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UNIVERSITY OF RUHUNA - FACULTY OF MEDICINE ALLIED HEALTH SCIENCES DEGREE PROGRAMME FOURTH BPHARM PART I EXAMINATION - JUNE 2015 PH 4112: ADVANCED MEDICINAL CHEMISTRY I (SEQ)

TIME: TWO HOURS

INSTRUCTIONS

- Answer all questions.
- Do not use any correction fluid.
- Answer questions in the given answer book.
- Marks will be deducted for illegible hand writing.

1.1 Name five chemical mediaters involved in inflammation & immune reactions.	(10 marks)
1.2 Draw the structure of 5, 8, 11, 14-eicosateuraenoic acid (Arachidonic acid).	(10 marks)
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	••••
1	·····
1.3 Identify the following molecule. State the class of enzyme which converts the act to the following molecule.	d mentioned in 1.2 (05 marks)
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				index No:	
1.4	Aspirin is one of the Mechanism of action of a		ces the synthe	sis of prostagland	ins. Explain the (20 marks)
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1.5	Give the chemical structu	res of following NSAID	s highlighting	their structural diffe	erences. (15 marks)
	Give the chemical structu	res of following NSAID Diclofenac So	aldergramsprove-assume took specialising professional sections of	their structural diffe	

- 1.7 Morphine is used as a narcotic analgesic. There are number of morphine derivatives that give similar activity.
 - 1.7.1 Illustrate how the structures of codeine and heroin are differentiated from that of morphine.

A-Morphine

CH₃

HO OH

Morphine





1.7.2 Discuss the structure activity relationship of morphine.	(20 marks)

Index	No:	

2. Signal can pass over the synapse by either chemically or electrically. The process of transmalong a neuron and over the synapse is called neurotransmission.	ission of a signal
2.1 Define the terms; Cholinergic and Adrenergic.	(10 marks)
Cholinergic:	
	••••••
Adrenergic:	
2.2 Give the biosynthetic pathway of acetylcholine (highlight important structures & enzyme	es involved). (20 marks)
2.3 Discuss the action of acetylcholine esterase.	(10 marks)

2			Index No:	
	thanecol and carbacol are well ivity relationship of these two d	designed to overcome the choling	esterase activity. Exp	plain the structure (15 marks)
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2.5 Sta	ate the two types of anti-choline	esterases. Give one example for	each type.	(10 marks)

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2.6 Gi	ve the structures of dopamine, n	orepinephrine and epinephrine hi	ghlighting the differe	nces.
				(15 marks)
	Dopamine	Norepinephrine	Epinephri	ne
		,		
				Equipment Comment

2.7 Identify the following structures of drugs which belong to adrenergic group, and complete the following table. (20 marks)

Molecule	Drug	Target receptor/s	Therapeutic applications
(HO) (CH)			
PO 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
OH S CH	1		
HC CH CH			

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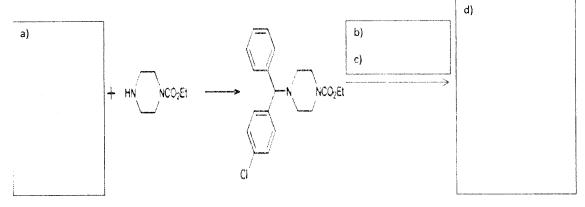
3.1. Illustrate the biosynthesis of histamine.	(10 marks)
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	,
	•••••••
3.2 Both chlorpromazine & promethazine have phenothiazine ring structure, but antihis	stamine effect is
	(15 marks)
given only by promethazine. Explain the reason.	(15 marks)
	•••••
	••••••

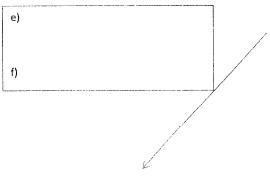
3.3 State why cetirizine give less sedative effect compared to the chlorpheniramine malean	e.
	(10 marks)
1	
	••••

3.

3.4 Complete the synthetic pathway for *cetirizine* given below.

(15 marks)





Cetirizine

3.5 Define the following terms.

	3.5.1 Vitamins	(05 marks)
•••••	3.5.2 Pro-vitamins	(05 marks)
		•••••
		• • • • • • • • • • • • • • • • • • • •

3.5.3 Preformed vitamins	(05 marks)
	••••••
3.5.4 Anti-vitamins	(05 marks)
3.6 Vitamin B ₃ is composed of two structures.	
510 1	
3.6.1 Name those two components.	(10 marks)
3.6.2 Draw the chemical structure of one of the component	t mentioned in the question 3.6.1
3.0.2 Draw the enemical structure of the of the component	(08 marks)
	(00 ///////////////////////////////////
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3.7 Write down three advantages of taking folic acid during the preg	gnancy. (12 marks)

4. Answer all parts

4.1.1 Give the meaning of the term "general anaesthetics".	(05 marks)
4.1.2 Given below are some examples for general anaesthetic drugs. Group them b administration.	
a) Thiopental b) Halothane c) Desflurane d) Etomidate e)Ketamine	
4.1.3 Draw the structure of halothane and explain how the presence of carbon-hal	
anaesthetic activity of halothane.	(20 marks)
4.2 What are 'antipsychotics'? Classify them by giving examples of one potent com-	pound
from each category.	(20 marks)

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4.3 Give the **generic name, chemical name and structure** of the anticonvulsant drug obtained by replacing 'O' at C-2 of phenobarbital with 2H atom. (20 marks)

Phenobarbital

	With the help of a general structure explain the structure activity relationship (SAR) benzodiazepines and related compounds.	of (30 marks)
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