

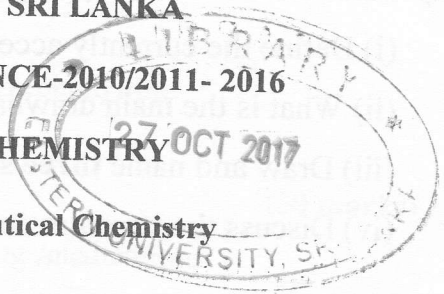


EASTERN UNIVERSITY, SRI LANKA

FOURTH EXAMINATION IN SCIENCE-2010/2011- 2016

SPECIAL DEGREE IN CHEMISTRY

CHS 08: Medicinal and Pharmaceutical Chemistry



Answer ALL the questions.

Time allowed: TWO hours

Answer all the parts (a), (b) and (c)

(a) Cardiovascular drugs generally exert their action on the heart or blood vessels directly or indirectly.

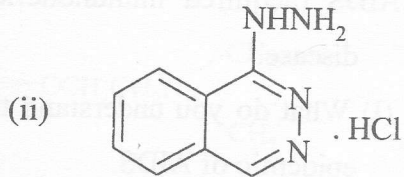
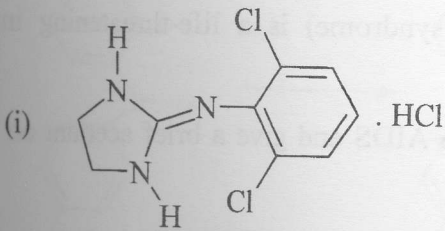
(I) How would you classify cardiovascular drugs? **(20marks)**

(II) Draw the structures of **any two** of the following drugs:

(i) Losartan (ii) Sodium nitroprusside (iii) Methyldopa (iv) Diazoxide

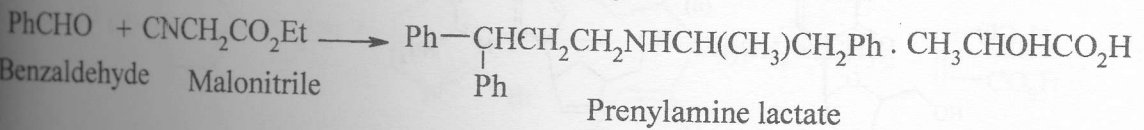
(10 marks)

(III) Write the names of the following drugs:



(10 marks)

(b) Prenylamine lactate is one of the vasodilator drugs. Show the steps involved in the synthesis of prenylamine lactate from benzaldehyde and malonitrile.



(30 marks)

(c) Leaves of *Digitalis lanata* gave **two** important cardiac glycosides. Give the structure, chemical name and uses of these cardiac glycosides.

(30 marks)

Contd...

2. Answer **both** parts (a) and (b)

(a) "Antibiotics" are highly important drugs in pharmaceutical industry.

(i) Define the currently accepted definition of the term "antibiotics".

(ii) What is the main drawback in the excessive usage antibiotics in Asia?

(iii) Draw and name **three** structures from the **six** natural penicillins.

(iv) Discuss the structure activity relationship (SAR) of penicillins.

(60 Marks)

(b) (i) What are the importance of pharmaceutical drug analysis?

(ii) The standards for pharmaceutical chemicals/drugs and their respective forms depends on three cardinal/main objectives. One of the objectives is "biological response versus chemical purity". What are the other two objectives? Explain each of them.

(iii) What do you understand by the term "limit tests" for pharmaceutical drugs?

