



ANJUMAN-I-ISLAM'S

**AIKTC KALSEKAR TECHNICAL CAMPUS**

INNOVATIVE TEACHING · EXUBERANT LEARNING

School of Architecture

School of Engineering & Technology

School of Pharmacy

*Knowledge Resource & Relay Centre (KRRC)*

AIKTC/KRRC/SoP/ACKN/QUES/2022-23/

Date: 25/01/23

School: SoP-PCI Branch: SoP SEM: IV

To,  
Exam Controller,  
AIKTC, New Panvel.

Dear Sir/Madam,

Received with thanks the following **Semester/Periodic** question papers from your exam cell:

AKT ✓

Sr. No.	Subject Name	Subject Code	Format		No. of Copies
			SC	HC	
1	Pharmaceutical Organic Chemistry III	BP401T		—	
2	Medicinal Chemistry I	BP402T		✓	
3	Physical Pharmaceutics II	BP403T		—	
4	Pharmacology I	BP404T		✓	
5	Pharmacognosy and Phytochemistry I	BP405T		✓	

Note: SC – Softcopy, HC - Hardcopy

(Shaheen Ansari)  
Librarian, AIKTC

Duration: 3 hours

Total marks: 75

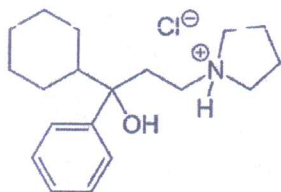
- N.B. : 1. All questions are compulsory  
2. Figures to right indicate full marks

Q. 1 Choose the appropriate option for following multiple choice-based questions. (20)  
Each question carries one mark.

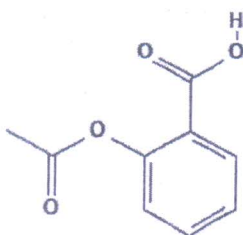
- 1 Which of the following statement is incorrect with respect to ionisation of drug  
[a] The ionization of the drug depends on its pKa & the surrounding pH  
[b] Ionized form is the preferred form of the drug to cross cell membranes.  
[c] Most of the drugs are either weak acids or base and can exist in either ionised or unionised state.  
[d] Ionization imparts good water solubility to drug
- 2 Oxazepam is the active metabolite of which of the following pairs of drugs  
[a] Chlordiazepoxide and Chlorazepate  
[b] Chlordiazepoxide and Diazepam  
[c] Chlordiazepoxide and Alprazolam  
[d] Chlordiazepoxide and Lorazepam
- 3 When the acetyl group in Acetylcholine is replaced by higher homologs \_\_\_\_\_.  
[a] Potency decreases  
[b] Activity retains  
[c] No effect on the activity  
[d] Potency increases
- 4 Which of the following is an example of dissociative anaesthetics  
[a] Sevoflurane  
[b] Ketamine HCl  
[c] Isoflurane  
[d] Desflurane
- 5 Which of the following is not an examples of 2-arylimidazoline class?  
[a] Phenylephrine  
[b] Naphazoline  
[c] Oxymetazoline  
[d] Xylometazoline
- 6 Droperidol is a member of ---- class of antipsychotic agents.  
[a] Phenothiazine  
[b] Butyrophenone  
[c] Benzazepine  
[d] Benzoisoxazole
- 7 Primary site for Drug Metabolism is  
[a] Intestine  
[b] Lung  
[c] Liver  
[d] Both a and b

- 8 Mephenytoin acts as an anticonvulsant by  
[a] inhibiting calcium channels  
[b] inhibiting sodium channels  
[c] inhibiting GABA metabolism  
[d] increasing GABA reuptake
- 9 Identify the opioid agonist containing 4-methylpiperidine pharmacophore  
[a] Meperidine  
[b] pentazocine  
[c] Levorphanol  
[d] Codeine
- 10 Ibuprofen is marketed as a racemic mixture, although biologic activity resides almost exclusively in the \_\_\_\_\_ isomer  
[a] S-(+)  
[b] R-(+)  
[c] S-(-)  
[d] Both R & S

- 11 What is the category of the following drug?



- [a] Parasympathomimetic  
[b] Anticholinergic  
[c] Adrenergic agonist  
[d] Adrenergic blocker
- 12 Identify the drug



- [a] Aspirin  
[b] Diclofenac  
[c] Ibuprofen  
[d] Sulindac
- 13 Which of the following is pure antagonist at all opioid receptor subtype  
[a] Morphine  
[b] Pentazocine  
[c] Naloxone  
[d] Nalorphine

