



First Semester Examination  
2020/2021 Academic Session

February 2021

**EUP222 – Engineers in Society**

Duration : 2 hours

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Please check that this examination paper consists of **NINE (9)** pages of printed material before you begin the examination.

**Instructions** : This paper contains **FOUR (4)** parts. Answer **ALL** questions.

**Each part must be answered in a separate booklet.**

**Parts A, B, C & D – Compulsory**

All questions **MUST BE** answered on a new page.

**PART A**

1. (a). Describe the following terminologies with appropriate example for explanation purposes.

(i). Emotional skill

(ii). Project Time Management

[10 marks]

(b). The acquisition of new personnel for a particular job vacancy can be made either through outsourcing candidate or promotion of an in-house staff within the organisation. Please use appropriate example to support your explanation.

(i). Demonstrate advantages and disadvantages of an in-house staffing/recruitment if compared to an outsourced candidate

(ii). Illustrate key criteria that would be useful to decide whether to carry out an in-house promotion or outsourcing.

[15 marks]

...3/-

**PART B**

2. Dantera Engineering Company (DEC) has an opportunity to offer new service to an industrial client, but has to purchase supplies and equipment from a manufacturer in order to provide that service. The contract is for 5 years with an option for renew. DEC is responsible for all costs of promotion and distribution of its new service. After a detailed study, DEC has estimated that the following costs and revenues would be associated with the new service:

<b>Information:</b>	<b>RM</b>
Annual revenue and costs:	
Sales revenues	200,000
Cost of goods sold	125,000
Operating costs (for salaries, advertising and other direct costs)	35,000

As an engineering student with finance knowledge in project investment, you are requested to assist this company according to the following scenarios:

- (a). Before deciding on this investment, explain the key elements of project finance decision.

[8 marks]

- (b). Based on the above information, analyze the annual net cash inflows for this project.

[3 marks]

...4/-

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- (c). Dantera Engineering Company also plans to produce a new product and its production requires a special equipment costing RM 1,600,000. The new product is expected to increase the company's annual revenue by RM1,200,000. Materials, labor, etc. will be RM 500,000 per year. DEC will depreciate the special equipment over 4 years using the straight-line method of depreciation. Tax rate is 40%. Analyze the net income for this new product.

[4 marks]

- (d). Based on information given in (c), analyze after-tax operating cash flows.

[3 marks]

- (e). Based on the condition of cash flow in (d), justify whether Dantera Engineering Company should proceed to produce this new product based on the company's cash flow.

[7 marks]

...5/-

**PART C**

3. (a). Explain the term “Conflicts of Interest” in engineering practises.

[5 marks]

- (b). Demonstrate the needs and consideration of ethics for engineers in the era of Industrial Revolution 4.0.

[10 marks]

- (c). As a potential Professional Engineer with Practicing Certificate, explain the condition and procedure in which you are entitled to take over the work of another registered engineer.

[10 marks]

**PART D****Article 1****ODOUR POLLUTION IN SUNGAI SELANGOR AGAIN, WATER CUTS AGAIN, 1.1 MILLION PLUS ACCOUNTS AFFECTED**

**PETALING JAYA:** Water contamination has been detected in Sungai Selangor again causing unscheduled water cuts to 1,139,008 accounts across the state.

Pengurusan Air Selangor Sdn Bhd (Air Selangor) said it had to issue a stop-work order on its Phase 1,2,3 and Rantau Panjang water treatment plants after the pollution was detected.

The water contamination at Sungai Selangor was detected at 12.45 pm on Tuesday (Nov 10), it said in a statement on Tuesday (Nov 10).

'The stop-work order is expected to affect water supplies involving 1,139,008 accounts covering 1,279 areas in Kuala Lumpur, Petaling, Klang, Shah Alam, Kuala Selangor, Hulu Selangor, Gombak and Kuala Langat," it said.

Air Selangor said that water supply to the areas mentioned would be shut down at 6 pm. As of 2.30 pm, the threshold odour number (TON) was recorded at eight TON at Rantau Panjang water treatment plant and four TON at Phase 1,2,3 at the Sungai Selangor water treatment plant.

It added that efforts to flush contaminants in Sungai Selangor would be done by releasing 300 million litres of water a day from the Sungai Selangor dam and 500 million litres a day at the Sungai Tinggi dam.

