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

1. Discuss the structure-activity relationship (SAR) and mechanism of action of anthranillic acid derivatives. 3+2

2. Describe different stages of general anaesthesia. Discuss various drugs with their chemical structures used in inhalation anaesthesia. 2+3

3. Elaborate the mechanism of action and structure-activity relationship (SAR) of narcotic analgesics 5

4. Write the SAR of phenyl ethanolamine derivative as sympathomimetic drugs. 5

5. Define adrenergic blockers. Highlight two examples non-selective alpha-adrenergic blockers with structures.

6. Define the term sedative and hypnotics. Outline the synthetic scheme of barbiturates. 2+3

7. Define and classify benzodiazepine with structural examples. 1.5+3.5

8. Outline the synthetic scheme for the preparation of Dicyclomine and neostigmine.

9. Write the biosynthetic pathway of acetylcholine. 5

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B.Pharm Even Semester Examination, May, 2025

PHARMACEUTICAL SCIENCES

(4th Semester)

Course No: BP-402T

(Medicinal Chemistry-I)

FM: 75

Time: 3 Hours

The figures in the right margin indicate full marks for the question

I. A. Multiple Choice questions 1x10=10

1. Substitution with methyl group at para position of phenyl ring of salicylates leads to-

   a) Increase in toxicity,

   b) Increase in anti-inflammatory activity.

   c) Decrease in toxicity,

   d) Loss of activity

2. Which of the following agents lacks a carboxylic acid group and thus does not exert anti-inflammatory action *via* traditional COX inhibition mechanisms?

   a) Ibuprofen b) Indomethacin

   c) Naproxen d) Acetaminophen

3. How many carbon chains are essential for the activity of propranolol

   a) carbon chain b) 2 carbon chain

   c) 3 carbon chain d) 4 carbon chain

4. Which of the following morphine analogues lacks the 4,5-epoxide bridge and still retains potent analgesic activity?

a) Pentazocine b) Levorphanol

c) Naloxone d) Diphenoxylate

5. Ephedrine contain

a) One asymmetric carbon atom

b) Two asymmetric carbon atom

c) Three asymmetric carbon atom

d) No asymmetric carbon atom

6. Sevoflurane is chemically classified as:

a) A chlorinated ether

b) A fluorinated methyl isopropyl ether

c) A brominated hydrocarbon

d) A trifluoromethyl benzene derivative

7. Epoxy ring is present in

a) Hyosciamine b) Scopolamine

c) Ipratropium d) Atropine

8. Which statement about drug metabolism is CORRECT?

a) Phase I reactions always lead to inactivation of drugs

b) Phase II reactions always produce active metabolites

c) Prodrugs are usually activated by Phase I metabolism

d) Phase I metabolism directly leads to renal elimination without further modification

9. In ethylene bridge of acetylcholine incorporation of beta substitution leads to reduction of

a) Muscarinic activity b) Nicotinic activity

c) No Change d) All of these above

10. Yohimbine is a selective

a) Alpha 2 agonist b) Alpha 2 antagonist

c) Alpha 1 agonist d) Alpha 1 antagonist

I. B Objective type **2x5=10**

1. Write the structure and chemical name of a) Mefenamic acid b) Fentanyl citrate c) Tolazoline d) Barbital e) Dicyclomine

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

1. Define drug metabolism. Explain the non-synthetic reactions of drug metabolism with suitable examples. Enumerate different factors affecting drug metabolism. 1+6+3

2. Define and classify cholinergic drugs. Write the SAR of anticholinergic agent. Outline the preparation of ipratropium bromide. 1+2+4+3

3. Define catecholamines. Why are they called so? Write the biosynthetic pathway of adrenaline. 1+2+7=10