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**B. Pharmacy (Fourth Semester) Examination,
April-May 2021**

(PCI Scheme)

(Pharmacy Branch)

PHARMACEUTICAL ORGANIC CHEMISTRY-III

(Theory) (BP401T)

Time Allowed : Three hours

Maximum Marks : 75

Note : *The question paper consists of three section i.e. A, B and C. Section-A consists of 20 MCQs of 1 mark each. All questions are compulsory. Section-B consists of 3 questions out of which 2 questions should be attempted, 10 marks each. Section-C consists of nine questions out of which attempt 7 questions 5 marks each.*

Section-A

20×1=20

Note : *Attempt all questions.*

1. Multiple Choice Questions :

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- (i) Tartaric acid is optically inactive due to :
- (a) Presence of symmetry
 - (b) Internal compensation
 - (c) Absence of Chirality
 - (d) (a) and (b) both
- (ii) D-erythrose and D-threose are :
- (a) Enantiomers
 - (b) Diastereomers
 - (c) Mesocompound
 - (d) Epimers
- (iii) The molecules which not mirror image of each other are called :
- (a) Enantiomers
 - (b) Epimers
 - (c) Racemi (Mixture)
 - (d) Diastereomers
- (iv) Racemic modification is a method of :
- (a) Separation of stereoisomers with optical activity

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- (b) Preparation of stereoisomers with optical activity
- (c) Mixing of Itereoisomers
- (d) None of the above
- (v) Which of the following is optically active :
- (a) $\text{CH}_3\text{-CH(OH) COOH}$
 - (b) $\text{CH}_2\text{-NH}_2\text{-CHO}$
 - (c) $\text{CH}_3\text{-CH}_2\text{-CH (CH}_3)_2$
 - (d) $\text{CH}_2\text{-CH}_2\text{-CCl}_2$
- (vi) Atropisomerism commonly occurs in :
- (a) Non Aromatic Compound
 - (b) Aliphatic Chiral Compounds
 - (c) Biphenyl Compounds
 - (d) Phenolic Compound
- (vii) Which of the following is most stable conformation of propane :
- (a) Eclipsed
 - (b) Gauch
 - (c) Anti or trans

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- (d) Skew
- (viii) Cis/trans, E/Z, syn/Anti are the type of :
- (a) Structural Isomerism
 - (b) Optical Isomerism
 - (c) Geometrical isomerism
 - (d) (b) & (c) both
- (ix) Conformation of Cyclohexane is :
- (a) Staggered
 - (b) Gauch
 - (c) Chair
 - (d) Eclipsed
- (x) Which heterocycle is more basic :
- (a) Furan
 - (b) Pyrrole
 - (c) Thiophene
 - (d) None of the above
- (xi) Which ring is completely saturated :
- (a) Pyrrole

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- (b) Pyrazole
- (c) Pyrroline
- (d) Pyrrolidine
- (xii) Acetylation of thiophene occurs at :
- (a) C-2 atom
 - (b) C-3-atom
 - (c) 1st atom
 - (d) Both (a) & (b)
- (xiii) Reaction of furan with ammonia will give :
- (a) 2-amino furan
 - (b) 3-amino furan
 - (c) 2, 3-diamino furan
 - (d) None of the above
- (xiv) When acetylene heated with ammonia over red not tube, it yield :
- (a) Furan
 - (b) Pyrrole
 - (c) Pyridine
 - (d) Pyrrazole

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- (xv) Which of the following heterocycle is bicyclic :
- (a) Acridine
 - (b) Quinoline
 - (c) Steroidal
 - (d) Piperazine
- (xvi) Which of the following heterocycle does not contain two nitrogen atoms :
- (a) Pyridine
 - (b) Pyrimidine
 - (c) Pyrazole
 - (d) Piperazine
- (xvii) Skraup's synthesis is reaction method which yields :
- (a) Indole ring
 - (b) Quinoline ring
 - (c) Purine ring
 - (d) Isoindole ring
- (xviii) Conversion of Ketoxime to amide is reaction.
- (a) Oppenauer-oxidation

