COMSATS University Islamabad, Lahore Campus

Bachelors of Computer Engineering

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EGG101 Engineering Professionalism

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Assignment 2

Date Assigned: Apr 11, 2025
Due Date: Apr 18, 2025

Background

HydroSys Solutions Pvt. Ltd., a mid-sized engineering firm, is developing a new product called **FlowMeter X**—a precision water flow measurement device to be deployed in municipal water systems. The project is a collaborative effort involving design engineers, quality engineers, and production managers. The product must meet **ISO 4064** standards (for water meters), and the project is already under the scrutiny of a potential overseas client who demands strict adherence to international industrial standards.

Scenario

As the project advances toward the prototype phase, a debate arises in the engineering team regarding a design decision. A suggested material substitution—motivated by a cost-saving strategy proposed by the finance department—might compromise the device's long-term durability under high pressure. One senior engineer insists that the material still falls within acceptable ranges according to ISO 4064, while another points out that the latest update of the standard recommends a stricter requirement under certain environmental conditions.

Meanwhile, the **project manager**, who has a background in business but limited engineering expertise, presses the team to finalize the design within a week to meet a contractual milestone. The manager's directive is met with quiet resistance, leading to tension in the team.

Some engineers feel disconnected from management decisions, and others are unsure whether to comply or continue pushing for better technical clarity. Despite the lack of open confrontation, productivity is slowing, and moral tone within the team begins to dip.

The following themes are present in this case:

- Ethical Corporate Climate
- Loyalty and Collegiality
- Manager–Engineer Interaction
- Conflict Management

Instructions

Read the case study carefully and answer the questions that follow. Your responses should demonstrate critical thinking, the ability to apply theoretical concepts to practical situations, and thoughtful analysis. Cite relevant principles and provide supporting arguments wherever appropriate.

Discussion Questions: PLO8/CLO1/C3

Q1. Ethical Corporate Climate:
In what ways can the absence of a clear conflict resolution mechanism and inconsistent moral tone from management affect long-term team performance and decision-making integrity in engineering projects?
(Use the FlowMeter X case and your own understanding to identify practical strategies that could foster an ethically strong corporate environment.)

Q2. Loyalty and Collegiality:
How can conflicting interpretations of agency loyalty and collegiality among team members lead to ethical tensions in decision-making processes?
(Analyze how professional loyalty and mutual respect should be balanced when facing conflicting technical and managerial directives.)

Q3. Manager–Engineer Interaction:
Evaluate how the imbalance of executive and expert authority in the FlowMeter X case influenced project outcomes and team dynamics.
(Discuss which type of company structure—engineer-oriented, customer-oriented, or finance-oriented—best supports ethical engineering practice, and justify your reasoning with evidence from the scenario.)

Q4. Conflict Management:
Which types of conflict are most critical to resolve early in multi-disciplinary engineering teams, and why?
(Using the principles of conflict resolution, propose a practical framework the FlowMeter X team could use to navigate their disagreements over standards, deadlines, and resources.)