



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

MAY 2016 FINAL EXAMINATION PAPER

TITLE OF PAPER : INTRODUCTION TO TOXICOLOGY II  
COURSE CODE : EHS 561  
DURATION : 2 HOURS  
MARKS : 100

INSTRUCTIONS

- 1) QUESTION 1 IS COMPULSORY
- 2) Then answer ANY OTHER THREE (3) 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

DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY  
THE INVIGILATOR.

## QUESTION 1

- a) Write the best meaning of these terms as they relate to hepatotoxicity. Only write the number and the corresponding meaning (7marks).  
E.g. 1 = Itching of the skin.

1. Hypersensitivity	
2.	Chronic fibrosis, often due to alcohol
3. Hepatic cancer	
4.	Backup of bile salts into liver cells
5. Hepatic necrosis	
6.	Inflammation of the liver
7. Steatosis	

- b) Write short notes on the vulnerability of the Blood Testis Barrier to toxicological insult (5 marks)
- c) Define the following terms (6 marks)
- i. Oncosis
  - ii. Autophagy
  - iii. Pyroptosis
- d) What are the 3 body organs that are affected during hepatotoxicity? (3 marks)
- e) Name the four different types of neurotoxicity (4 marks)

## QUESTION 2

- a) Biomarkers are not just picked at random if one wants to carry out an investigation. Name the 6 criteria that must be considered in choosing biomarkers. (6 marks)
- b) Different media are used in determining different matters of interest. What is the 5 media used in biomarkers? (5 marks)
- c) Biological markers are said to be biologically relevant, what is the connotation of this statement? (5 marks)
- d) Reproductive toxic effects may manifest in different forms in humans. Debate this statement and support it with relevant examples. (7 marks)
- e) Differentiate between toxico-dynamics and toxico-kinetics (2 marks)

### QUESTION 3

- a) When do scientists apply Uncertainty Factors? (5 marks)
- b) Explain what signal transduction is and how the body prepares itself in the face of adversity? (8 marks)
- c) What is placental toxicity and how does it manifest itself? (12 marks)

### QUESTION 4

- a) It is said that the ecosystem is able to rebound from a disruptive agent. This however, is dependent on two determinants. Name these dependents (4 marks)
- b) Define heavy metal toxicity and the signs and symptoms? (5 marks)
- c) With regards to hepatic clearance, what is the extraction ratio? (4 marks)
- d) Name the 3 main factors that affect the absorption within the various sites of the Gastrointestinal Tract (6 marks)
- e) What is the sensitive period of gestation when xenobiotics can effect their lethal insult called. State the appropriate number of days for this effect. (3 marks)
- f) Define Volume of Distribution of a toxicant in the body (3 marks)

### QUESTION 5

- a) DDT as an environmental health toxicant normally depicts specific pathological changes in the human body. Name these body parts affected (4 marks)
- b) Differentiate between these three words: mutagenesis, mutation and mutagen (6 marks)
- c) Define and write a formula for first order kinetics (5 marks)
- d) Bioavailability of toxicants to humans is subject to three factors, yet it is 100% bioavailable if applied intravenously. Name these 3 bioavailability determinants (6 marks)
- e) Differentiate between low and high intrinsic clearance (4 marks)