UNIVERSITY OF SWAZILAND

Faculty of Health Science

Department of Environmental Health Sciences

MAIN EXAMINATION

DECEMBER 2014

Title of paper: INTRODUCTION TO TOXICOLOGY

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) Name the different types of metabolites that DDT is usually converted to in the body (6)
b) Which species is supposedly exposed more to toxicants and why? (8)
c) What is the route of elimination of the following compounds? (4)

- Volatile compounds
- Very low molecular compounds
- Both water and lipid
- Major route for low molecular weight polar compounds

d) DDT metabolites are distributed throughout the body tissues; however they tend to accumulate in specific sites. Which are these sites? (2)
e) Name 5 commonly encountered toxic heavy metals that affect men (5)

QUESTION 2

a) What is the importance of NA+ and K+ inside and outside the cell? (3)
b) Nerve impulse and muscles are affected by DDT from sending signals to different parts of the body. What are the 2 conditions that can manifest nerve impulses failure and define what they mean (4)
c) What is the function(s) of the plasma membrane and indicate the type of special substances that it allows to enter and leave the cell? (8)
d) Name the anatomical parts where DDT causes organ toxicity in both males and females (6)
e) Give 4 reasons why food processing is important (4)

QUESTION 3

a) What are the 3 functions of the suppository route? (6)
b) Some chemicals are said to mimic oestrogen in females, what are the effects thereof? (6)
c) How does DDT affect the following entities?
   i. Birds (8)
   ii. Men (4)
d) What do regulatory toxicologists consider in real life situations other than just the toxicity of a chemical? (1)

QUESTION 4

a) Name the 4 key storage sites for toxicants (8)
b) Define the following terms (10)
   i. ADI
   ii. RfD
   iii. LADD
   iv. NOAEL
   v. MoS
c) Re-arrange the following in their chronological order (4)
   i. Exposure assessment
   ii. Risk characterization
   iii. Hazard identification
   iv. Dose –response assessment
d) What are the 3 main forms of endocytosis? (3)

QUESTION 5

a) What are the functions of the following proteins? (9)
   i. Channel proteins
   ii. Carrier proteins
   iii. Ionophores
b) Name the 3 types of genetic change that an organism can go through if there is genotoxicity (6)
c) What is the severity of a teratogen dependent on (6)
d) Organogenesis is the most sensitive period of gestation, which period is this? (4)