BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: B.PHARM. **SEMESTER: VI**
BRANCH: PHARMACY **SESSION: SP2025**

SUBJECT: BP601T MEDICINAL CHEMISTRY-III

TIME: 3.00 Hours **FULL MARK: 75**

INSTRUCTIONS:

1. **The missing data, if any, may be assumed suitably.**
2. **Before attempting the question paper, be sure that you have got the correct question paper.**
3. **Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.**
4. **This question paper consists of (03) three parts. Read the part wise instructions before attempting the questions.**

PART-I
Objective types questions (Instruction: Answer all questions)

Q1. (10 x 2 = 20 Marks)

A. Clavulanic acid and ___ are examples of ß-lactamase inhibitors often combined with ___ antibiotics.

B. Penicillin G is primarily effective against ___ bacteria and is administered via the ___ route.

C. The major adverse effects of aminoglycosides include ___ and ___.

D. The prodrug ___ is metabolized into the active compound ___, which inhibits dihydrofolate reductase in Plasmodium.

E. Tetracyclines like ___ and ___ are effective against both Gram-positive and Gram-negative organisms.

F. The first-line anti-tubercular agents include rifampicin, ___, ___, ethambutol, and pyrazinamide.

G. The major adverse effect of isoniazid is ___, while rifampicin may cause ___ discoloration of body fluids.

H. Trimethoprim inhibits the enzyme ___ reductase, while pyrimethamine is used as an antimalarial by targeting ___ synthesis.

I. Amphotericin B and ___ are antifungal antibiotics that target the synthesis of ___ in fungal cell membranes.

J. Lipinski's Rule of Five predicts ___, while partition coefficient assesses ___ of a compound.

PART-II
Short Answers
(Instruction: Answer seven out of nine questions)

(7 x 5 = 35 Marks)

Q2. Discuss the nomenclature and classification of antibiotics based on their chemical structure and mechanism of action.
Q3. Highlight the role of SAR in the development of antimalarial drugs.
Q4. Analyze the adverse effects and clinical significance of anti-tubercular antibiotics.
Q5. Write the synthesis of para-amino salicylic acid (PAS) and describe its mechanism of action.
Q6. Discuss the role of antifungal agents in treating systemic and superficial fungal infections, with examples.
Q7. Describe the concept of prodrugs and their applications in improving the profiles of drugs.
Q8. Compare the advantages and limitations of CADD over traditional drug design approaches.
Q9. Describe the role of high-throughput screening in combinatorial chemistry.
Q10. Write the synthesis of chloramphenicol and describe its mechanism of action.

PART-III
Long Answers
(Instruction: Answer two out of three questions)

(2 x 10 = 20 marks)

Q11. Explain the SAR of beta lactam antibiotics.
Q12. Explain the SAR of aminoglycosides antibiotics.
Q13. Explain the concept of Quantitative Structure-Activity Relationship (QSAR) in drug design.

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