**Question 1 – BPM - 5 Marks**

Business Process Management is a systematic approach to improving and optimizing business processes. It focuses on analyzing, modeling, monitoring, and continuously enhancing workflows to achieve better efficiency, effectiveness, and flexibility within an organization

**Goal**: To develop an online agriculture product store that enables farmers to purchase agricultural products (fertilizers, seeds, pesticides) directly from manufacturers, to facilitate remote area farmers.
**Input**:

1. Requirements: Functional and non-functional requirements from stakeholders (farmers, manufacturers, and committee).
2. Products: Fertilizers, seeds, and pesticides information provided by manufacturers.
3. Budget: INR 2 Crores.
4. Duration: 18 months.

**Resources:**

Manpower, warehouse, software, hardware, budget, salary, vendor quotation

**Output:**

Sales revenue, efficiency.

**Activities:**

Excellent customer service, partner with leading brand

**Value:**

 Reduces intermediaries, ensuring farmers get access to affordable and quality products, Promotes better agricultural practices by providing easy access to necessary farming inputs.

**Question 2 – SWOT - 5 Marks**

A SWOT Analysis is a technique used to identify and assess an organization's strengths, which are internal advantages, weaknesses, which are internal limitations, opportunities, which are external possibilities for growth, and threats, which are external challenges or risks.

**Strengths**:

Solves a real problem for farmers.

Strong financial backing (₹2 Crores).

 Skilled development team.

Positive social impact through CSR.

**Weaknesses:**

Digital literacy barriers for farmers.

Internet and smartphone limitations in rural areas.

Dependence on manufacturers for product supply.

Delivery challenges in remote areas.

**Opportunities**:

Large untapped rural market.

Potential government partnerships.

Growing technology adoption in rural areas.

Future expansion to other agricultural products.

**Threats**:

Competition from established e-commerce platforms.

Connectivity issues in rural areas.

Resistance to digital adoption by farmers.

Regulatory and operational risks.

**Question 3 – Feasibility study - 5 Marks**

A feasibility study is an assessment conducted to evaluate the practicality and viability of a proposed project or idea. It examines technical, financial, legal, operational, and market factors to determine whether the project is achievable, sustainable, and likely to succeed.

1. Technology

Java , Spring boot framework, MySQL, Selenium, Jmeter, JIRA, etc.

2. Hardware

 Setup, ware house, office space, contact setup.

3. Software

Web browser, Smartphone (basic windows/Android/iOS compatibility), Payment get Ways software.

**Resource**

 Project management team, Business analyst, Software developers.

**Budget: ₹2 Crores**

 Development cost, Hardware cost, Training,

**Time Frame:**

18 Months

**Question 4 – Gap Analysis - 5 Marks**

 GAP analysis is a method used to assess the difference between the current state and the desired future state of a process, system, or organization. It identifies the "gap" between where an organization currently stands and where it wants to be, helping to identify areas for improvement and actions needed to bridge that gap.

**1. Current State (As-Is)**

Farmers’ Challenges:

Difficulty in accessing essential agricultural products (fertilizers, seeds, pesticides) in remote areas.

Reliance on intermediaries leading to increased costs and delays.

Limited awareness of product options and availability.

Manufacturers’ Challenges:

Lack of direct access to a wider customer base (farmers).

Inefficiency in communicating product details to remote areas.

Dependency on traditional sales channels.

**2. Desired State (To-Be)**

Farmers’ Benefits:

Seamless online access to a wide range of agricultural products.

Ability to browse, compare, and order products directly from manufacturers.

Delivery services to remote locations, reducing time and effort.

Manufacturers’ Benefits:

Direct interaction with farmers via a centralized platform.

Increased product visibility and sales.

Simplified order processing and tracking.

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

Risk analysis is the process of identifying, assessing, and prioritizing potential risks that could negatively impact an organization, project, or decision. It involves evaluating the likelihood and impact of different risks, enabling organizations to develop strategies to mitigate or manage those risks effectively. Risk analysis helps in making informed decisions to minimize potential losses and enhance opportunities.

