



UNIVERSITY OF RUHUNA - FACULTY OF ALLIED HEALTH SCIENCES

DEPARTMENT OF PHARMACY

FOURTH BPHARM PART II EXAMINATION – SEPTEMBER 2023

PH 4213 ADVANCED MEDICINAL CHEMISTRY II – SEQ PAPER

TIME: TWO HOURS

INSTRUCTIONS

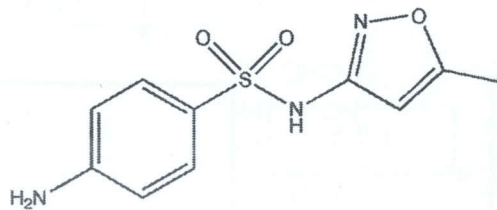
- There are **four** questions in Part A and B.
- Answer **all** the questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

PART A

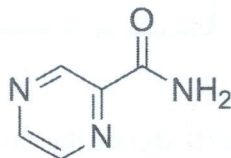
01.

1.1 Write the generic names of the medicines given below which are used in pharmacological treatments. (15 marks)

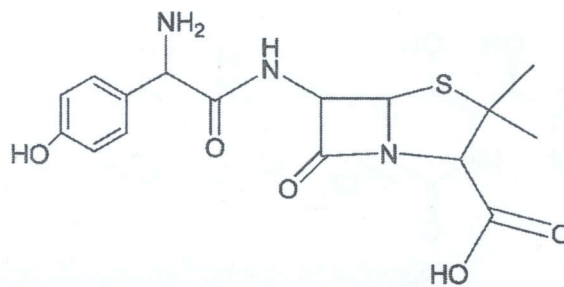
1.1.1



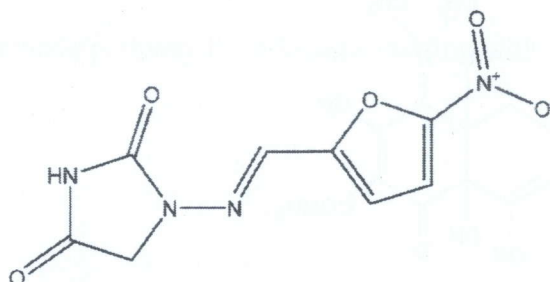
1.1.2



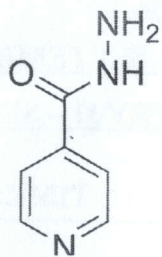
1.1.3



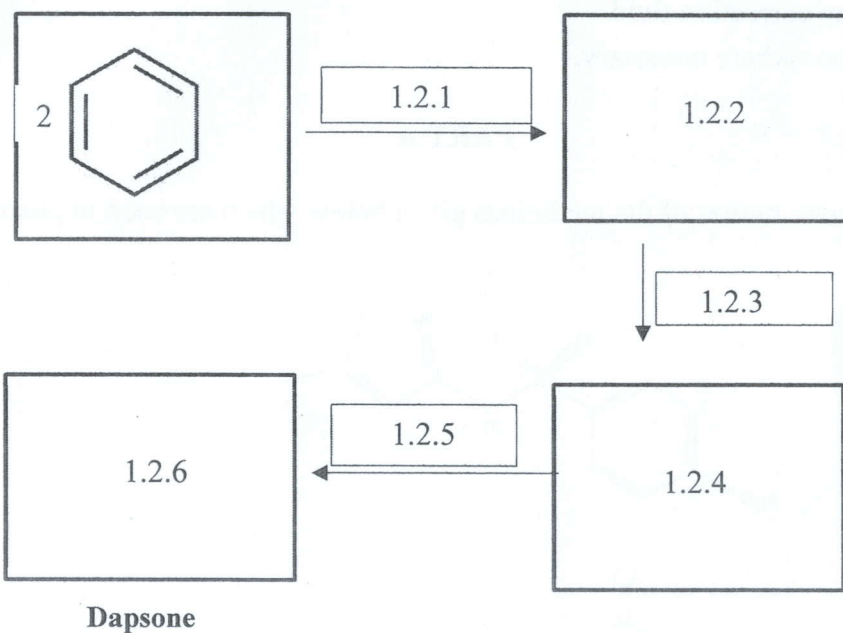
1.1.4



1.1.5

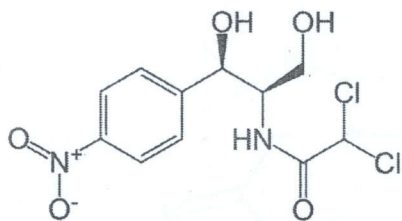


1.2 Synthesis of Dapsone starting with benzene is given below. Complete the blanks using other necessary reagents, reaction conditions and intermediate products formed. (25 marks)

