

QP Code: 90284

**SET 2 QUESTION PAPER**

**Subject:** Pharmacognosy & Phytochemistry I

**Year and Sem:** S.Y. B.Pharm (SEM-IV) (Choice Based) (R-2019)

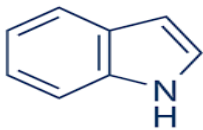
**Duration:** 3 hours

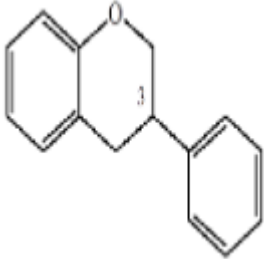
**Total marks: 80**

**N.B.: 1. All questions are compulsory**

**2. Figures to right indicate full marks**

Q. I	Choose appropriate option for following multiple choice based questions:	20M
1	Artificial invert sugar, an adulterant for honey is detected by ---	
a	Selivonanoff's test	
b	Fiche's test	
c	Ninhydrine test	
d	Fehling test	
2	Position of Plant in taxonomy and chemical nature of drugs is included in which of the following system of classification	
a	Taxonomical Classification	
b	Chemotaxonomical Classification	
c	Chemical classification	
d	Serotaxonomical classification	
3	Total Ash value in case of crude drug signifies	
a	Organic content of the drug	
b	Cellular content of the drug	
c	Inorganic content of the drug	
d	Phytoconstituents of the drug	
4	Palisade ratio is	
a	Total number of palisade cells beneath each epidermal cell	
b	Total number of Palisade cells beneath mesophyll	
c	Average number of Palisade cells beneath each epidermal cell	
d	Average number of Palisade cells beneath four continuous epidermal cells	
5	A change of the DNA sequence within a gene or a chromosome of an organism resulting in the creation of a new character or trait not found in the parental type	
a	Chemodemes	
b	Hybridization	
c	Polyploidy	
d	Mutation	
6	The natural plant growth regulator which promote cell division, cell elongation and useful in root formation, phototropism, geotropism and apical dominance	
a	Cytokinins	
b	Abscisic acid	
c	Auxins	

d	Gibberellins	
7	The method of collection of gum from the plant	
a	felling	
b	cutting	
c	tapping	
d	digging	
8	Following are the methods of in-situ conservation except	
a	National Park	
b	Botanical Garden	
c	Statuary	
d	Biosphere reserve	
9	Cytokinins are derivatives of	
a	Proteins	
b	Adenine	
c	Glycosides	
d	Indole	
10	Following are the macronutrient; except	
a	Nitrogen	
b	Sulphur	
c	Copper	
d	Potassium	
11	The unorganized mass of cells which proliferates from the cells of an explant is termed as	
a	Callus culture	
b	Protoplast culture	
c	Suspension culture	
d	Culture	
12	The system of medicine which put forth the Laws of Similars which says that like cures like (Similae similibus curentur)	
a	Unani	
b	Homeopathy	
c	Ayurveda	
d	Siddha	
13	Identify the class of compound from the given basic nucleus	
		
a	Indole Alkaloids	
b	Anthraquinone Glycosides	

c	Quinoline Alkaloids	
d	Cardiac Glycosides	
14	Identify the class of compound from the given basic nucleus	
		
a	Isoflavonoids	
b	Neo Flavonoids	
c	Flavonoids	
d	Flavan-3-ol	
15	C-Antraquinone 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	Hemp is an example of fibre belonging to the class	
a	Regenerated fibre	
b	Mineral fibre	
c	Carbohydrate fibre	
d	Protein fibre	
17	-----are agents that can cause a birth defect by permanently altering the structure and functions of organs exposed to them	
a	Teratogens	
b	Allergens	
c	Hallucinogens	
d	Enzymes	
18	The proteolytic enzyme derived from the bacteria present in the gut of silk worm	
a	Urokinase	
b	Streptokinase	
c	Serratiopeptidase	
d	Pepsin	
19	Acacia and tragacanth are examples of natural gums classified in specific group	
a	Seed gums	
b	Marine gums	