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- (b) Dakin reaction
- (c) Claisen-schmidt condensation
- (d) Beckmanns rearrangement
- (xix) Reduction of carbonyl compound to alkane in the presence of zinc amalgam is :
- (a) Birch reduction
 - (b) Clemmensen reduction
 - (c) Wolf-kishner reaction
 - (d) Schmidt rearrangement
- (xx) Sodium cyanoborohydride reagent used for :
- (a) Oxidation
 - (b) Hydrolysis
 - (c) Reduction
 - (d) Rearrangement

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Section-B

2×10=20

Note : Answer any two questions. All questions carry equal marks.

2. Give the synthesis method and different chemical reaction of indole.
3. Write criteria for optical activity. Give method of racemic resolution.
4. Give the reaction, mechanism, and application of Beckmann's rearrangement and Claisen-schmidt condensation reaction.

Second-C

5×7=35

Note : Answer any seven question. All questions carry equal marks.

5. What are enantiomers and diastereomers?
6. Write a note on EZ nomenclature of geometrical isomers.
7. Discuss the basicity of pyrrole.

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8. Give classification of heterocycle compounds with example.
9. Discuss the chemical reactivity of oxazole compounds.
10. Discuss the reaction and mechanism of clemmense reduction.
11. Explain the role of metal hydride in reduction reactions.
12. Write the medicinal use of different heterocycles.
13. Write note on stereoselective and stereospecific reactions.

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**B. Pharmacy (Fourth Semester) Examination,
April-May 2021**

(PCI Scheme)

(Pharmacy Branch)

MEDICINAL CHEMISTRY-I

[Theory (BP402T)]

Time Allowed : Three hours

Maximum Marks : 75

***Note : The question paper consists of three parts
i.e. A, B and C. Part A consists of 20 MCQs
of 1 mark each. All questions are compulsory.
Part B consists of 3 questions out of which 2
questions should be attempted, 10 marks
each. Part C consists of nine questions out
of which attempt 7 questions 5 marks each.***

Section-‘A’

20×1=20

***Note : Attempt all questions. All questions carries 1
mark.***

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[2]

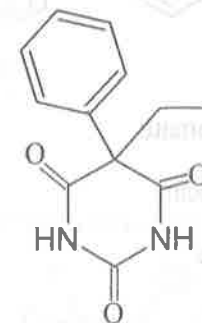
1. Multiple Choice Questions :

- (i) Chat stands for :
- (a) Choline acetate transaminase
 - (b) Choline acetyl transferase
 - (c) Carboxyl acetyl transferase
 - (d) Choline acetyl transaminase
- (ii) The given chemical structure is of which drug?
- (a) Pralidoxime chloride
 - (b) Enrophenonium chloride
 - (c) Isoflurophate
 - (d) Tacrine hydrochloride
- (iii) Starting material for the synthesis of neostigmine is :
- (a) Potassium m-(N, N-dimethylamine) phenolae and Dimethyl carbamoyl chloride :
 - (b) Choline chloride
 - (c) Potassium m(N, N-dimethylamine) phenolate
 - (d) Dimethyl carbamoyl chloride and Choline chloride

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- (iv) AChE stands for :
- (a) Acetylcholinease
 - (b) Acetylcholinesterase
 - (c) Aminocholinesterease
 - (d) None
- (v) The given chemical structure is of which drug?



- (a) Phenobarbitone
 - (b) Methabarbital
 - (c) Trimethadione
 - (d) None
- (vi) Selective COX-2 inhibitor is :
- (a) Etoricoxib
 - (b) Aspirin

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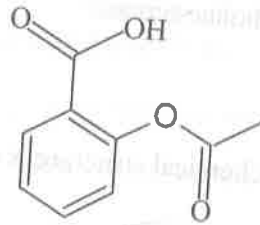
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(c) Naproxen

(d) Piroxicam

(vii) The given chemical structure is of which drug?