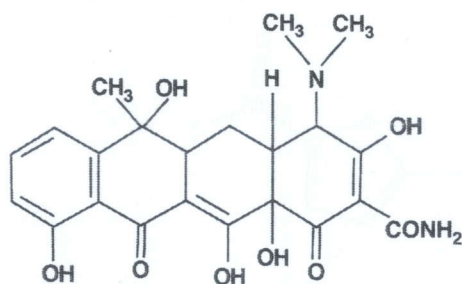


1.3 Describe the general structure activity relationship (SAR) of the drug/pharmacophore of the following two molecules. (30 × 2 marks)

1.3.1



1.3.2

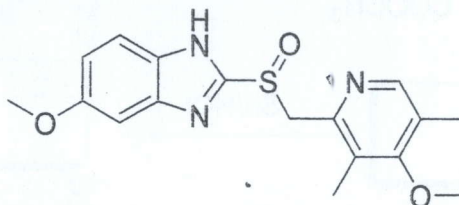


PART B

02.

2.1 Name four classes of drugs used to treat peptic ulcer disease giving one example drug for each. (20 marks)

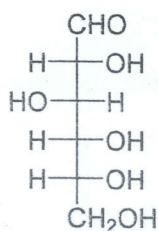
2.2 Chemical structure of omeprazole is given below:



2.2.1 Draw the structure of active isomer of omeprazole. (10 marks)

2.2.2 Illustrate the mechanism of reaction between omeprazole and H^+/K^+ ATPase under acidic environment of parietal cells. (30 marks)

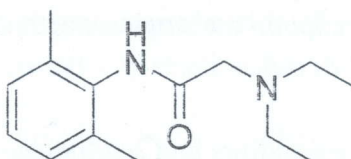
2.3 Isosorbide dinitrate (ISDN) is a drug used in angina. Draw a synthetic pathway for the chemical synthesis of ISDN starting from D-Glucose. (40 marks)



D-Glucose

03.

3.1 Chemical structure of lidocaine is given below:



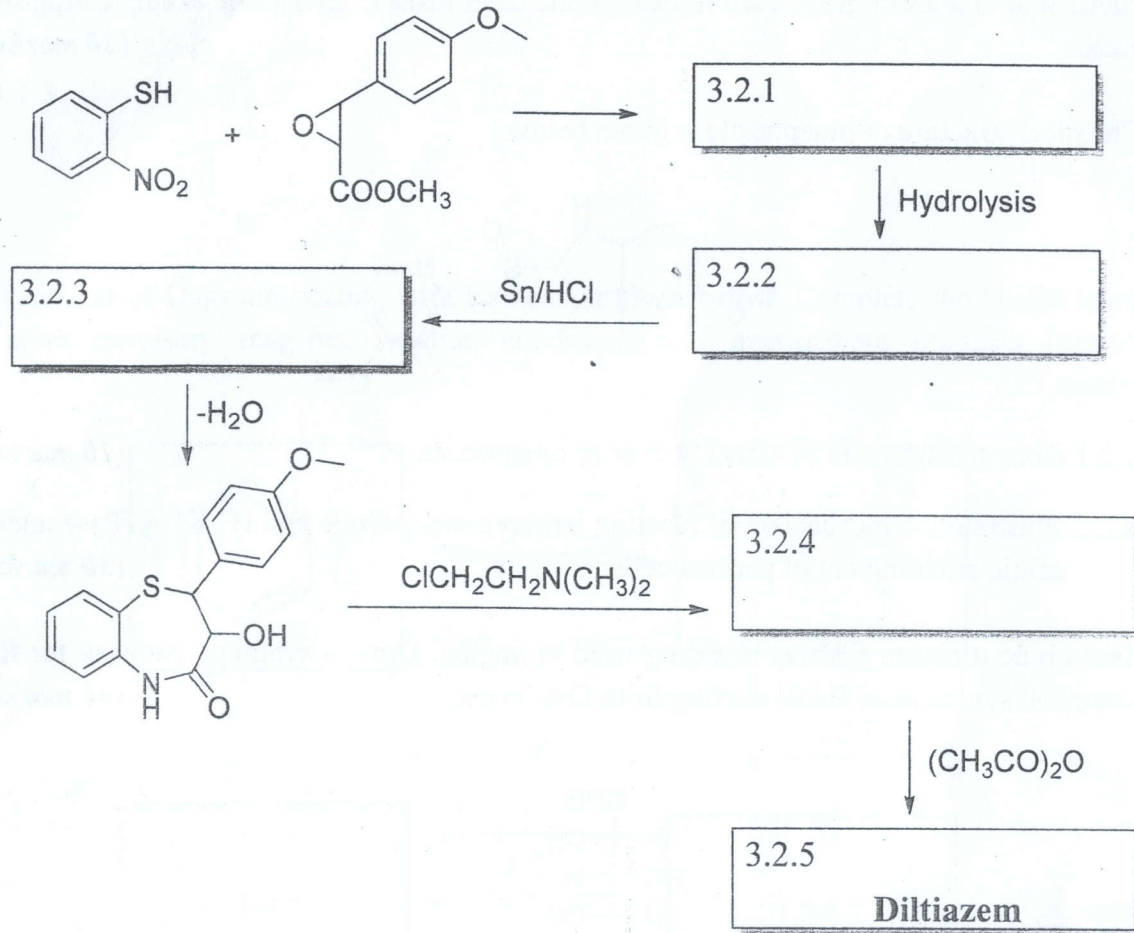
3.1.1 Give two of the clinical indications of lidocaine. (10 marks)

