring, Hibernate, etc.
* UI/UX developers (if it's a full-stack project).
* DevOps engineers for CI/CD and cloud deployment (Docker, Jenkins, Kubernetes).
* Business Analysts and QA/Testers with experience in Java-based projects.
* Consider upskilling existing staff if hiring is not feasible.

**4. Budget**

* Licensing cost (if any) for tools or frameworks (e.g., Oracle DB, premium IDEs).
* Salary and contractor costs for developers, testers, analysts.
* Cloud hosting or server procurement costs.
* Training and onboarding expenses.
* Contingency buffer (10–15%) for unforeseen risks.

**5. Time Frame**

* Define project phases: Requirements, Design, Development, Testing, UAT, Deployment.
* Estimate time for each phase based on resource availability and complexity.
* Account for dependencies, stakeholder approvals, and feedback loops.
* Include buffer time for delays (e.g., 10–20% extra).
* Create a Gantt chart or project plan to track progress.

**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\*

**Current State**
Everything is scramble so difficult to select one product

No Fixed quality standards

Pricing difference

Uncertainty of product inventory

No proper Product Description

Improper Knowledge of Weather/Climate changes

Effects of Pesticides,Chemicals,Insects on Crop

**Desired State**

Everything at one place

Fixed Quality Standards by Govt. Approval

Proper Pricing with Price Tags

Proper Knowledge along with Description, Climate Changes

Improved Cost Efficiency

**Question 5 – Risk Analysis - 10 Marks**

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

Internal Risks

Inventory management

Operational Cost

Time Management

Manpower Issues

External Risks

Govt Policies

Competitors

Hacking

Security concerns

BA Risks

Incomplete requirement gathering

Scope creep

Improper Knowledge

Project Risks

Change in requirements

Team Dissolving

Fund Management

**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

**1. Stakeholder Analysis**

| **Stakeholder** | **Role & Interest** | **Influence Level** | **Needs/Concerns** |
| --- | --- | --- | --- |
| **Farmers** | Sell produce, use platform for market access | High | Fair pricing, easy-to-use interface, timely payments |
| **Buyers (Retailers, Wholesalers, Consumers)** | Purchase produce from platform | High | Quality assurance, competitive pricing, secure transactions |
| **Agriculture Experts** | Provide guidance on best farming practices | Medium | Knowledge sharing, farmer engagement |
| **Logistics Providers** | Handle transportation & delivery | Medium | Efficient tracking, fair pricing, timely dispatch |
| **IT & Development Team** | Manage platform maintenance & security | High | Robust platform, minimal downtime |
| **Customer Support** | Handle queries & complaints | Medium | Quick response time, issue resolution |
| **Government & Regulators** | Ensure compliance with agricultural laws | High | Adherence to local & national regulations |
| **Investors & Sponsors** | Fund & support platform growth | High | ROI, user engagement, business expansion |
| **Marketing Team** | Promote platform to farmers & buyers | Medium | Effective campaigns, strong brand awareness |

**2. RACI Matrix (Responsible, Accountable, Consulted, Informed)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Task / Activity | Farmers | Buyers |  | Logistics | IT Team | Support | Govt. & Reg. | Investors | Marketing |
| Platform Development | I | I |  | I | R/A | I | C | C | C |
| Order Management | R | R |  | C | I | I | I | I | I |
| Payment Processing | R | R |  | I | C | I | C | A | I |
| Quality Control | R | C |  | I | I | I | C | I | I |
| Logistics & Delivery | I | I |  | R/A | C | I | I | I | I |
| Customer Support | I | I |  | I | I | R/A | I | I | I |
| Marketing & Promotion | I | I |  | I | C | I | I | A | R |
| Regulatory Compliance | I | I |  | I | C | I | R/A | I | I |

**Key:**

* **R** = Responsible (Executes the task)
* **A** = Accountable (Final decision-maker)
* **C** = Consulted (Provides input)
* **I** = Informed (Needs updates)

**Business Requirement Document (BRD)**

**Project Name: Online Agriculture App**

**Prepared By: [KEDAR K]**

**Date: 31/03/2025**

**Version: 1.0**

**1. Executive Summary**

The **Online Agriculture Product Store** aims to connect farmers, buyers, and service providers in a digital ecosystem to facilitate efficient agricultural trade, knowledge sharing, and logistics management. This app will streamline the supply chain, provide fair pricing, and ensure a seamless user experience for all stakeholders.

