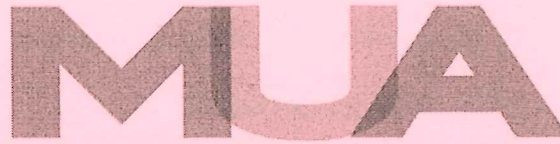


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UNDERGRADUATE UNIVERSITY EXAMINATIONS

SCHOOL OF MANAGEMENT AND LEADERSHIP

DEGREE OF BACHELOR OF ARTS IN DEVELOPMENT STUDIES

PMT 302: PROJECT MANAGEMENT TOOLS AND TECHNIQUES

DATE: 4TH APRIL 2025

DURATION: 3 HOURS

MAXIMUM MARKS: 70

INSTRUCTIONS:

1. Write your registration number on the answer booklet.
2. **DO NOT** write on this question paper.
3. This paper contains **SIX (6)** questions.
4. Question **ONE** is compulsory.
5. Answer any other **THREE** questions.
6. Question **ONE** carries **25 MARKS** and the rest carry **15 MARKS** each.
7. Write all your answers in the Examination answer booklet provided.

QUESTION ONE

Read the Case Study below carefully and answer the questions that follow:

STREAMLINING HEALTHCARE SERVICES

GreenEnergy, a renewable energy company, embarked on constructing a 50 MW solar energy plant in a rural area to provide clean energy to underserved communities. The project, aimed at promoting sustainable energy solutions, had a budget of \$25 million and was expected to be completed in 24 months. This case study explores how GreenEnergy applied the five key phases of project management—Initiation, Planning, Execution, Monitoring and Controlling, and Closure—to successfully deliver the project on time and within budget.

A comprehensive feasibility study was conducted to assess the project's viability, including site analysis, environmental impact assessments, and financial projections. GreenEnergy identified key stakeholders, including local authorities, investors, the rural community, and environmental organizations. A project charter was developed, detailing the objectives, high-level requirements, and major risks. The project charter was approved by key stakeholders, providing the project team with the authority to proceed.

Gaining approval from local authorities took longer than expected due to concerns about the environmental impact on local wildlife. After negotiations and a commitment to conservation efforts, GreenEnergy received the necessary approvals to move to the next phase. Develop a detailed project plan, including timelines, resources, budgets, and risk management strategies. The project team created a WBS to outline all tasks and deliverables, such as securing materials, labor, and necessary permits. Engineers, procurement officers, and project managers were assigned roles and responsibilities. Local contractors were hired for construction, while international experts provided technical oversight. Identified risks included delays due to weather conditions and supply chain disruptions. Contingency plans were developed to mitigate these risks. A detailed timeline was created using Gantt charts to visualize project milestones and key deadlines. Managing the procurement of solar panels from international suppliers led to delays due to customs regulations and logistics. GreenEnergy adjusted the timeline and established a supply chain management team to minimize delays.

Land was cleared, and construction of the foundation began. The solar panels and electrical infrastructure were installed according to the project schedule. The project manager held weekly meetings with the construction team, engineers, and contractors to ensure smooth collaboration and timely progress. Inspection teams were deployed to ensure the construction met safety and quality standards. Heavy rainfall during the monsoon season delayed some construction activities, leading to schedule adjustments. The team used the contingency plan to adjust the timeline, ensuring that the overall project remained on track. They focused on indoor tasks during bad weather conditions to optimize time.

The project manager used project management software to monitor progress against key performance indicators (KPIs), such as cost variance, schedule variance, and resource utilization. A few issues were raised regarding the late delivery of electrical components, but the project team managed to resolve these using alternative suppliers. When unforeseen circumstances required changes (e.g., adjusting the design of the solar panel mountings due to local terrain), a formal change control process was implemented to assess the impact on budget and schedule. Managing cost overruns due to increased labor costs and price fluctuations in international shipping.

Despite minor budget overruns, the project remained largely on track thanks to effective cost control measures, such as negotiating bulk purchase discounts for additional materials. Formally close the project, hand over deliverables, and evaluate project success. A final inspection was conducted to ensure that the solar plant met all technical and safety specifications. A third-party auditor verified compliance with environmental and safety regulations. The project team prepared a project closure report, documenting all lessons learned, project outcomes, and any remaining issues that need addressing. The project was handed over to GreenEnergy's operations team, who will manage the plant's day-to-day activities, including maintenance and monitoring energy output. A post-project evaluation was conducted to assess the overall success of the project in terms of time, budget, and stakeholder satisfaction. A few technical issues arose during the final testing phase, which required some rework to optimize the plant's energy output.

After addressing the minor technical issues, the project was declared a success. It was completed within 26 months, with a slight budget overrun of 5%, which was deemed acceptable given the scope and challenges encountered. The solar plant is now operational and providing clean energy to over 50,000 households in the region.

Required:

- a) Discuss steps GreenEnergy took to ensure that the project was feasible before proceeding (10 Marks)
- b) Reflect on the risk management strategies used in the case study. Explain the key risks identified, and how did GreenEnergy's contingency plans help mitigate these risks (10 Marks)
- c) Discuss how GreenEnergy's contingency plans help mitigate these risks identified above (5 Marks)

QUESTION TWO

- a) Discuss how GreenEnergy's contingency plans help mitigate these risks identified above (7 marks)
- b) Four tasks with corresponding durations and dependencies are involved in a construction project:

Task A: 5 days Task B: 8 days (dependent on Task A) Task C: 6 days (dependent on Task A) Task D: 7 days (dependent on Task B and Task C)

Required

Determine the project's critical path by calculating the earliest start and finish times for each activity. (8 Marks)

QUESTION THREE

- a) Evaluate three key performance indicators you would use to monitor the project's advancement and success (6 marks)
- b) Give examples of three strategies that work well for encouraging a constant exchange of innovative ideas within your company (9 marks)

QUESTION FOUR

- a) In the context of businesses or organizations, describe a sustainability plan
(7 marks)
- b) Describe the significance of corporations creating a sustainability plan. (8 marks)

QUESTION FIVE

- a) Identify and describe three common accountability issues that project managers may encounter during the project lifecycle (8 marks)
- b) Enumerate seven techniques project managers may employ to successfully address and reduce these accountability challenges (7 Marks)

QUESTION SIX

- a) Explain the main steps or stages that are usually included in the PCM process.
(12 marks)
- b) Describe project scheduling (3 marks)