c	Exudate gums	
d	Microbial Gums	
20	Gelatin is the example of source of drug of natural origin which is obtained from the following	
a	Vegetable source	
b	Animal source	
c	Mineral source	
d	Marine Source	
<b>Q. II A</b>	<b>Answer any one of the following.</b>	<b>12M</b>
1a	Draw the nucleus, example, use and chemical test of the following-  i. Tropane alkaloid ii. Cardiac glycosides iii. Triterpenoidal pentacyclic saponin	<b>6M</b>
1b	Define Ash value and swelling Index? Write a note on wax obtained from animal source.	<b>6M</b>
2a	Draw the nucleus, example, use and chemical test of the following i. Anthraquinone Glycosides ii. Steroidal saponin iii. Isoquinoline alkaloids	<b>6M</b>
2b	Define and write the significance of moisture content as physical parameter in the evaluation of Drugs of Natural origin. Give complete pharmacognostic account of any one oil having cathartic property.	<b>6M</b>
<b>Q.II B</b>	<b>Answer any four out of the five</b>	<b>48 M</b>
1a	Explain the role of Pharmacognosy in Allopathy and Ayurveda system of medicine with examples.	<b>6 M</b>
1b	Write in detail about any three factors influencing cultivation of medicinal plants with one example each.	<b>6 M</b>
2a	Discuss transgenic plants and their use in the production of edible vaccines. Give the advantages of edible vaccine.	<b>6 M</b>
2b	Classify following with examples: i. Volatile oil ii. Tannins	<b>6 M</b>
3a	With the help of suitable examples differentiate between organized and unorganized drugs. Write a note on Agar.	<b>6 M</b>
3b	Write the source, preparation, constituents, chemical tests and uses of 'Acacia'.	<b>6 M</b>
4a	Define Polyploidy and Hybridization.	<b>3 M</b>
4b	Differentiate between Callus and Suspension culture.	<b>3M</b>

4c	Compare and contrast Absorbent and Non-absorbent cotton.	<b>3M</b>
4d	Write about Sero-taxonomical classification of Drugs of natural origin with suitable examples.	<b>3M</b>
5a	Write a note on i. Conservation of medicinal plants. ii. Novel medicinal agents from marine source.	<b>6 M</b>
5b	Explain any two proteolytic enzymes obtained from plant source.	<b>6 M</b>

Subject: Pharmacology I (Theory)

Year and Sem: S. Y. B. Pharm. Sem IV Rev. 2019

Duration: 3 Hrs

Total marks: 80

N.B. : 1. All questions are compulsory

2. Figures to right indicate full marks

**Q. 1. Choose appropriate option for following multiple choice based questions. 20 marks**

1. The phenomenon in which the action of one drug is abolished by the other is known as \_\_\_\_\_
  - a. Antagonism
  - b. Synergism
  - c. Dose-response relationship
  - d. Desensitization
  
2. The theoretical volume of plasma from which the drug is completely removed in unit time signifies \_\_\_\_\_ of a drug.
  - a. Absorption
  - b. Metabolism
  - c. Volume of distribution
  - d. Clearance
  
3. Which of the following effect can be seen in 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. Idiosyncrasy is \_\_\_\_\_.
  - a. Type A ADRs
  - b. Type B ADRs
  - c. Type C ADRs
  - d. Type D ADRs
  
5. Latanoprost is used in the treatment of \_\_\_\_\_.
  - a. Myasthenia gravis
  - b. Glaucoma
  - c. Alzheimer's disease
  - d. Epilepsy
  
6. An example of surface anaesthetic is \_\_\_\_\_.
  - a. Prilocaine
  - b. Bupivacaine
  - c. Benzocaine
  - d. Chlorprocaine

7. The most unwanted stage of anaesthesia which can be escaped with newer anaesthetic agents.
- Stage of analgesia
  - Stage of delirium
  - Medullary paralysis
  - Surgical anaesthesia
8. The drug useful in alcohol abstinence is \_\_\_\_\_.
- Disulfiram
  - Propranolol
  - Atropine
  - Tubocurarine
9. Nootropic drugs are \_\_\_\_\_.
- CNS depressants
  - Anxiolytics
  - Cognition enhancers
  - Antiepileptic drugs
10. The morphine exerts \_\_\_\_\_ effect
- Miosis
  - Increased motility
  - Respiratory stimulation
  - Algesia
11. Low volume of distribution indicates that the drug is distributed in the:
- Vascular compartment
  - Extracellular fluid
  - Intracellular fluid
  - Tissues
12. Which of the following is a G protein coupled receptor?
- Muscarinic cholinergic receptor
  - Nicotinic cholinergic receptor
  - Glucocorticoid receptor
  - Insulin receptor
13. Which of the following statement is correct for nasal decongestants?
- Safer in hypertensives
  - Do not produce any systemic effects
  - They are alpha antagonists
  - Cause impairment of mucosal ciliary function

14. The treatment involved in barbiturate poisoning include \_\_\_\_\_.
- Flumazenil
  - Urine alkalization
  - Pralidoxime
  - Atropine
15. Monoamine oxidase B subtype cause oxidation of \_\_\_\_\_.
- Histamine
  - Hydroxytryptamine
  - Adrenaline
  - Phenylethylamine
16. Atypical antipsychotics are preferred over typical antipsychotics mainly because \_\_\_\_\_.
- Atypical antipsychotics are potent dopamine blockers
  - Atypical antipsychotics are specific dopamine receptor blocking
  - Excreted unchanged in the urine
  - Minimal extrapyramidal side effect
17. Glutathione conjugation detoxifies which of the following drug?
- Proguanil
  - Acetazolamide
  - Paracetamol
  - Dopamine
18. A partial agonist can antagonize the effects of a full agonist because it has \_\_\_\_\_.
- High affinity but low intrinsic activity
  - Low affinity but high intrinsic activity
  - No affinity and low intrinsic activity
  - High affinity but no intrinsic activity
19. Dry, flushed and hot skin, dilated pupil, photophobia, dry mouth, excitement, convulsions and coma are the manifestations of \_\_\_\_\_.
- Organophosphate poisoning
  - Morphine poisoning
  - Belladonna poisoning
  - Heavy metal poisoning
20. The drawback of nitrous oxide as anesthetic agent is
- It may lead to diffusion hypoxia
  - It has hangover effect
  - It is highly explosive
  - Incompatibility with other anesthetic agents