(iv) How would you perform the limit tests for the following metallic impurities?

i) Lead

ii) Arsenic

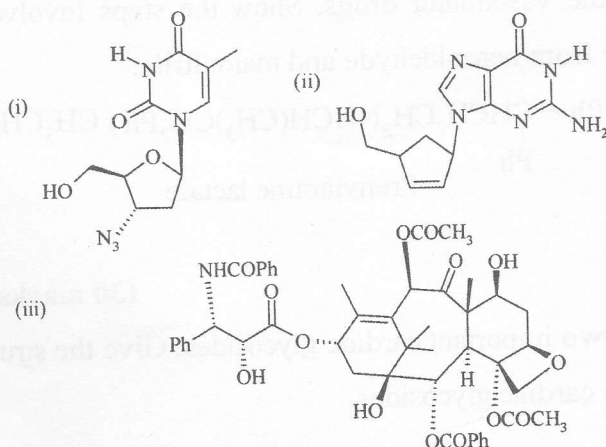
(40 marks)

3. Answer **all** the parts (a), (b) and (c)

(a) AIDS (acquired immunodeficiency syndrome) is a life-threatening infectious disease.

(I) What do you understand the term AIDS and give a brief account on the epidemic of AIDS.

(II) Write the names of **any two** of the following HIV (human immunodeficiency virus) drugs:



(35 marks)

(b) Asthma is a chronic inflammatory disease.

Draw the structures of **any four** of the following drugs which are being used in medication for asthma.

- (i) Salbutamol (ii) Turbutaline (iii) Theophylline
(iv) Hydrocortizone or cortisol (v) Beclomethazone

(30 marks)

Drug design is the inventive process of finding new drugs/medications.

- (i) Briefly describe about computer aided drug design.
(ii) List out the factors governing drug design?

(35 marks)

Answer **both** parts (a) and (b)

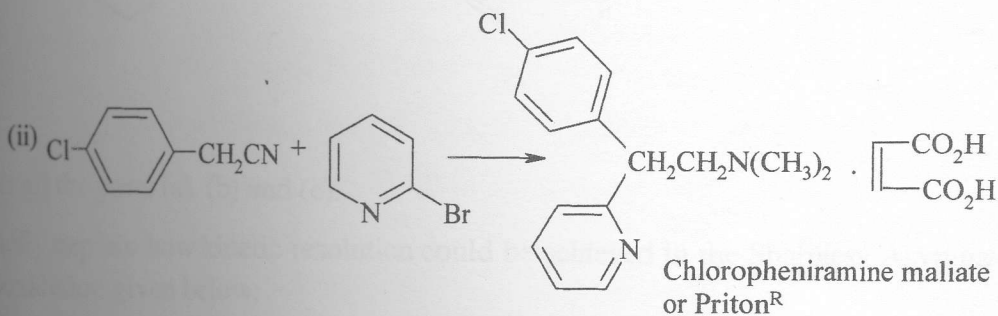
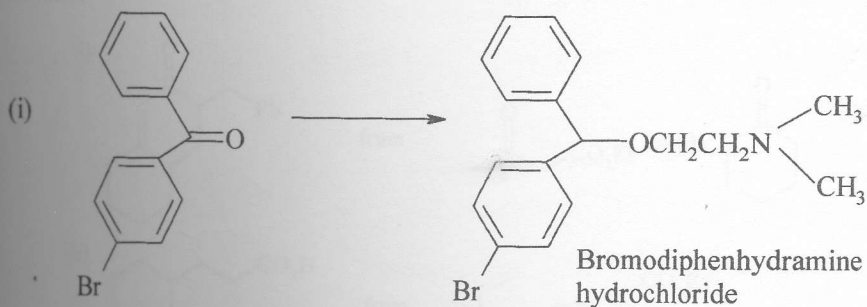
(a) The term antihistamine is traditionally used to refer to drugs that block the H₁-receptors.

(I) How would you classify antihistamines on the basis of their chemical structures?

Give an example for each case.

(20 marks)

(II) Indicate how the following drug synthesis may be effected (each of which may involve several steps). Give essential reagents and experimental conditions.



(30 marks)

Contd..

(b) (I) What is pharmacodynamics of a drug? Explain the different process involved

(30 marks)

(II) What is half-life ($t_{1/2}$) of a drug? Why do drugs have different half-lives?

(20 marks)

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