(a) Aspirin

(b) Meclofenomate

(c) Indomethacin

(d) Zomepirac

(viii) Antipsychotic Drug is :

(a) Naproxen

(b) Bethanechol

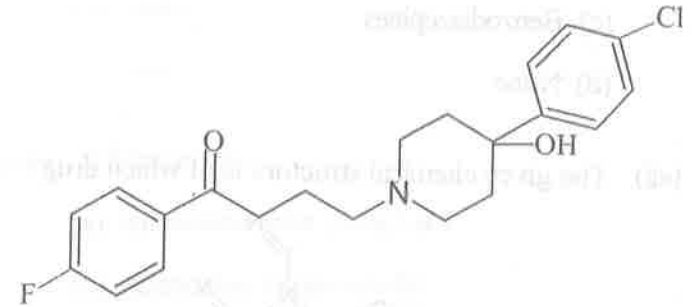
(c) Thioridazine

(d) Isoflurophate

(ix) The given chemical structure is of which drug?

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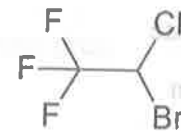
(a) Risperidone

(b) Haloperidol

(c) Sulpieride

(d) None

(x) The given chemical structure is of which drug?



(a) Halothane

(b) Isoflurane

(c) Desflurane

(d) None

(xi) Diazepam is :

(a) Barbiurates

(b) Non-Benzodiazepines

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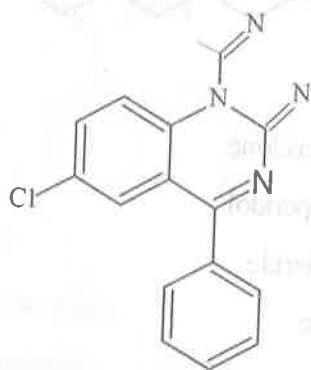
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(c) Benzodiazepines

(d) None

(xii) The given chemical structure is of which drug?



(a) Zolpidem

(b) Chlorazepate

(c) Alprazolam

(d) None

(xiii) Choline can be biosynthesized from the amino acid but most of the choline used to form acetylcholine is recycled after AChE-catalyzed hydrolysis of acetylcholine in the synaptic space.

(a) serine

(b) glycine

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(c) valine

(d) none

(xiv) ATP stands for :

(a) Adenosine tetra phosphate

(b) Adenosine tri phosphate

(c) Amino tri phosphate

(d) Adenine tri phosphate

(xv) Atropine is :

(a) Anticonvulsant drug

(b) Anticholinergic drug

(c) Antipsychotic drug

(d) None

(xvi) Which of the following is Mydriatics?

(a) Cyclopentolate

(b) Biperiden

(c) Cyclopyrrolate

(d) None

(xvii) Which of the following is long acting barbiturate?

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- (a) Butobarbitone
- (b) Methohexitone
- (c) Phenobarbitone
- (d) None

(xviii) Direct acting sympathomimetic agents is :

- (a) Nor-epinephrine
- (b) Hydroxyamphetamine
- (c) Pseudoephedrine
- (d) None

(xix) Synthetic cholinergic block in agent is

- (a) Tropicamide
- (b) Acetylcholine
- (c) Carbachol
- (d) Pilocarpine

(xx) Phenytoin is :

- (a) Oxazolidinedione
- (b) Succinimide
- (c) Hydantion
- (d) None

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Section-'B' 2×10=20

Note : Attempt any two questions. Each question carries 10 marks.

2. Discuss Biosynthesis and catabolism of Acetylcholine.
3. Explain physicochemical properties in relation to biological action.
4. Classify beta-blocking agents with their chemical structure and give SAR of beta blockers.

Section-'C' 7×5=35

Note : Attempt any seven questions. Each question carries 5 marks.

5. Write SAR of Parasympathomimetic agents.
6. Discuss adrenergic receptors and their distribution;
7. Give synthesis of propranolol and procyclidine HCl.
8. Discuss SAR of Morphine analogues.

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9. Write synthesis of ibuprofen and halothane.
10. Classify Cholinergic Blocking Agents.
11. Discuss cholinergic receptors and their distribution.
12. Discuss the SAR of benzodiazepines.
13. Explain briefly the mechanism of Anticonvulsant action.

