



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 5 Examination in Engineering: March 2026

Module Number: IS 5101

Module Name: Engineering Ethics (C18)

[Three Hours]

[Answer ALL questions. Each question carries 12 marks]

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- Q1** Why should professional engineers adhere to the following clauses of Engineering Ethics? Explain with appropriate examples and possible consequences.
(about 250 words per each)
- a) Engineers shall neither disclose nor use confidential information gained in the course of their employment without express permission, except where public interest and safety are involved.
[6.0 marks]
- b) Engineers shall not use the advantage of a privileged position to compete unfairly with other engineers.
[6.0 marks]
- Q2** Discuss the following scenarios while stating whether each scenario represents ethical or unethical conduct, with justification based on the IESL Code of Ethics.
(about 150 words per each)
- a) Mr. Dimuthu is a a reputed engineer in Sri Lanka working in a public sector organization. With the rise of the living cost in Sri Lanka, he has started an online pyramid scheme as a new business to earn extra money. He has requested from many people around him to invest in his business and recruit many investors continuously while emphasizing that at the end they can receive a massive profit. Since Mr. Dimuthu is reputed engineer in the society, many people believe his promise and keep on investing and recruiting many more investors to this business expecting a massive profit at the end.
[4.0 marks]
- b) Mr. Herath is a recently graduated computer engineer. Currently, he is working in an IT firm. He is not happy about the monthly salary he receives from the firm. Hence, he is applying for new job opportunities in leading IT firms expecting a good salary. Since leading IT firms look for many other qualifications and certifications in programming aspects, he has prepared some fake service letters and certificates to get selected for the new job. Finally, he could get selected to a new job in a leading IT firm and get a higher salary than he expected.

[4.0 marks]

- c) Ms. Shiromi is an engineer working in a leading manufacturing firm. She discovers that another engineer (Mr. Sahan) who is working in the same firm, has been downloading restricted files that contain trade secrets about a new product that the Mr. Sahan is not personally involved with. Ms. Shiromi knows that Mr. Sahan has been having financial problems as he is a school time friend of Ms. Shiromi. She fears the Mr. Sahan is planning to sell the secrets or perhaps leave the company and use them in starting up his own company. Ms. Shiromi complained this to top management and Mr. Sahan lost his job because of that after an inquiry.

[4.0 marks]

- Q3 a) *Bhopal: A Prayer for Rain* is a 2014 Indian English-language historical drama film based on the Bhopal disaster. The film highlights various ethical and unethical behaviors exhibited by different groups, including engineers, business owners, doctors, journalists, politicians, and the general public. Explain in detail the unethical behaviors of three of these groups as depicted in the film, providing specific examples of their actions and the consequences of their misconduct. (Students enrolled in the IS 5101 – Engineering Ethics module were requested to watch this film before the examination. To facilitate this, the lecturer provided necessary instructions and resources on the LMS).

(about 100 words per each)

[6.0 marks]

- b) Suppose you are an expert in Engineering Ethics. You are asked to develop a code of ethics for politicians (e.g., ministers, parliamentarians) in Sri Lanka with reference to the IESL code of ethics to minimize the unethical practices of politicians. Propose at least 3 major clauses from the IESL code of ethics and discuss why you have selected them to include in the code of ethics for politicians

(about 100 words per each)

[6.0 marks]

- Q4 On August 10, 1978, a Ford Pinto was hit from behind on a highway in Indiana. The impact of the collision caused the Pinto's fuel tank to rupture and burst into flames, leading to the deaths of three teenage girls riding in the car. This was not the first time that a Pinto had caught on fire as a result of a rear-end collision. In the seven years following the introduction of the Pinto, there had been some 50 lawsuits related to rear-end collisions. However, this time Ford was charged in a criminal court for the deaths of the passengers. This case was a significant departure from the norm and had important implications for the Ford engineers and managers. A civil lawsuit could only result in Ford being required to pay damages to the victim's estates. A criminal proceeding, on the other hand, would indicate that Ford was grossly negligent in the deaths of the passengers and could result in jail terms for

the Ford engineers or managers who worked on the Pinto.

The case against Ford hinged on charges that it was known that the gas-tank design was flawed and was not in line with accepted engineering standards, even though it did meet applicable federal safety standards at the time.

During the trial, it was determined that Ford engineers were aware of the dangers of this design, but management, concerned with getting the Pinto to market rapidly at a price competitive with subcompact cars already introduced or planned by other manufacturers, had constrained the engineers to use this design.

The dilemma faced by the design engineers who worked on the Pinto was to balance the safety of the people who would be riding in the car against the need to produce the Pinto at a price that would be competitive in the market. They had to attempt to balance their duty to the public against their duty to their employer. Ultimately, the attempt by Ford to save a few dollars in manufacturing costs led to the expenditure of millions of dollars in defending lawsuits and payments to victims. Of course, there were also uncountable costs in lost sales due to bad publicity and a public perception that Ford did not engineer its products to be safe.

(Original Source: Engineering Ethics, authored by Charles B. Fleddermann, 2012)

- a) Explain in detail the unethical behavior demonstrated by design engineers in this case. (about 50 words)
[2.0 marks]
- b) If you are the chief design engineer in that company, explain how you will behave from the beginning of the Ford Pinto design process to ensure the safety of the users. (about 150 words)
[4.0 marks]
- c) Discuss why engineers should hold paramount the health, safety and welfare of the public in the performance of their professional duties while taking precedence over their responsibility to the profession, sectoral or private interests, employers or to other engineers. (about 300 words)
[6.0 marks]

Q5 Prabath, an environmental engineer, has worked for several years for a company that operates massive production plants. Manufacturing so many products create significant waste, some of which is considered hazardous, requiring extensive documentation, reporting, and proof of proper disposal according to government standards. One year, the Central Environmental Authority (CEA) selected Prabath's manufacturing company for an audit covering the entire waste management and disposal processes used at the plants. As part of the audit, three years' worth of records were to be studied and reported on. Prabath reviewed the thousands of documents and developed the associated reports.

His extensive review uncovered a few errors in the past records revealing that hazardous waste disposal was not done correctly by past environmental engineers. Because an important part of waste management is done essentially with record keeping, he knew the CEA would not appreciate the errors in the reporting processes. Prabath met with his supervisors to inform them of the errors.

They also recognized that the CEA would be displeased with these errors, and they feared the consequences. Prabath's supervisors then asked Prabath to make this problem go away. They didn't want to hear any more about these errors and they didn't think the CEA should hear about them either.

- a) Identify 2 parties who have violated Engineering Ethics according to this scenario.
[2.0 marks]
- b) Identify the ethical violations done by these 2 parties?
[2.0 marks]
- c) As a professional engineer, what should Prabath do in such a situation?
Explain your answer. (about 100 words)
[2.0 marks]
- d) Discuss about engineer's ethical responsibilities towards the environment according to the IESL code of ethics. (about 300 words)
[6.0 marks]