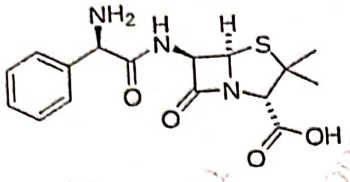
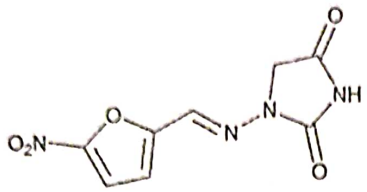
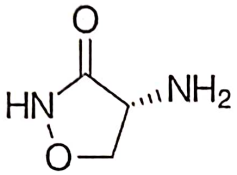
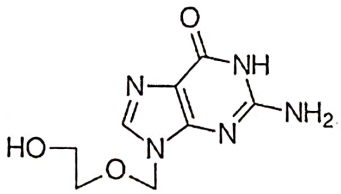
Time:3Hrs Marks:75

Q.I. Answer the following Multiple Choice Questions. Select the most appropriate option for each statement. 20M

Sr No	Questions		Options
1	Identify the following structure 	a	Amoxicillin
		b	Ampicillin
		c	Cloxacillin
		d	Penicillin V
2	Hammett constant is a measure of	a	Lipophilicity of substituent
		b	Log P of substituent
		c	Steric effect of substituent
		d	Electronic effect of substituent
3	β-lactam ring in cephalosporin is fused with	a	Dihydrothiazine ring
		b	Dihydrothiazole ring
		c	Dihydrothiadiazine ring
		d	Dihydrothiadiazole ring
4	Azithromycin consists of a	a	16-membered lactone ring
		b	15 membered lactam ring
		c	15 membered lactone ring
		d	14 membered lactam ring
5	Conjugated trione system of tetracycline has a pka of	a	2.8-3.4
		b	7.2-7.8
		c	9.1-97
		d	5.5-6.5
6	Water soluble artemisinin derivative used as antimalarial agent is	a	Artemether
		b	dihydroartemisinin
		c	Arteether
		d	Artesunate
7	Structure of tripartite prodrug is	a	Drug-Linker-Carrier
		b	Linker-Drug-Carrier
		c	Linker-Carrier-Drug
		d	Drug-Linker-Drug
8	Chloramphenicol activity resides in	a	L-threo isomer
		b	L-erythro isomer
		c	D-erythro isomer
		d	D-Threo isomer
9	Example of an aminoglycoside is	a	Capreomycin
		b	Clindamycin
		c	Kanamycin
		d	Clarithromycin

10	Heterocyclic ring present in pyrazinamide is	a	pyridazine
		b	pyrazine
		c	pyridine
		d	pyrimidine
11	Identify the following drug 	a	Furosemide
		b	Diloxanide furoate
		c	nitrofurantoin
		d	linezolid
12	Identify the following drug 	a	cycloserine
		b	clindamycin
		c	chloramphenicol
		d	capreomycin
13	Following drug is useful in treatment of infection caused by 	a	H1N1
		b	HSV
		c	HIV
		d	VZV
14	2-methyl imidazole and nitric acid are starting materials used for synthesis of	a	Itraconazole
		b	Miconazole
		c	Metronidazole
		d	Ketoconazole
15	Prontosil on metabolism leads to formation of	a	Sulfacetamide
		b	Sulfisoxazole
		c	Sulfone
		d	Sulfanilamide
16	---------- is an example of NNRTI	a	Zidovudine
		b	Lamivudine
		c	Delavirdine
		d	Didanosine
17	Solid phase synthesis is frequently used in combinatorial chemistry. Which means?	a	Reactions are carried out without solvent

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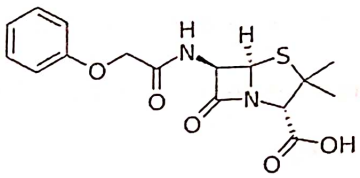
		b	Reagents and reactants are attached to a solid phase support
		c	Reagents are used in the solid phase
		d	Molecules are constructed on a solid phase support
18	Characteristic side effect associated with Sparfloxacin is	a	phototoxicity
		b	nephrotoxicity
		c	hepatotoxicity
		d	neurotoxicity
19	4-[(4-aminobenzene)sulfonyl]aniline is the IUPAC name of	a	sulfanilamide
		b	dapsone
		c	sulfacetamide
		d	sulfapyridine
20	Target enzyme of Terbinafine is	a	Squalene epoxidase
		b	Lanosterol-14α-demethylase
		c	Lanosterol-14α-reductase
		d	Squalene dehydrogenase

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

Q1.

a. With reference to the structure, answer the following questions **4M**



i) Give the generic name of the above drug.

ii) Draw the structure of the salt form of the above drug.

iii) Above drug can be given by ..... route. Justify.

iv) Explain one modification done to improve its penicillinase resistance.

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

c. Explain the structural modifications done to improve the acid stability and bioavailability of macrolides. **2M**

Q2.

a. Explain the development of cephalosporins with the help of structural features. Comment on the advantages of each generation. **4M**

b. Clavulanic acid is given in combination with amoxicillin. Justify. **4M**

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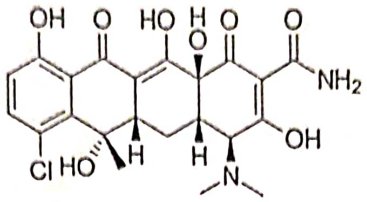
c. What are bioprecursor prodrugs? 2M

Q. 3.

a. With reference to the structure, answer the following questions 4M



i) Identify the chemical class and generic name of the drug.
ii) Classify the above drug based on its duration of ation.
iii) Draw the structure of any salt form of the drug.
iv) What will happen if amide group of the drug is replaced by nitrile?

b. i) Explain the acid catalyzed degradation of cephalosporins with the help of suitable reaction. 2M

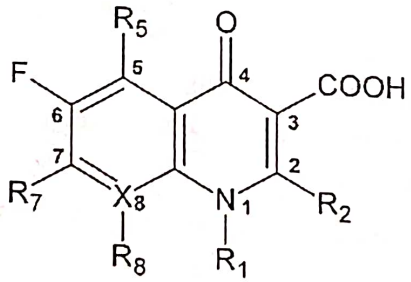
ii) Draw the structure and use of any monobactam. 2M

c. Draw the structure of Pyrimethamine. Why is it given in combination with sulfadoxine? 2M

Q. III Attempt <u>any seven out of given nine questions.</u> 35M

Q1. Give the synthetic scheme for synthesis of Isoniazid. Depict the metabolism of Isoniazid. 5M

Q2. With reference to the following scaffold, answer the following questions: 5M



a) Name the above scaffold and identify the target of action.
b) Identify the drug with R_1 = cyclopropyl, R_5 = amino, R_7 = 2,6-dimethyl-4-piperazinyl, R_8 = Fluoro.
c) Highlight the part of the drug involved in binding to the target protein.
d) Presence of small alkyl group at position 1 dictates the spectrum of activity. State whether the statement is true or false. Justify.

Q3. Explain with the help of suitable reactions the activation of acyclovir required for its action. Name the enzyme inhibited by acyclovir. 5M

Q4. a) Give the synthetic scheme for synthesis of Miconazole 3M

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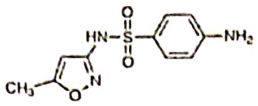
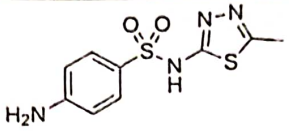
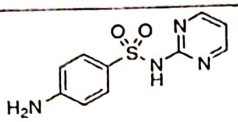
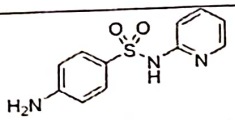
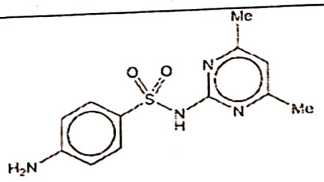
b) Give the structure and use of Rimantadine. 2M

Q5. Match the following: 5M

Drug	Structure	Heterocyclic ring present
1. Sulfapyridine		i)Unsubsituted Pyrimidine
2. Sulfadiazine		ii)Pyridine
3. Sulfamethizine		iii) 1,3,4-thiadiazole
4. Sulfamethizole		iv)Isoxazole
5. Sulfamethoxazole		v) 4,6-dimethyl pyrimidine

Q6. a) Give the structure, generic name and use of drug containing 1,4-naphtho quinone nucleus. 3M

b) Give the structure of any one mutual prodrug. 2M

Q.7. a) Give the synthetic scheme for synthesis of mebendazole 3M

b) Explain ADEPT. 2M

Q.8. Name two computer aided drug design techniques. Explain molecular docking in detail. 5M

Q.9 What is solid phase synthesis? Elaborate on the linkers used in solid phase synthesis. 5M

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