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**B. Pharmacy (Four Semester) Examination,
April-May 2021**

(PCI Scheme)

(Pharmacy Branch)

PHYSICAL PHARMACEUTICS-II

THEORY (BP403T)

Time Allowed : Three hours

Maximum Marks : 75

Note : Answer questions A, B and C as per the given options.

Part-A

1×20=20

Note : Attempt all questions.

1. Multiple Choice Questions :

- (i) Which of the following factors affect the rate of reaction?

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- (a) Temperature
 - (b) Catalysis
 - (c) Dielectric constant
 - (d) All of the above
- (ii) Accelerated stability testing is done to -
- (a) Predict shelf life of the formulation
 - (b) Predict dissolution constant
 - (c) Predict diffusion constant
 - (d) Determine activation energy
- (iii) ICH stands for -
- (a) Indian council on harmonization
 - (b) International conference on harmonization
 - (c) Indian conference on harmonization
 - (d) International council on harmonization
- (iv) The modern definition of oxidation is -
- (a) Loss of Oxygen
 - (b) Gain of Oxygen
 - (c) Loss of one or more electron
 - (d) Gain one or more electron

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- (v) Viscous oil generally exhibit-
- (a) Dilatant flow
 - (b) Plastic flow
 - (c) Pseudo-plastic flow
 - (d) Newtonian flow
- (vi) System that undergoes gel-to-sol transformation on shaking is referred to :
- (a) Shear thinning system
 - (b) Shear thickening system
 - (c) Elastic deformation
 - (d) Plastic deformation
- (vii) Jellies generally exhibit -
- (a) Plastic flow
 - (b) Dilatant flow
 - (c) Pseudo-plastic flow
 - (d) All of the above
- (viii) The ratio of increase in the length to original length of bar is -
- (a) Compressive strain

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- (b) Shear strain
 - (c) Tensile strain
 - (d) Depressive strain
- (ix) Ideal phase volume ratio for stable emulsions is -
- (a) 25:75
 - (b) 50:50
 - (c) 75:25
 - (d) 33:66
- (x) Oil in water emulsions usually show creaming in-
- (a) Upward direction
 - (b) Downward direction
 - (c) First upward and then downward direction
 - (d) First downward and then upward direction
- (xi) In flocculated suspension the rate of suspension is-
- (a) Low
 - (b) More
 - (c) Zero
 - (d) 50%
- (xii) The size of dispersed particles in coarse dispersion range

[5]

from-

- (a) $1 \mu\text{m}$ to $100 \mu\text{m}$
 - (b) $1 \mu\text{m}$ to 100nm
 - (c) 1mm to 100cm
 - (d) Less than $1 \mu\text{m}$
- (xiii) The rapid increase in solubility of a surfactant solution above a definite temperature is known as -
- (a) Cloud point
 - (b) Krafft point
 - (c) Critical micellar concentration
 - (d) Triple point
- (xiv) Surface tension of water is-
- (a) 62 dynes/cm
 - (b) 72 dynes/cm
 - (c) 82 dynes/cm
 - (d) 92 dynes/cm
- (xv) When a drop of oleic acid is placed on the surface of water -
- (a) It remains on the water as a film

- (b) It spreads on water as a film
- (c) It diffuses and mixes with water
- (d) It forms an emulsion with water
- (xvi) For the proper wetting of solids by liquids the contact angle should be nearly-
- (a) Zero
- (b) 90°
- (c) 180°
- (d) 270°
- (xvii) If the gold number is less than the protective action will be -
- (a) More
- (b) Less
- (c) Half
- (d) Zero
- (xviii) Electrodialysis is a method used for the purpose of -
- (a) Stabilization
- (b) Purification
- (c) Identification
- (d) Synthesis

- (xix) The protective ability of colloids is measured as -
- (a) Zeta potential
- (b) Streaming potential
- (c) Gold number
- (d) None of the above
- (xx) Brownian movement of particles ... -
- (a) Assists sedimentation
- (b) Prevents sedimentation
- (c) Increases sedimentation
- (d) Does not affect sedimentation

Part-B**2×10=20**

Note : Answer any two question from Part-B. All question carry equal marks.

