2. Discuss in details about the chemistry, classification and SAR of penicillins. 4+2+4=10

3. Describe about the chemistry, mechanism of action, synthesis and resistance of chloramphenicol. 3+2+3+2=10

III. Short answers (Answer seven out of nine questions) (5x7=35)

1. Write briefly about the chemistry and SAR of amino glycosides. 2+3=5
2. Write in details about the chemical reactions involved in degradation of penicillins. 5
3. Describe briefly about the classification and SAR of tetracyclines. 2+3=5
4. Classify urinary tract anti-infective agents. Outline the synthesis of ciprofloxacin. 2+3=5
5. Discuss in details about chemistry and mechanism of action of amphotericin-B. 3+2=5
6. Discuss the synthesis, mechanism of action and various combinations of trimethoprim. 2+2+1=5
7. Classify anti-tubercular agents. Outline the synthetic scheme and mechanism of action of INH. 2+2+1=5
8. Discuss in details about the classification and SAR of quinolones. 2+3=5
9. Write a short note on antiviral agent acyclovir. 5

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UG (CBCS) EVEN SEMESTER EXAM, JULY 2024

PHARMACEUTICAL SCIENCES

(6th Semester)

Course No: BP - 601T

(Medicinal Chemistry III-Theory)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

I.A. Multiple choice questions - 1x10=10

1. Which environmental factor primarily causes the degradation of ?-Lactam antibiotics?
   (i) High temperature
   (ii) UV light
   (iii) Moisture
   (iv) Acidic pH
2. Which statement is true about the stereochemistry of β-Lactam antibiotics?
   (i) They have a planar structure.
   (ii) They have multiple chiral centers.
   (iii) They lack any stereoisomers.
   (iv) They have a rigid, inflexible ring system.
3. What is the primary purpose of designing a prodrug?
   (i) To decrease the drug's potency
   (ii) To improve the drug's stability

(Turn Over)

(iii) To enhance the drug's solubility and bioavailability

(iv) To reduce the drug's half-life

4. Which antimalarial drug is derived from the Chinese plant Artemisia annua?
   (i) Pyrimethamine
   (ii) Artemether
   (iii) Atovaquone
   (iv) Proguanil
5. In quinolones, which structural modification significantly enhances their activity against Gram-negative bacteria?
   (i) Addition of a fluorine atom at the C-6 position
   (ii) Addition of a methyl group at the N-1 position
   (iii) Addition of an amine group at the C-7 position
   (iv) Addition of a hydroxyl group at the C-8 position
6. Ethionamide is a structural analog of which first-line anti-tubercular drug?
   (i) Rifampicin
   (ii) Isoniazid
   (iii) Ethambutol
   (iv) Pyrazinamide
7. Griseofulvin inhibits fungal growth by targeting which cellular component?
   (i) Cell membrane
   (ii) RNA synthesis
   (iii) DNA synthesis
   (iv) Microtubules
8. Ivermectin is effective against which type of infections?
   (i) Bacterial

   (ii) Viral
   (iii) Fungal
   (iv) Parasitic
9. The antibacterial activity of Sulfamethoxazole is due to its structural similarity to which metabolite?
   (i) Thymidine
   (ii) Folic acid
   (iii) Para-aminobenzoic acid (PABA)
   (iv) Dihydrofolate
10. Clotrimazole inhibits the synthesis of which fungal cell membrane component?
   (i) Glucan
   (ii) Mannan
   (iii) Ergosterol
   (iv) Chitin

I. B. Objective type 2x5=10

1. Outline the synthesis of the following drugs
   a) Para amino salicylic acid (PAS)
   b) Tolnaftate
   c) Sulfacetamide
   d) Dapsone
   e) Metronidazole

II. Long answers (Answer two out of three questions) 10x2=20

1. Classify antimalarial drugs. Discuss in details about the SAR of quinolines. Outline the preparation of chloroquine and pamaquine. 2+4+(2+2)=10