

The Open University of Sri Lanka
 Faculty of Engineering Technology
 Department of Electrical & Computer Engineering



Study Programme	: Bachelor of Software Engineering Honours
Name of the Examination	: Final Examination
Course Code and Title	: EEI5280 Creative Design
Academic Year	: 2024/2025
Date	: 12 th August 2025
Time	: 0930 - 1230
Duration	: 3 hours

General Instructions

1. Read all instructions carefully before answering the questions.
2. Answers should be written in the answer book provided. Answer for each question should commence from a new page.
3. This question paper consists of **Four (4) questions in Two (02) pages** including this cover page.
4. Answer all questions.
5. This is a Closed Book Test (**CBT**).
6. Answers should be in clear handwriting.
7. Do not use red color pen.

Read the following Case Study carefully and answer the questions.

Reducing Single-Use Plastic in Urban Sri Lanka

Sri Lanka faces a severe issue with plastic waste, especially single-use plastics such as shopping bags, straws, and packaging. Despite government bans and awareness campaigns, implementation has been inconsistent. Plastic pollution continues to impact animals, marine ecosystems, urban drainage, and public health. NGOs and startups have tried to introduce many alternatives like biodegradable bags and reusable containers, but adoption remains low.

A social enterprise named Eco Wave wants to create a sustainable, user-friendly, and scalable solution to drastically reduce single-use plastic in urban households and businesses. They have decided to apply the Design Thinking Process to generate innovative solutions. Eco Wave has recruited as an expert design consultant.

Question 01

- (a) Write a memo to Eco Wave's board explaining what Design Thinking is and justify why this approach is suitable for solving the single-use plastic problem in Sri Lanka.
(08 Marks)
- (b) Outline and briefly describe the major steps of Design Thinking. For each step, explain how it specifically applies to the plastic waste issue described in the case study.
(12 Marks)

- (c) Critically evaluate the Design Thinking process by comparing it with a traditional linear problem-solving approach (e.g., Waterfall model) emphasizing how Design Thinking encourages more innovative and sustainable solutions. (05 Marks)

Question 02

- (a) Apply the “5 Whys” method to identify the root cause of Sri Lanka’s persistent single-use plastic problem, based on the case study. Present your analysis clearly. (10 Marks)
- (b) Identify five key stakeholders of the problem and analyze their role, influence, and interest in solving the problem. (05 Marks)
- (c) Propose a user research plan that Eco Wave should undertake to ensure their solution is user-centric and addresses real pain points. Briefly describe at least two tools/techniques that they can use during this process. (10 Marks)

Question 03

- (a) Generate three innovative solutions to address single-use plastic waste in urban Sri Lanka. For each solution, explain: ($3 \times 5 = 15$ Marks)
- i. The core idea
 - ii. The design features that make it user-friendly and sustainable
 - iii. Potential limitations or risks
- (b) From your proposed solutions, select the most viable one and justify your choice using criteria such as feasibility, cost, scalability, and impact. (08 Marks)
- (c) Identify two additional issues related to plastic waste (not mentioned in the case study) that Eco Wave should anticipate and briefly suggest how these might be addressed. ($2 \times 3 = 06$ Marks)

Question 04

- (a) Describe how Eco Wave can ensure that the chosen solution is viable and user centric. (03 Marks)
- (b) Identify three major challenges Eco Wave may face when implementing the chosen solution and suggest strategies to overcome each. (06 Marks)
- (c) What are the considerations on each of the following aspects that Eco Wave must address in implementing a solution to the Plastic Waste Problem in Sri Lanka: ($3 \times 4 = 12$ Marks)
- i. Ethical
 - ii. Legal
 - iii. Societal
 - iv. Environmental