UNIVERSITI KUALA LUMPUR
INSTITUTE OF MEDICAL SCIENCE TECHNOLOGY

FINAL EXAMINATION

MARCH 2025 SEMESTER

COURSE CODE	:	HRB10203
COURSE TITLE	:	PRINCIPLES IN OCCUPATIONAL SAFETY & HEALTH
PROGRAMME NAME	:	BACHELOR OF OCCUPATIONAL SAFETY & HEALTH (HONOURS)
DATE	:	03 JULY 2025
TIME	:	2:00PM - 5:00PM
DURATION	:	3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consist of ONE sections.
4. Section A consist of five questions. Answer FOUR (4) questions only.
5. Please write your answer on the answer booklet provided.
6. Please answer all questions in English only.
7. Refer to the attached Formula/ Appendies. ☐ *Tick if applicable*

THERE ARE 6 PAGES OF QUESTIONS INCLUDING THIS PAGE

SECTION A (Total: 100 marks)

Answer FOUR (4) questions.

Please use the answer booklet provided.

Question 1

A workplace hazard includes obvious dangers like unguarded machinery and exposed electrical wiring, alongside more subtle issues such as poor workstation design leading to strain.

(a) Indicate SIX (6) types of mechanical injury.

(6 marks)

(b) Examine THREE (3) types of machine safeguard.

(6 marks)

(c) Find EIGHT (8) common electrical hazards in construction.

(8 marks)

(d) Predict FIVE (5) ergonomics risk factors that will impact musculoskeletal system.

(5 marks)

Question 2

A 55-year-old male construction worker on a high-rise building project in Kuala Lumpur, Malaysia, has recently shown a noticeable decrease in productivity and an increase in irritability. His work involves mixing concrete manually and carrying heavy bags of cement to different levels of the building. He wears normal short sleeve shirts and bandanna. He works for 9 hours with 3.5 hours of rest daily. The average heat exposure reading at the construction site during the workday is 26.2°C, with periods of direct sun exposure.

(a) Compute the risk level for above condition.

(10 marks)

(b) Choose the correct instrument and its part / sensors when assessing heat stress.

(5 marks)

(c) Examine FIVE (5) health impacts of heat stress to worker.

(10 marks)

Question 3

Occupational vibration refers to the physical vibration transmitted to workers' bodies through their work activities, primarily from machinery, tools or vehicles.

(a) Examine TWO (2) types of vibration and its source.

(4 marks)

(b) Calculate the daily duration permitted for a jackhammer usage if its vibration output is 6.5 m/s^2.

(8 marks)

(c) Predict how many workers in a day are required to perform a task, if the output of a concrete breaker is 10 m/s^2. The working hours is 8 hours daily.

(8 marks)

(d) Discover FIVE (5) health impacts to the workers upon exposure to vibration for a long period of time.

(5 marks)

Question 4

Fire safety refers to the set of practices and measures designed to prevent the outbreak of fires, limit the spread of fires once they occur and ensure the safe evacuation of people.

(a) Examine the elements that can cause fire.

(6 marks)

(b) Interpret the principle in using fire extinguisher.

(4 marks)

(c) Show the evacuation procedure in responding to emergency situation.

(5 marks)

(d) Construct the Incident Command System structure and its major branches.

(10 marks)

Question 5

Hazard control measures are strategies and actions taken to eliminate or reduce the risk of harm from hazards in the workplace or any environment. The goal is to prevent incidents, injuries, illnesses and property damage.

(a) Illustrate the Hierarchy of Hazard Control that is commonly used.

(10 marks)

(b) Select FIVE (5) actions that considered as administrative control that can be implemented by employer.

(5 marks)

(c) Identify FIVE (5) theories for accident causation.

(5 marks)

(d) Explain the overload expect under Peterson's Accident Theory.

(5 marks)

END OF EXAMINATION PAPER

Table 5: Clothing-Adjustment Factors for Some Clothing Ensembles*

CLOTHING TYPE	ADDITION TO WBGT (°C)
Work clothes (long sleeve shirt and pants)	0
Cloth (woven material) coveralls	0
Double-layer woven clothing	3
SMS polypropylene coveralls	0.5
Polyolefin coveralls	1
Limited-use vapor-barrier coveralls	11

Source: Table 1 Clothing adjustment factors from TLV s and BEIs by ACGIH 2015

* Clothing Adjustment Factors cannot be added for multiple layers.

Table 6: Metabolic Rate of Employees by Job Category (ACGIH 2015)

WORK CATEGORY	METABOLIC RATE	EXAMPLES
Rest	115 W	Sitting
Light	180 W	Sitting with light manual work with hands or hands and arms and driving. Standing with some light arm work and occasional walking.
Moderate	300 W	Sustained moderate hand and arm work, moderate arm and leg work, moderate arm and trunk work, or light pushing and pulling. Normal walking. Moderate lifting.
Heavy	415 W	Intense arm and trunk work, carrying, shovelling, manual sawing, pushing and pulling heavy loads, and walking at a fast pace. Heavy materials handling.
Very Heavy	520 W	Very intense activity at fast to maximum pace.

Source: Table 3 metabolic rate from TLV s and BEIs by ACGIH 2015

Table 7: Screening criteria for TLV and AL based on ACGIH TLV

SCREENING TLV					SCREENING AL			
% WORK	LIGHT	MODERATE	HEAVY	VERY HEAVY	LIGHT	MODERATE	HEAVY	VERY HEAVY
75 - 100	31.0	28.0	-	-	28.0	25.0	-	-
50 - 75	31.0	29.0	27.5	-	28.5	26.0	24.0	-
25 - 50	32.0	30.0	29.0	28.0	29.5	27.0	25.5	24.5
0 - 25	32.5	31.5	30.5	30.0	30.0	29.0	28.0	27.0

Source: Table 2 screening criteria for TLV and action limit from TLV s and BEIs by ACGIH 2015

Table 8: Risk Decision

RISK DECISION	
ADJUSTED WBGT VALUE	DECISION
WBGT adjusted < Action Limit	Low Risk
Action Limit < WBGT adjusted<TLV	Medium Risk
WBGT adjusted > TLV	High Risk