

Time: 2 hours 30 minutes**Total Marks: 60****Instructions:**

- (1) All questions are compulsory.
 (2) Figures to the right indicate full marks.

1. A. Attempt **any two** of the following: **8**
- Discuss the following physical and chemical parameters in drug distribution:
 (a) Solubility (b) Ionization.
 - Explain the use of functional groups in prodrugs with advantages.
 - Discuss structure modification to increase potency and therapeutic index of a drug.
 - Discuss how penicillin was discovered without a lead.
- B Attempt **any one** of the following: **4**
- Give details of factors affecting bioactivity.
 - Discuss the basic idea regarding combinatorial synthesis.
2. A Attempt **any two** of the following: **8**
- What is 'QSAR'? Explain Taft equation and give it's Hancock modification.
 - Explain use of computers in drug design with suitable examples.
 - What are soft drugs? Give their properties.
 - Give the synthesis and one application of cetirizine.
- B Attempt **any one** of the following: **4**
- Explain the methods used to correlate regression parameters with biological activity.
 - Give the synthesis and one application of fluconazole.
3. A Attempt **any two** of the following: **8**
- Discuss the biosynthesis of dimethylallyl pyrophosphate (DMAPP) from acetyl-CoA.
 - How are L-Tyrosine and phenylalanine biosynthesized from chorismic acid?
 - Describe the prostaglandin PGF_{2a} production mechanism.
 - Describe how palmitate is produced during the biosynthesis of fatty acids from malonyl-CoA.

B Attempt **any one** of the following: 4

- i) Give the steps involved in the synthesis of Orsellinic acid *via* acetate pathway.
- ii) Write a note on primary and secondary plant metabolites.

4 A Attempt **any two** of the following: 8

- i) Define, Polymer supported reagents with suitable example. Give the applications of any one polymer supported reaction in Organic synthesis.
- ii) Give any two examples of green oxidation catalyst promoted reactions.
- iii) Define Crown Ether. Write down any one example of crown ether catalysed reaction.
- iv) What are Ionic liquids? Give any one application of ionic liquid as a green solvent.

B Attempt **any one** of the following: 4

- i) Why non-polar or less polar solvents are not suitable for microwave reactions? Give any one example of microwave assisted reaction.
- ii) Write down the green synthesis of Ibuprofen. Give any two advantages of green synthetic method of Ibuprofen.

5 A Attempt **any four** of the following: 12

- a) Discuss the basic pharmacokinetics in drug absorption.
- b) Define the terms: Receptor and drug potency.
- c) Explain drug design via enzyme inhibition.
- d) Give synthesis of Fluoxetine
- e) Write a note on the biosynthesis of Shikimic Acid.
- f) Discuss the mevalonate pathway for the biosynthesis of Mevalonic acid.
- g) Explain in brief any three principles of Green Chemistry.
- h) Write down the structure and chemical name of Aliquat 336. Give any one application of Aliquat 336 in organic synthesis.

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