

FINAL EXAMINATION SEMESTER II SESSION 2022/2023

COURSE CODE	: METE1153
COURSE	: OCCUPATIONAL SAFETY FOR ENERGY SYSTEM
PROGRAMME	: MASTER OF SCIENCE (ENERGY MANAGEMENT)
TIME	:
DATE	:

INSTRUCTIONS TO STUDENT:

- 1. ANSWER ALL QUESTIONS
- 2. STUDENTS ARE NOT ALLOWED TO REFER TO ANY NOTES OR ELECTRONIC DEVICES

CHEATING IS STRICTLY PROHIBITED DURING EXAMINATION

THIS EXAMINATION PAPER CONSISTS OF <u>4</u> PRINTED PAGES INCLUSIVE OF THIS PAGE

QUESTION 1 (25 Marks)

CLO	CLO1		CLO2	
	(a)	(b)	(c)	(d)
Marks	5	5	7	8

 (a) Evaluate the concept and fundamental of occupational safety in a manufacturing industry, emphasizing in energy system.

(5 Marks)

(b) Identify five (5) major types of occupational safety hazards.

(5 Marks)

(c) Discuss on the international standard that is widely used for establishment safety quality in industry. Elaborate and explain the important features of that standard.

(7 Marks)

(d) As a Safety Officer in a renewable energy plant, your job scope is to ensure overall safety and health in the company. In an unscheduled power interruption, a problem was identified to appear from the Low Voltage Room. The Maintenance Executive submitted a Permitto-Work (PTW) form to you for them to solve the power problem in the Low Voltage Room. Assuming the Maintenance Engineer has filled up the PTW correctly and completely, as a Safety Officer, you need to check and approve the PTW. Describe the anticipated plan and existing control measures to control occupational hazards prepared by the Maintenance Engineer.

(8 Marks)

QUESTION 2 (25 Marks)



You are a reputable safety consultant. Kencana Oleo Sdn. Bhd., a Small Medium Enterprise (SME) oil refinery company invited you to help them establish a proper safety management system (SMS) since they experienced a series of near miss incidents recently. Design and develop an SMS proposal complete with the required elements for the company. This proposal of yours will guide the company towards the realization of SMS implementation. (25 Marks)

QUESTION 3 (25 Marks)

CLO4		
25		

As an active progressive refinery, Kencana Oleo Sdn. Bhd. consumed substantial electrical power supplied by Tenaga National Berhad (TNB). Electricity is supplied from the grid to its substation, then to its Main Switch Board (MSB), then to its step-down transformer, and Low Voltage (LV) room. Once in a while chargeman and/or electrical engineers enter these spaces and perform numerous tasks, for example gear switching, cleaning and others.

Conduct a detailed and comprehensive Hazard Identification Risk Analysis Rick Control (HIRARC) on a minimum of five (5) possible activities that could take place in the substation, MSB, transformer room, and LV room. Tabulate your result in a proper HIRARC Table.

(25 Marks)

(CONFIDENTIAL)

QUESTION 4 (25 Marks)

CLO	CLO2		CLO5
	(a)	(b)	(c)
Marks	5	5	15

Controlling exposures to occupational hazards is the fundamental method of protecting workers. Traditionally, a hierarchy of controls (HOC) has been used as a means of determining how to implement feasible and effective control solutions. However, there is a changing in the landscape of safety and health in Malaysia i.e., from old controlling risk method to new prevention strategy via general principles of prevention (GPP) and prevention through design (PtD) method. The goal of GPP and PtD is to prevent or reduce occupational injuries, illnesses and fatalities by incorporating prevention considerations into all designs and operation parameter that affect workers.

- (a) Analyze the weaknesses of concept of control in HOC that led to higher accident rates in Malaysia.
 (5 marks)
- (b) Based on your professional opinion, critically analyses why GPP and PtD is more effective to prevent accident at work? (5 Marks)
- (c) Discuss how you can competently perform different approaches to increase the awareness on occupational safety aspect at workplace and among society? (15 Marks)