- 14 Identify the drug used to reverse opioids overdose  
[a] Fentanyl  
[b] Loperamide  
[c] Nalorphine  
[d] Morphine
- 15 The longest duration of action of the following benzodiazepines  
[a] Chlordiazepoxide  
[b] Diazepam  
[c] Oxazepam  
[d] Lorazepam
- 16 Uncharged form of which drug exists as a pair of tautomers?  
[a] Methyldopa  
[b] Terbutaline  
[c] Isoproterenol  
[d] Clonidine
- 17 Which of the following is incorrect pair of NSAIDs  
[a] Indole acetic acid: Diclofenac  
[b] Pyrazoles and Pyrazolidinediones: Phenylbutazone  
[c] p-aminophenols: Acetaminophen  
[d] Salicylates: Aspirin
- 18 Select the benzisoxazole and piperidine containing drug from the following.  
[a] Risperidone  
[b] Loxapine  
[c] Clozapine  
[d] Sulpiride
- 19 Which of the following is incorrect statement about Codeine  
[a] Codeine is not a prodrug  
[b] Codeine is the 3-methoxy analogue of Morphine  
[c] Codeine is converted to morphine by the action of CYP enzymes.  
[d] Use of Codeine longer than 6 months is associated with an increased risk of severe cardiovascular events.
- 20 Which of the following anti-inflammatory agents is a prodrug  
[a] Morphine  
[b] Sulindac  
[c] Ibuprofen  
[d] Naproxen

Q.2 Answer **any two** of the following three questions.

(20)

A (i) Discuss importance of ionization and solubility with respect to biological action of drug with example

(4)

(ii) Predict any two Phase-I metabolites and Phase 2 metabolites for each of the following (Draw structures): Propranolol and Chlorpromazine.

(6)

- B (i) Discuss the SAR of anticholinergic agents with suitable examples. (5)
- (ii) Give structure, mechanism of action and uses of Dicyclomine. Outline its synthesis along with reaction conditions and necessary reagents. (5)
- C (i) Discuss SAR of morphine analogues with suitable example (structures necessary) (6)
- (ii) Give structure and metabolism of Halothane and Ketamine hydrochloride (4)

Q.3 Answer any seven of the following nine questions. (35)

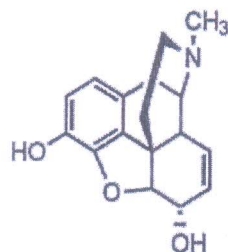
A Classify  $\beta$ -adrenergic agonist based on selectivity with suitable examples (including structures). Explain why Salbutamol is orally active. (5)

B Match the anticonvulsant drugs with their mechanisms of action (5)

	Drug		Anticonvulsant mechanism
1.	Phenytoin	a.	GABA receptor agonist
2.	Clonazepam	b.	increases GABA biosynthesis
3.	Trimethadone	c.	Na channel inhibitor
4.	Felbamate	d.	T-type Calcium channel inhibitor
5.	Gabapentin	e.	NMDA receptor antagonist

C The list of antimuscarinic agents is given below. Draw their structures and write the chemical class they belong to. Cyclopentolate, Tropicamide, Benztropine, Biperiden hydrochloride and Dicyclomine. (5)

D Answer the following with respect to the structure given below: (5)



- Identify the structure
- Predict any one Phase I and Phase II metabolite of the structure.
- Give name and structure of 3 methoxy analogue of given structure

iv. Indicate the types of substitution at 17th position that give rise to pure opioid antagonists

- E Explain MAO pathway and COMT pathway in metabolism of Norepinephrine and Epinephrine. (5)
- F Give chemical classification of NSAIDs. (5)
- G Depict the synthesis of Chlorpromazine indicating the reagents and reaction conditions used. Give an example of a thioxanthene bioisostere of Chlorpromazine. (5)
- H Enlist Phase I metabolic reactions and discuss in detail oxidation reactions with suitable examples (5)
- I Name the antidote used for organophosphate poisoning. Draw its structure and discuss the mechanism of action. (5)

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Time: 3 Hrs

Marks: 75

1. Multiple Choice Questions (select single best answer)

(20x1= 20)

1. Tachyphylaxis is defined as \_\_\_\_\_
  - a. Requirement of higher dose of drug to produce a given response.
  - b. The development of tolerance to pharmacologically related drugs.
  - c. Inert substance which is given in the garb of a medicine.
  - d. The rapid development of tolerance when doses of the drug repeated in quick succession result in marked reduction of response
  
2. Acetylation is an example of \_\_\_\_\_
  - a. Nonsynthetic reaction
  - b. Synthetic reaction
  - c. Phase I reaction
  - d. Functionalization reaction
  
3. Which of the following effect can be seen in equilibrium type competitive antagonism in a drug-response curve?
  - a. Non-parallel left shift
  - b. Non-parallel right shift
  - c. Parallel right shift
  - d. Parallel left shift
  
4. Receptor agonists possess \_\_\_\_\_
  - a. Affinity but no intrinsic activity
  - b. Intrinsic activity but no affinity
  - c. Affinity and intrinsic activity with a + sign
  - d. Affinity and intrinsic activity with a - sign
  
