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| Name: |  |
| Enrolment No: | |

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2023
Set-B

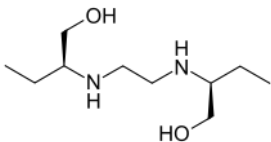
Course: Medicinal Chemistry III Theory
Program: B.Pharm
Course Code: BP601T

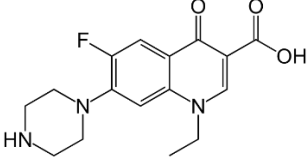
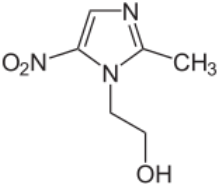
Semester : VI
Duration : 03 Hours
Max. Marks : 75

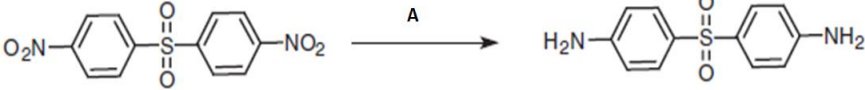
Instructions: Read each question carefully. Attempt all questions under Section A (20 x 1 marks). Attempt any two questions out of three under Section B (2 x 10 marks). Attempt any seven questions out of nine under Section B (7 x 5 marks).

SECTION A
Multiple choice questions

(20Qx1M=20 Marks)

| S. No. | | Marks | COs |
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| Q1 | Which of the following drug is 38-membered heptaene useful as anti-fungal agent? A) Natamycin B) Amphotericin B C) Nystatin D) Streptomycin | 1 | CO1 |
| Q2 | What crucial feature of a Penicillin is involved in its mechanism of action? A) Carboxylic acid B) Beta-lactam ring C) Acyl side chain D) Thiazolidine ring | 1 | CO1 |
| Q3 | The beta-lactamase enzyme catalyzes: A) The biosynthesis of the penicillin structure from the amino acid valine B) The final cross-linking reaction to form the bacterial cell wall C) The hydrolysis of the acyl side chain from penicillin structures D) The hydrolysis of the four-membered beta-lactam ring present in penicillin | 1 | CO1 |
| Q4 | The correct name of the drug with the following structure is: <div style="text-align: center;">  </div> A) Ampicillin B) Isoniazid C) Pyrazinamide D) Ethambutol | 1 | CO1 |
| Q5 | Which of the following is the target enzyme of sulphonamides? A) Dihydropteroate synthase B) Dihydrofolate reductase C) Topoisomerase D) DNA ligase | 1 | CO1 |
| Q6 | Octahydronaphthacene is present in: A) Cephalosporin B) Doxycycline C) Penicillin D) Thienamycin | 1 | CO1 |

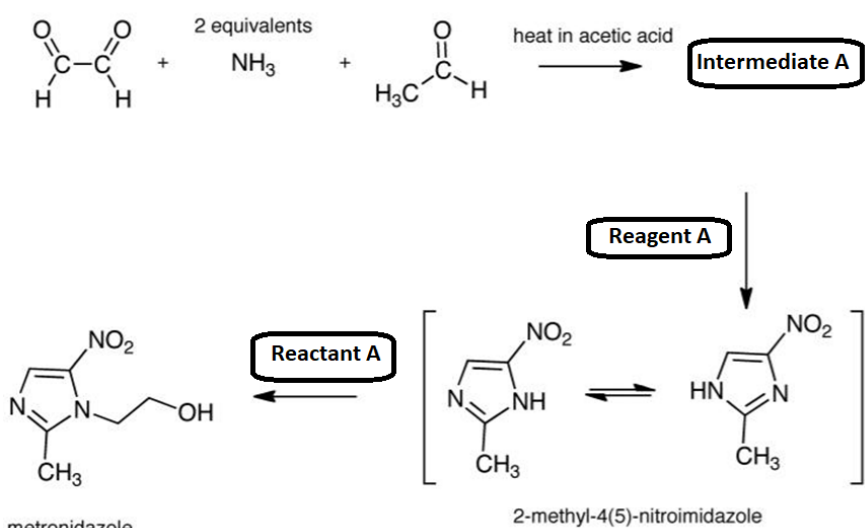
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| Q7 | Which of the following interfere with DNA/RNA biosynthesis? A) Penicillin-C B) Cycloserine C) Nystatin D) Actinomycin | 1 | CO1 |
| Q8 | Penicillins are derivatives of: A) 6-Nitropenicillanic acid B) 7-Nitropenicillanic acid C) 7-Aminopenicillanic acid D) 6-Aminopenicillanic acid | 1 | CO1 |
| Q9 | What is the name of the drug with the following structure?  A) Norfloxacin B) Gatifloxacin C) Nalidixic acid D) Ciprofloxacin | 1 | CO1 |
| Q10 | Identify the name of the drug with the following structure:  A) Metronidazole B) Tinidazole C) Ornidazole D) Ketoconazole | 1 | CO1 |
| Q11 | Which of the following penicillin analog is susceptible to penicillinase? A) Methicillin B) Penicillin-V C) Cloxacillin D) Oxacillin | 1 | CO1 |
| Q12 | Identify the drug(s) whose structure(s) contain(s) the furan ring: A) Nitrofurantoin B) Cefuroxime C) Furazolidone D) All of the above | 1 | CO1 |
| Q13 | Correct IUPAC name of the drug Ethionamide is: A) 2-Ethyl isonicotinamide B) 3-Ethyl isonicotinamide C) 2-Ethyl thioisonicotinamide D) 3-Ethyl thioisonicotinamide | 1 | CO1 |
| Q14 | Which of the following binds to 50S subunit of the bacterial ribosome? A) Tetracycline B) Clindamycin C) Streptomycin D) All of the above | 1 | CO1 |
| Q15 | Cotrimoxazole is a combination of: A) Sulfisoxazole and Trimethoprim B) Sulfamethoxazole and Trimethoprim C) Sulfisoxazole and Pyrimethamine D) Sulfamethoxazole and Pyrimethamine | 1 | CO1 |