**2. Business Objectives**

* Provide **farmers** with a **direct market** to sell produce.
* Ensure **buyers** get **high-quality** agricultural products at competitive prices.
* Ensure compliance with **government regulations** in agriculture and trade.
* Enable **secure and fast transactions** through digital payment solutions.
* Improve overall **efficiency and transparency** in the agricultural supply chain.

**3. Scope of the Project**

**In Scope:**

Farmer registration and product listing
Buyer registration and order placement
Integration of **logistics** for delivery tracking

Payment gateway integration
Customer support chat system
Weather forecasts and crop advisory

**Out of Scope:**

 Offline transactions
 Large-scale warehousing solutions
 Government subsidy management

**4. Stakeholders**

|  |  |  |
| --- | --- | --- |
| **Stakeholder** | **Role** | **Interest** |
| Farmers | Sell produce | Fair pricing, ease of use, timely payments |
| Buyers (Retailers/Consumers) | Purchase goods | Quality assurance, competitive prices |
| Logistics Providers | Delivery | Tracking, route optimization |
|  |  |  |
| T & Development Team | Maintain platform | Security, uptime |
| Government/Regulators | Compliance | Legal adherence |
| Investors | Fund growth | ROI, business expansion |
| Marketing Team | Promote platform | High user engagement |

**5. Functional Requirements**

**5.1 User Registration & Profiles**

* Farmers can **create profiles**, add location, and list crops.
* Buyers can **search, filter**, and **purchase** agricultural products.

**5.2 Product Listing & Search**

* Farmers upload **images, descriptions**, and **pricing**.
* Buyers use **filters** (crop type, price, region) to find products.

**5.3 Order & Payment Management**

* Secure **payment gateway** integration (UPI, card, net banking).
* Buyers get order **tracking & confirmation notifications**.

**5.4 Logistics & Delivery**

* Partnered **logistics services** for **real-time tracking**.
* Estimated **delivery time** and automated dispatch system.

**5.5 Chat & Support**

* **Live chat** for farmers and buyers.
* AI-based **chatbot** for common queries.

**5.6 Knowledge Hub**

* Farmers receive **weather updates, market trends**, and **farming tips**.

**5.7 Ratings & Reviews**

* Buyers & farmers can **rate and review** transactions.

**6. Non-Functional Requirements**

* **Scalability:** Handle **large user traffic**.
* **Security:** End-to-end **encryption** for transactions.
* **Performance:** **Low latency**, high uptime (99.9%).
* **Compliance:** Follow **government agricultural policies**.

**7. Assumptions & Constraints**

**Assumptions:**

* Users have **internet access**.
* Payment partners will support **digital transactions**.
* Logistics partners ensure **on-time delivery**.

**Constraints:**

* **Limited connectivity** in rural areas.
* **Regulatory approvals** required for operations.

**8. Success Metrics**

* **Number of farmers onboarded** within the first 6 months.
* **User engagement rate** (active transactions per month).
* **Order fulfillment time** (average delivery time).
* **Revenue generated** via platform fees and partnerships.

**9. Risks & Mitigation**

| **Risk** | **Impact** | **Mitigation** |
| --- | --- | --- |
| Low adoption by farmers | High | Awareness campaigns, training |
| Payment failures | Medium | Multiple payment gateways |
| Logistics delays | High | Partnering with multiple delivery providers |

**10. Timeline & Milestones**

| **Milestone** | **Timeline** |
| --- | --- |
| Project | Month 1 |
| UI/UX Design Completion | Month 2 |
| Development Phase 1  | Month 3-5 |
|  Testing | Month 6 |
| Launch & Marketing | Month 7 |

**11. Budget & Resource Allocation**

| **Component** | **Budget Allocation (%)** |
| --- | --- |
| Development | 40% |
| Marketing | 25% |
| Operations & Logistics | 15% |
| Customer Support | 10% |
| Compliance & Legal | 10% |

**12. Conclusion**

The **Online Agriculture App** will revolutionize **agriculture trade** by providing **farmers and buyers with a seamless digital platform**. This app will enable **fair pricing, efficient logistics, and secure transactions**, fostering a **transparent** and **profitable** agricultural ecosystem.