5. Mephesisin is a \_\_\_\_\_
  - a. Nondepolarizing blocker
  - b. Centrally acting muscle relaxants
  - c. Depolarizing Blocker
  - d. Peripherally acting muscle relaxants
  
6. Which of the following statement is true for Atropine?
  - a. Produces mydriasis
  - b. Precipitates asthmatic attack
  - c. Markedly increases sweat, salivary, tracheobronchial and lacrimal secretion
  - d. Causes tachycardia
  
7. On-off syndrome is associated with \_\_\_\_\_
  - a. Carbidopa
  - b. Seligeline
  - c. Entacapone
  - d. Levodopa

8. Which of the following is a dissociative type of anesthetic agent?
- Nitrous oxide
  - Ketamine
  - Halothane
  - Ether
9. The repetitive consumption of drug to avoid withdrawal symptoms by a subject is termed as \_\_\_\_\_
- Drug addiction
  - Drug tolerance
  - Drug dependence
  - Drug abuse
10. Selegiline is a \_\_\_\_\_ drug used in Parkinsonism treatment.
- MAO B inhibitor
  - MAO A inhibitor
  - COMT inhibitor
  - Dopa decarboxylase inhibitor
11. The process of transport across the cell in particulate form by formation of vesicles is \_\_\_\_\_
- Active transport
  - Pinocytosis
  - Facilitated diffusion
  - Passive transport
12. Which of the following receptor type has 7 helical membrane spanning amino acid segments with 3 extracellular and 3 intracellular loops?
- Metabotropic Receptor
  - Ionotropic Receptor
  - Nuclear Receptor
  - Tyrosine protein kinase receptor
13. An example of Injectable and Surface anaesthetic is \_\_\_\_\_
- Benoxinate
  - Benzocaine
  - Procaine
  - Lidocaine
14. The balanced anesthesia means \_\_\_\_\_
- Administration of preanesthetic medications to relieve pain, relax muscles and ease the patient
  - Administration of specific one medication to relieve pain, relax muscles and ease the patient
  - Administration of two or more medication to relieve pain, relax muscles and ease the patient
  - Administration of postanesthetic medications to relieve pain, relax muscles and ease the patient



15. The atypical antipsychotic drug that leads to agranulocytosis \_\_\_\_\_
- Haloperidol
  - Clozapine
  - Flouxetine
  - Chlorpromazine
16. Wine reaction is the major side effect exerted by \_\_\_\_\_
- Disulfiram
  - TCA
  - Levodopa
  - MAO inhibitors
17. Which of the following statement is NOT correct with respect to plasma protein binding?
- Generally expressed plasma concentrations of the drug refer to bound as well as free drug
  - High degree of protein binding generally makes the drug long acting
  - Highly plasma protein-bound drugs are largely restricted to the intracellular compartment
  - The bound fraction is not available for action
18. How many people will be checked under phase IV surveillance?
- 20-50 people
  - 20-300 people
  - 20-300 people
  - The whole market will be under surveillance
19. Organophosphates act by \_\_\_\_\_
- Blockage of cholinergic receptors
  - Activation of beta receptors
  - Inhibition of cholinesterase
  - Blockage of alpha receptors
20. The drawback of nitrous oxide as an anesthetic agent is \_\_\_\_\_
- Incompatibility with other anesthetic agents
  - It has hangover effect
  - It is highly explosive
  - It may lead to diffusion hypoxia

(2x10= 20)

**II. Long Answers (Answer 2 out of 3)**

- Define the receptor. Discuss the theories of drug-receptor interactions. Write a note on the nuclear receptor.
- What are sympatholytics? Classify them and give the pharmacology of Propranolol.
- Classify antiepileptics based on mechanism of action. Discuss in detail hydantoin derivatives as antiepileptics

III. Short Answers (Answer 7 out of 9)

(7x5= 35)

- A. Give the advantages and disadvantages of oral route.
- B. Define Adverse drug reactions. Mention the scope and objectives of pharmacovigilance.
- C. Enlist various factors modifying drug action and discuss any two in detail.
- D. Write a note on pressor agents.
- E. Explain the mechanism of action of local anesthetics. Enlist various techniques of anesthesia.
- F. Write a note on pharmacological actions of morphine
- G. Differentiate between benzodiazepines and barbiturates
- H. Add a note on hallucinogens.
- I. Discuss in detail use of anticholinesterases in treatment of Alzheimer's disease

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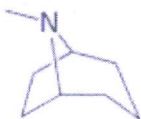
Total marks: 75

