Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Even) Semester Examination May-June 2025

Roll no.....

Name of the Program and semester: B.PHARMA VI SEMESTER
Name of the Course: MEDICINAL CHEMISTRY III
Course Code: BP 601T
Time: 3 hour

Maximum Marks: 75

Note:
(i) This question paper contains three sections
(ii) All the sections are compulsory

Section-A

MULTIPLE CHOICE QUESTION **20 X 1 = 20 MARKS**

S.N	CONTENTS	COs
1.	Resistance to β-lactam antibiotics is most commonly due to: A. Efflux pump activation B. Target site mutation C. β-lactamase enzyme production D. Ribosomal methylation	CO-1
2.	Which is a third-generation cephalosporin with good CNS penetration? A. Cephalexin B. Cefuroxime C. Ceftriaxone D. Cefazolin	
3.	Which chemical moiety is common in all aminoglycosides? A. Deoxystreptamine B. Erythronolide C. Phenol D. β-lactam	
4.	Tetracyclines chelate with which ions, reducing bioavailability? A. Na^+ and K^+ B. Fe^{2+} and Cu^{2+} C. Ca^{2+}, Mg^{2+}, Fe^{2+} D. Cl^- and Br^-	
5.	Erythromycin is a: A. 14-membered macrolide B. 15-membered macrolide C. 16-membered macrolide D. Cyclic peptide	CO-2

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6.	Which metabolic reaction primarily inactivates chloramphenicol in the liver? A. Sulfation B. Hydroxylation C. Glucuronidation D. Methylation	
7.	Primaquine is especially effective against: A. Blood schizonts B. Liver hypnozoites C. Sporozoites D. Gametocytes of *P. falciparum*	
8.	Chloroquine belongs to which class of antimalarial drugs? A. 8-Aminoquinoline B. 4-Aminoquinoline C. Quinolone D. Tetracycline	
9.	Pyrazinamide is converted to its active form by: A. Monooxygenase B. Amidase C. Peroxidase D. Reductase	**CO-3**
10.	Which generation of quinolones includes moxifloxacin? A. First B. Second C. Third D. Fourth	
11.	A piperazine ring at position 7 increases activity against: A. Gram-positive bacteria B. Mycobacteria C. Gram-negative bacteria D. Anaerobes	
12.	Which of the following is a non-nucleoside reverse transcriptase inhibitor (NNRTI)? A. Zidovudine B. Tenofovir C. Efavirenz D. Acyclovir	
13.	What is the primary target of the antifungal drug terbinafine? a) Chitin synthesis b) Ergosterol synthesis	**CO-4**

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	c) Cell wall synthesis d) DNA synthesis	
14.	Which of the following is a characteristic feature of polyene antifungal drugs? a) They inhibit cell wall synthesis b) They bind to ergosterol in the fungal cell membrane c) They inhibit DNA synthesis d) They inhibit RNA synthesis	
15.	Metronidazole works by causing DNA damage in microorganisms through which mechanism of action in the following? a) Reactive oxygen species (ROS) b) DNA polymerase inhibitors c) Antimetabolites d) Protein synthesis inhibitors	
16.	Dapsone works by inhibiting the synthesis of which essential molecule in bacteria? a) Folic acid b) Peptidoglycan c) Lipid A d) Ribosomal RNA	
17.	What is the significance of ADMET in drug design? a) It refers to the analysis of the molecule's absorption, distribution, metabolism, excretion, and toxicity properties b) It is used to determine the molecular weight of a drug c) It helps in optimizing the drug's solubility d) It is used to predict the side effects of a drug	**CO-5**
18.	Which of the following is a key component of a QSAR study? a) Experimental determination of biological activity b) Molecular docking studies c) High-throughput screening of compounds d) Clinical trials	
19.	What is logP (partition coefficient) used to represent in QSAR studies? a) Lipophilicity of a molecule b) Toxicity of a molecule c) Hydrogen bonding capacity of a molecule d) Molecular size	
20.	What is solid-phase synthesis in combinatorial chemistry? a) A method where the reaction occurs on a solid support to facilitate the synthesis of large compound libraries	

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	b) A technique for separating compounds based on solubility c) A method of compound purification d) A technique for testing the biological activity of compounds	

Section B

Short Questions: Attempt any seven questions. **7x5 = 35 marks**

SN	QUESTIONS	CO's
1.	Classify penicillins with examples and their chemical degradation	CO 1
2.	Write structure and SAR of tetracycline	CO 1
3.	Elaborate prodrug with their pharmaceutical application	CO2
4.	Write synthesis of chloramphenicol and chloroquine	CO 2
5.	Discuss the SAR of quinolones	CO 3
6.	Describe anti-tubercular agents and synthesis of isoniazid	CO 3
7.	Write synthesis of metronidazole and miconazole	CO 4
8.	Define chemistry and SAR of sulfonamides	CO4
9.	Write a note on molecular docking techniques	CO 5

Section C

Long questions: Attempt any two questions **2x10 = 20 marks**

SN	QUESTIONS	CO's
1	Write classification of cephalosporin with example and its SAR, MOA and chemical degradation.	CO 1
2	What is anti-malarial drug. Elaborate the malarial life cycle and the drug acting on different stages and SAR of quinolines	CO 2
3	Explain the major physicochemical properties used in QSAR studies, such as lipophilicity, electronic properties, steric properties, hydrogen bonding. How do these properties influence the pharmacokinetics and pharmacodynamics of drug candidates?	CO 5