**Project Management**

**December 2024 Examination**

**1. What is a project life cycle and explain the three different forms of project life cycle? Using any suitable example explain the five phases in a project life cycle along with list of activities involved in each phase? (10 Marks)**

**Ans 1.**

**Introduction**

A project life cycle is a structured sequence of phases that a project passes through from initiation to completion. It provides a framework for managing a project, ensuring that all critical aspects are addressed, from planning to execution and closure. Understanding the project life cycle is essential for effective project management, as it helps in breaking down complex projects into manageable stages, each with distinct goals, activities, and deliverables. This ensures that resources

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**2. Explain the importance of developing Work Breakdown Structure (WBS) for managing project scope and how it facilitates better project management using a suitable example. Also describe how agile project management is different from traditional waterfall approach. (10 marks)**

**Ans 2.**

**Introduction**

A Work Breakdown Structure (WBS) is a critical tool in project management that helps break down a project into smaller, more manageable tasks or components. It is a hierarchical decomposition of the project’s scope, making it easier to allocate resources, set timelines, and monitor progress. By breaking down a project into individual deliverables and tasks, the WBS helps project managers define

**3. Case Study Title: "Implementing a Solar Power Plant Project" Background:**

**Green Energy Solutions (GES), a leader in renewable energy, has recently secured a contract to design, build, and manage a 50 MW solar power plant in a rural region. This project aims to reduce the area's dependence on fossil fuels while meeting the increasing energy demands in an environmentally sustainable manner. GES has committed to completing the project within a stringent timeline of 18 months, with a budget of USD 50 million. The project involves a diverse group of stakeholders, including government bodies, local communities, suppliers, and contractors.**

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| --- | --- |
| **Project Scope** | **Challenges** |
| **Design and Engineering- Developing the**  **plant's design, including the selection of**  **solar panels, inverters, and other critical**  **components.**  **Procurement- Acquiring all necessary**  **equipment and materials.**  **Construction- Establishing the plant’s**  **infrastructure, installing solar panels, wiring, and connecting to the power grid.**  **Testing and Commissioning- Ensuring the plant operates efficiently and meets regulatory standards through comprehensive testing.**  **Handover and Operation- Transitioning the project to the operations team, who will oversee the plant's management.** | **Tight Schedule: The 18-month timeline is**  **ambitious, considering the project's**  **complexity and potential delays in**  **procurement and construction.**  **Budget Constraints: The project must be**  **delivered within the USD 50 million budget,**  **necessitating meticulous cost management.**  **Stakeholder Management: Addressing the concerns of local communities and adhering to environmental regulations is crucial.**  **Risk of Delays: Potential delays could arise from adverse weather conditions, supply chain issues, and regulatory approvals.** |

**3a. How would you approach developing a project schedule using the critical path method (CPM) for the solar power plant project? Additionally discuss strategies to manage risks involved in scheduling. (5 Marks)**

**Ans 3a.**

**Introduction**

Developing an effective project schedule is critical for successfully delivering the 50 MW solar power plant project for Green Energy Solutions (GES) within the 18-month timeline. The Critical Path Method (CPM) is a widely used technique in project management that helps identify the longest sequence of dependent tasks in a project, known as the "critical path." By focusing on these tasks, project managers can ensure timely completion. For the solar power plant, CPM will help plan activities such as design, procurement, construction, and testing. Additionally, risk management

**3b. How would you approach developing the project budget and managing costs throughout the lifecycle of the solar power plant project? Additionally discuss the cost estimation and strategies for addressing potential cost overruns. (5 Marks)**

**Ans 3b.**

**Introduction**

Developing a project budget for the solar power plant project is crucial for ensuring that the project is completed within the allocated USD 50 million. A well-planned budget includes cost estimates for design, procurement, construction, testing, and commissioning, along with contingency reserves for unforeseen expenses. Effective cost management throughout the project lifecycle is essential to monitor expenses, avoid cost overruns, and ensure financial control. The key to managing