COEPD – Traditional Development

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

14 Questions

Instructions to follow:

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

2.After submission of the answers of this prep exam, You should be prepared to attend viva and justify

your answers in the prep exams. If in Viva, participant is NOT justifying the answers, Viva will be

repeated until Candidates justify 60% correctness.

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

(should apply their knowledge in this task first)

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

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

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

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

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

9. Please focus on learning and applying the knowledge as this knowledge will be helpful in

contributing at your BA job.

**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 farmer’s 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 MarksIdentify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer)Question 2 – SWOT - 5 Marks

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

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.

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 AnalysisQuestion 5 – Risk Analysis - 10 MarksList down different risk factors that may be involved (BA Risks And process/Project Risks)

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

Question 7 – Business Case Document - 8 Marks

Help Mr Karthik to prepare a business case document

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

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?

Question 10 – Waterfall Vs V-Model - 5 Marks

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

Question 11 – Justify your choice - 3 Marks

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

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

Question 13 – Fixed Bid Vs Billing - 5 Marks

Explain the difference between Fixed Bid and Billing projects

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 and Implementation Timesheet of a BA

Question 1 – BPM (Business Process Model) - 5 Marks

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

**Goal**: The goal of the Online Agriculture Store is to bridge the gap between farmers and agriculture product suppliers, making it easier for farmers in remote areas to access seeds, pesticides, and fertilizers.

**Inputs**

* Product details (seeds, pesticides, fertilizers) provided by manufacturers
* Farmer requests for products (orders)
* Delivery details (farmer’s location)
* Internet access (for both farmers and suppliers)

**Resources**

* Online platform (web/mobile application)
* Agriculture product manufacturers (seeds, fertilizers, pesticides)
* Delivery service providers
* IT team (development and support staff)

**Outputs:**

* Available products listed in the online store
* Farmers' orders placed for desired products
* Successful transactions and deliveries of products to farmers
* Feedback and reviews on product quality and service

**Activities:**

* Manufacturers submit product details
* Farmers browse and select products
* Farmers place orders for selected products
* Payments processed securely
* Delivery details collected and shared with the delivery team
* Products delivered to farmers
* Feedback collected for quality and service improvement

**Value created to the end customer (farmers):**

* Easier access to vital farming products
* Convenience of ordering from home or the farm
* Reduced reliance on local stores that may be far away
* Transparent pricing and availability of quality products
* Improved farming efficiency with quality products

Question 2 – SWOT Analysis- Marks

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

For Mr. Karthik’s SWOT analysis, here's what he should consider:

**Strengths:**

* First-mover advantage in remote farming areas
* Direct communication between farmers and suppliers
* Strong support from the government (CSR funding)
* Experienced development team at APT IT Solutions
* High demand for agricultural products in rural areas

**Weaknesses:**

* Limited internet connectivity in remote areas
* Farmers may have low technical literacy
* Dependence on external delivery services
* Initial costs and challenges in building trust among farmers
* Possible resistance to change from traditional methods

**Opportunities:**

* Expansion into additional agricultural regions and countries
* Partnership with more agricultural product manufacturers
* Incorporation of advanced technologies like AI to predict demand
* Development of a mobile app version for wider access
* Educational content for farmers to improve their knowledge of new products

**Threats:**

* Competition from established suppliers or platforms
* Delays in delivery or logistics issues in remote areas
* Fluctuating prices of agricultural products
* Dependence on stable internet connectivity
* Changing agricultural policies and regulations

Question 3 – Feasibility Study (Technology Feasibility)- 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.

When conducting a feasibility study for technology (Java), Mr. Karthik should consider the following:

**Hardware:**

* Servers to host the application and store data
* Devices for developers, testers, and end-users (PCs, smart phones, tablets)

**Software:**

* Java (for backend development)
* Database Management System (e.g., MySQL, PostgreSQL)
* Integrated Development Environment (IDE) for Java (e.g., Eclipse, IntelliJ)
* Testing tools (Selenium, JUnit)
* Server and hosting software (Apache, Nginx, AWS, etc.)

**Trained Resources:**

* Java developers for backend development
* Database administrators (DB Admin)
* Network administrators (NW Admin)
* Testers for QA

**Budget:**

* 2 Crores INR
* Breakdown for development, infrastructure, testing, and deployment
* Consideration for marketing and post-launch support

**Time frame:**

* 18 months duration (including planning, development, testing, and deployment phases)

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

For the Gap Analysis, Mr. Karthik needs to compare the AS-IS (existing process) and TO-BE (future process) for the agriculture store:

AS-IS Process (Current State):

* Farmers purchase products from local stores, often with limited variety and availability
* Lack of transparency in product quality and pricing
* Limited access to advanced farming products due to geographical barriers
* Manual tracking of orders and deliveries
* Dependence on traditional farming practices with limited access to technology

TO-BE Process (Future State):

* Online platform providing access to a wide range of agricultural products
* Direct communication with manufacturers, ensuring product authenticity and quality
* Seamless order and payment system
* Efficient logistics and delivery system tailored to remote areas
* Mobile and web access for farmers to browse, order, and receive products easily
* Data analytics to predict demand, optimize product availability, and support farmers with insights

