UNIVERSITY OF JAFFNA, SRI LANKA
FACULTY OF ALLIED HEALTH SCIENCES
THIRD YEAR FIRST SEMESTER EXAMINATION IN BPharmHons - 2023
PHAMC 3163 MEDICINAL CHEMISTRY I

Date: 04.12.2024 **Time: 02 Hours**

Answer all four questions.

1.	1.1	**1.1.1** Draw the structure of acetylcholine.	**(10 Marks)**
		1.1.2 Acetylcholine is highly prone to hydrolysis. Explain the reason for this instability.	**(20 Marks)**
		1.1.3 Describe how the acetylcholine is modified as carbachol to resist hydrolysis.	**(20 Marks)**
	1.2	**1.2.1** List the uses of cholinergic antagonists.	**(10 Marks)**
		1.2.2 Antagonists should have stronger binding compared to agonists. Briefly explain this by comparing the Structure Activity Relationship (SAR) of cholinergic agonists and antagonists.	**(40 Marks)**
2.	2.1	List the main classes of receptors present in the human body.	**(10 Marks)**
	2.2	What is constitutive receptor activation?	**(10 Marks)**
	2.3	The flight or fight response is crucial in human survival.	
		2.3.1 Name the receptor involved in the fight or flight response.	**(10 Marks)**
		2.3.2 Briefly explain the signal transduction pathway of the fight or flight response.	**(40 Marks)**
	2.4	Describe the following phenomena that take place in the tyrosine kinase-linked receptors.	
		2.4.1 Dimerization of the receptor.	**(10 Marks)**
		2.4.2 Auto phosphorylation of the receptor.	**(10 Marks)**
		2.4.3 Cross phosphorylation of the enzyme.	**(10 Marks)**
3.	3.1	Sulphonamides act by inhibiting folate synthesis. Folate is important for humans as well. State the reason why sulphonamides are not toxic to humans.	**(20 Marks)**
	3.2	**3.2.1** Name a pro-drug of sulphonamide used to treat gut infections.	**(10 Marks)**
		3.2.2 Briefly explain how it is designed to target gut infections.	**(30 Marks)**
	3.3	Co-trimoxazole acts through sequential blocking in the folate synthesis pathway of bacteria.	
		3.3.1 Name two drugs that are combined in Co-trimoxazole.	**(10 Marks)**
		3.3.2 Describe the sequential blocking of Co-trimoxazole.	**(30 Marks)**

4. 4.1 **4.1.1** Name two catecholamines involved in the adrenergic neurotransmission. **(10 Marks)**

4.1.2 List the steps involved in the neurotransmission that occurs in the nerve synapses of the adrenergic nervous system. **(20 Marks)**

4.2 **4.2.1**Isoetharine acts as a short acting-beta-2 adrenergic agonist. Briefly explain the reason for its short duration of action. **(10 Marks)**

4.2.2 Discuss how the structure of salmeterol is designed to treat nocturnal asthma. **(20 Marks)**

4.3 Explain the Structure Activity Relationship (SAR) of aryloxypropanolamines. **(40 Marks)**