UNIVERSITY OF SWAZILAND

Faculty of Health Science

Department of Environmental Health Sciences

JULY, 2014 SUPPLEMENTARY EXAMINATION

Title of paper: INTRODUCTION TO TOXICOLOGY I

Course code: EHM 314

Time allowed: 2 HOURS

Marks allocation: 100 Marks

Instructions:

1) Answer ANY FOUR (4) questions
2) Each question is weighted 25 marks
3) Write neatly and clearly
4) Begin each question on a separate sheet of paper

This paper is not to be opened until the invigilator has granted permission

QUESTION 1

a) Discuss therapeutic value and therapeutic indexes (10)
b) With regards to tolerance, what is dispositional tolerance? (5)
c) Write briefly about the functions of an analytical toxicologist (5)
d) The right dose differentiates a poison from remedy, write his statement in full. Who is famous for this statement, do you agree with his assertion and why? (5)

QUESTION 2

a) There are no harmless substances, there are only harmless ways of using substances, who is famous for this utterance, support his statement in not more than 5 lines (5)
b) What are the human's pathways of exposure to xenobiotic? (4)
c) Define a completed exposure pathway (6)
d) How do you measure exposure in a most precise way? (4)
   The following entities have to be taken into account;
e) Exposure to toxicants can be measured and quantified according to the media being analyzed, what are the units used in expressing quantity of the toxicant in the following media? (6)
   i. Solid
   ii. Liquid
   iii. Air

QUESTION 3

a) Match the following with the most accurate description, write the letters only. e.g. G) – 1. (10)

Item	Branch of Toxicology	Areas covered
A	Environmental	1.Identifies toxicants in body fluids or suspected containers
B	Clinical	2.Ensures a sumptuous meal is delivered
C	Analytical	3.Deals with attempted suicides
D	Descriptive	4.Responsible for the chemical dosage that might cause illness & disease
E	Food	5.Identification & quantification of poisoning
F	Forensic	6.Deals with DDT research in the environment

b) Schematically draw the dose-response curve and make the necessary labels? (5)

c) Contrast and compare the following (4)
   i. Therapeutic window
   ii. Therapeutic index

d) Define the following terms (4)
   i. Toxicity
   ii. Xenobiotic

e) What is the important concept of dose-response relationships? (2)

QUESTION 4

a) Humans can either be exposed to toxicants through dermal, inhalation or ingestion. However there are other routes that xenobiotics can enter the body. Name alternative routes that xenobiotics can be administered to humans (4)

b) Threshold Limit Values are expressed in three ways, name them (6)

c) Write short notes on the following (4)
   i. Electrophile
   ii. An addictive effect

d) Write the formulae to calculate the following (10)
   i. Exposure
   ii. ADD
   iii. LADD
   iv. RfD
   v. Oral dose

e) What do you understand by a target organ? (1)

QUESTION 5

a) Write short notes on the following as they relate to xenobiotic movements in the cell (6)
   i. Facilitated diffusion
   ii. Passive transfer
   iii. Active transport

b) What do you understand by an isotonic environment? (1)

c) Compare and contrast the following, LD_{50}, LC_{50} and TD_{50} (6)

d) What is the relationship between lysomes and vacuoles as regards waste substances? (4)

e) When considering movement of toxicants across cells, the mitochondria is called the power house of the cell, how so? (2)

f) What do the following acronyms stand for in toxicology? (6)

i. TD

ii. PEL

iii. sER