



EASTERN UNIVERSITY, SRI LANKA
SPECIAL DEGREE EXAMINATION IN CHEMISTRY
(FEB/MARCH' 2014)
FOURTH YEAR FIRST SEMESTER-2009/2010
CHS 08-Medicinal and Pharmaceutical Chemistry

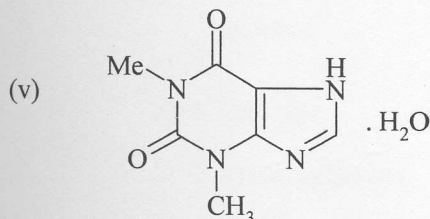
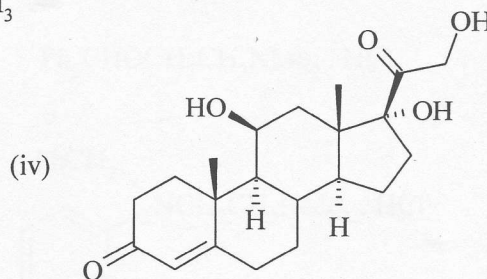
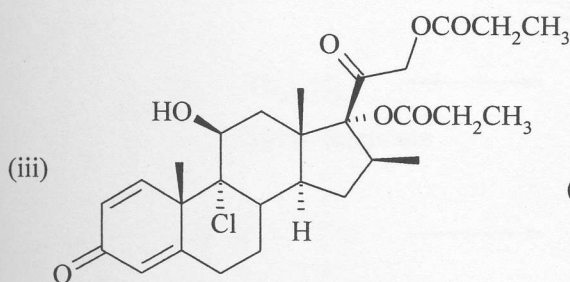
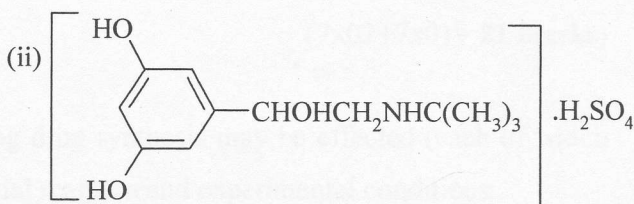
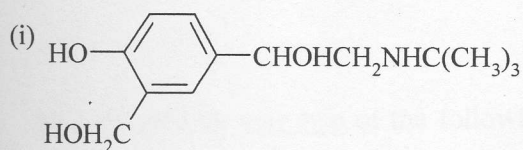
Answer all questions

Time allowed: 02 hours

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

(a) Asthma is a chronic inflammatory disease.

Identify the following drugs by their common or trivial names which are used in medication for asthma.



(30 marks)

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(b) (i) AIDS (acquired immunodeficiency syndrome) is a life-threatening infection or disease. Give a brief account on the global epidemic of AIDS.

(14 marks)

(ii) Draw the structures of **any three** of the following HIV (human immunodeficiency virus) drugs:

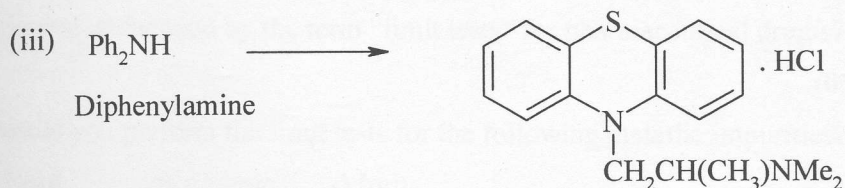
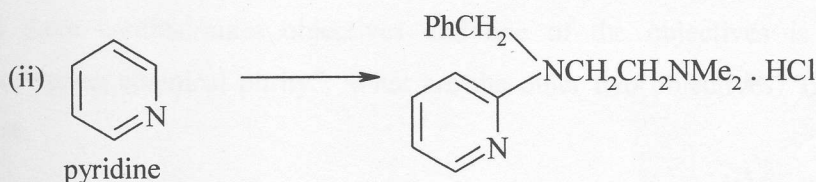
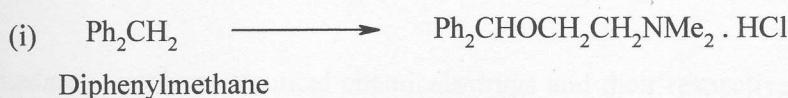
- (p) Zidovudine or Retrovir[®] (q) Carbovir
(r) Combivir (s) Palicitaxel or Taxol

(21 marks)

(c) (x) The term antihistamine is traditionally used to refer to drugs that block the H₁-receptors. How do you classify antihistamines on the basis of their chemical structures? Give an example for each case.

(7x02+7x01= 21 marks)

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



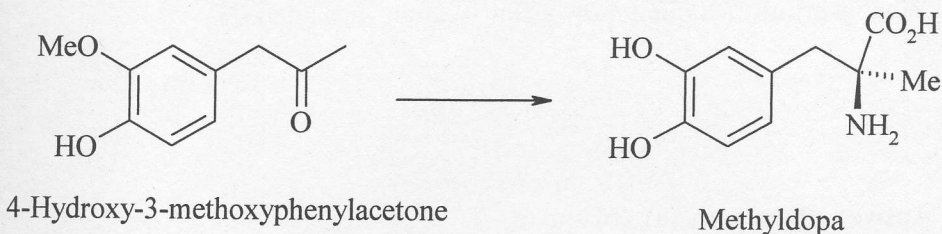
(07x2= 14 marks)

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

(a) (i) Cardiovascular drugs may be conveniently classified into four groups. What are those four groups?

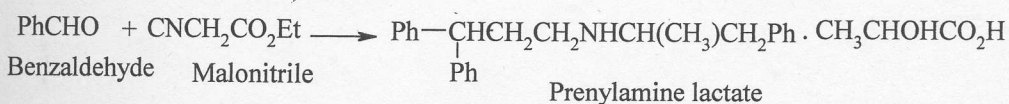
(10 marks)

(ii) Methyldopa (Aldomet[®]) is a potent antihypertensive agent. Show the steps involved in the synthesis of methyldopa from 4-hydroxy-3-methoxyphenylacetone. Discuss the structure activity relationship of methyldopa.



(20 marks)

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



(20 marks)

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

(10 marks)

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

(20 marks)

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

(05 marks)

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

p) Lead q) Arsenic r) Iorn

(15marks)

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

a) Name three different types (families) of membrane bound receptors. Explain their structure and functions.

(60 marks)

b) What is affinity? Explain how affinity can be measured.

(40 marks)

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

a) What is pharmacokinetics of a drug? Explain the four different stages involved in it.

(30 marks)

b) What is drug metabolism? Explain the phase i and phase ii metabolism with suitable examples

(40 marks)

c) What is half-life ($t_{1/2}$) of a drug? Explain why knowledge of the half-life of a drug is required for drug dosing.

(30 marks)
