



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**B.Sc. (Honours) Degree in Chemistry
Fourth Year Semester I Examination – September / October 2019**

CHE 4213 – CHEMICAL TOXICOLOGY

Answer all questions.

Time: Two (02) hours

1. a) Illustrate what is meant by the terms therapeutic index and margin of safety. (40 marks)
- b) Explain the term tolerance using a suitable example. (20 marks)
- c) Define the term LD₅₀. (20 marks)
- d) State assumptions of dose-response relationship. (20 marks)

2. a) Write short notes on following;
 - i. Plasma protein binding
 - ii. Enterohepatic recirculation (40 marks)
- b) What are the physicochemical characteristics which determine the absorption, distribution and excretion of chemicals in biological systems. (20 marks)
- c) The three main sites of absorption for chemicals are the gastrointestinal track, skin and lungs. List the similarities and differences between these sites relevant to the absorptive process. (40 marks)

3. a) Briefly describe the two phases of metabolism. (20 marks)
- b) List the chemical reactions taking place in the two phases of metabolism. (20 marks)
- c) Identify the chemical and biological factors that affect the metabolism. (20 marks)

d) Distribution of foreign compounds may be restricted to certain tissues like brain.

Explain.

(40 marks)

4. a) Naphthalene is toxic to the lungs. How does the human body eliminate naphthalene with the aid of glutathion conjugation?

(40 marks)

b) Write short notes on following;

i. Toxic effects of bee venom

ii. Toxins of castor beans

iii. Nerve toxins in plants

(60 marks)

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