00003

CINEC
CAMPUS
Beyond A Graduate

Faculty of Health Sciences
Bachelor of Science Honours in Industrial Pharmaceutical Sciences
IPS 3133 – Advanced Medicinal Chemistry I
Batch – 02 and 03
3rd year 1st semester
Special Repeat Examination

INDEX NUMBER:...

Date	: 24th June 2024
Time	: 09.00 a.m. – 12.00 p.m. (Three hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.
- You are not allowed to take out the examination papers.

Question 01 **(100 marks)**
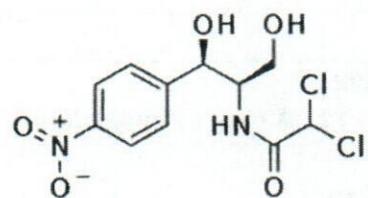
1.1. Classify the drugs based on origin-source of drugs. (25 marks)

....
....
....
....
....
....
....

1.2 State the important forces (bonds) that govern the solubilization process of drugs.

(25 marks)

....
....
....
....

....

....

....

....

....

1.3 Indicate the lipophilic and hydrophilic sites of the following antibiotic chloramphenicol and predict the overall solubility. (25 marks)
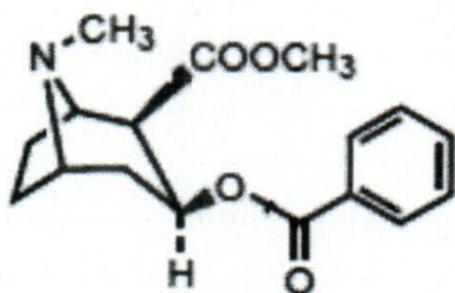
1.4. Lipinski's Rule of Five is useful in drug design. Justify your answer. (25 marks)

....

....

....

....

....

....

....

....

....

....

....

....

Question 02   **(100 marks)**

2.1.Identify the structure of given drug in **Figure A**.   (25 marks)

Figure A

....

2.2.Draw the structures of the hydrolyzed products of the drug mentioned in 2.1.   (25 marks)
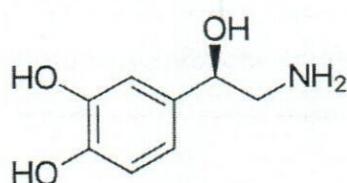
2.3.How does the therapeutic efficacy enhanced in diflunisal?   (25 marks)

....

....

....

....

....

....

....

....

....

....
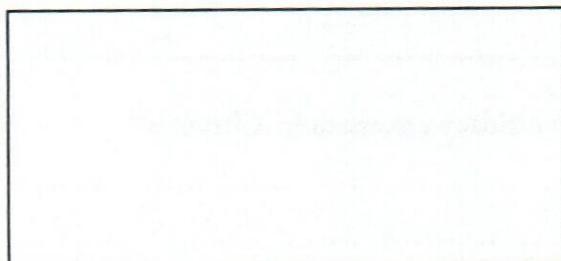
2.4.Heroin is a strong μ agonist developed by altering the Morphine structure. Justify this
statement.   (25 marks)

....

....

....
....
....
....
....
....
....
....

Question 03 (100 marks)

3.1. The structure of the norepinephrine is given below.
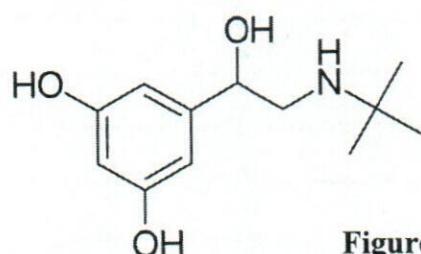
3.1.1. Draw the chemical structures of epinephrine by using the given structure.

(20 marks)

3.2. There is a bulk nitrogen group with substitutions in the terbutaline structure (**Figure B**). State how the following activities are changed according to the Structure activity relationship.

3.2.1. Alpha and beta receptor activity (15 marks)

Figure B

....
....
....

3.2.2. Metabolism of the drug (15 marks)
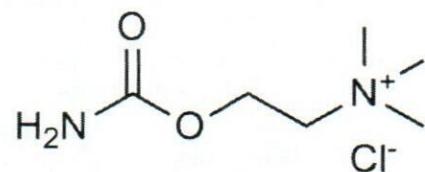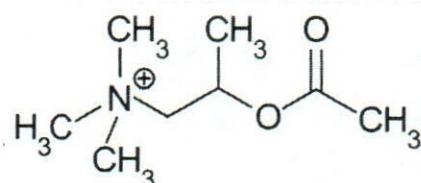
....

