



**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.

1.1 Name **five** chemical mediators involved in inflammation & immune reactions. **(10 marks)**

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1.2 Draw the structure of 5, 8, 11, 14-eicosatetraenoic acid (Arachidonic acid). **(10 marks)**

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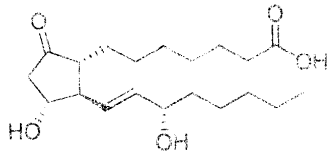
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1.3 Identify the following molecule. State the class of enzyme which converts the acid mentioned in 1.2 to the following molecule. **(05 marks)**



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1.4 Aspirin is one of the NSAIDS which influences the synthesis of prostaglandins. Explain the mechanism of action of aspirin. **(20 marks)**

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1.5 Give the chemical structures of following NSAIDs highlighting their structural differences. **(15 marks)**

Mefenamic acid	Diclofenac Sodium	Ibuprofen

1.6 Paracetamol has less anti-inflammatory effect but potent analgesic effect. Illustrate the synthetic pathway of paracetamol (chemical structures required). **(10 marks)**

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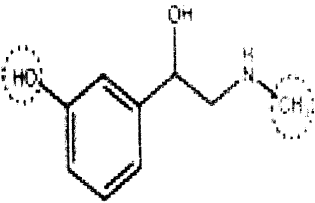
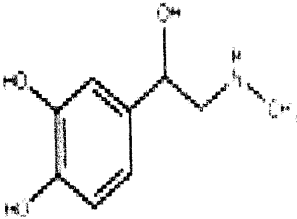
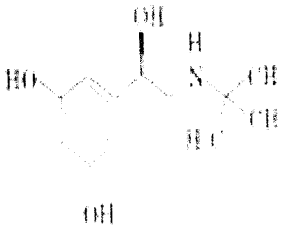
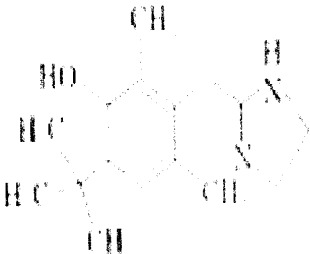
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2.7 Identify the following structures of drugs which belong to adrenergic group, and complete the following table. (20 marks)

Molecule	Drug	Target receptor/s	Therapeutic applications
			
			
			
			

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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 antihistamine effect is given only by promethazine. Explain the reason.

**(15 marks)**

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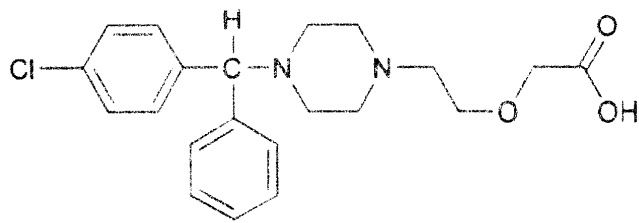
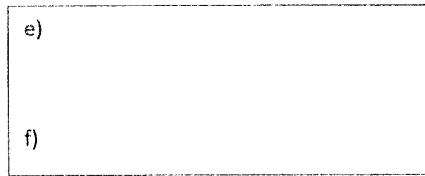
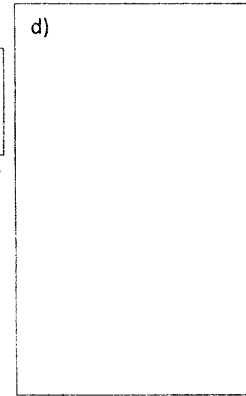
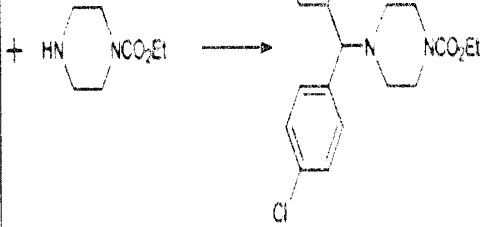
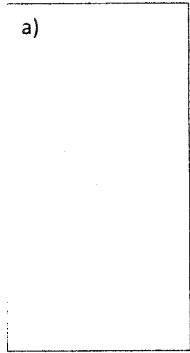
3.3 State why *cetirizine* give less sedative effect compared to the *chlorpheniramine maleate*.

**(10 marks)**

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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)

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3.5.2 Pro-vitamins

(05 marks)

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3.5.3 Preformed vitamins

**(05 marks)**

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3.5.4 Anti-vitamins

**(05 marks)**

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3.6 Vitamin B<sub>3</sub> is composed of two structures.

3.6.1 Name those two components.

**(10 marks)**

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3.6.2 Draw the chemical structure of **one** of the component mentioned in the question 3.6.1.

**(08 marks)**

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3.7 Write down three advantages of taking folic acid during the pregnancy.

**(12 marks)**

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4. Answer **all** parts

4.1

4.1.1 Give the meaning of the term “general anaesthetics”. **(05 marks)**

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4.1.2 Given below are some examples for general anaesthetic drugs. Group them based on the method of administration.

a) Thiopental b) Halothane c) Desflurane d) Etomidate e)Ketamine **(05 marks)**

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4.1.3 Draw the structure of halothane and explain how the presence of carbon- halogen bonds affects the anaesthetic activity of halothane. **(20 marks)**

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4.2 What are ‘antipsychotics’? Classify them by giving examples of **one** potent compound from each category. **(20 marks)**

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