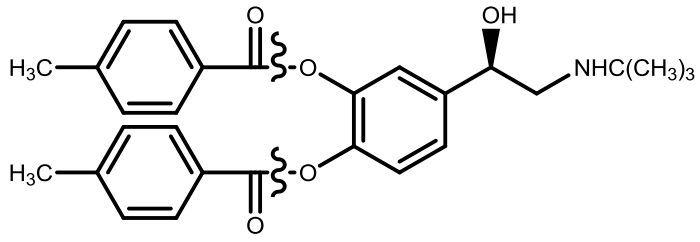
[Time: 3 Hours] **[Total Marks: 80]**

NB: All questions are compulsory.

Q.1		Answer any 10 out of 12 questions listed below	**20**
	i.	What are mutual prodrugs? Give an example of it.	
	ii.	What is the Michaelis-Menten equation and its Lineweaver-Burk form?	
	iii.	Define "non-competitive allosteric antagonism" with suitable example?	
	iv.	Explain chain branching as method for lead modification?	
	v.	Explain Van der Waals interactions involved in drug receptor binding.	
	vi	Define a bioprecursor and give an example of oxidatively metabolized bioprecusor.	
	vii	Write the principle involved in Induced fit drug receptor interaction.	
	viii	Define Conformational isomers and give two examples.	
	ix	Give example of one carbon transfer coenzyme catalysis reaction.	
	x	Name any one phase I enzyme involved in reduction reaction and state a typical reaction catalyzed by it	
	xi	What is the conceptual difference between Km and Ks as enzyme kinetic	
	xii	parameters	
		What are eutomer and distomer?	
Q.2.	a.	Discuss the structural modification methods used in lead identification	**4**
	b.	Explain Rate theory OR Activation aggregation theory postulated in drug receptor interactions. Give its limitations	**4**
	c.	Write a note on application of site specific prodrugs using suitable examples	**4**
Q.3.	a.	Define drug metabolism and classify the Phase I and Phase II drug metabolism enzymes	**4**
	b.	Describe CYP450 oxygen activation cycle. OR Write a short note on inhibition of CYP450 and its consequences	**4**
	c.	Derive the Briggs Haldane equation for explaining the kinetics of enzyme reactions. State all the methods for plotting enzyme kinetic data, derive the equation used for Eadie Hofstee plots.	**4**
Q.4	a.	Explain the significance of bipartitle and tripartite systems in designing prodrugs by giving two examples from each class. OR Give examples of prodrugs which can be prepared for drugs containing amino functional group	**4**
	b.	What are bioisosteres? How they are classified? Support your answer by giving suitable examples	**4**
	c.	Outline the silent features of the Occupancy theory for drug receptor interaction. Derive the equation for the response	**4**
Q.5	a.	Explain how prodrug approach can be used to achieve the patient compliance Write a note on glucuronosyl transferase enzymes **OR** sulfotransferase enzymes	**4**
	b.	What is co-enzyme catalysis? Explain any enzyme catalyzed cofactor requiring	**4**
	c.	reaction involving two electron transfer.	**4**
Q.6	a.	Write a note on Aldehyde oxidase OR Xanthine oxidoreductase	**4**

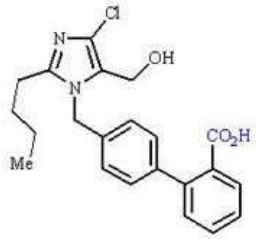
b. Bitolterol (A) shows an improved activity over previous catechol like compounds. What feature of salbutamol is crucial to this increased duration of action? What strategy was used to attain the improved duration of action? **4**



(A)

OR

Losartin was developed from structure (I) as an antihypertensive agent by replacing a carboxylic acid group with a tetrazole ring and showed improved biological activity. What strategy has been used to improve the biological activity? Justify your answer by giving suitable explanation.



(I)

Losartan

c. Give the topology of the 2-TM ion channel. Explain how the gating mechanism takes place **4**

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