- N.B.: 1. All questions are compulsory  
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- Q. 1** Choose appropriate option for following multiple choice based questions. 20
- 1 Identification of drugs based on part of plant is  
a Taxonomical Classification  
b Morphological classification  
c Chemical classification  
d Serotaxonomical classification
- 2 The content of hydroxy methyl furfural is used to detect the adulteration in a  
a Honey  
b Gelatin  
c Acacia  
d Wool fat
- 3 Inorganic content of the drug  
a Ash value  
b Moisture content  
c Water soluble extractive  
d Alcohol soluble extractive
- 4 Vein islet number is  
a Total number of vein islets beneath each epidermal cell  
b Total number of vein islets s beneath mesophyll  
c Total number of vein islets in 1mm<sup>2</sup> of epidermal cells.  
d Average number of vein islets beneath four continuous epidermal cells
- 5 Which of the following technique is capable of inducing genetic manipulation resulting in production of pest resistant species  
a Biological control  
b Agricultural control  
c Mechanical control  
d Chemical control
- 6 Which of the following of Plant growth inhibitor  
a Cytokinins  
b Abscisic acid  
c Auxins  
d Gibberellins
- 7 Tapping is the method of collection of -----  
a Gums  
b Flowers  
c Fruits  
d Volatile oil
- 8 Following are the methods of Ex-situ conservation except  
a Raising nurseries  
b Seed banks  
c Seedling  
d National parks

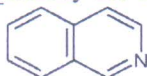
- 9 Which of the following is Adenine derivatives  
 a Cytokinins  
 b Abscisic acid  
 c Auxins  
 d Gibberellins
- 10 Following are the micronutrient; except  
 a Boron  
 b Iron  
 c Copper  
 d Magnesium
- 11 \_\_\_\_\_ is a type of culture in which single cell or small aggregates of cell multiply while suspended in agitated liquid medium.  
 a Callus culture  
 b Suspension culture  
 c Protoplast culture  
 d Pollen culture
- 12 The alcohol solubility of castor oil is due to the \_\_\_\_\_ constituent. **a**  
 a Ricinoleic acid  
 b Myricyl palmitate  
 c Stearic acid  
 d Linoleic acid

- 13 Identify the class of compound from the given basic nucleus



- a Tropane Alkaloids  
 b Anthraquinone Glycosides  
 c Quinoline Alkaloids  
 d Cardiac Glycosides

- 14 Identify the class of compound from the given basic nucleus



- a Quinoline  
 b Isoquinoline  
 c Indole  
 d Tropane

- 15 O-Anthraquinone glycosides are confirmed by which of the following tests  
 a Borntrager's test  
 b Modified Borntrager's test  
 c Keller Killiani test  
 d Shinoda test

- 16 Jute is an example of fibre belonging to the class  
a Regenerated fibre  
b Mineral fibre  
c Carbohydrate fibre  
d Protein fibre
- 17 ----- are a diverse group of drugs that alter perception, thoughts, and feelings  
a Teratogens  
b Allergens  
c Hallucinogens  
d Enzymes
- 18 ----- is an enzyme secreted in stomach it digests proteins found in ingested food.  
a Urokinase  
b Streptokinase  
c Serratiopeptidase  
d Pepsin
- 19 ----- is an example of mucilage from marine sources  
a Agar  
b Acacia  
c Tragacanth  
d Honey
- 20 Which the following is obtained from the aqueous extract of the bones of domestic animals  
a Papain  
b Gelatin  
c Acacia  
d Tragacanth

- Q. IIA Answer the following. (Any two out of three) 20**
- 1) a) Explain the significance of Ash value and extractive value in the identification of DONO. 10  
b) Write the source, preparation, constituents, chemical tests and uses of 'Tragacanth'.
- 2) a. Give salient features and applications of edible vaccine. 10  
b. Draw the heterocyclic nucleus/ general structure and write one example with its use and chemical test for the following phytoconstituents  
i. Tropane alkaloid  
ii. Cardiac glycosides
- 3) a) Classify fibres based on the biological source. Write a note on any one vegetable fibre. 10  
b) Write a note on various methods of propagation with suitable example.

- Q. IIB Answer the following. (Any seven out of Nine)**
- 1) Give biological source, chemical constituent and identification tests for bees wax 5
  - 2) Draw the heterocyclic nucleus/ general structure and write one example with its use and chemical test for the following phytoconstituents 5
    - i. Anthraquinone glycoside
    - ii. Indole alkaloid
  - 3) Define plant tissue culture and its advantages. Explain briefly callus culture and protoplast culture. 5
  - 4) Explain the importance of storage of crude drugs with suitable examples. 5
  - 5)
    - a) Write a note on dried juices and Latex. 5
    - b) Write a note on conservation of medicinal plants.
  - 6) Give advantages & disadvantages of morphological and pharmacological classification of drugs of natural origin. 5
  - 7) Explain any two proteolytic enzymes obtained from plant source. 5
  - 8) Write a note on leaf constants for quantitative microscopy. 5
  - 9) Classify Flavanoids with suitable examples, Give its chemical test. 5

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