



UNIVERSITY OF SWAZILAND

Faculty of Health Sciences

Department of Environmental Health Science

MAY 2013 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 an sequential order**

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

QUESTION 1

- a) The enactment of the Toxic Substance Control Act in the United States was as a result of widespread contamination of the environment with chemicals. Write briefly on the mandate that was given to EPA with regards to this Act (10)
- b) In food toxicology, people may consume different types of food and might also react to those types of foods consumed differently. Outline the different adverse food reactions that consumers may exhibit (4)
- c) Define what an RfD is, and how is it derived (6)
- d) Outline the media that toxicologists use to test for toxicity in the human body? (5)

QUESTION 2

- a. Which products are likely to be excreted by the following processes? (4)
 - i. Exhalation
 - ii. Urinary excretion
- b. Protoxicants in food are said to be anti –nutritive, what is your view on this statement? (3)
- c. Briefly discuss scombroid food poisoning and give examples of associated symptoms thereof (7)
- d. Outline the health benefits that can be derived from heavy metals (5)
- e. Name the 4 major storage site for xenobiotics (4)
- f. Name the species of animals that have displayed long tolerance to DDT effects even if they can be repeatedly exposed to it (2)

QUESTION 3

- a) The contamination of food by chemical hazards is a worldwide public health concern. How can food contamination occur? (6)
- b) Define heavy metal toxicity and what could be the effects of long term exposure (6)
- c) Discuss the 3 types of genetic change that can be ascribed to genotoxicity (6)
- d) What are the crucial parameters that can support the severity of a teratogen (6)
- e) How would you define food allergy or hypersensitivity? (1)

QUESTION 4

- a) Differentiate between ecotoxicology and environmental toxicology (8)**
- b) Discuss one function of the following proteins (6)**
 - i. Albumin**
 - ii. Lipoproteins**
 - iii. Glycoproteins**
- c) DDT as an example of an environmental toxicant has a half-life of between 2 – 15 years and is converted in the body to 3 critical metabolites. Name the metabolites and the organ(s) that may experience the highest insult thereof (6)**
- d) Excretion of toxicants in the faeces occurs due to 2 processes, write briefly about one of these processes (5)**

QUESTION 5

- a) What has been the observed effects caused by DDT to birds and fish (6)**
- b) Name the 3 processes that are involved in urinary excretion of xenobiotics (6)**
- c) List the food plants that toxicological studies have implicated as being able to accumulate and retain DDT (3)**
- d) Outline the health effects that DDT has allegedly caused both to males and females who have been exposed to it (10)**