**Internal Risk**

Lack of skilled resources.

Budget overruns.

Poor communication among stakeholders or misunderstanding of the requirement.

Scope creep due to unclear requirements.

**External Risk**

Internet connectivity issues in rural areas.

Regulatory changes in agriculture or e-commerce as per government norm and condition.

transportation challenges in remote areas.

Resistance to technology adoption by people.

**BA Risk**

Incomplete or unclear requirements

Miscommunication between stakeholders

Failure to prioritize requirements

Insufficient domain knowledge

Lack of stakeholder buy-in

**Project Based risk**

Unrealistic timelines

Dependencies on external vendors

Quality issues in deliverables

Failure to meet user needs

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

Stakeholder analysis is the process of identifying and evaluating the individuals, groups, or organizations that have an interest in or are affected by a project, decision, or initiative. It involves understanding their expectations, needs, influence, and potential impact on the project. The goal is to prioritize stakeholders, manage relationships effectively, and ensure that their concerns and requirements are considered throughout the project lifecycle.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Task/Activity** | **Requirement Gathering** | **Platform Design (UI/UX)** | **Platform Development** | **Database Design and Management** | **Network Infrastructure Setup** | **Testing** |
| **Responsible (R)** | Business Analyst (BA) | UX/UI Designers | Java Developers, Senior Java Developer | DB Admin (John) | Network Admin (Mike) | Testers (Jason, Alekya) |
| **Accountable (A)** | Mr. Vandanam (PM) | Mr. Vandanam (PM) | Ms. Juhi (Sr. Developer) | Ms. Juhi (Sr. Developer) | Ms. Juhi (Sr. Developer) | Mr. Vandanam (PM) |
| **Consulted (C)** | Farmers (Peter, Kevin, Ben), Manufacturers | Farmers, Manufacturers | Business Analyst | Business Analyst | Business Analyst | Business Analyst |
| **Informed (I)** | Project Committee, Development Team | Development Team | Project Committee | Development Team | Development Team | Project Committee |

**Question 7 – Business Case Document - 8 Marks**

This project was launched to solve the obstacles that farmers in remote places encounter while trying to obtain key agricultural products including fertilizers, seeds, and pesticides. The goal is to build an online platform that allows farmers and manufacturers to engage directly, thereby enhancing accessibility, lowering costs, and increasing efficiency in the agriculture supply chain.

It is going to tackle the challenges of limited access to agricultural products in remote areas, high costs because of intermediaries, lack of product knowledge, and inefficiencies in procurement. The direct connection between farmers and manufacturers via an online platform will ensure that they have direct access to the products, eliminate the role of intermediaries, reduce logistical inefficiencies, and increase awareness.

It requires resources consisting of a development team including Java developers, testers, network, and database administrators and also requires a project manager with the business analyst, and UI/UX designer for this as it costs them about ₹2 crores. Since this involves quite minimal changes from an organizational side to the manufacturing firms but a potential change needed on training with the farmer.

ROI is anticipated in 3 to 5 years. Immediate stakeholders are the farmers and manufacturers, whereas logistics providers and financial institutions are secondary stakeholders. Important stakeholders who will take decisions are Mr. Henry (sponsor), Mr. Pandu (financial head), and Mr. Dooku (project coordinator). The project committee will oversee their decisions.

**Question 8 – Four SDLC Methodologies - 8 Marks**

 Methodology is a systematic, fixed approach or set of principles, rules, and processes used to conduct research, solve problems, or carry out tasks in a particular field or discipline. It outlines the methods, tools, techniques, and procedures employed to achieve objectives or solve specific problems effectively and consistently.

1. Waterfall

 Model - sequential

The Waterfall Model follows a linear and sequential approach, where each phase must be completed before the next begins.

Phases: Requirements → Design → Implementation → Testing → Deployment → Maintenance.

