



UNIVERSITY OF SWAZILAND
Faculty of Health Sciences
Department of Environmental Health Science

BACHELOR OF SCIENCE IN ENVIRONMENTAL
MANAGEMENT AND OCCUPATIONAL HEALTH

JULY 2017 SUPPLEMENTARY EXAMINATION PAPER

TITLE OF PAPER : FUNDAMENTALS OF INDUSTRIAL HYGIENE
COURSE CODE : EHM 428
DURATION : 2 HOURS
MARKS : 100

INSTRUCTIONS

1. Read the questions & instructions carefully
2. Answer ANY OTHER FOUR (4) questions
3. Each question is weighted 25 marks
4. Write neatly and clearly
5. Begin each question in a separate sheet of paper
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.

QUESTION 1

- a) What are the 2 design features that SCBA for fire fighting are dependent on, and why are they expensive compared to other types? (6)
- b) What is the time lapse that can force fire rescuer's to manually rescue one of their own? (4)
- c) List the agricultural situations that would require SAR. (3)
- d) Name 5 types of quarter mask and state what they indicate. (5)
- e) Define filter efficiency. (1)
- f) What do the following letters used in respirators labelling mean?
N, R, P. (6)

[25 marks]

QUESTION 2

- a) If you were carrying out air sampling in the workplace, you would consider where to sample. What factors will you be focussing on? (8)
- b) How does a Tyndal Beam Light Effect function and what is its limitation? (10)
- c) Define a fit test. (3)
- d) List the possible sources of health hazards produced by heat in the workplace. (4)

[25 marks]

QUESTION 3

- a) Compliance surveys are carried out where exposure stressors are quantified and evaluated by comparison to published health standards. Name these standards. (4)
- b) If as an OSH officer one has to undertake a walk-through survey, what would be the rationale for such an exercise? (10)

- c) Workers exposed to various hazards will more often bring complaints to your office. Briefly outline the different steps that you would take to address this. (8)
- d) Define an IDHL atmosphere. (3)

[25 marks]

QUESTION 4

- a) If you were to quantify exposure, what would be the 3 key parameters you will take into account? (6)
- b) What biological indices would one find in the following media? (6)
 - i. Urine
 - ii. Blood
 - iii. Exhaled air
- c) Define the following terms used under OELs? (6)
 - i. Regulatory standard
 - ii. Voluntary guidelines
 - iii. Local limits
- d) Name the 2 bodies that were formed due to the industrial hygiene revolution in the USA around the 1920s – 1930s (4)
- e) Outline the three purposes of integrated sampling (3)

[25 marks]

QUESTION 5

- a) Name the three (3) basic types of LEV hoods that industries may utilise to control workplace contaminants. (3)
- b) What do the following acronyms stand for in industrial hygiene? (4)
 - i. PS4R and
 - ii. HSI
- c) Define Equivalent Sound Level (Leq). (4)
- d) Explain briefly what the following terms mean
 - i) Lower exposure action values: (4)
 - ii) Upper exposure action values: (4)

- iii) Exposure limit values: (4)
- e) What is the meaning of a 5dB doubling concept (2)

[25 marks]