



THE OPEN UNIVERSITY OF SRI LANKA  
BACHELOR OF TECHNOLOGY – LEVEL 05  
FINAL EXAMINATION – 2005  
MPU 3303 – TECHNOLOGY, SOCIETY & ENVIRONMENT  
DURATION: FOUR HOURS (ESSAY TYPE PAPER)  
OPEN BOOK EXAMINATION

035

Date: 8<sup>th</sup> April 2006

Time: 13.30 hr. - 17.30 hr.

The questions are grouped in the following manner:

Part A : Q1 – Q4

Part B : Q5 – Q9

Part C : Q10

Please ensure that answers for questions in different parts are given in separate books.  
Mark your Index Number and the Part you are answering on each book.

Please answer a total of six questions, choosing not more than three from any single part.  
Do not use more than 300 words to answer any question.

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

**Part A**

1. In which ways has technology been successful in satisfying human needs in a sustainable manner? Give an example of such a successful technology.  
In contrast name a technological development, which resulted on a failure. The failed technology cited by you should have failed to satisfy a human need adequately or not being sustainable or both.
2. Write short notes on the following;
  - a) Ecological cycles
  - b) A food chain
  - c) An ecological niche
  - d) A habitat of an organism
3. What is the primary function of a power station, choose between the following two options,
  - a) It generates Energy
  - b) It raises the quality of energy from a 'raw' form to electrical energy.Can you think of reasons as to why France's power consumption increased by a significant amount while undertaking a rapid increase in Nuclear power?

Contd/

4. What is the underlying assumption when using discount rates to evaluate the cost/benefit of a project?  
If some project was to yield long-term benefits, say in about 200 years what value of discount rate would you suggest?  
What other criteria (other than economic factors) should one use in evaluating a project. State some of the criteria you would use.

### **Part B**

5. a) Discuss the importance of Hydrological cycle (water cycle) for the existence of sustainability in the environment.  
b) What are the major types of pollution to the environment?  
c) Discuss the possible social and environmental impacts of the proposed Norochcholei coal power project.
6. a) Give a brief account on "Why environmental management is necessary?"  
b) Discuss the main stages in the EIA process  
d) What is the main advantage in forming the Terms of Reference (TOR) in an EIA process
7. What are the main features of a Jaipur foot, which make it attractive to amputees in Sri Lanka?  
List at least three features and gives reasons for your selection.

**Question no 8 and 9 are based on the project description given below**

#### Introduction

*Tourism is one of the fastest growing sectors in the Sri Lankan economy. The government has launched an accelerated hotel development programme throughout the country to encourage the tourist industry. Anuradhapura being an ancient city of archaeological and religious importance attracts large tourist inflow. To cater for the increased number of tourists the Kulankulama site has been identified as a potential location for hotel development.*

*The purpose of the proposed action is to build a Resort Hotel having 75 rooms to cater for the increased number of tourists visiting Anuradhapura.*

*According to the National Environmental Act No 47 of 1980 and amended by Act No. 56 of 1988, any development project falling within the reservation of the full supply level of the reservoir should undergo an EIA, prior to the approval of the project. As the proposed site is located within Nuwarawewa Reservation the above requirement has to be fulfilled prior to approval.*

*Following description is an abstract section of the EIA report;*

#### Details of the project

*This site is 46 acres (18.4) in extent and is located within the village Ichchankulam, off Matala road at a distance of 8 Km from Anuradhapura town. The capacity of the hotel is 75 double bedrooms and will have facilities for dining, sports, and recreational activities and will include a Golf course, horse riding and water sports such as wind surfing boating etc.*

*Contd/*

*The concept of the design is an integrated plan consisting of indigenous environmental and ecological elements to achieve an environmental friendly hotel development.*

*Affected Environment*

- a) *Physical Environment: Lands, Land use and Landscape character, Fresh water systems, Infrastructure services like Electricity facilities, water, waste management, Transportation*
- b) *Biological Environment: The site is covered by a shrub jungle and does not consist of any rare or endangered plant species. Some part of the site becomes submerged by water during the rainy season. It has become nesting and breeding grounds for a number of bird species. Most of the birds found here are wetland birds. Fresh water fauna consists with both indigenous and introduced varieties.*
- c) *Social Environment: The members of this village community do not believe in that their Socio – economical and cultural life style would be affected at all, by constructing the hotel. In fact they gladly hope that the partially constructed hotel will be completed soon, so that the Hotel will improve their access road, Electricity, and other infrastructure facilities*

*The EIA team has identified the following aspects as most significant out of total list of impacts;*

- *Water supply*
- *Water pollution*
- *Degradation of fauna and flora*
- *Solid waste*
- *Visual quality*

- 8. a) Who would be the Project Approving Agency (PAA) for the above project?
  - b) Suggest a suitable method for impact identification for the above project. Describe how you set about in finding the significant impacts using that method.
  - c) Give a suitable mitigatory action plan for the impacts identified.
- 9. a) Who would be the suitable expertise in the EIA consultant team for the above project?
  - b) The total waste generation for the hotel would be approximately 450 kg per day. Since this area is located outside the Anuradhapura Municipal Council limits there is no system for solid waste management in the study area. Suggest a suitable method for solid waste management for the project.

**Part C**

- 10. Some commentators have claimed that the recent tsunami, which hit Asia and Africa, was caused due to human intervention on the ecosphere. If you agree which part of the ecosphere could have seen an impact?  
What type of human action do you think might have led to the tsunami?  
If you disagree, explain as to what type of natural activity could result in such a tsunami. Comment on the expected frequency of such occurrences.