RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (Honors) Degree in Chemistry / B.Sc. (Joint Major) Degree in Chemistry and Physics / B.Sc. (4 year) Degree in Applied Sciences
Fourth Year - Semester II Examination – June / July 2018

CHE 4212 PHARMACEUTICAL AND MEDICINAL CHEMISTRY

Time: Two (02) hours **Answer all Questions**

1).

a) Explain the two phases of biotransformation of drug molecules with examples (30 Marks)

b) Discuss the phases of clinical trials in the drug development process (30 Marks)

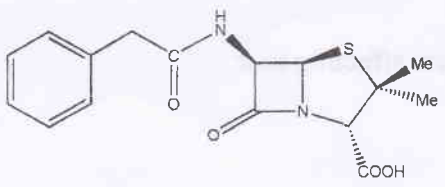
c) Discuss the importance of prodrugs. Provide example where necessary. (20 Marks)

d) Explain how the induction and inhibition of enzymes affect to the plasma concentration of drugs (20 Marks)

2).

a) Discuss the factors those effect to absorption of a drug to the blood circulation (20 Marks)

b) The following structure shows Penicillin G. This drug is known to be not active orally. Explain the reason using the structure. (30 Marks)



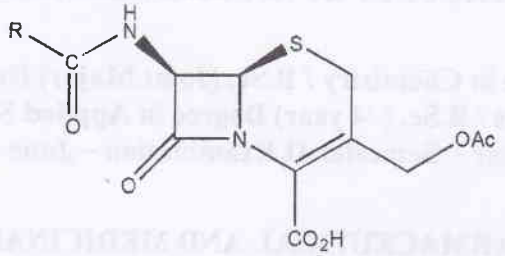
c) The volume of distribution of the drug theophyllin is 35L and the volume of distribution of another drug chloroquine is 13000 L. Explain the reason for these values with a focus on the characteristics of the two drugs. (25 Marks)

d) The drug Digoxine has clearance rate of 7.0 (L/hour) and the half life is 40 hours. What is the volume of distribution? (25 Marks)

3).

a) Define the terms agonist and antagonist and provide examples for both (20 Marks)

b) Given below is the structure of cephalosporin antibiotics



I. Identify the active site responsible for the antimicrobial action and name it (10 Marks)

II. Explain the mechanism of action of penicillin using the structure (30 Marks)

III. Discuss the advantages cephalosporins molecular structure has comparing to penicillin to have better antibiotic activity. (20 Marks)

c) Discuss the properties to be included in a drug designed to treat urinary track infections (20 Marks)

4).

Write short notes on the following topics (25marks x4 = 100)

a) Chemical modification as a drug designing method

b) β-lactamases inhibitors

c) Chemical delivery systems

d) Half life of a drug and factors effecting to it

-END-