UNIVERSITY OF JAFFNA, SRI LANKA

BACHELOR OF PHARMACY

THIRD YEAR SECOND SEMESTER EXAMINATION – AUGUST 2017

PHACH 3202 MEDICINAL CHEMISTRY II

23.08.2017 **Time – 2 hour**

Answer all Six Questions.

1 **1.1** Give two (02) examples each for ester and amide based local anesthetics. **(20 Marks)**

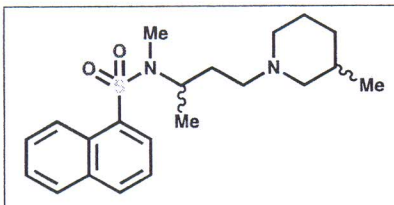
1.2 Describe the mechanism of action of a lidocaine molecule with a schematic diagram. pKa of lidocaine is 7.9. **(40 Marks)**

1.3 Draw the synthetic route of two intravenous and two gaseous general anesthetics. **(40 Marks)**

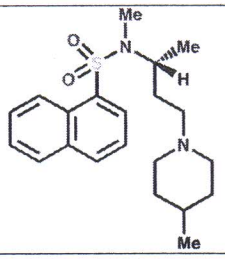
2 **2.1** Provide one (01) structural example each for tricyclic antidepressant and selective noradrenaline reuptake inhibitor. **(20 Marks)**

2.2 Use a schematic diagram to illustrate the mechanism of action of tricyclic antidepressant. **(30 Marks)**

2.3 The Structure A shows the lead compound for the $5HT_7$ receptor. Explain how this compound is transferred in to structure B during the drug discovery.



Structure A



Structure B

(50 Marks)

3 **3.1** Give the first experimental evidence to suggest that there are two types of histamine receptors available in human body. **(20 Marks)**

3.2 List the subtypes of histamine receptors and describe their functions. **(30 Marks)**

3.3 Describe the formation of hydrochloric acid in the partial cell with appropriate schematic diagram. **(50 Marks)**

4 **4.1** Draw the structure of omeprazole. **(10 Marks)**

4.2 Use curly arrows to show the mechanism of action of the omeprazole. **(40 Marks)**

4.2 Describe with relevant structurers on how the lead compound is converted to omeprazole. **(50 Marks)**

5 **5.1** Draw the structure of dopamine molecule. **(20 Marks)**

5.2 Name two (02) drugs that could

5.2.1 stimulate the dopamine receptor. **(10 Marks)**

5.2.2 reduce the metabolism of dopamine. **(10 Marks)**

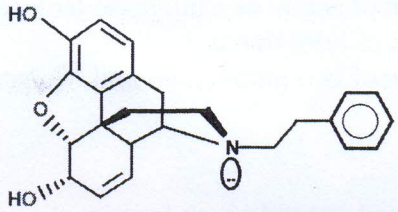
5.3 Draw the synthetic pathway of following drugs

5.3.1 Carbidopa **(30 Marks)**

5.3.2 Levodapa **(30 Marks)**

6 **6.1** Draw the pharmacophore of morphine and indicate its important binding interactions. (30 **Marks**)

6.2 Explain the interactions of following molecule with opioid receptors. **(30 Marks)**



6.3 Draw the structure of 6-Acetylmorphine molecule and explain the reasons for its increased activity on opioid receptors. (40 **Marks**)