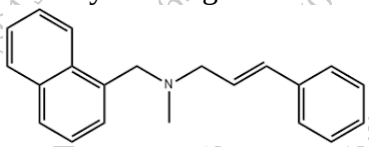
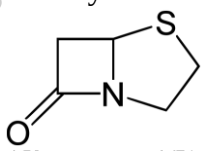
3 Hours **Total Marks: 75**

Q.I	Answer the following Multiple Choice Questions. Select the most appropriate option for each statement.			20M
	Questions		**Options**	
1	In tetracycline, the pka value of phenolic enone system is in the range of	a	6.4-6.8	
		b	9.1-9.7	
		c	7.2-7.8	
		d	2.8-3.3	
2	Hammett's electronic constant is represented by	a	ω	
		b	ρ	
		c	Es	
		d	σ	
3	Name active form of pyrazinamide	a	Pyrazinoic acid	
		b	Prrazinaldhyde	
		c	Isonicotinic acid	
		d	Isonicotinaldehyde	
4	Amodiaquine belongs to	a	2-amino quinoline class	
		b	4-amino quinoline class	
		c	3-amino quinoline class	
		d	5-amino quinoline class	
5	Which of the following is an aminoglycoside antibiotic	a	Kanamycin	
		b	Erythromycin	
		c	Chloramphenicol	
		d	Capreomycin	
6	β-lactam ring in cephalosporin is fused with	**a**	Dihydrothiazine ring	
		b	Dihydrothiazole ring	
		c	Dihydrothiadiazine ring	
		d	Dihydrothiadiazole ring	
7	Identify the drug 	a	Naftifine	
		b	Clotrimazole	
		c	Tolnaftate	
		d	Itraconazole	
8	Identify the reactant for synthesis of Pamaquine	a	4-methoxy 2-nitrobenzenamine and glycerol	
		b	3-chloroaniline and diethyl ethoxymethylenemalonate	
		c	2,4-dichloro-5-fluoro-benzoyl chloride and diethyl malonate	
		d	2-(4-chlorabenzoyl)-benzoic acid and ethylene diamine	

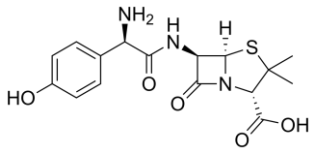
9	Purine dideoxynucleoside analog of inosine is	a	Didanosine	
		b	Indinavir	
		c	Zidovudine	
		d	Lamivudine	
10	Antiviral tri-cyclic primary amine drug.	a	Rimantadine	
		b	Acyclovir	
		c	Ganciclovir	
		d	Amantadine	
11	Identify the following ring 	a	Penam	
		b	Penem	
		c	Cepham	
		d	Cephem	
12	_____is treated with $KHCO_3$ and CO_2 to synthesize PAS	a	o- aminophenol	
		b	m-aminophenol	
		c	p-amino phenol	
		d	None of the above	
13	Rifamycin inhibit _____	a	DNA-dependent RNA polymerase	
		b	DNA ligase	
		c	DNA polymerase	
		d	RNA polymerase	
14	Identify Heterocyclic ring present in Nalidixic acid	a	Naphthyridine	
		b	Quinoline	
		c	Naphthalene	
		d	Pyrimidine	
15	Sultamicillin is prodrug of	a	ampicillin and clavulanic acid	
		b	ampicillin and tazobactam	
		c	ampicillin and sulbactam	
		d	amoxycillin and sulbactam	
16	Which of the following is anti-amoebic drug	a	Ketoconazole	
		b	Metronidazole	
		c	Albendazole	
		d	Sulfamethoxaole	