- What is the influence of temperature and light on the rate of determination? How can drugs be stabilized against chemical degradation?
- Discuss the concept of structured vehicles in the formulation of suspension with suitable examples.

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4. Elaborate salient features of lyophobic and lyophilic colloids. Describe the various factors which influence their stability.

Part-C 5×7=35

*Note : Answer any seven question from Part-C.
All question carry equal marks.*

5. Explain the method of prediction of shelf life.
6. Describe ICH guidelines for accelerate stability study.
7. Write about the effect of temperature and other factors on viscosity of fluids.
8. What are non-Newtonian fluids? Classify them based on the flow and deformation.
9. Describe the various tests which may be used to identify the types of emulsion.
10. Draw a neat and clean diagram of duNouy tensiometer and explain its working.
11. Prove the diffusion coefficient decreases with colloidal particle size.

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12. Explain the mechanism of formulation of micelles with suitable examples.
13. Discuss the behavior of surfactants in aqueous solution.

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**B. Pharmacy (Fourth Semester) Examination,
April-May 2021**

(PCI Scheme)

(Pharmacy Branch)

PHARMACOLOGY-I (BP404T)

Time Allowed : Three hours

Maximum Marks : 75

Note : This question paper contains three parts. A, B and C. Part-A contains 20 MCQ's of 1 mark each. All questions are compulsory in part-A. Part-B contains 3 long answer questions from part-B attempt any two carries 10 marks each. Part-C contains 9 short answer questions each of 5 marks. Attempt any 7 out of 9 questions from part-C.

Part-A

20×1=20

1. Multiple choice questions (MCQs) :

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- (i) What does the term "bioavailability" mean?
- (a) Plasma protein binding degree of substance.
 - (b) Permeability through the brain-blood barrier.
 - (c) Fraction of an uncharged drug reaching the systemic circulation following any route administration.
 - (d) Amount of a substance in urine relative to the initial dose.
- (ii) Biological barriers include all except :
- (a) Renal tubules
 - (b) Cell membranes
 - (c) Capillary walls
 - (d) Placenta
- (iii) The volume of distribution (V_d) relates :
- (a) Single to a daily dose of an administered drug.
 - (b) An administered dose to a body weight.
 - (c) An uncharged drug reaching the systemic circulation.

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- (d) The amount of a drug in the body to the concentration of a drug in plasma.
- (iv) Tachyphylaxis is :
- (a) A drug interaction between two similar types of drugs.
 - (b) Very rapidly developing tolerance.
 - (c) A decrease in responsiveness to a drug, taking days or weeks to develop.
 - (d) None of the above
- (v) Local anaesthetics cause :
- (a) Analgesia, amnesia, loss of consciousness.
 - (b) Blocking pain sensation without loss of consciousness.
 - (c) Alleviation of anxiety and pain with the altered level of consciousness.
 - (d) A stupor or somnolent state.
- (vi) Where M_2 cholinergic receptor located :
- (a) Heart

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- (b) Glands
 - (c) Smooth muscle
 - (d) Endothelium
- (vii) Select which one is reversible cholinesterase inhibitor :
- (a) Isoflurophate
 - (b) Carbochol
 - (c) Physostigmine
 - (d) Parathion
- (viii) Select which drug is use against myoclonic seizure is :
- (a) Primidone
 - (b) Carbamazepine
 - (c) Clonazepam
 - (d) Phenytoin
- (ix) The mechanism fo carbidopa's action is :
- (a) Stimulating the synthesis, release, or reuptake of dopamine.