....

3.3. Identify the chemical structures given below. (20 marks)

3.3.1. 3.3.2.

....
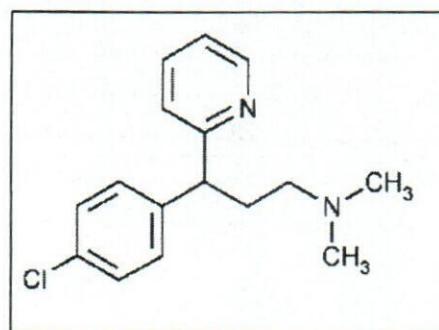
3.4. What is G - protein coupled receptors? (30 marks)

....

....

....

....

....

....

....

....

....

Question 04 **(100 marks)**
4.1.

4.1.1. Identify the given chemical structure of the drug. (20 marks)

....
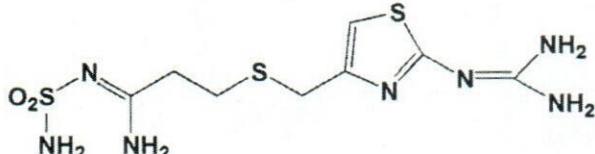
4.1.2.   What is the group of this drug?   (10 marks)

....
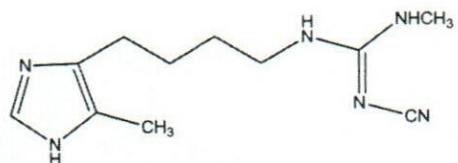
4.2. Identify the chemical structures given below.   (40 marks)
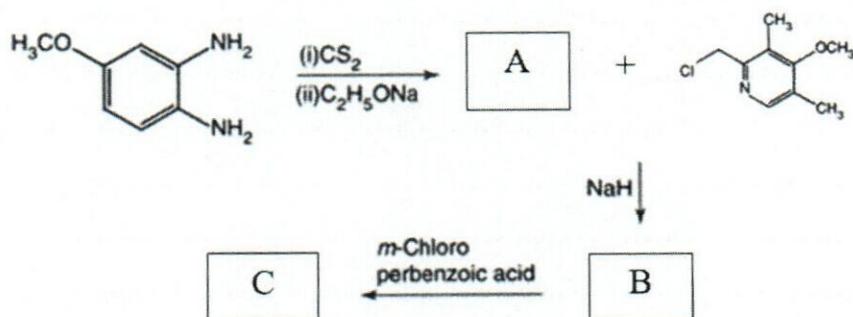
    4.2.1.   4.2.2.

....

4.3. Draw the chemical structures (**A, B, & C**) to complete the synthesis pathway of omeprazole.
                                                                        (30 marks)

....
....
....
....
....
....
....
....
....

Question 05   (100 marks)

5.1. Define the term partition coefficient (P)   (20 marks)

....
....
....

5.2. State the importance of logP in drug design. (30 marks)

....

....

....

....

5.3. What is the importance of Lipinski's *Rule of Five* in drug design. (30 marks)

....

....

....

....

....

....
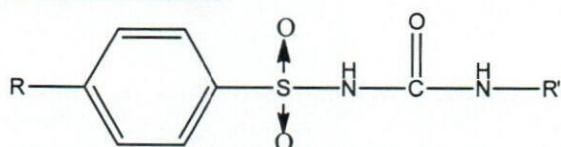
5.4. What is meant by bioisostere and bioisosteric replacement? (20 marks)

....

....

....

....

....

Question 06 **(100 marks)**
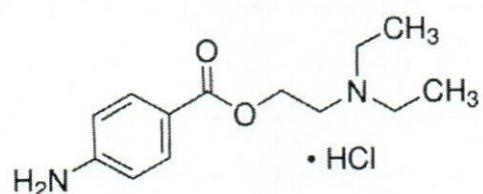
6.1 Identify the following chemical structure. (20 marks)

....

6.2. State the structure-activity relationship of the given structure in 6.1. (25 marks)

....

....

....

....

....

....

....

....

....

....

....

6.2 Identify the lipophilic and hydrophilic portions of the given drug molecule.   (25 marks)

....

....

....

....

....

....

....

....

6.3 "Zwitterionic form enhances the local anaesthetic activity of procaine". Justify this
    statement.   (30 marks)

....

....

....

....

....

....

....

....

....

....