

The Open University of Sri Lanka

M.Sc. in Environmental Science – 2016/17

Eco toxicology and Pollution Management (NEP2223) – Level 8

FINAL EXAMINATION

Duration: Three (03) Hours



Date: 18th November 2017

Time: 9.30 a.m. – 12.30 p.m.

Answer any four (04) questions out of six.

1. a. Discuss the importance of eco toxicology as an interdisciplinary science.
(50 marks)
- b. Describe the mechanisms involved in passing toxicants through the cell and organ membranes.
(50 marks)
2. Describe the processes and mechanisms of incorporation of toxicants into the bone tissue of an organism.
(100 marks)
3. Describe the properties of a successful biomarker for environmental monitoring.
(100 marks)
4. a. Describe briefly the following as applied in chemical toxicology.
 - i. Acute and chronic toxicity
 - ii. Dose Response relationship
 - iii. Threshold and Non-threshold dose(15 marks)
- b. i. Discuss three ways that toxicants can interact to produce toxic effect. Give one example in each case.
- ii. What is meant by the term “median lethal dose (LD₅₀)”?

Given that the LD₅₀ (oral exposure) for a toxicant A is 6 mg /kg and LD₅₀ for B is 1 mg /kg. The LD₅₀ for a mixture A and B (in equal amounts) is 20 mg/kg.

- iii. Which is more toxic among toxicants A and B?
- iv. Comment on the interaction between the toxicants A and B.

(35 marks)

- c. i. Compare Phase I and Phase II reactions involve in biotransformation of xenobiotic compounds
- ii. Explain the type of biotransformation in the metabolism of naphthalene using chemical equation (or chemical reaction).

(50 marks)

5. a. List the toxic effects of xenobiotics.

(10 marks)

- b. Discuss the factors influencing bioaccumulation of xenobiotics in human tissues, giving examples.

(40 marks)

- c. List the types of DNA damage

(20 marks)

- d. Select **three (03)** types of DNA damages listed above and explain the mechanism of action of each type.

(30 marks)

6. a. Discuss giving examples the relationship between work and health.

(30 marks)

- b. Occupational stress is increasingly becoming an important health issue. It may lead to severe physical, psychosocial and behavioral problems.

- i. Name **four (04)** occupations where workers are likely to develop stress.

(20 marks)

- ii. Describe the causes of stress in the work settings you have named in **part b. (i)**.

(20 marks)

- iii. Discuss the strategies that could be introduced to prevent workers becoming stressed.

(30 marks)