Advantages:

Simple and easy to understand.

Clear deliverables at each phase.

Ideal for projects with well-defined requirements.

Disadvantages:

Inflexible to changes once a phase is completed.

Not suitable for complex or evolving projects.

2. Agile Methodology

Agile emphasizes iterative development, collaboration, and adaptability to change.

Phases: Iterative cycles (Sprints) involving Planning → Development → Testing → Review → Deployment.

Advantages:

Highly adaptable to changes in requirements.

Encourages close collaboration with stakeholders.

Faster delivery of functional components.

Disadvantages:

Requires constant involvement from stakeholders.

Difficult to estimate time and costs accurately.

3. Scrum Framework

Scrum is an Agile framework focused on iterative development and team collaboration.

Phases: Sprint Planning → Daily Stand-ups → Sprint Development → Sprint Review → Sprint Retrospective.

Advantages:

Emphasizes teamwork and accountability.

Delivers usable features after every sprint.

Transparent progress tracking with tools like burndown charts.

Disadvantages:

Requires a dedicated Scrum Master and trained team.

Not ideal for projects with fixed deliverables or rigid timelines.

4. Evolutionary Spiral Model

It is an evolutionary software development approach that combines iterative development with systematic risk assessment. It emphasizes refinement through successive iterations (or spirals), addressing risks at each stage and gradually evolving the system.

Advantages:

Focus on early identification and mitigation of risks reduces project failure rates.

Adapts to evolving requirements, making it suitable for dynamic projects.

Regular user feedback ensures alignment with user expectations.

Each iteration adds value and builds towards the final system.

Disadvantages:

Requires expertise in risk analysis and management.

Iterative processes and risk assessments can increase project costs.

Frequent iterations and validations may extend project timelines.

Overhead may outweigh benefits for simple, low-risk projects.

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

**1. Waterfall Model**

The Waterfall Model is the traditional, linear approach to software development, where each phase must be completed before moving to the next one.

Phases: Requirements → Design → Implementation → Testing → Deployment → Maintenance

Advantages:

Easy to understand and manage.

Suitable for projects with clear, fixed requirements.

Easy to track progress with structured stages.

Disadvantages:

Inflexible; changes are difficult to implement after the project has started.

Testing happens only after development is done, which makes early problem detection hard.

Not suitable for complex or changing projects.

Best For:

Projects with well-defined, non-changing requirements.

Smaller projects with a limited scope or those that involve standard technology.

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

RUP is an iterative, risk-driven development model that focuses on structured workflows and continuous refinement of the system.

Phases: Inception → Elaboration → Construction → Transition

Advantages:

Iterative approach helps in early risk identification.

Focus on use cases and architecture ensures system reliability.

Regular stakeholder feedback and quality assurance.

Disadvantages:

Can be resource-heavy in terms of documentation and process management.

Requires experienced teams and detailed planning.

May be overkill for small projects.

Best For:

Large-scale, complex projects requiring a detailed, structured approach.

Projects with significant risk and need for high-quality architectural planning.

**3. Spiral Model**

The Spiral Model is an evolutionary approach, which combines iterative development with risk assessment and management.

Phases: Objective Setting → Risk Assessment → Development and Validation → Review and Planning

Advantages:

Risk management is a strong focus for proactive problem-solving.

Flexible and adaptive to changes in requirements.

Regular user feedback ensures the system is on track.

Disadvantages:

The repetitive nature of the phases makes it time-consuming and costly.

Requires skilled resources for risk management and continuous review.

Complexity might not be needed for straightforward projects.

Best for:

High-risk, large and complex projects with critical need of risk management

Projects whose requirements are likely to change or those whose results may not be clear.

**4. Scrum Model**

Scrum is an Agile framework that places emphasis on collaboration, teamwork and iterative development, and concentrates on the frequent delivery of small, working parts of software.