"Aside from that, the Selangor Water Management Authority (LUAS) has also released 192 million litres of raw water from the KL Larut pond for the same reason," it said.

LUAS earlier Tuesday (Nov 10) said the source of the pollution might be solvents that were found in Sungai Selangor, causing operations at the water treatment plants in Rantau Panjang, and Sungai Selangor's Phase 1, 2 and 3 to be stopped from 12.20 pm to 12.45 pm.

LUAS, Syarikat Bekalan Air Selangor Sdn Bhd (SYABAS), and other relevant authorities has started investigations while mitigation plans were executed, LUAS said on Twitter.

**Source:** *The Star*

**Date:** *Nov 10, 2020*

4. (a). Based on **Article 1** above, please answer **Questions 4 (a)**.
- (i). Which **THREE (3)** Sections (complete) in the Environmental Quality Act 1974 that are relevant to the issue mentioned in news article?
- [3 marks]
- (ii). A “stop-work’ order was announced in order to cease any operations that could further aggravate the situation and public health. What is the **PENALTY** for the offence of committing water pollution in the environment? And what is the compound if the offence still **PERSISTS** on a daily basis?
- [2 marks]
- (iii). Elaborate **TWO (2)** mitigation plans the companies can strategize out in order to resolve the water contamination problems.
- [4 marks]

**Article 2****CONSTRUCTION RELATED DEATHS AND INJURIES ALARMING**

**KUALA LUMPUR:** The growing number of deaths and injuries related to the construction industry is troubling. In 2018 alone, the industry recorded the highest number of deaths across the nation's economic sectors. The Occupational Safety and Health Department's (DOSH) statistics recorded 169 deaths and 3,911 accidents in the construction sector for 2018.

"The rate of fatality per 100,000 workers in the construction sector is 13.44 in 2018, as compared to 14.57 in 2017.

The former Chairman of the National Institute of Occupational Safety and Health told New Straits Times that Malaysia's Fatal Accident Rate (FAR) was not only 10 times worse than that of the United Kingdom but had in fact deteriorated by 20 per cent since the turn of the century, which was also reported by CIDB (Construction Industry Development Board).

It is urged that all stakeholders to step up efforts so that such tragedies do not recur. Authorities could start by making its reports public in the interest of accountability, transparency as well as to create awareness.

The public often hears about investigations being carried out by the authorities after a major accident but the findings are not make known. In the end, no preventive or remedial lessons remain unlearnt. This will jeopardize the public confidence towards safety in the construction industry. The site safety must also be stepped up.

Another way to improve safety and health (OSH) compliance is to encourage developers and contractors to use technology such as wireless technology combined with the latest software and gadgets, such as drone and remote sensing gear. This can enable safety managers to monitor workers and machines as well as assess the situation via their laptop or smartphone.

Stringent enforcement and policies must also be introduced through the strengthening of existing laws which include amending the Occupational Safety and Health Act (OSHA) 1994 to help the country face the new challenges in the light of the Industrial Revolution (IR) 4.0.

Construction workers also need to be given adequate training so that they know how to identify risks and to ensure that they can identify hazards as well as assess and control risks.

"Workers need to be trained so that they can conduct constant monitoring on safety aspects and identify potential hazards to avoid any untoward incidents. Evacuation training must also be conducted as part of the OSH management plan to ensure workers were prepared to face any incident. Authorities must also ensure that construction work conducted at the site comply with specifications set by experts."

***Edited from the Source: The Star***

***Date: Nov 10, 2020***



- (b). Please read **Article 2** above and answer **Questions 4.(b)**.
- (i). Based on the report in the article above, describe **THREE (3)** risks or hazards that are present in a construction site.  
[6 marks]
- (ii). Explain why do the public easily lose confidence towards the authorities when the matter concerns the workers' health and safety at the construction site? Explain further what should be done to rectify the situation.  
[4 marks]
- (iii). Based on the Occupational Safety and Health Act 1994, explain **THREE (3)** RESPONSIBILITIES of the EMPLOYERS to ensure the safety of their employees at work?  
[3 marks]
- (iv). Explain **TWO (2)** measures the DEVELOPERS or CONTRACTORS can carry out to improve OSH compliance.  
[2 marks]
- (v). List **TWO (2)** stakeholders of the construction industry.  
[1 mark]

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