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UNIVERSITY OF ESWATINI

Faculty of Health Sciences
Department of Environmental Health Science



BACHELOR OF SCIENCE IN ENVIRONMENTAL
MANAGEMENT AND OCCUPATIONAL HEALTH

JULY 2019 RESIT EXAMINATION

TITLE OF PAPER : FUNDAMENTALS OF INDUSTRIAL HYGIENE
COURSE CODE : EHS 436
DURATION : 2 HOURS
MARKS : 100

INSTRUCTIONS

1. Read the questions & instructions carefully
2. Question 1 is compulsory
3. Then answer ANY OTHER THREE (3) questions
4. Each question is weighted 25 marks
5. Write neatly and clearly
6. Numbering within a chosen question should be in a sequential order
7. BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY
THE INVIGILATOR.**

EHS 436 FUNDAMENTALS OF INDUSTRIAL HYGIENE

QUESTION 1

- a) Write short notes on the 5 tenets of industrial hygiene (20)
- b) Give a brief description of the Tyndal Beam Light Effect? (5)

QUESTION 2

- a) If as an OSH officer one has to undertake a walk-through survey, what would be the rationale for such an exercise? (10)
- b) Workers exposed to various hazards will more often bring complaints to your office for your attention. Briefly outline the different steps that you would take to address this. (8)
- c) Define an non- IDHL atmosphere. (3)
- d) In relation to lighting, what do the following terms imply? (4)
 - i. Quality
 - ii. Quantity

QUESTION 3

- a) What biological indices would one find in the following media? (6)
 - i. Urine
 - ii. Blood
 - iii. Exhaled air
- b) Define the following terms used under OELs? (6)
 - i. Regulatory standard
 - ii. Voluntary guidelines
 - iii. Local limits
- c) Name the 2 bodies that were formed due to the industrial hygiene revolution in the USA around the 1920s – 1930s (4)
- d) Name the three (3) basic types of LEV hoods that industries may utilise to control workplace contaminants. (6)
- e) What do you understand by integrated sampling (3)

QUESTION 4

The following are multiple choice questions. Write the letter and corresponding number only. Each answer carries 1 mark. (10)

- a) Too many levels of management, chronic and recurring internal problems, and numerous meetings attended by many people are typically symptoms of:
- i. Poor communications.
 - ii. Lack of management training.
 - iii. Poor employee morale.
 - iv. A flawed organizational structure.
- b) Workers in a brass foundry complain of a fever and general malaise on Mondays following a weekend respite from work. You will plan to arrive at the plant equipped to obtain
- i. Blood samples to detect carbon monoxide exposures.
 - ii. Air samples to measure exposures to zinc fume.
 - iii. Potable water samples to detect PCB concentration.
 - iv. Urine samples to measure exposures to lead.
- c) A maintenance worker must enter an empty reactor vessel for cleaning, inspection and lining repair. In the absence of continuous ventilation and testing of the air in the vessel, you would recommend:
- i. An organic vapor respirator for the worker and a helper with a life line within earshot.
 - ii. Performance of the work at night with prior notice to the city's emergency response unit.
 - iii. Flushing the tank with a suitable organic solvent before the worker enters
 - iv. A Self Contained Breathing Apparatus and fixed life line for the worker and a helper directly outside the tank.
- d) The ACGIH Threshold Limit Value is primarily intended to guard against:
- i. Delayed lung edema.
 - ii. Respiratory tract irritation.
 - iii. Tubular kidney injury.
 - iv. Mottling of tooth enamel.

EHS 436 FUNDAMENTALS OF INDUSTRIAL HYGIENE

e) Which one of the following health effects may be manifested by chronic overexposure to benzene?

- i. Bladder tumors
- ii. Cholinesterase depression
- iii. Abdominal colic
- iv. Leukemogenic cancer

f) Why is it important to involve workers during potential hazard identification? (2).

g) List the considerations that a sampling and analytical procedure is dependent on (6).

h) In a point form, discuss sample collection considerations (7).

QUESTION 5

a) Comparing TWAs and STELs, what are the possible advantages of each over the other? (6).

b) What information would one need when interpreting data sampling results? (6)

c) List the considerations that a sampling and analytical procedure is dependent on (6).

d) In a point form, discuss sample collection considerations (7).