

## FIRST YEAR FIRST SEMESTER EXAMINATION IN BPHARMHONS IN PHARMACY- 2021

## PHACH 1173 PHARMACEUTICAL CHEMISTRY I

Date: 20 DEC 2022

Time: 2 Hours

ANSWER ALL THE FOUR QUESTIONS

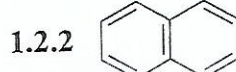
1. 1.1 1.1.1 Define isomerism. (10 Marks)

1.1.2 Diagrammatically illustrate the possible isomerism of

1.1.2.1  $[\text{Co}(\text{NH}_3)_4(\text{NO}_2)(\text{SO}_4)]$  (30 Marks)1.1.2.2  $[\text{Co}(\text{en})_2(\text{NH}_3)\text{Cl}]^{2+}$  (20 Marks)

1.1.3 Briefly explain the administration of chelating agents to remove the heavy metals from body with an example. (20 Marks)

1.2 State whether the following compounds are aromatic or anti aromatic or non-aromatic with justification. (20 Marks)



2. 2.1 2.1.1 Define Gibbs free energy. (10 Marks)

2.1.2 The reaction occurs at 273 K, the change in enthalpy = 19,070 cal, and the change in entropy = 90 cal/k.

2.1.2.1 Calculate the Gibbs free energy change ( $\Delta G$ ) of the above reaction. (30 Marks)

2.1.2.2 State whether the reaction is spontaneous or not? (10 Marks)

2.2 2.2.1 Define phase diagram. (10 Marks)

2.2.2 Using the following data, roughly sketch the phase diagram: critical point at 373 °C and 217 atm; (b) triple point at 0.01 °C and 0.006 atm; (c) solid is less denser than liquid at triple point (label the diagram). (25 Marks)

2.2.3 Explain the diagram drawn in questions 2.2.2. (15 Marks)

3. 3.1 What is rate law. (10 Marks)

3.2 Consider the following reaction,



3.2.1 Derive the integrated rate equation for a zero-order reaction. (30 Marks)

3.2.2 Draw the graph for concentration against time. (10 Marks)

3.3 3.3.1 Define half life of a drug. (10 Marks)

3.3.2 Draw the half life elimination curve. (10 Marks)

3.3.3 Drug A has a half-life of 2 hours. If the initial plasma level of the drug, given as a single dose, is 1200 mg/L, what will its plasma level after 8 hours? (30 Marks)

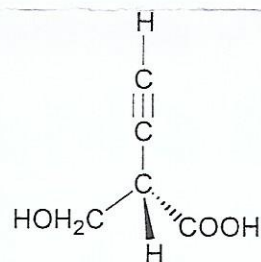
4. 4.1 Define the followings.

4.1.1 Epimers (10 Marks)

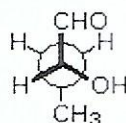
4.1.2 Chirality (10 Marks)

4.2 Assign a configuration, R or S, to each of the following compounds. (30 Marks)

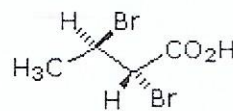
4.2.1



4.2.2

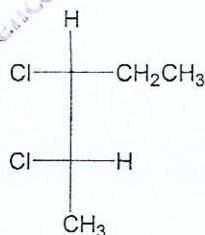


4.2.3

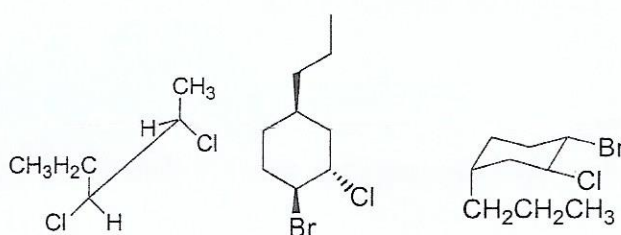


4.3 State the stereochemical relationship between the following molecules with justification.

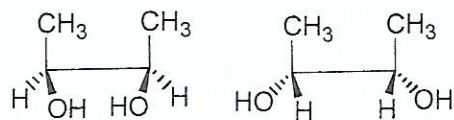
4.3.1



4.3.2



4.3.3



(50 Marks)