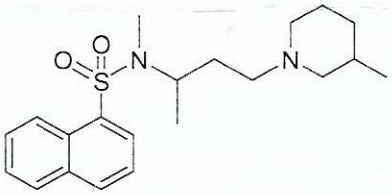
UNIVERSITY OF JAFFNA, SRI LANKA
FACULTY OF ALLIED HEALTH SCIENCES
THIRD YEAR SECOND SEMESTER EXAMINATION IN BPharmHons-2023
PHAMC 3253 MEDICINAL CHEMISTRY II

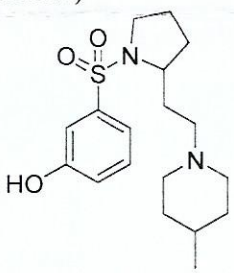
Date: 27.05.2025 **Time: 2 Hours**

1	1.1	Use a labeled schematic diagram to illustrate the process of hydrochloric acid (HCl) formation in gastric parietal cells.	**20 marks**
	1.2	Describe the first experimental evidence that demonstrated the existence of two distinct types of histamine receptors in the human body.	**20 marks**
	1.3	Draw the chemical structures of four (04) clinically used proton pump inhibitors (PPIs).	**20 marks**
	1.4	Using a detailed reaction mechanism illustrates how a PPI covalently inhibits the H^+/K^+-ATPase enzyme in gastric parietal cells.	**40 marks**
2	2.1	Draw the pharmacophore of morphine and label the key functional groups responsible for its binding interactions with opioid receptors.	**20 marks**
	2.2	Describe the structure-activity relationship (SAR) of morphine.	**40 marks**
	2.3	Draw the structure 6-Acetylmorphine and explain the reasons for its enhanced potency on opioid receptors.	**20 marks**
	2.4	Describe the SAR of Enkephalins.	**20 marks**
3	3.1	Briefly explain the proposed mechanisms of action of non-steroidal anti-inflammatory drugs (NSAIDs),	**20 marks**
	3.2	Draw the chemical structures of any two (02) commonly used NSAIDs.	**20 marks**
	3.3	Draw the general chemical structures of the following NSAID classes and discuss their SAR:	
		3.2.1 Salicylates	**30 marks**
		3.2.2 Arylalkanoic acids	**30 marks**
4	4.1	Provide one example of each of the chemical structures of a tricyclic antidepressant and a selective noradrenaline reuptake inhibitor.	**20 marks**
	4.2	Explain the monoamine hypothesis of depression with examples that both support and contradict it.	**30 marks**
	4.3	Describe the advantages and challenges of targeting the 5-HT_7 receptor for antidepressant drug development.	**20 marks**

4.4 Structure A represents a lead compound for the 5-HT_7 receptor; explain how it was modified to yield structure B during SAR studies. (Structures of A and B are given below) **30 marks**



Structure A



Structure B