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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER II  
SESSION 2010/2011**

**COURSE** : ENGINEERS AND SOCIETY  
**COURSE CODE** : BPK 4032  
**PROGRAMME** : 2BEE, 3BEE, 4BEE, 3BEI, 4BEI  
**EXAMINATION DATE** : APRIL/MAY 2011  
**DURATION** : 2 HOURS  
**INSTRUCTION** : ANSWER **FOUR (4)** QUESTIONS ONLY

THIS PAPER CONSISTS OF EIGHT (8) PAGES

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**Q1 (a)** Technological and economic efficiencies in providing service to the public are the expected benefits from the privatisation of public utilities companies in Malaysia. Discuss with examples whether the technological benefits of privatisation have been achieved.

(5 marks)

(b) With the rapid development in IT, would virtual Laboratories be a good substitute for real ones in engineering? Elaborate on the merits and demerits of the issue.

(5 marks)

(c) Today's, sustainability is not considered in most of the activities. These activities are grouped into four main categories.

(i) List all the categories and

(ii) Give some examples.

(5 marks)

(d) Explain and give some examples of major issues on the environment such as air pollution, chemical pollution, climate change, flora and fauna, and population.

(5 marks)

(e) (i) What is the Green House effect?

(ii) Referring to Green House effect, how does it happen?

(5 marks)

**Q2 (a)** Think of some type of risky or unsafe behavior in which you have participated.

(i) What made it seem unsafe?

(ii) Why did you do it anyway?

(iii) What does this tell you about your role as an engineer?

(5 marks)

- (b) What a doe's responsibility of a design engineer has to ensure that the products he designs are safe to use? A cell phone can be safely used by stopping the car while talking, but not everyone does this. Is this the engineers fault?

(5 marks)

- (c) In what ways could cell phones be made safe to use in automobile? On balance, is the use of cell phones in automobiles a safety risk or a safety enhancement?

(5 marks)

- (d) What new ethical issues do you think nanotechnology brings about? What are the pitfalls of introducing a new technology without thorough testing of its safety? Is it possible to thoroughly test the safety of new technology before it is introduced?

(5 marks)

- (e) Do you think the attempts of the government to change the way technologies are introduced by requiring research on the societal and ethical implications of the technology are practical? Why?

(5 marks)

- Q3** (a) What is the most promising energy source to replace fossil fuels? Explain where and how it is produced in Malaysia.

(5 marks)

- (b) (i) Do we need to control the population?  
(ii) What is the best way to achieve this?

(iii) Is it ethical for governments to set rules and regulations to control the population?

(5 marks)

(c) Explain how to become a Professional Engineers. List five (5) characteristics of Professional Engineers. According to statistics in 1998: 23,856 graduate engineers are registered with board, only 9,316 are professional engineers. How does it happen?

(5 marks)

(d) The Board of Engineers Malaysia (BEM) is a statutory body constituted under the Registration of Engineers Act 1967. It was formed on 23 August 1972. BEM falls within the domain of responsibility of the Minister of Works. The appointment of the Board Members and the Register is made by the Minister. In essence, the Board is established for regulating the professional conduct and practice of registered engineers in order to safeguard the public safety and interest. Describe the function of BEM.

(5 marks)

(e) The Institution of Engineers, Malaysia (IEM) is a professional learned society serving more than 15,000 members in Malaysia, overseas and the communities in which they work. It was formed in 1959 and was admitted a member of the Commonwealth Engineers Council in 1962. The Institution is a qualifying body for professional engineers in Malaysia. Briefly describe the objectives of IEM.

(5 marks)

- Q4** (a) (i) What is moral theory?  
(ii) Why we need to learn moral theories?

- (iii) List four (4) moral theories.  
(5 marks)
- (b) All engineering projects are constrained by the availability of time and money. Some challenges that the flood control system in Malaysia was designed as well as it could be given the financial constraints put on the engineers. What should engineers do if they don't have the budget required to do the job correctly? Which moral theory to use?  
(5 marks)
- (c) Briefly explain ISO 14000. Discuss the functions and future of ISO 14000.  
(5 marks)
- (d) (i) What are the opportunities and threats of EMS (Environmental Management System) to the Malaysian industry?  
(ii) How does Malaysia maintain and improve the environmental quality through the Malaysia Plans, and through rules and regulations?  
(5 marks)
- (e) Briefly explain the National Environmental Policy. Why did Malaysia develop the MSC (Multimedia Super Corridor)? What are the achievements?  
(5 marks)
- Q5** (a) The first part of the definition of a profession presented previously said that professions involve the use of sophisticated skills. Do you think that these skills are primarily physical or intellectual skills? Give examples from professions such as law, medicine, and engineering, as well as from nonprofessions.  
(5 marks)

(b) What is 'Conflict of Interest'? Explain using examples.

(5 marks)

(c) "Engineer A is employed by SPQ Engineering, an engineering firm in private practice involved in the design of bridges and other structures. As part of its services, SPQ engineering uses a CAD software design product under a licensing agreement; SPQ Engineering is not permitted to use the software at more than one workstation without paying a higher licensing fee. SPQ Engineering ignores this restriction and uses the software at a number of employee workstations. Engineer A becomes aware of this practice and calls a 'hotline' publicizes in technical publication and reports his employer's activities"

(i) Was it ethical for Engineer A to report his employer's apparent violation of the licensing agreement to the 'hotline'? Explain why.

(ii) What is Engineer A's obligation in this case?

(5 marks)

(d) The Bakun Hydroelectric Project (BHEP) was first proposed in the 1980s as part of series of dams to exploit the hydroelectric potential of Sarawak's rivers. However, it is opposed by many in the indigenous communities, together with opposition political parties, a coalition of over 40 Malaysian NGOs, other NGOs and individuals. Both government and NGOs have their justification on this project. The government's main argument for the project is that it is a cheap source of energy, while NGOs argue that the project involves considerable and possibly prohibitive risks, and such a massive project would have considerable environmental impact. As an engineer in future, do you agree with the project? Why?

(5 marks)