UNIVERSITY OF JAFFNA, SRI LANKA
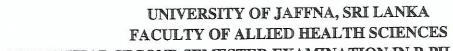FACULTY OF ALLIED HEALTH SCIENCES
FOURTH YEAR SECOND SEMESTER EXAMINATION IN B.PHARM (HONS)-2019
PHAAP 4214 ADVANCED PHARMACEUTICS –PAPER II

Date: 17.05.2021   Time: 02 hours

ANSWER ALL SIX QUESTIONS

1.   50 Kg woman was given a single IV bolus of an antibacterial agent
        at the dose of 6mg/Kg. Blood samples were drawn at regular intervals
        and the concentration of the drug in the plasma was determined and
        the values are given below.
        Note: Assume that the body acts as one compartment open model.

Time (Hrs)	Plasma drug concentration (Cp) (mg/L)
0.25	8.21
0.50	7.87
1.0	7.23
3.0	5.15
6.0	3.09
12.0	1.11
18.0	0.40

1.1.   What is the order of kinetics of the above mentioned antibacterial
        agent?   (05 Marks)
1.2.   Write the equation to derive the half-life from the order of kinetics. (10 Marks)
1.3.   Calculate the elimination rate constant, half-life and volume of
        distribution of the above mentioned antibacterial agent.   (25 Marks)
1.4.   If the antibacterial is ineffective below the concentration of 2mg/L,
        calculate the duration of action of the drug.   (20 Marks)
1.5.   Find out how long it will take to eliminate 99.9% of the drug.   (10 Marks)
1.6.   If the dose of the antibacterial agent is doubled for the above patient,
        calculate the duration of action using the calculated volume of
        distribution and the elimination rate constant.   (30 Marks)

2.
2.1.   List the factors influencing the oral drug absorption.   (10 Marks)
2.2.   Describe the patient related factors that affect the plasma protein
        binding of drugs.   (20 Marks)
2.3.   Write an account on
2.3.1. Conjugation with glucuronic acid.   (30 Marks)
2.3.2. Biliary excretion of drugs.   (40 Marks)

3.

   3.1.   Describe the different types of formulation additives used in the hair conditioners.   (30 Marks)

   3.2.   Describe the advantages and disadvantages of soap over surfactants in shampoo formulations.   (20 Marks)

   3.3.

       3.3.1. List five (05) characteristics of an ideal hair dye.   (10 Marks)

       3.3.2. Name the components of the permanent hair colorants and describe the interactions between them to form permanent color.   (20 Marks)

   3.4.   Briefly explain the function of fluoride compounds that are used in the dentifrices.   (20 Marks)

4.

   4.1.

       4.4.1.Define preformulation.   (10 Marks)

       4.4.2.List the importance of hygroscopicity test in the preformulation studies.   (20 Marks)

       4.4.3.Explain three (03) thermal analysis techniques that are used in the preformulation studies.   (30 Marks)

   4.2.   Describe the problems encountered during the storage of drugs in plastic containers.   (40 Marks)

5.

   5.1.   Describe the methods used to prevent hydrolytic decomposition of the drugs.   (40 Marks)

   5.2.   List five (05) factors that affect the auto-oxidation of a drug.   (10 Marks)

   5.3.   Describe the physical degradation of drugs with examples.   (50 Marks)

6.   Define the following and explain its role in pharmaceutical manufacturing.

   6.1.   Pilot plant scale up.   (25 Marks)

   6.2.   Pharmaceutical validation.   (25 Marks)

   6.3.   Stability testing.   (25 Marks)

   6.4.   Good manufacturing practices.   (25 Marks)