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- (b) Inhibition of dopa decarboxylases.
 - (c) Stimulating dopamine receptors.
 - (d) Selective inhibition of catechol-O-methyltransferase.
- (x) Neuroleptics are used for treatment of :
- (a) Neurosis
 - (b) Psychosis
 - (c) Narcolepsy
 - (d) Parkinsonian disorders
- (xi) Disulfiram is used for the treatment of :
- (a) Acute alcoholic intoxication.
 - (b) Both physically and psychologically dependent alcoholics.
 - (c) Alcoholics psychologically but not physically dependent on alcohol.
 - (d) Both (a) and (b) are correct
- (xii) Currently barbiturates are primarily used as :
- (a) Hypnotic

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[6]

- (b) Sedative
 - (c) Antiepileptic
 - (d) Preanaesthetic medicant
- (xiii) The most probable mechanism of anticonvulsant action of phenytoin is :
- (a) Facilitation of GABAergic inhibitory transmission.
 - (b) Hyperpolarization of neurones
 - (c) Interaction with Ca^{2+} channels to promote Ca^{2+} influx
 - (d) Prolongation of voltage sensitive neuronal Na^{+} channel inactivation.
- (xiv) Which of the followings is an atypical neuroleptic drug?
- (a) Loxapine
 - (b) Olanzapine
 - (c) Pimozide
 - (d) Flupenthixol

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- (xv) Renal excretion of lithium is reduced by :
- (a) Furosemide
 - (b) Hydrochlorothiazide
 - (c) Indomethacin
 - (d) All of the above
- (xvi) The antidote of choice for morphine poisoning is :
- (a) Nalorphine
 - (b) Nalbuphine
 - (c) Naltrexone
 - (d) Naloxone
- (xvii) The current therapeutic indication of acetazolamide is :
- (a) Congestive heart failure
 - (b) Renal insufficiency
 - (c) Cirrhosis of
 - (d) Glaucoma

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- (xviii) Neostigmine is preferred over physostigmine for treating myasthenia gravis because :
- (a) It is better absorbed orally
 - (b) It has longer duration of action
 - (c) It has additional direct agonistic action on nicotinic receptors at the muscle end plate
 - (d) It penetrates blood-brain barrier
- (xix) Diazepam is used as a muscle relaxant for :
- (a) Deep intra-abdominal operation
 - (b) Tracheal intubation
 - (c) Tetanus
 - (d) Diagnosis of myasthenia gravis
- (xx) Choose of the correct statement about nicotine :
- (a) It is selectively stimulates parasympathetic ganglia
 - (b) It has no clinical application
 - (c) It is used as an aid during smoking cessation
 - (d) It is used in Alzheimer's disease

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Part-B

Long Answer Type Questions

(Answer any 2 out of 3)

2×10=20

2. Classify local anaesthetics with suitable example and discuss their mechanism of action.
3. Discuss the pathology of epilepsy, classify anti-epileptics and discuss their mechanism of action.
4. Classify anti-Parkinsonian agents and discuss Pharmacology of I-dopa.

Part-C

Short Answer Type Questions

(Answer any five)

5×7=35

5. Write note on different routes of drug administration.
6. Write short note on different membrane transport.
7. Write short note on Phase-I drug metabolism.

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[10]

8. Classify different receptor and explain about enzyme linked receptor.
9. Discuss different phases of drug discovery process.
10. Write short note on Cholinergic nerves transmission in ANS.
11. Discuss the mechanism of action of benzodiazepines.
12. Explain different stages of general anaesthesia.
13. Give example of drugs use for treatment of mania and discuss the mechanism of lithium.

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**B. Pharmacy (Fourth Semester) Examination,
April-May 2021**

(PCI Scheme)

(Pharmacy Branch)

PHARMACOGNOSY-I

(Theory : BP405T)

Time Allowed : Three hours

Maximum Marks : 75

***Note : Attempt all questions from Section A. Attempt
any two questions from Section B and seven
questions from Section. C.***

Section-A

20×1=20

(Multiple Choice Questions)

***Note : Attempt all questions. Each question carries
1 mark.***

1. (i) Unorganised drugs are those which :
 - (a) Possess cellular structure

[2]

- (b) Do not possess cellular structure
- (c) Possess only scars
- (d) Possess only buds
- (ii) Which of the following is a common classification of crude drugs :
- (a) Alphabetical
- (b) Therapeutical
- (c) Chemical
- (d) All of the above
- (iii) Which of the following is not a part of flower :
- (a) Calyx
- (b) Bark
- (c) Corolla
- (d) Gynoecium
- (iv) Which of the following is not a type of trichome :
- (a) Glandular
- (b) No grandular
- (c) Cruciferous
- (d) Hydathodes

