Duration: 2.5 Hours **Max Marks: 60**

N.B. i) All questions are compulsory.
ii) Figures to the right indicate full marks.

1.	A.		Attempt **any two** of the following:	**8**
		i)	Explain the terms: A) Receptor B) Therapeutic index	
		ii)	Discuss how penicillin was discovered without a lead.	
		iii)	Discuss the physical and chemical parameters solubility and ionization, in drug distribution.	
		iv)	Discuss structure modification to increase potency and therapeutic index of a drug.	
	B		Attempt **any one** of the following:	**4**
		i)	Discuss the basic idea regarding combinatorial synthesis.	
		ii)	Give details of factors affecting bioactivity	
2.	A		Attempt **any two** of the following:	**8**
		i)	Explain how steric factors affect activity of a drug.	
		ii)	Explain use of computers in drug design.	
		iii)	What are prodrugs? Explain their types. Give advantages of prodrugs.	
		iv	Explain drug design via enzyme inhibition.	
	B		Attempt **any one** of the following:	**4**
		i)	Give synthesis and one application of Fluoxetine.	
		ii)	Give synthesis and one application of Labetalol.	
3.	A		Attempt **any two** of the following:	**8**
		i)	Discuss the Mevalonate pathway in the biosynthesis of Mevalonic acid.	
		ii)	What are isoflavonoids? Give biosynthesis of isoflavonoids from flavonoids.	
		iii)	Give the structure of Farnesyl pyrophosphate and conversion of it in bisabolyl cation.	
		iv	How is L-Tyrosine biosynthesized? Explain in detail.	
	B		Attempt **any one** of the following:	**4**
		i)	What are the metabolites? What are primary and secondary metabolites in plants?	
		ii)	Explain the processes involved in fatty acid biosynthesis.	
4	A		Attempt **any two** of the following:	**8**
		i)	What are the examples of Green Reagents? Give the application of any one Green Reagent in Organic synthesis.	
		ii)	Give any two green acid catalysed reactions with examples.	

iii) Write down the long form of PTC with two examples. Give example of chemical reaction using PTC.

iv Explain any two reactions with examples in which water is employed as a green solvent.

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

i) Write down the application of Solid phase synthesis in any two organic reactions.

ii) Define Sonochemistry. Write down the symbol used for reactions carried out in the presence of ultrasound. Give any one example of Ultrasound assisted reaction.

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

a) Explain the use of functional groups in prodrugs with advantages.

b) Define the terms: drug assay and drug potency.

c) Discuss the concept and properties of soft drug.

d) Explain the modern method of drug design using bioinformatics.

e) Explain the biosynthesis of prostaglandin PGE_2 from Arachidonic acid.

f) How is Chorismic acid synthesized from Shikimic acid.

g) Explain in brief any three principles of Green Chemistry.

h) What is supercritical Carbon Dioxide. Give any one application of supercritical Carbon Dioxide in organic synthesis.