Question 8 – Four SDLC Methodologies - 8 MarksBottom of Form

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

**1. Sequential (Waterfall Model)**

* A **linear** approach where each phase
* Requirement Gathering, Requirement Analysis, Design,Development ,Testing, Deployment and Implementation occurs
* Once a phase is completed, you **cannot** go back.
* In a waterfall model , each phase must be completed in its entirely before the next phase can begin

**2. Iterative Model ( Rational Unified Process(RUP))**

* Development is done in **repeated cycles (iterations)**, refining the system with each iteration.
* Within each iteration the tasks are categorized into 9 Disciplines
* Business modelling, Requirements, Analysis and Design, Implementation, Test, Deployment, Configuration and change management, Project management , Environment
* It also includes Four Project life cycle phases
* Inception , Elaboration , Construction , Transition

**3. Evolutionary Model (Spiral)**

* The Spiral model has 4 phases Planning, RisK Analysis , Engineering and Evaluation
* A prototype is produced at the end of risk analysis phase
* Software is produced in the engineering phase
* Evaluation allows the customer to evaluate the output of the project to date before the project continues to next spiral
* Used in research and product development where feedback helps shape the system.

**4. Agile Methodology**

* A **flexible** and **collaborative** approach with fast iterations .
* Prioritizes customer feedback, continuous delivery, and adaptability.
* Best for **dynamic projects** where changes and improvements happen frequently.
* No Documentation

**Final Thoughts**

* **Use Waterfall** for small, well-defined projects with less chances of change in requirement
* **Use Iterative** for gradual improvements.
* **Use Evolutionary** for good risk analysis and good for large critical projects
* **Use Agile** for fast-paced projects with changing needs and close customer collaboration with less documentation

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

Waterfall

Linear -sequential life cycle model

Very simple to understand and use

Each phase must be completed before the next phase begin

Stages

Requirement Gathering and Analysis

Design, Development, Testing, Deployment & Implementation

RUP ( Rational Unified Process)

It is an Iterative Software Development Process

It is based on set of building blocks or contents elements

The main building blocks are

Roles (Who)

Work products(what)

Tasks(how)

Tasks are categorized into nine disciplines

Business modelling

Analysis and Design

Implementation

Test

Deployment

Three supporting disciplines

Configuration and change management

Project management

Environment

Question 10 – Waterfall Vs V-Model - 5 Marks

Write down the differences between waterfall model and V model.

**Waterfall**

|  |
| --- |
|  |

|  |
| --- |
| Linear and sequential |

Happens after development

Errors found late

Difficult to make changes once a phase is completed

Higher risk of failure

|  |
| --- |
|  |

|  |
| --- |
| Best for simple, well-understood projects |

**V-model**

Sequential with corresponding testing for each phase

|  |
| --- |
|  |

|  |
| --- |
| Testing is done in parallel with development |

Errors detected early

Flexible due to early validation

Lower risk due to early testing

|  |
| --- |
|  |

|  |
| --- |
| Best for complex and safety-critical projects |
| Question 11 – Justify your choice - 3 MarksAs a BA, state your reason for choosing one model for this projectV -ModelSimple and easy to useEasy to manage due to rigidity of the model each phase has a review processPhases are processed and completed one at a timeWorks well for smaller projects where requirements are well understood  |

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.

RG-Requirement Gathering

RA-Requirement Analysis

Design-High level & Low level

D1,D2,D3,D4-Development Phases

T1,T2,T3,T4-Testing Phase

UAT-User acceptance Testing

PM-Project manager

BA-Business Analyst

Java Developers-Coding

Testers-Module and Integration Testing

DB Admin-Data base setup and management

Network Admin-Network Configuration

|  |  |  |  |
| --- | --- | --- | --- |
| **Phase** | **Responsible Resource(s)** | **Duration** | **Depends On** |
| RG | PM, BA | X days | – |
| RA | BA, PM | X days | RG |
| Design | Developers, BA, PM | X days | RA |
| D1 | Java Developers | X days | Design |
| T1 | Testers | X days | D1 |
| D2 | Java Developers | X days | T1 |
| T2 | Testers | X days | D2 |
| D3 | Java Developers | X days | T2 |
| T3 | Testers | X days | D3 |
| D4 | Java Developers | X days | T3 |
| T4 | Testers | X days | D4 |
| UAT | BA, Testers, PM, Client | X days | T4 |

