



UNIVERSITY OF SWAZILAND

Faculty of Health Science

Department of Environmental Health Sciences

Supplementary Examination

Title of paper: INTRODUCTION TO TOXICOLOGY I

Course code: EHS 560

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) If two chemicals are mixed together they produce different reactions that can either be more potent or even less than the parent one. Explain each of the following reactions (10)
 - i. Antagonism
 - ii. Synergism
 - iii. Additivity
 - iv. Potentiation
 - v. Covalent bonding
- b) Name the factors that affect absorption of toxicants through the dermal route (6)
- c) Write short notes on why the Blood Brain Barrier is vulnerable to toxicants (9)

QUESTION 2

- a) Discuss dose fractioning and give an illustration thereof (10)
- b) What are the physiological features that make the Blood Placental Barrier vulnerable to toxic insults (10)
- c) Write short notes on each of the following (5)
 - i. Tolerance,
 - ii. RfD,
 - iii. Biologically effective dose
 - iv. NOAEL
 - v. MTD

QUESTION 3

- a) The selection of test organisms is guided by some supposed favorable criteria on the experiment to be performed. What could these criteria be? (6)
- b) Name the reactions that are undergone by both Phases 1 and II reactions (8)
- c) What are the major factors that influence toxicity? (4)
- d) Which four (4) primary systems enzymes are responsible for impeding the first pass effect of a drug? (7)

QUESTION 4

- a) What is hypersensitivity (allergy)? (3)
- b) What are the most common symptoms of allergy? (5)
- c) Define "idiosyncratic reaction and give an example. (3)
- d) Give an example of a delayed toxic effect and name the potentially toxic chemical that causes it (4)
- e) Name 3 adverse effects that are essentially irreversible (6)
- f) What is systemic injury and what is a target organ? (4)

QUESTION 5

- a) Name 5 chemicals that are readily absorbed through the skin (5)
- b) What diameter of particle can reach the alveoli? (3)
- c) What are phagocytosis and tidal volume and why are they important in human toxicology? (5)
- d) How are inhalation and ingestion related with regards to toxicity? (6)
- e) What combinations of exposure pattern and chemical properties are likely to be the most harmful? (2)
- f) What are the key factors in determining whether injury follows exposure to a potentially toxic chemical? (4)