THE OPEN UNIVERSITY OF SRI LANKA

Faculty of Engineering Technology
Department of Mathematics and Philosophy of Engineering

Bachelor of Science Honours in Engineering

Bachelor of Software Engineering Honours

Bachelor of Industrial Studies Honours

Final Examination (2023/2024)

MHJ5342/MHJ5372: TECHNOLOGY, SOCIETY AND ENVIRONMENT

(Open-book Examination)

Date: 2nd February 2025 (Sunday) **Time: 13:30 hrs. – 17:30 hrs.**

Please answer a total of five questions only.

Start each answer in a separate answer book. Clearly mark your index number on each answer book. Please make sure that you submit five answer books.

Please DO NOT copy directly from a text. If you have to quote, please do so within inverted commas.

Q1. Assume you are appointed to revise the criteria for awarding the gold medal for the best engineering research conducted by students of the Faculty of Engineering Technology. Discuss the factors that should be evaluated and the weight assigned to each factor. (*Hint*: Use knowledge gained from sessions on the interconnectedness of technology, society, and the environment.) *(100 marks)*

Q2. Discuss whether technology is neutral, using Information and Communication Technology (ICT) as an example. *(100 marks)*

Q3. (a) Discuss the factors contributing to internal and external brain drain. *(40 marks)*

(b) There is a perception that Sri Lankan experts living abroad should return to help the country become developed. How valid is this perception? Critically discuss. *(60 marks)*

Q4. Explain why the "Gender in Development" approach is superior to the "Women in Development" approach. *(100 marks)*

Q5. "According to the second law of thermodynamics, we are moving toward a 'dead world' one day." Using the concept of "open systems," which enables life to exist, argue against this statement. *(100 marks)*

Q6. Electric buses are being introduced as a means of achieving sustainability in the public transport sector.

Argue:

(a) In favor of this measure. *(50 marks)*

(b) Against this measure. *(50 marks)*

Q7. Artificial Intelligence (AI) has permeated all aspects of human life, raising serious questions about how academic assessments of students are conducted. For instance, the utility of TMAs (Tutor Marked Assignments) as assessment tools is under scrutiny. Discuss how student assessments can be adapted in an AI-dominated world. *(100 marks).*

Q8. How can engineers incorporate sustainable development principles into the design, construction, and operation of infrastructure projects to minimize environmental impacts while maximizing economic and social benefits? Address factors such as renewable energy, resource efficiency, waste management, and community engagement. *(100 marks).*

Q9. Discuss renewable and alternative energy sources with the most potential to address climate change. From the five main sources (wind, solar, hydro, nuclear, and biofuels), select two for comparison.

(a) What are the benefits and drawbacks of each? *(50 marks)*

(b) Recommend a form of energy for wide-scale adoption in Sri Lanka, considering geographical factors. *(25 marks)*

(c) Recommend a form of energy for global adoption, considering geographical factors. *(25 marks)*

Q10. (a) Briefly explain each step of the scoping process under EIA (Environmental Impact Assessment) procedures. *(50 marks)*

(b) What are the challenges of conducting EIA in Sri Lanka? *(20 marks)*

(c) What are the key benefits of conducting a Strategic Environmental Assessment (SEA)? *(10 marks)*

(d) Briefly explain the key steps involved in conducting SEA. *(20 marks)*

Q11. 'Visual pollution' refers to the degradation of the visual environment's quality, assessed as an aesthetic composition. Unlike other aesthetic compositions, the visual environment cannot be recreated; it can only be transformed. If the quality deteriorates during transformation, it is termed 'visual pollution.'

(a) How do you define "composition" in aesthetics? *(10 marks)*

(b) Describe the following fundamental characteristics of a composition: *(40 marks)*

i. Unity
ii. Balance
iii. Harmony and contrast
iv. Rhythm

Hypothetical Development Project:

Assume a proposal to convert Kandy Lake into a water park to attract tourists. The plan includes demolishing the existing *Walakulu Bamma* around the lake and introducing activity spaces such as boatyards, water play equipment rental centers, and food outlets. Additionally, floating restaurants and a Chinese-style restaurant on the man-made island within the lake are proposed.

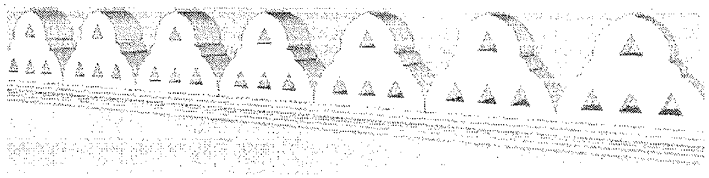


Figure -'Walakulu Bamma' (which translated to 'Cloud Wall')

As an Environmental Impact Assessment Officer, write a short report analyzing the potential impact on environmental aesthetics due to the proposed development. *(50 marks)*

- The End -