**Durations (X days)** depend on project scope and complexity.

Question 13 – Fixed Bid Vs Billing - 5 Marks

Explain the difference between Fixed Bid and Billing projects

|  |  |  |
| --- | --- | --- |
| **Feature** | **Fixed Bid Project** | **Billing Project (e.g., Time & Materials)** |
| **Pricing** | Fixed total price agreed upfront | Based on actual time and materials used |
| **Scope** | Clearly defined and fixed | More flexible and can evolve |
| **Risk** | Primarily on the service provider | More balanced between client and provider |
| **Client Involvement** | Less intensive after scope definition | More intensive, ongoing involvement |
| **Flexibility** | Lower, changes require formal requests | Higher, more adaptable to changes |
| **Estimation** | Crucial and done upfront | Initial estimates provided, final cost varies |
| **Billing** | Milestone-based or upon completion | Periodic based on time and materials |

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**

**Stage of SDLC:** Design

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity/Task** | **Hours Worked** | **Notes/Comments** |
|  | Eliciting and documenting detailed business requirements | 4.0 | Conducted interviews with stakeholders from Sales and Marketing departments. |
|  | Creating use cases and user stories | 3.0 | Developed 15 user stories for the core module. |
|  | Developing process flow diagrams (BPMN) | 2.5 | Documented the order processing workflow. |
|  | Defining non-functional requirements (e.g., performance, security) | 1.5 | Collaborated with the technical team on security requirements. |
|  | Participating in design review meetings | 2.0 | Provided input on user interface design from a business perspective. |
|  | Updating requirements documentation based on feedback | 1.0 | Incorporated changes from the design review meeting. |

**2. Development Timesheet of a BA**

**Stage of SDLC:** Development

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity/Task** | **Hours Worked** | **Notes/Comments** |
|  | Clarifying requirements for the development team | 2.0 | Answered queries from developers regarding specific user stories. |
|  | Participating in daily stand-up meetings | 0.5 | Provided updates on requirement clarifications and potential roadblocks. |
|  | Reviewing developed features against requirements | 3.5 | Conducted initial checks on the user registration functionality. |
|  | Collaborating with developers on data mapping | 1.0 | Assisted in defining the mapping between source and target systems. |
|  | Addressing scope change requests and impact analysis | 2.0 | Analyzed the impact of a new feature request on existing functionalities. |
|  | Updating requirements documentation as needed | 1.0 | Documented a minor change in the reporting logic. |

**3. Testing Timesheet of a BA**

**Stage of SDLC:** Testing

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity/Task** | **Hours Worked** | **Notes/Comments** |
|  | Reviewing test plans and test cases | 2.5 | Ensured test cases cover all documented business requirements. |
|  | Creating and executing business acceptance test (BAT) scenarios | 3.0 | Performed testing on key business processes. |
|  | Participating in defect triage meetings | 1.5 | Provided business context and prioritization for identified defects. |
|  | Validating fixed defects against requirements | 2.0 | Re-tested functionalities after defect resolution. |
|  | Supporting user acceptance testing (UAT) activities | 1.0 | Assisted users with understanding test scenarios and recording results. |
|  | Documenting test results and providing sign-off support | 1.0 | Prepared a summary of BAT results. |

**4. UAT Timesheet of a BA**

**Stage of SDLC:** User Acceptance Testing (UAT)

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity/Task** | **Hours Worked** | **Notes/Comments** |
|  | Preparing UAT test scripts and data | 2.0 | Created specific scenarios based on key user workflows. |
|  | Facilitating UAT sessions with end-users | 4.0 | Guided users through the testing process and answered their questions. |
|  | Providing support to users during UAT execution | 1.5 | Assisted users in logging defects and providing necessary information. |
|  | Analyzing and documenting UAT feedback and results | 2.0 | Categorized feedback and linked it to specific requirements. |
|  | Participating in UAT status meetings | 0.5 | Provided updates on UAT progress and identified issues. |
|  | Obtaining UAT sign-off from stakeholders | 1.0 | Coordinated with business stakeholders for formal approval. |

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

**Stage of SDLC:** Deployment & Implementation

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity/Task** | **Hours Worked** | **Notes/Comments** |
|  | Reviewing deployment plans and checklists | 1.0 | Ensured business considerations are included in the deployment process. |
|  | Participating in deployment readiness meetings | 0.5 | Provided a business perspective on the go-live readiness. |
|  | Providing on-site support during and immediately after deployment | 3.0 | Assisted users with initial access and addressed immediate post-go-live issues. |
|  | Monitoring system implementation and business impact | 2.5 | Tracked key business metrics to assess the success of the implementation. |
|  | Developing and delivering post-implementation training | 2.0 | Conducted training sessions for end-users on the new system. |
|  | Gathering feedback and identifying areas for improvement | 1.0 | Collected user feedback for future enhancements. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |