JHARKHAND Rai University
RANCHI

End Semester/Reappear (Semester VI) Examination May 2025

Programme: B. Pharm
Course: Medicinal Chemistry-III **Full Marks: 75**
Course Code: BP601T **Time: 3 Hrs.**
Enrolment no. _____

Q.No.	Questions	CO	Bloom Taxonomy Category	Marks
	Section I			
1	**Objective Type Questions**			**1 x 20 = 20**
	i.Which beta-lactam antibiotic is a monobactam? a. Imipenem b. Aztreonam c. Ceftriaxone d. Amoxicillin ii. Which key interaction occurs between sulfonamides and bacterial dihydropteroate synthase? a. competitive inhibition at the PABA binding site. b. covalent bonding with enzyme residues. c. hydrogen bonding with bacterial ribosomes. d. chelation with divalent metal ions. iii.Cephalosporins belong to which class of antibiotics? a. Macrolides b. Beta-lactams c. Aminoglycosides d. Tetracyclines iv. Which antifungal drug inhibits fungal squalene epoxidase? a. Fluconazole b. Terbinafine c. Amphotericin B d. Caspofungin v. Amphotericin B belongs to which class of antifungal agents? a. Azoles b. Polyenes c. Allylamines d. Echinocandins	CO1	Remember	
	vi. Albendazole and Mebendazole primarily target which component of the parasite? a. Cell wall synthesis b. Microtubules c. Neurotransmitter receptors d. ATP synthesis vii. Which azole antifungal is commonly used for cryptococcal meningitis? a. Ketoconazole b. Fluconazole c. Itraconazole d. Clotrimazole viii.The antiviral activity of Ribavirin is due to structural resemblance to which nucleotide? a. Adenosine b. Guanosine c. Thymidine d. Uridine ix. Which of the following is an aminoglycoside antibiotic? a. Penicillin b. Tetracycline c. Gentamicin d. Erythromycin x. Which of the following is a common side effect of tetracyclines? a. Photosensitivity b. Hepatotoxicity c. Nephrotoxicity d. Hearing loss			
	xi. Which of the following is a common side effect of β-Lactam antibiotics? a. Hearing loss b. Aplastic anemia c. Allergic reaction d. Yellowing of teeth xii. Sulphadiazine contains which heterocyclic system? a. pyrimidine. b. diazine. c.oxadiazole. d. thiophene xiii. Tetracyclines inhibit protein synthesis by binding to which bacterial ribosomal subunit? a. 50S ribosomal subunit b. 60S ribosomal subunit c. 30S ribosomal subunit d. 70S ribosomal subunit xiv. Which major toxicity is associated with Chloroquine therapy? a. Retinopathy b. Hepatotoxicity c. Nephrotoxicity d. Ototoxicity xv. The primary mechanism of Metronidazole involves: a. Generation of reactive oxygen species (ROS) b. Inhibition of folate synthesis c. Blocking ergosterol biosynthesis d. Disrupting microtubule formation			
	xvi. Which method is commonly used in molecular docking for predicting ligand-receptor binding? a. scoring function analysis. b. UV-visible spectroscopy. c. differential scanning calorimetry. d. thin-layer chromatography. xvii. Which of the following is an aminoglycoside antibiotic? a. Penicillin b. Tetracycline c. Gentamicin d. Erythromycin xviii. Aminoglycosides primarily target which bacterial structure? a. Cell wall b. 30S ribosomal subunit c. DNA gyrase d. RNA polymerase xix. Which of the following is a tetracycline antibiotic? a. Penicillin b. Gentamicin c. Doxycycline d. Erythromycin xx. What is the primary vector for malaria transmission? a. Aedes mosquito b. Culex mosquito c. Anopheles mosquito d. Tsetse fly			

Section II				
2. Short Answer type questions.				**7 x 5 = 35**
a	Give the classification of cephalosporin based on generations.	CO1	Remember	
b	Explain the structural activity relationship of Tetracycline. Draw the structure of Oxytetracycline.	CO1	Understand	
c	Give the synthetic route for chloroquine along with its mechanism of action and uses.	CO2	Apply	
d	Give structural activity relationship of Macrolide Antibiotics. Explain it's mechanism of action and uses	CO2	Understand	
e	Explain the mechanisms of action of Nalidixic acid and Gatifloxacin in bacterial inhibition.	CO3	Understand	
f	Demonstrate the use of Hammet's parameter in predicting molecular interactions in drug design.	CO5	Apply	
	or			
	Demonstrate how solid-phase synthesis enables the rapid generation of compound libraries for drug discovery.	CO5	Apply	
g	Give classification for Sulphonamides and provide the MOA for Sulfamethoxazole.	CO4	Remember	
	or			
	Provide synthesis, MOA and uses for the drug- Trimethoprim.	CO4	Remember	
Section III				
Long Answer Type questions				**2 x 10 = 20**
3	Evaluate Hansch analysis and its contributions to QSAR studies	CO5	Evaluate	
	or			
	Compare and contrast ligand-based pharmacophore modeling and structure-based pharmacophore modeling.	CO5	Evaluate	
4	What are tetracycline, and how do they function as antibiotics? Discuss the structure and use of minocycline and tetracycline.	CO1	Evaluate	
	or			
	Write the nomenclature, SAR and uses of the following class of drugs- penicillin and beta-lactamase inhibitors.	CO1	Analysis	

Course Outcomes (CO):

On the successful completion of the Course, students will be able to:-

CO1: Understand the importance of drug design and different techniques of drug design

CO2: Understand the chemistry of drugs with respect to their biological activity

CO3: Know the metabolism, adverse effects and therapeutic value of drugs

CO4: Know the importance of SAR of drugs

CO5: Knowledge about structure & synthesis & IUPAC name.