UNIVERSITY OF JAFFNA, SRI LANKA BACHELOR OF PHARMACY

THIRD YEAR SECOND SEMESTER EXAMINATION – JULY 2015 PHACH 3202 MEDICINAL CHEMISTRY II

16.07.2015

Time: 2 hour

ANSWER ALL EIGHT QUESTIONS.

1	1.1	Illustrate the structural characteristics of a local anesthetic using a diagram.	(20 Marks)
	1.2	Describe the mode of action of a local anesthetic using a	(40 Marks)
	1.3	schematic diagram of a sodium channel. Draw the synthetic route of two intravenous general anesthetics.	(40 Marks)
2	2.1 2.2	Draw the structure of the natural ligand serotonin. Structure A synthesized as a lead compound for the 5-HT _{2C} receptor antagonist by a pharmaceutical company. Explain how structure A is converted to structure B through the drug optimization process.	(20 Marks) (50 Marks)
		Structure A CH ₂ CH ₃ Furan N N Structure B	
	2.3	Briefly explain strategies, which can be used to study drug - receptor interactions.	(30 Marks)
3	3.1	What made the SK & F scientists to predict that there are two	(20 Marks)
	3.2	types of histamine receptors? Draw the structure of N^{α} -Guanyl histamine and explain why it	(60 Marks)
	3.3	acts as a partial agonist. Provide two examples of classical antihistamine and draw their structures.	(20 Marks)
			(40.35)
4	4.1	Draw the schematic diagram of Parietal cell and explain its function.	(40 Marks)
	4.2	Draw the mechanism of Proton Pump Inhibitors (PPI).	(60 Marks)

- 5 5.1 Provide one structural example for selective serotonin receptor inhibitors and tricyclic antidepressants.
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 - 5.2 The structure A shows a lead compound for the 5HT₇ receptor. Explain how this compound transferred into structure B during the lead optimization process.
- (**80 Marks**)

(20 Marks)

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Structure A

Structure B

- 6 6.1 Draw the structure of the morphine and discuss the structure activity relationship (SAR). (40 Marks)
 - 6.2 6.2.1 Draw the structure of Nalaxone (20 Marks)
 - **6.2.2** Explain, how the structural knowledge of morphine helped to synthesize the antagonist Nalaxone. (20 Marks)
- 7.1 Describe the mechanism of actions of thyroid hormones.
 7.2 Draw the chemical synthetic route of thyroxine.
 7.3 Draw a synthetic route of a thioureylenes.
 (40 Marks)
 (40 Marks)
- 8 8.1 Describe the anti-epileptic drug mechanism that target ion-channels. (30 Marks)
 - **8.2** Provide five molecular evidences for abnormalities in ion channels. (30 Marks)
 - 8.3 Provide one example of an anti-epileptic drug that interacts with following drug targets: Na channel, K channel, Ca channel, NMDA receptor and GABA transporter.(40 Marks)