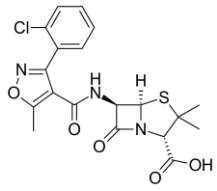
17	Molecular docking helps in understanding	a	physicochemical properties of drug	
		b	binding interactions of the drug	
		c	pharmacokinetic profile of the drug	
		d	bioavailability of the drug	
18	Identify which of the following is sulfone	a	Dapsone	
		b	Trimethoprim	
		c	Sulfisoxazole	
		d	Sulfacetamide	
19	Identify the most active isomer of Chloramphenicol.	a	L-threo isomer	
		b	L-erythro isomer	
		c	D-erythro isomer	
		d	D-Threo isomer	
20	π represents _____ in 2D QSAR	a	steric parameters	
		b	hydrophobicity	
		c	electronic parameters	
		d	electrostatic parameters	

Q.II **Attempt <u>ANY TWO</u> of the following. Draw structures wherever required.** **20M**

1A With reference to the following structures, answer the following questions **4M**

a) **b)**





i) Give the generic name of the above drug a.
ii) Give the generic name of the above drug b.
iii) Which of the above drugs is β-lactamase resistant.
iv) Narrow spectrum drug is _____ and Broad spectrum drug is _____.

1B Explain the structural features and mechanism of action of aminoglycosides. **4M**

1C Explain stability of macrolide antibiotics with suitable examples. **2M**

2A Explain the development of cephalosporins with suitable structures. Comment on the advantages of each generation. **4M**

2B a) Draw the structure and mention the generic name of any monobactam. **4M**
b) Clavulanic acid is given in combination with cloxacillin. State whether the statement is True or False. Justify.

2C Explain the activation and mechanism of action of proguanil. **2M**

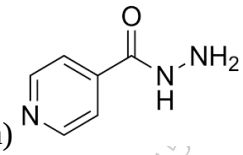
3A a) With the help of reaction explain the epimerization of tetracyclines and its effect on their activity. **4M**
b) Explain degradation of tetracycline in extreme acidic conditions.

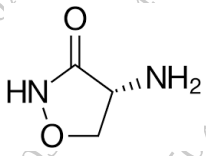
3B Draw the structures of drugs belonging to the monobactam class. Comment on their spectrum of activity. **4M**

3C Define Prodrug. Differentiate between bipartite and tripartite prodrugs. **2M**

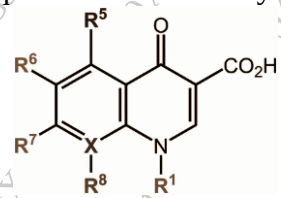
Q.III Attempt **any Seven out of given Nine questions.** **35M**

1. Identify the following two drugs and elaborate the mechanism of action. **5M**

a) 

b) 

2. Write the effect of substitutions on the following scaffold of fluoroquinolone at R1, R6, R7 and R8 positions with suitable examples for each. Mark essential pharmacophore required for the activity. **5M**



3. A. Outline the synthesis of acyclovir along with suitable reagents. **4M**

B. Name any one antiviral protease inhibitor. **1M**

4. A.Write chemical classification of azole antifungal drugs. Mention one example with structure for each class. **4M**

B. With structure write example of naturally occurring antifungal antibiotic. **1M**

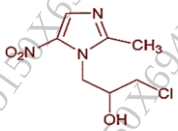
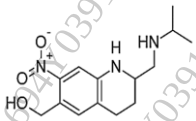
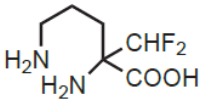
5. A.Outline synthesis of Sulfamethoxazole with suitable reagents and indicate its use. **3M**

B. Sulfasalazine is a prodrug. Answer true or false and justify. **2M**

6. A. Write the Name and structure of antiprotozoal agent which acts by inhibiting ubiquinone reductase. **2M**

B.With the help of suitable structures explain the role of alkoximino group in aminoacyl side chain at 7th position of cephalosporins. **3M**

7. Match the following **2M**

Name	Structure	Mechanism of Action
Ornidazole		Ornithine Decarboxylase inhibitor
Eflornithine		Bind to the protein tubulin and, thus, prevent tubulin polymerization to microtubules
		Generation of ROS

B. Outline synthesis of Mebendazole with suitable reagents. **3M**

8. Name two computer aided drug design techniques. Explain the steps involved in molecular docking. **5M**

9. Write a short note on solid phase synthesis. **5M**