Steps: Sprint Planning → Daily Stand-ups → Sprint → Sprint Review → Sprint Retrospective

Advantages:

Adaptability to Change in Requirements High

Frequent Releases of Workable Software With High Value Provided to Stakeholders

Promote Cross-Functional Teams

Disadvantages:

Highly devoted team and seasoned Scrum Master are needed

Projects with requirements are not flexible

Projects with immovable timelines may not be applicable

Stakeholders' ongoing involvement can be challenging

Best for:

Agile-experience teams

Those who have work experience in Agile environments.

**Question 10 – Waterfall Vs V-Model - 5 Marks**

|  |  |
| --- | --- |
| **Waterfall Model** | **V-Model** |
| Linear and sequential | Sequential but with development and testing phases linked |
| Testing occurs after the development phase | Testing begins alongside development, integrated at each stage |
| Development and testing are separate, with testing at the end | Each development phase has a corresponding testing phase |
| Low flexibility, changes are difficult and costly once a phase is complete | Slightly more flexible but still not ideal for mid-project changes |
| Focuses mainly on development, testing at the end | Focuses on both development and testing throughout the process |
| Suitable for projects with stable, unchanging requirements | Suitable for projects needing rigorous testing with clear, stable requirements |

**Question 11 – Justify your choice - 3 Marks**

Water fall Model for the Online Agriculture Products Store project will provide a structured approach to manage requirements, design, development, testing, and deployment, ensuring that the project stays on track and delivers the platform as planned. The project has clearly defined goals (connecting farmers to manufacturers) and a specific scope (online store for fertilizers, seeds, and pesticides). Waterfall is ideal when the requirements are well-understood and unlikely to change during the project. Since this project has a defined budget (₹2 Crore INR) and timeline (18 months), Waterfall allows for organized tracking of progress through its sequential phases, making it easier to stay on schedule and within budget.

**Question 12 – Gantt Chart - 5 Marks**



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

Fixed Bid Model

Cost is fixed and agreed upon upfront.

Low flexibility; scope cannot easily change.

Vendor assumes project risks.

Ideal for small, well-defined projects.

Billing (Time & Material) Model

Cost depends on hours worked and resources used.

High flexibility; scope can evolve during the project.

Risk is shared between client and vendor.

Ideal for complex, dynamic, or long-term projects.

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

|  |  |  |
| --- | --- | --- |
| **SDLC Stage** | **Task** | **Estimated Hours** |
| **1. Requirement Analysis** |   |   |
| - Stakeholder Meetings | Arrange workshops to gather requirements | 15-20 hrs/week |
| - Documentation | Create BRD, SRS, use cases | 10-15 hrs/week |
| - Validation | Signed-off requirements with stakeholders | 5-10 hrs/week |
| **2. System Design** |   |   |
| - Collaboration | Assist architects with functional design | 10-15 hrs/week |
| - Wireframing | Design wireframes or prototypes | 5-10 hrs/week |
| - Review | Validate design meets requirements | 5-10 hrs/week |
| **3. Development** |   |   |
| - Requirement Clarification | Walkthrough session to DEV+QA+IE | 5-10 hrs/week |
| - Backlog Grooming | Update and prioritize backlog | 5 hrs/week |
| - Support | Confirm requirement against requirements | 5 hrs/week |
| **4. Testing** |   |   |
| - Test Case Review | Validate test cases with QA team | 5-10 hrs/week |
| - UAT Coordination | Plan and monitor User Acceptance Testing | 10-15 hrs/week |
| - Issue Resolution | Clarify defects related to requirements | 5-10 hrs/week |
| **5. Deployment** |   |   |
| - Go-live Support | Ensure smooth rollout | 10-15 hrs/week |
| - Post-deployment Feedback | Collect feedback from users/stackholders | 5-10 hrs/week |
| **6. Maintenance** |   |   |
| - Change Requests | Document and manage new requirements | 10-15 hrs/week |
| - Continuous Support | Assist in ongoing issue resolution | 5-10 hrs/week |