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[This question paper contains 4 printed pages.]

**Your Roll No.....**

**Sr. No. of Question Paper : 1562** **G**

Unique Paper Code : 3182012302

Name of the Paper : Medicinal Chemistry

Name of the Course : **BSc. (Hons) Biomedical Science (NEP)**

Semester : III

Duration : 3 Hours Maximum Marks : 90

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **five** questions in all.
3. Question No. **1** is compulsory.
4. Give illustrations and examples wherever required.
5. Subparts of the questions should be attempted together.

P.T.O.

1. (a) Briefly explain the following **(Any three)** (3×2=6)

(i) Lipinski's rule of five

(ii) Antisense therapy

(iii) First pass metabolism

(iv) Pharmacophore

(b) Distinguish between **(Any two)** (2×4=8)

(i) Analogue synthesis & Rational drug design

(ii) Partial Agonist & Inverse Agonist

(iii) Nuclear & Surface receptors

(iv) *In vitro* & *in vivo* screening

(c) State whether the given statement is true or false. Justify your answer (2×2=4)

(i) The sub lingual route of drug administration bypasses the first-pass effect.

(ii) Lipophilicity of the drug is an important factor responsible for its absorption.

2. (i) What is SAR? Discuss the SAR of Salicylic acid.

(ii) What are anti-inflammatory drugs? Differentiate between preferential COX-2 inhibitors and selective COX-2 inhibitors with suitable examples. (9,9)

3. (i) Explain the concept of Isosterism in drug design. Explain the types of bioisosteric modifications with suitable examples.

(ii) Discuss the classes of DNA as drug target. Explain the mechanism of action of DNA intercalators with the help of specific example. (9,9)

4. (i) Discuss the signal transduction pathway involving kinase-linked receptors and GPCR with suitable examples.

(ii) Discuss the role of intermolecular forces involved in the binding of drug with the receptor using a hypothetical example. (9,9)

5. (i) Explain with the help of the diagram: Effect of increasing concentrations of a competitive and non-competitive antagonist on the DRC for an agonist.

(ii) What do you understand by the term lead compound? What are the possible ways of finding a lead compound? Discuss at least one way with an example. (9,9)

6. (i) Differentiate between non-competitive and suicide substrate inhibitors with suitable examples.

(ii) Discuss how the molecular descriptors are related to the physiochemical properties of molecules using examples. (9,9)

7. (i) Discuss how prodrug strategy could be used to tackle membrane permeability, solubility, and drug toxicity problems. Explain with a suitable example.

(ii) Discuss the concept of target specificity and selectivity in drug discovery? How can one exploit target specificity and selectivity between species and tissues for drug designing with suitable examples? (9,9)