



Department of Mathematics and Philosophy of Engineering
Bachelor of Technology/ Software Engineering

Level 5

MPJ5233/MPJ5263 - Technology, Society and Environment
Final Examination - 2013/2014 (Open Book Examination)

Date: 07.08.2014

Time: 09.30 a.m.- 13.30 p.m.

Instructions

- Answer any Six (6) questions in your own words.
- Marks will be deducted, if a direct copy from the texts or the references.
- This paper contains 3 pages

1. (a) Define the term "sustainable development". (25%)
(b) "Engineers have a special responsibility for achieving the goal of sustainable development". Discuss critically. (75%)
2. (a) What is "environmental impacts assessment". (25%)
(b) List down the importance of the Environmental Impact Assessment report for an engineer who is responsible to project implementation. (25%)
(c) The Sri Lanka railway department developed a proposal to construct the express railway line parallel to the southern expressway. Assuming that, you are a member of the EIA team critically evaluate environmental, social and economic effects of the project. (50%)
3. Briefly discuss how modern lifestyles of present people contribute to disrupting the biogeochemical cycles. (100%)

4. (a) Briefly discuss why there is a growing concern among people on the health impacts of mobile phones. (50%)
- (b) As an engineer, discuss ways through which you could help people to understand the health effects of mobile phone use. (50%)
5. (a) Define “visual environment” and “visual pollution” (30%)
- (b) Assume that, after graduation, you were appointed as an engineer at the Urban Development Authority. Your first assignment is to improve the Nugegoda city area as a place of scenic beauty. Briefly discuss how could you improve the city without disturbing the visual environment. (70%)
6. Out of the six major scenarios (i.e. Scenario A1F1, Scenario A1B, Scenario A1T, Scenario A2, Scenario B1 and Scenario B2) predicted by the Intergovernmental Panel on Climate Change (IPCC), What you think is the most likely scenario we will be able to witness by 2050. Critically justify your answer. (100%)
7. Write short notes on three of the following (100%)
- (a) Basic resources for production.
- (b) Development of renewable energy sources.
- (c) Initial environmental examination.
- (d) Habitat destruction due to development.
8. (a) Describe what is meant by,
- i. External brain drain. (15%)
- ii. Internal brain drain. (15%)
- (b) Critically discuss (i) the reasons for external and internal brain drain and (ii) argue the case that brain drain is not desirable for a third world country. (70%)
9. (a) Describe the difference between “sex” and “gender”. (20%)
- (b) “Representation of women in engineering education and in the profession is very low”. What do you think are the reasons for this status of affairs? (50%)
- (c) Discuss ways to improve women’s representation in engineering. (30%)
10. (a) List down characteristics of low entropy and high entropy. (25%)

- (b) Draw a graph of entropy change of a human being from birth to death. (20%)
- (c) "High quality, energy has a low entropy value, low quality, energy has a high entropy value". Critically discuss the above statement in term of the second law of thermodynamics. (55%)

11. Use your knowledge of the connectedness of technology in society and environment to critically discuss the following paragraph. (Hint: take the material, shape and purpose of a technical artifact as an example)

"We need to remind ourselves that when we talk of the technological, we are not talking about the purely technological - that no such beast exists. Rather, we are saying that the technology is social. Already, then, we find that we need to blur the boundaries of categories that are normally kept apart. There is no real way of distinguishing between a world of engineering on the one hand and a world of social on the other". - Wiebe E. Bijker and John Law

(100%)