THE OPEN UNIVERSITY OF SRI LANKA
Faculty of Engineering Technology
Department of Mathematics and Philosophy of Engineering

Bachelor of Technology Honours in Engineering
Bachelor of Software engineering Honours
Bachelor of Industrial Studies Honours

Final Examination (2017/2018)
MHJ5533/5563/MPJ5233/5263:TECHNOLOGY SOCIETY AND ENVIRONMENT

(Open-book Examination)

Date: 19th January 2019 (Saturday) **Time: 9:30 am – 13:30 pm**

Please answer a total of <u>six questions only</u>. Do not use more than 400 words to answer any question.

The questions are grouped in the following manner: Part A: Q1-4; Part B: Q5-6; Part C: Q7; Part D: Q8-9; Part E: Q10-11. Please ensure that <u>answers for questions in different parts are given in separate answer books.</u> Clearly mark your index number and the part you are answering on each book.

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

Part A

Q1.

i) Give 5 examples for each category of following needs.

a) Basic needs
b) Constructed needs (30 marks)

ii) Discuss whether we can sustain the existing world as we see it today if we decide that all human needs should be legitimate needs. What things will we have to give up and what things can we retain for example? How will the world look under such a scenario? (Hint: Use 4 conditions of legitimate needs as your guideline for the discussion) (70 marks)

Q2.

Discuss in detail why the status of research is poor in Sri Lanka. (100 marks)

Q3.

i) "Foster a science, technology and innovation culture that effectively reaches all citizens of the country" is policy objective no. 1 of the National Science and Technology Policy in Sri Lanka. Discuss ways through which this objective can be achieved. (50 marks)

ii) "Promote basic, applied and developmental research, particularly in areas of national importance and priority" is policy objective no. 4 of the National Science and Technology Policy in Sri Lanka. Identify and describe 6 such areas of national importance and priority. (50 marks)

Q4.

Many countries in Europe are promoting cycling in a major way as a solution to the transport problem. There are instances of cycling being given priority over motor vehicle driving in transport planning. Cycling so far was a part of popular culture also in East Asian countries. China was once known as the kingdom of bicycles. Cycling was the popular mode of transport in Jaffna and Batticaloa till recent times. Write an essay discussing how cycling can be one of the solutions to problems faced by Sri Lankans in transport. (100 marks)

Part B

Q5.

i) List down basic resources for production? (10 marks)

ii) What are the resources required under each category of basic resources for production to establish an automobile assembling industry in Sri Lanka? Out of the resources you have mentioned which resources are available in Sri Lanka?(30 marks)

iii) Discuss the advantages and disadvantages of establishing the above mentioned industry based on your list of resource required and their availability.(30 marks)

iv) If the government has taken a decision to strengthen local human resources required to bring the industrial sector to an advanced stage, what types of steps can be taken to achieve the objective? (30 marks)

Q6.

i) Briefly describe the relationship between quality of energy, order and entropy. (20 marks)

ii) If there exists a mechanism to export the entropy generated by human activities from the earth to outer space, living beings on earth will be safe from catastrophic incidents caused by increased entropy (e.g. environmental pollution). Discuss.(80 marks)

Part C

Q7.

Agriculture is one of the key sectors affected negatively with current and projected impacts of climate change. Rainfed paddy farmers (those who do not have irrigation facilities for paddy cultivation and depend on the rain) are the most vulnerable for climate change impacts compared to paddy farmers under main irrigation schemes.

i) Briefly analyze the above statement with your arguments. Provide examples where possible. (50 marks)
ii) What would you recommend as adaptation strategies for small scale rainfed paddy farmers in Sri Lanka?(50 marks)

Part D

Q8.

Imagine that you are in the interview panel for recruiting a software developer for a well-known software company in Colombo. Although the company has working hours from 8 am to 5 pm, your employees often have to stay over time to achieve the deadlines. You have shortlisted a male and a female graduate with the same qualifications fresh out from a recognized university in Sri Lanka. Critically discuss how the gender attribute of the applicants would be considered in your recruitment? If the gender attribute has nothing to do with your recruitment, explain why? (100 marks)

Q9.

Sweden is implementing a gender-neutral kindergarten system in which kids will not be raised with the stereotypes of being a boy or a girl. Analyze the possible consequences of this system including the future use of technology and technological developments. (100 marks)

Part E

Q10.

"You look everywhere; you will find examples of engineering having positive and negative effects on visual pollution. Visual pollution is an aesthetic issue and refers to the impacts of pollution that impair one's ability to enjoy a vista or a pleasing view".
While keeping in mind the above statement, answer the questions below.

i) By taking examples from a city of your choice, discuss in brief how undesirable urban development could disturb the visual environment. (60 marks)
ii) How can you prevent visual pollution while working as an engineer? (40 marks)

Q11.

i) Define the term "Environmental impact assessment (EIA)". (10 marks)

ii) Give an example of the engineering development project in Sri Lanka. Identify potential negative and positive impacts of the proposed engineering development project. (60 marks)

iii) Write mitigatory measures you could suggest to minimise negative impacts of the project and propose two alternatives for the project. (30 marks)

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