

Name:

Enrolment No:



**UPES**  
**End Semester Examination, December 2023**

**Course: Antimicrobial Drug Resistance and Drug Development**  
**Program: M.Sc. Microbiology**  
**Course Code: HSMB8016P**

**Semester: III**  
**Time : 03 hrs.**  
**Max. Marks: 100**

**Instructions: Attempt all the questions**

S.No	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q1	Who among the following is regarded as the father of Chemotherapy? a) Alexnder Fleming                      b) Paul Ehrlich c) Howard Florey                          d) Alfard Gilman	1.5	CO1
Q2	Which of the following is the drug-related factor while choosing an antibiotic? a) Spectrum of activity                      b) Pharmacokinetic profile b) Route of administration                d) All of the above	1.5	CO3
Q3	Which of the following is not the reason of combining antimicrobial agents? a) To prevent resistance                      b) To generate synergism c) To create antagonism                      d) To enhance spectrum of activity	1.5	CO2
Q4	Which of the following is usually not the reason for failure of antimicrobial therapy? a) Weakened immune system b) Incomplete course of therapy c) Presence of dormant microorganism d) Oral administration of the drug	1.5	CO3
Q5	Which of the following is the source of penicillin? a) Bacteria                                      b) Virus c) Fungi    d) Actinomycetes	1.5	CO1
Q6	Tinidazole is an a) Antibacterial agent                      b) Antiviral agent c) Antifungal agent                          d) Antiamoebic agent	1.5	CO1
Q7	Trifluridine inhibits? a) DNA polymerase                          b) Reverse transcriptase c) DNA gyrase                                  d) DNA-dependent RNA polymerase	1.5	CO1

<b>Q8</b>	Which of the following is the example of Echinocandins? a) Caspofungin                      b) Anidulafungin c) Micafungin                        d) All of the above	<b>1.5</b>	<b>CO1</b>
<b>Q9</b>	Which of the following microorganism can be resistant to vancomycin? a) <i>Enterococcus faecium</i> b) <i>Enterococcus faecalis</i> c) <i>Staphylococcus aureus</i> d) All of the above	<b>1.5</b>	<b>CO2</b>
<b>Q10</b>	Which of the following is not associated with environmental prevalence of resistance? a) Sewage                              b) Biocides c) Heavy metals                        d) None of the above	<b>1.5</b>	<b>CO2</b>
<b>Q11</b>	Which of the following is not a macrolide antibiotic? a) Streptomycin                        b) Amoxicillin c) Azithromycin                        d) Clarithromycin	<b>1.5</b>	<b>CO1</b>
<b>Q12</b>	Provide an example of beta lactamase inhibitor.	<b>1.5</b>	<b>CO1</b>
<b>Q13</b>	What do you understand by target validation.	<b>1.5</b>	<b>CO3</b>
<b>Q14</b>	What do you understand by teratogenicity?	<b>1.5</b>	<b>CO3</b>
<b>Q15</b>	What do you understand by homology model in CADD?	<b>1.5</b>	<b>CO3</b>
<b>Q16</b>	Define receptor in drug design.	<b>1.5</b>	<b>CO3</b>
<b>Q17</b>	Provide an example of enzyme inhibitor as drug target.	<b>1.5</b>	<b>CO3</b>
<b>Q18</b>	When is IND filed during drug development?	<b>1.5</b>	<b>CO3</b>
<b>Q19</b>	Provide an example of database and docking software in CADD.	<b>1.5</b>	<b>CO3</b>
<b>Q20</b>	Which phase of clinical trial can include healthy humans rather than patients?	<b>1.5</b>	<b>CO3</b>
<b>Section B</b> <b>(4Qx5M=20 Marks)</b>			
<b>Q1</b>	What do you understand by transduction and conjugation mode of resistance?	<b>5</b>	<b>CO2</b>
<b>Q2</b>	Write a brief note on integrase inhibitor and CCR5 antagonist.	<b>5</b>	<b>CO1</b>
<b>Q3</b>	Write down about prevalence of antibiotic resistance in the environment.	<b>5</b>	<b>CO2</b>

<b>Q4</b>	What do you understand by receptors as drug targets for drug design?	<b>5</b>	<b>CO3</b>
<b>Section C</b> <b>(2Qx15M=30 Marks)</b>			
<b>Q1</b>	<b>Background:</b> Jim, aged 25 years, has recently received a diagnosis of HIV infection, and is placed on a treatment regimen of zidovudine and lamivudine...? <b>Questions:</b> <ol style="list-style-type: none"> <li>Determine what information you would give him concerning the drugs he will be taking?</li> <li>What adverse reactions and contraindications would you discuss with Jim?</li> <li>What other alternative combinations can be given?</li> </ol>	<b>5+5+5=15</b>	<b>CO1, CO2, CO3</b>
<b>Q2</b>	<b>Background:</b> A nurse is preparing to administer amphotericin B to a patient with a systemic mycotic infection. This is the first time the nurse has administered amphotericin B. <b>Questions:</b> <ol style="list-style-type: none"> <li>Determine what information the nurse should be aware of concerning the administration of this drug. Explain your answer.</li> <li>Is there any chance of resistance? If yes, how?</li> <li>Mention any possible side effect/contraindication?</li> </ol>	<b>5+5+5=15</b>	<b>CO1, CO2, CO3</b>
<b>Section D</b> <b>(2Qx10M=20 Marks)</b>			
<b>Q1</b>	Write a detail note on macrolide antibiotics with mechanism of action, resistance and uses.	<b>10</b>	<b>CO1, CO2</b>
<b>Q2</b>	Write a detail note on computer-aided drug design (CADD) with the focus on structure and ligand-based drug design.	<b>10</b>	<b>CO3</b>