3.1.2 Mention two other drugs that can be used for one of the indications mentioned above. (10 marks)

3.1.3 Propose a synthetic pathway for lidocaine starting with 1,3-dimethyl-2-nitrobenzene. (30 marks)

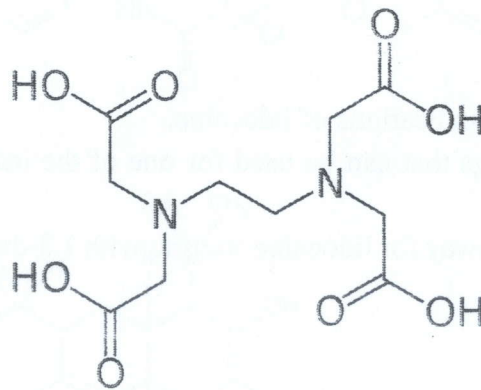
3.2 Fill in the blanks of the following synthetic scheme for the synthesis of diltiazem.

(50 marks)

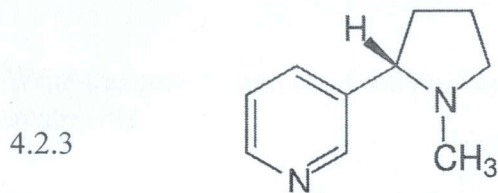
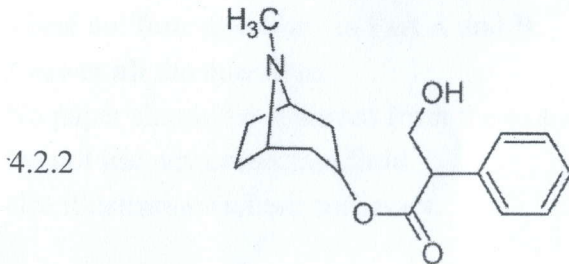
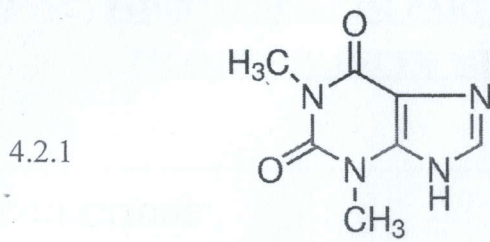


04.

4.1 Name the following drug and briefly explain the structure activity relationship of the drug. (20 marks)

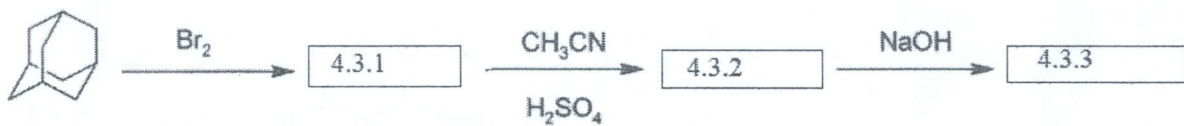


4.2 Write the name and pharmacological activity of the following compounds. (15 marks)



4.3 Giving structures, complete the synthetic pathway of amantadine (4.3.3) given below.

(15 marks)



4.4 Oral hypoglycemic agents are used to treat type II diabetes as an adjunct to dietary control, weight loss and exercise, before insulin.

4.4.1 Briefly explain the mechanism of action of sulfonylureas. (10 marks)

4.4.2 Discuss the structure activity relationship (SAR) of sulfonylureas. (10 marks)

4.5 Alkylating agents, antimetabolites, and antibiotics are some of the important drugs which are being used in treating cancer patients.

4.5.1 Sketch the synthetic pathway of cyclophosphamide starting from "diethanolamine" giving chemical structures of intermediates. (20 marks)

4.5.2 State three features of the pyrimidine analogues; based on its structure activity relationship. (10 marks)

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