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RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. Honours in Chemistry / B.Sc. Honours in Chemistry and Physics
Fourth Year Semester I Examination – January / February 2021

CHE 4213 – CHEMICAL TOXICOLOGY

Answer all questions. **Time: Two (02) hours**

1. a) Illustrate what is meant by the terms synergism and antagonism. (20×2 marks)
   b) List the factors that determine the dose. (20 marks)
   c) Define the term therapeutic index. (20 marks)
   d) State assumptions of dose-response relationship. (20 marks)

2. a) Write short notes on
      i. enterohepatic recirculation
      ii. blood brain barrier (20 ×2 marks)
   b) Presence of food affects the absorption of toxic compounds into the body. Illustrate the statement. (30 marks)
   c) Acetaminophen is a moderately water and lipid soluble weak organic acid. Where would you expect the absorption of Acetaminophen occurs in the gastrointestinal tract. Explain using suitable calculations.

pH of gastric juice	2	pH of plasma	7.4
pH of intestinal juice	6	pKa of Acetaminophen	9.5

(30 marks)

3. a) Describe the phase I metabolism using suitable examples. (40 marks)

b) Briefly describe the toxic response "teratogenicity" and indicate its possible outcomes. (30 marks)

c) Describe the "Biomarkers" applied in chemical toxicology. (30 marks)

4. a) What are the physicochemical factors that affect on the passage of toxic molecules? (20 marks)

b) Absorption of toxic compounds through skin depends on the site and hence nature of the skin. Explain using suitable examples. (40 marks)

c) Particle size plays an important role in absorption of toxic compounds through lungs. Justify your answer. (40 marks)

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