



UNIVERSITY OF SWAZILAND

Faculty of Health Sciences

Department of Environmental Health Science

May 2014 Main Examination

Title of paper: INTRODUCTION TO TOXICOLOGY II

Course code: EHS 561

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 in a separate sheet of paper**
- 5) Numbering within a chosen question should be in a sequential order**

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

QUESTION 1

- a) Whilst men are more supposedly exposed to toxicants during spraying activities in malarial parts of Swaziland, studies have shown that females tend to carry more of the brunt of the toxic insult than males. Why is this the case? (8)
- b) Toxicokinetics is a short version of what the body does to a drug. Outline the components that are contained in the broader definition thereof (7)
- c) Differentiate between intrinsic and low drug clearance (4)
- d) What are uncertainty factors and when are they used? (6)

QUESTION 2

- a) After a toxicant has been delivered to the cellular environment, there is interaction with the target molecule and/or alteration of the biological environment altogether. If the cell fails to repair itself, it then succumbs to death. Name 5 pathogenesis of the tissue organ that may be displayed after toxicity has set in (5)
- b) List 4 factors that can facilitate the accumulation of ultimate toxicants in the body and 4 factors that can impede the same (8)
- c) What advantages are conferred by apoptosis and pyroptosis during organogenesis? (4)
- d) Name the different types of metabolites that DDT is usually converted to in the body (6)
- e) How do the following present themselves in an organism? (2)
 - i. Embrolethality
 - ii. Embrotoxicity

QUESTION 3

- a) Write the following in full and indicate what they represent: (10)
 - i. UF_A
 - ii. UF_H
 - iii. UF_S
 - iv. UF_{BD}
 - v. MF
- b) Schematically draw an impression of an AUC indicating its relevant parameters and outline how it is derived (10)
- c) Discuss in brief what makes fetuses and children particularly vulnerable to neurotoxins (5)

QUESTION 4

- a) Outline the conditions that can favour pesticide runoff (5)
- b) List the severe changes that can be observed during dermal toxicity (6)
- c) Make a schematic presentation of the potential stages in the development of toxicity after a chemical exposure has occurred (7)
- d) Define the following terms (6)
 - i. Organotropism
 - ii. Signal transduction
 - iii. Fight – flight response
- e) What is the main objective of metabolism? (1)

QUESTION 5

- a) Differentiate between necrobiosis and apoptosis (6)
- b) Name the type of cell death that does not undergo programmed cell death (2)
- c) What are the different types of cell deaths that are known as type 1, 2, & 3? (6)
- d) List the 4 morphological characteristic aspects of type 3 cell death (4)
- e) Define gangrenous necrosis & what are the 2 types thereof (6)
- f) Define lytic necrosis (1)