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- (v) The bunch of flower is called as :
- (a) Corolla
- (b) Androcium
- (c) Bark
- (d) Inflorescence
- (vi) Lycopodium spore method was developed by :
- (a) James Rodrix
- (b) Wallis
- (c) Linnaeus
- (d) Engler
- (vii) While performing the chemomicroscopy of a drug lignified trichomes were observed. Probable drug is :
- (a) Buchu
- (b) Lobelia
- (c) Nux-vomica
- (d) Mint leaves
- (viii) The melting point range of hydrous wool fat is :
- (a) 115-120°C

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- (b) 34-40°C
 - (c) 45-50°C
 - (d) 10-20°C
- (ix) Optical rotation is measured by :
- (a) Viscometer
 - (b) Polarimeter
 - (c) Opticometer
 - (d) Microtome
- (x) One of the following parameter is not used in quality control of crude drugs :
- (a) Total ash
 - (b) Acid soluble ash
 - (c) Water soluble ash
 - (d) Water insoluble ash
- (xi) The principle of separation of thin layer chromatography is :
- (a) Absorption
 - (b) Adsorption

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[5]

- (c) Attraction
 - (d) None of these
- (xii) The concept of totipotency was laid by :
- (a) Loo
 - (b) Haberlandt
 - (c) Cocking
 - (d) Galen
- (xiii) Subculturing of callus is done because of :
- (a) Nutrient depletion
 - (b) Medium drying
 - (c) Both (a) and (b)
 - (d) None of the above
- (xiv) In culture medium the elements required in the concentration less than $0.5 \text{ ml mol l}^{-1}$ are known as :
- (a) Macronutrients
 - (b) Micronutrients
 - (c) Organic nutrients
 - (d) Stiff agents

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- (xv) The most commonly used gelling agent in culture medium is :
- (a) Gelatin
 - (b) Agar-agar
 - (c) 2, 4-D
 - (d) Methyl cellulose
- (xvi) Protoplasts can be obtained from :
- (a) Oxidation of tissue
 - (b) Saponification of tissues
 - (c) Enzymatic degradation of cells walls
 - (d) None of the above
- (xvii) Which of the following is not macronutrient :
- (a) Copper
 - (b) Nitrogen
 - (c) Potassium
 - (d) Sulphur
- (xviii) Papain shows its maximum activity between pH :
- (a) 5 to 6
 - (b) 1 to 2

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- (c) 2 to 3
- (d) 2-5 to 4
- (xix) Cotton and flax are :
- (a) Animal fibers
 - (b) Plant fibers
 - (c) Mineral fibers
 - (d) Synthetic fibers
- (xx) The destruction of enzymes takes place above :
- (a) 25°C
 - (b) 60°C
 - (c) 20°C
 - (d) 0°C

Section-B

2×10=20

(Long Answer Questions)

Note : Attempt any two questions. Each question carries 10 marks.

2. Give definition, history, scope and development of Pharmacognosy?

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3. What is the role of Pharmacognosy in traditional system of medicine like Ayurveda and Siddha?
4. Define tissue culture? name different type of culture and describe in detail the nutritional requirement for maintenance and growth of tissue culture.

Section-C 7×5=35

(Short Answer Questions)

Note : Attempt any seven questions. Each question carries 5 marks.

5. What are the different natural sources of drug? Name them and give at least two examples from each.
6. Describe pharmacological classification.
7. Discuss about adulteration and its different types?
8. Explain the application of plant hormone.
9. Define, classify and give characteristics test for alkaloids.
10. Write short notes on novel medicinal agents from marine sources.

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11. What are fibers? Give sources, chemical nature and uses of jute and hemp?
12. Give biological sources, chemical constituents, medicinal and other uses of castor oil and chaulmoogra oil.
13. Write in short about hallucinogens and natural allergens.