



Date:

Registration number:

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27.
M.Sc. CHEMISTRY - IV SEMESTER
SEMESTER EXAMINATION: APRIL-2022
(Examination conducted in July 2022)
OCH 0219 – MEDICINAL CHEMISTRY

Time: 2 hour 30 minutes

Max. Marks-70

This question paper contains **three** printed pages, **three** parts and **seventeen** questions.

Part A

Answer any **SIX** questions. Each question carries **TWO** marks. **2 X 6 = 12**

1. Mention any two characteristics of a soft drug.
2. Explain the term 'sequential blocking'.
3. Define ED_{50} and IC_{50}
4. What are bactericidal and bacteriostatic drugs?
5. 'DOLO-650' is one of the most commonly used medicine to relieve pain and fever. Name the API used in it.
6. Describe the terms IND and NDA used in drug discovery.
7. 'Incretin mimetics' act on which receptor?
8. What are the prerequisites for an 'immunological assay'?

Part B

Answer any **FOUR** questions. Each question carries **TWELVE** marks. **12 X 4 = 48**

9. a) Differentiate the terms agonist, antagonist and inverse agonist with the help of dose response curves.
b) Which are the different non-covalent interactions possible between receptor and the following drug molecules?



(6+6)

10. a) Explain the term 'simplification of a structure'. Mention advantages and disadvantages of this technique.
b) Define 'SAR'. Explain any four methods for optimization of hydrophilic property of the 'lead molecule'. (6+6)
11. a) How acyclovir helps in controlling growth and development of virus in human cells? Give a method for the synthesis of acyclovir.

b) Give a method for the synthesis of metformin and explain its role in controlling type-II diabetes. (6+6)

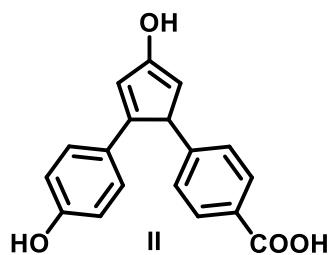
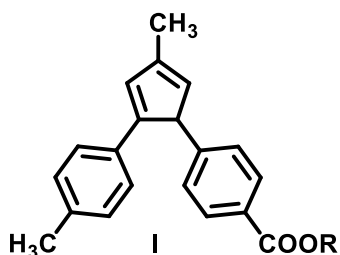
12. a) What are 'calcium channel blockers'? Explain their role as cardiovascular drugs.

b) How do we get inflammation? Explain different methods of controlling it by using NSAID's.

(6+6)

13. a) Define 'solid phase' technique. Mention any four advantages of this techniques.

b) Explain 'Lipinski's rule of five'. Apply this rule to the following molecules and identify the better drug molecule.



(6+6)

14. a) Give a method for the synthesis of ibuprofen starting from isobutylbenzene.

b) What is a prodrug? Mention different carrier linked prodrugs.

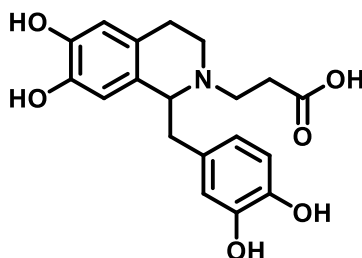
c) What are anti-neoplastic agents? Classify them with examples?

(4+4+4)

Answer any TWO questions. Each question carries FIVE marks.

5 X 2 = 10

15. The structure of a 'lead molecule' is given below. The PK data shows very low concentration at the site of action. Mention various possibilities to improve the PK data.



16. Give scientific reasons for the following.

a) Truck drivers are suggested not to use 'chlorphenamine' drugs while driving.

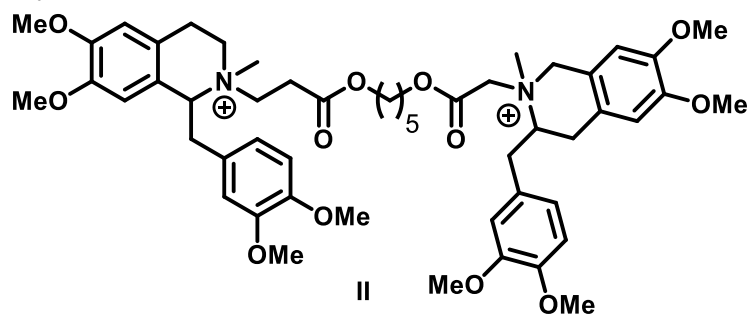
b) Insulin is not administered orally.

c) Extract from '*Vinca Rosea*' plant is used in the treatment of cancer.

d) The sale of 'Flunitrazepam' is restricted in many countries.

e) 'ACE inhibitors' is drug of choice for chronic heart failure.

17. a) Explain why the drug (II) is not stable in blood. What structural changes are needed to increase its stability in blood?



b) Why 'tetracyclin' tablets should not be consumed with milk?

(3+2)