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| Q16 | Identify the reagent A in the following reaction:  A) Sulphuric acid B) Nitric acid C) Sn / HCl D) KMnO ₄ | 1 | CO1 |
| Q17 | Which of the following is a synthetic antibiotic? A) Cephalothin B) Tetracycline C) Penicillin G D) Chloramphenicol | 1 | CO1 |
| Q18 | Epimerization in tetracycline takes place at A) Position 2 B) Position 3 C) Position 4 D) Position 9 | 1 | CO1 |
| Q19 | Aminoglycosides work by irreversibly binding to: A) Dihydrofolate synthetase B) 50S ribosomal subunit C) 30S ribosomal subunit D) RNA-dependent DNA polymerase | 1 | CO1 |
| Q20 | The Gray Baby Syndrome is a known adverse side-effect of: A) Azithromycin B) Chloramphenicol C) Streptomycin D) Amikacin | 1 | CO1 |

SECTION B (20 Marks)

Attempt 2 Question out of 3

(2Qx10M=20 Marks)

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| Q1 | Consider the reaction with the following scheme:  In the above scheme: (i) Write the chemical structure and name of the Intermediate A . (2+2marks) (ii) Give the details of the Reagents A. (2 marks) (iii) Write the chemical structure and name of the Reactant A . (2+2marks) | 4+2+4 | CO5 |
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| Q2 | Describe the chemical structure, mechanism of action and important uses of <u>any four</u> of the following drugs: (a) Chloramphenicol (b) Tinidazole (c) Cycloguanil (d) Azithromycin e) Sulfadiazine | 2.5 x 4 | CO3 |
| Q3 | Explain the structure-activity relationships of Penicillin. Write the scheme for the synthesis of <u>any two</u> of the following drugs: (a) Ciprofloxacin (b) Chloroquine (c) Dapsone | 4+(2x3) | CO4 |
| SECTION-C (35 Marks) | | | |
| Attempt 7 Question out of 9 | | (7Qx5M=35 Marks) | |
| Q1 | Write the structure and mechanism of action of Artemether. | (3+2) | CO3 |
| Q2 | Describe the structure-activity relationships of Tetracyclines. | (5) | CO5 |
| Q3 | Write the synthesis and mechanism of action of Trimethoprim. | (5) | CO4 |
| Q4 | Describe the structure-activity relationship of Cephalosporins. | (5) | CO5 |
| Q5 | Write the mechanism of action and synthesis of Isoniazid. | (2+3) | CO4 |
| Q6 | Write a short note on computer-aided drug design (CADD) approaches. | (5) | CO2 |
| Q7 | Write the chemical structure, mechanism of action, and uses of Doxycycline. | (5) | CO2 |
| Q8 | Classify anti-tubercular agents with examples. Write the structure of any one first-line anti-tubercular drug. | (3+2) | CO2 |
| Q9 | Write the chemical structure and uses of <u>any two</u> of the following drugs: Clotrimazole, Albendazole, and Sulfamethoxazole | (2 x 2.5) | CO3 |