Gaps to Address:

* Technology adoption in remote areas
* Logistics and delivery challenges
* User training and support
* Payment systems for rural areas

Question 5 – Risk Analysis- 10 marks

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

BA Risks:

* Misunderstanding user requirements (farmers and manufacturers)
* Inaccurate translation of business requirements to technical specifications
* Delays in requirements gathering or frequent changes in scope
* Lack of alignment with stakeholders (farmers, manufacturers, and developers)

Process/Project Risks:

* Delays in product development or testing phases
* Quality assurance issues in the app (e.g., crashes, bugs)
* Dependency on third-party services (e.g., payment gateways, delivery services)
* Inadequate infrastructure support for rural areas
* Risk of poor user adoption and resistance to the platform

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

Here’s a simple RACI matrix:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Project Activities / Phases | Mr. Henry | Mr. Pandu | Mr. Dooku | Peter, Kevin, Ben | Mr. Karthik | Mr. Vandanam (PM) | You (BA) | Dev Team (Juhi & Team) | Testers (Jason, Alekya) | DB Admin (John) / NW Admin (Mike |
| Project Vision & Goals | A | C | C | C | C | I | I | I | I | I |
| Requirement Gathering (RG | C | I | C | C (Influencers) | I | A | R | I | I | I |
| Requirement Analysis (RA) | I | I | C | C | I | A | R | I | I | I |
| Budget & Timeline Finalization | A | A | C | I | C | I | I | I | I | I |
| Technical Design (D1-D4) | I | I | I | I | I | A | C | R | I | C |
| Development & Implementation | I | I | I | I | I | A | C | R | I | C |
| Testing (T1-T4) | I | I | I | I | I | A | C | C | R | I |
| UAT (User Acceptance Testing) | I | I | I | R | I | A | C | I | C | I |
| Deployment & Go-Live | I | I | I | I | I | A | C | R | C | R |
| Ongoing Support / Feedback Loop | I | I | I | R | I | A | C | C | C | C |

R – Responsible, A – Accountable, C – Consulted, I – Informed

Key Stakeholders Who Take Decisions:

* Mr. Henry – Final Authority (Visionary + Sponsor)
* Mr. Pandu – Financial Decisions
* Mr. Dooku – Coordination + Operational Input
* Mr. Vandanam – PM responsible for Execution Decisions

Key Influencers:

* Peter, Kevin, Ben – Provide first-hand agricultural requirements (Real Users)
* Mr. Karthik – Delivery Oversight & Relationship Owner

Question 7 – Business Case Document - 8 Marks

Help Mr Karthik to prepare a business case document

A business case document for this project should include:

* Executive Summary – Brief overview of the project and objectives.
* Problem Statement – Address the issues farmers are facing and the need for this solution.
* Solution Overview – How the online agriculture store will solve these issues.
* Financial Overview – Project budget, resource allocation, expected returns.
* Risks & Mitigation – Identify key risks and strategies to address them.
* Timeline – Phases of the project with estimated durations.
* Stakeholders – List of key stakeholders and their roles.
* Conclusion – Final statement on why this project is a good investment.

Question 8 – Four SDLC Methodologies

Here’s a quick comparison of four SDLC methodologies:

* Sequential (Waterfall): Phases are linear and follow one another. Best for small, well-defined projects.
* Iterative: Similar to waterfall but with feedback loops after each iteration. Useful when requirements evolve.
* Evolutionary: Builds in increments, with each version improving upon the previous one. Useful for larger projects with changing requirements.
* Agile: Focuses on delivering small, working pieces of software quickly, with a lot of collaboration and flexibility.

Question 9 – Waterfall, RUP, Spiral, and Scrum Models

* Waterfall: A traditional, linear approach where each phase is completed before moving on to the next. Good for simple, well-understood projects but not flexible to change.
* RUP (Rational Unified Process): Iterative, risk-driven approach with phases like inception, elaboration, construction, and transition. Better for complex systems with defined requirements.
* Spiral: Focuses on risk management and iterative development. Ideal for large projects with a lot of uncertainty.
* Scrum: Agile framework with short sprints and continuous feedback. Great for projects where requirements are unclear or frequently changing.

Question 10 – Waterfall vs V-Model

* Waterfall Model: A linear, sequential approach with a focus on completing each phase before moving on.
* V-Model: Extends the waterfall by emphasizing verification and validation at each phase, leading to higher-quality deliverables.

Question 11 – Justify Your Choice

I would recommend the V-Model for this project due to its focus on quality assurance and testing at each phase, ensuring that errors are caught early, especially in a project like this where user experience and reliability

Question 12 – Gantt Chart (5 Marks)

Below is a sample Gantt chart based on the V-Model approach for the agriculture product store project.

