

B.Sc-M. Sc-INTEGRATED PROGRAMME
SCHOOL OF CHEMICAL AND LIFE SCIENCES
SEMESTER III EXAMINATION 2019
PAPER TITLE: PHARMACEUTICAL CHEMISTRY
PAPER CODE: BCH-SEC03

Roll No. _____

(Write your roll no. at the top immediately after receipt of this question paper.)

Time: 1.5h

Max Marks: 37

Attempt all the questions. All parts of a question must be attempted in continuation.
Start answer of a fresh question on a new page.

Q1a. Define the following terms (ANY FIVE).

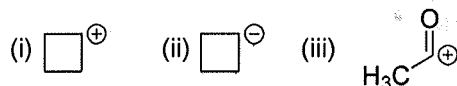
5 x 1 = 5

- | | | |
|---------------------|---------------------|------------|
| a. IC ₅₀ | c. Reterosynthesis | e. FGI |
| e. Soft Drugs | f. Feasible Synthon | g. Synthon |

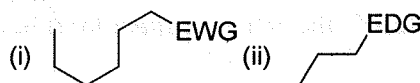
Q1b: Answer briefly all the following questions

4 x 1 = 4

- The noble prize of 1990 was awarded to _____ for retrosynthetic analysis.
- Give the notations used for
 - reterosynthesis: _____
 - Disconnection: _____
- Write the synthetic equivalents of the following synthons:



- Write the pattern of charges which would appear hypothetically using Alternating current charge theory.

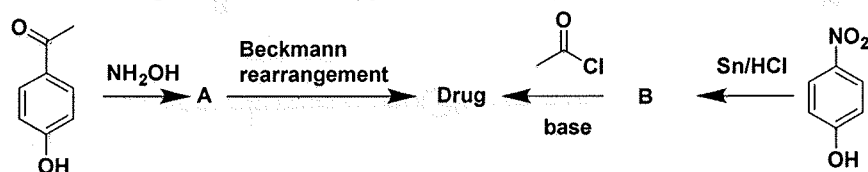


EWG: Electron withdrawing group
EDG: Electron donating group

Q2. Attempt ANY TWO of the following:

2 x 3.5 = 7

- Explain the Reterosynthesis of Aspirin and briefly sketch the synthetic scheme.
- Briefly explain the mechanism of action of Ibuprofen and Paracetamol. Account for the side effect of Paracetamol.
- Define donor synthon, Acceptor synthon and Umpolung. Explain the carbon chain lengths formed after combination of the following
 - $a_3 + d_2$
 - $a_2 + d_2$
- Complete the following conversions and give structures of **A**, **B** and **Drug** obtained.

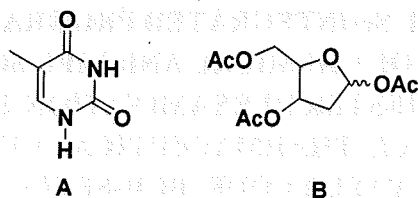


Q3. Attempt ANY TWO of the following:

2 x 3.5 = 7

- Define Sulpha Drug. Explain the broad mechanism of action for the Sulpha drug
- Define Nucleoside analogue drugs. Support your answer by comparing the structure of Guanosine and Acyclovir.

C. Give brief synthesis for azidothymidine (AZT) from A and B.

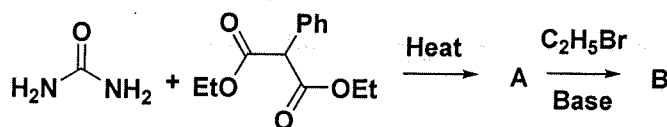


D. Explain the mechanism of action of Albendazole.

Q4. Attempt ANY TWO of the following:

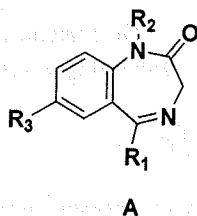
2 x 3.5 = 7

A. Complete the following reaction.



And explain the biological effect of the B (which is a barbituric acid analogue).

- B. Give any three methods for the synthesis of Glyceryl trinitrate from glycerol and mention its uses.
- C. Briefly explain the synthesis of Dapsone and its pharmaceutical application.
- D. What are R_1 , R_2 and R_3 in diazepam (A). Briefly sketch the synthesis and biological activity of Diazepam.



Q5. Attempt ANY TWO of the following:

2 x 3.5 = 7

- A. Explain the synthesis of Penicillin using fermentation. Justify the activity pattern for β -lactam, γ -lactam and δ -lactam analogues of penicillin.
- B. Write the structures of Cephalosporin and Clavulanic acid and explain their biological significance.
- C. Give a brief synthesis of Vitamin C from a suitable hexose sugar.
- D. Sketch the synthesis of A, B and Vitamin B₂ using A and B.