Legend:

* RG: Requirement Gathering
* RA: Requirement Analysis
* D1 to D4: Design Phases
* T1 to T4: Corresponding Testing Phases
* UAT: User Acceptance Testing

|  |  |  |  |
| --- | --- | --- | --- |
| **Phase** | **Start Date** | **End Date** | **Resources Involved** |
| RG (Requirement Gathering) | Month 1 | Month 2 | BA, PM, Stakeholders (Peter, Kevin, Ben), Committee |
| RA (Requirement Analysis) | Month 2 | Month 3 | BA, PM |
| D1 (High-Level Design) | Month 3 | Month 4 | BA, PM, Sr. Java Dev, NW Admin, DB Admin |
| T1 (Test Plan for D1) | Month 4 | Month 5 | Tester, BA, PM |
| D2 (Low-Level Design) | Month 5 | Month 6 | Java Devs, Sr. Java Dev, BA |
| T2 (Unit Testing Plan) | Month 6 | Month 7 | Java Devs, Testers |
| |  | | --- | | D3 (Module Development) | | |  | | --- | | Month 7 | | |  | | --- | | Month 10 | | |  | | --- | | Java Devs, DB Admin, NW Admin | |
| |  | | --- | | T3 (Module Testing) | | |  | | --- | | Month 10 | | |  | | --- | | Month 11 | | |  | | --- | | Testers, BA | |
| |  | | --- | | D4 (System Integration) | | |  | | --- | | Month 11 | | |  | | --- | | Month 12 | | |  | | --- | | Java Devs, NW Admin, DB Admin | |
| |  | | --- | | T4 (System Testing) | | |  | | --- | | Month 12 | | |  | | --- | | Month 13 | | |  | | --- | | Testers, BA | |
| |  | | --- | | (User Acceptance Testing) | | |  | | --- | | Month 14 | | |  | | --- | | Month 15 | | |  | | --- | | Testers, BA, Stakeholders, Committee | |
| |  | | --- | | Deployment & Handover | | |  | | --- | | Month 16 | | |  | | --- | | Month 18 | | |  | | --- | | All teams (Final deployment, support) | |

Question 13 – Fixed Bid Vs Billing Projects (5 Marks)

|  |  |  |
| --- | --- | --- |
| **Aspect** | **Fixed Bid Project** | **Billing/Time & Material Project** |
| **Definition** | A project with a fixed price for the entire scope | A project billed based on actual time and resources used |
| **Budget Control** | Client pays a fixed price irrespective of actual effort | Client pays based on hours/days worked |
| **Risk Ownership** | Vendor bears the risk if effort exceeds estimate | Client bears the risk of changing or extending the scope |
| **Flexibility** | Less flexible – changes may require new contracts | More flexible – scope can evolve with cost impact |
| **Preferred When** | Scope is clear and requirements are fixed | Requirements are uncertain or likely to evolve |

In this case:

The project is a Fixed Bid (2 Crores INR, 18 months duration under CSR), so APT IT SOLUTIONS will manage time and cost strictly within the defined scope.

Question 14 – Timesheets of a BA in Various Stages of SDLC (20 Marks)

Below are sample timesheet entries for a Business Analyst (BA) across various SDLC stages.

1. Design Timesheet of a BA

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity** | **Hours** | **Remarks** |
| 01-03-2025 | Review Requirements | 4 | Reviewed documented RG/RA |
| 02-03-2025 | Participate in Design Discussion | 5 | HLD session with devs & PM |
| 03-03-2025 | Create Use Cases & Workflows | 6 | UML diagrams for seed, fertilizer flow |
| 04-03-2025 | Review with Stakeholders | 3 | Got approval from Committee |

2. Development Timesheet of a BA

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity** | **Hours** | **Remarks** |
| 15-05-2025 | Clarify doubts for Developers | 4 | Assisted Java team on product flow |
| 16-05-2025 | Update Requirement Docs | 3 | Minor changes post stakeholder inputs |
| 18-05-2025 | Review Design Implementation | 5 | Checked logic flow in dev builds |

1. Testing Timesheet of a BA

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity** | **Hours** | **Remarks** |
| 20-06-2025 | Assist in Writing Test Cases | 4 | Created functional scenarios |
| 21-06-2025 | Validate Testing Activities | 5 | Verified test execution reports |
| 22-06-2025 | Conduct Review Meetings | 3 | Testing status and defect tracking |

1. UAT Timesheet of a BA

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity** | **Hours** | **Remarks** |
| 10-07-2025 | Prepare UAT Test Plan | 4 | Created checklist for stakeholders |
| 11-07-2025 | Coordinate UAT Execution | 5 | Peter, Kevin, Ben tested features |
| 12-07-2025 | Feedback Consolidation | 4 | Documented and discussed changes |

5. Deployment and Implementation Timesheet of a BA

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity** | **Hours** | **Remarks** |
| 01-08-2025 | Prepare User Manuals | 6 | Help documents for farmers |
| 03-08-2025 | Conduct Training for Stakeholders | 5 | Explained usage of app to Peter, Kevin |
| 05-08-2025 | Support Post Go-Live | 4 | Addressed first day queries from users |