**Q. 2 A Answer ANY ONE question.**

**12 marks**

- a Define metabolism. Enlist various Phase I and Phase II reactions. Add a note on enzyme induction and inhibition.
- b Classify anti-epileptics. Give the mechanism of action and adverse effects of Phenytoin and Valproic acid.

**Q. 2 B Answer ANY FOUR questions.**

**48 marks**

- a. i. Define absorption. Add a note on factors affecting absorption.
- a. ii. Give the advantages and disadvantages of the oral route.
- b. i. Classify the receptors along with the examples. Explain in brief ion channel receptors.
- b. ii. Define clinical trials, enlist their various phases and write a note on preclinical studies.
- c. What are sympatholytics? Classify them and add a note on the treatment of Glaucoma.
- d. Give mechanism of action and anyone therapeutic use of the following drugs: Thiopental, Disulfiram, Ketamine, and Baclofen.
- e. i. Write a detailed note on Psychostimulants.
- e. ii. Explain the pharmacology of Levodopa.

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Subject: Medicinal Chemistry-I

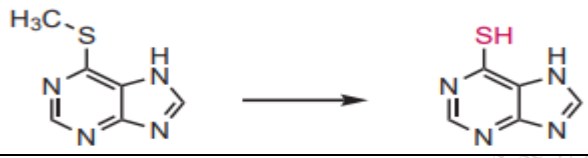
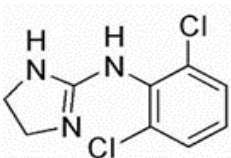
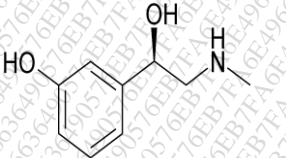
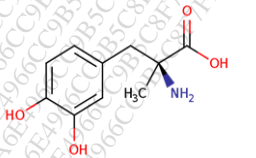
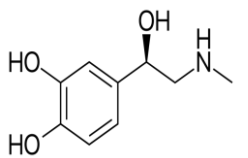
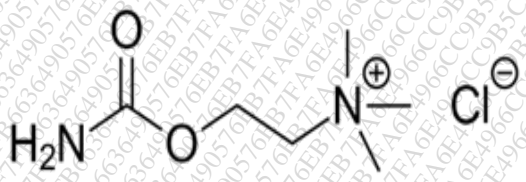
Year and Sem: S.Y. B.Pharm.(SEM-IV)

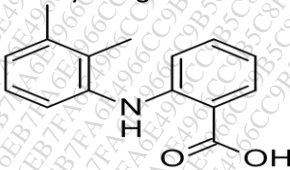
Duration: 3 hours

Total marks: 80 M

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. <span style="float: right;">20 M</span> Each question carries one mark.
1	<p>The type of metabolic reaction which occurs in the following biotransformation is</p>  <p>[a] Oxidation at benzylic carbon [b] Oxidation of Aromatic ring [c] Oxidation of C-S system [d] S-demethylation</p>
2	<p>Which of the following statement is incorrect about metabolism of drugs</p> <p>[a] Metabolism is also called a detoxification process [b] Phase I and Phase II reactions are metabolism pathways [c] Phase II reactions are also called as functionalization reactions [d] Cytochrome enzymes play an important role in the metabolism of drugs</p>
3	<p>Which of the following is a selective <math>\alpha</math>-1 receptor agonist?</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="225 1048 523 1249"> <p>a)</p>  </div> <div data-bbox="531 1048 874 1249"> <p>b)</p>  </div> <div data-bbox="882 1048 1185 1249"> <p>c)</p>  </div> <div data-bbox="1193 1048 1489 1249"> <p>d)</p>  </div> </div>
4	<p>Which drug contains a 4-amino-6,7-dimethoxyquinazoline ring system attached to an acyl piperazine moiety?</p> <p>[a] Tolazoline [b] Phentolamine [c] Phenoxy-benzamine [d] Prazosin</p>
5	<p>What is the name of this cholinergic drug?</p>  <p>[a] Bethanechol chloride [b] Carbachol chloride [c] Methacholine chloride [d] Acetylcholine chloride</p>
6	<p>Which drug is synthesised using phenyl acetonitrile and 1,5-dibromopentane as precursors?</p> <p>[a] Cyclopentolate [b] Tacrine [c] Neostigmine [d] Dicyclomine</p>
7	<p>Select the INCORRECT statement with respect to the SAR of adrenergic agonists with specific reference to 3',5'-dihydroxy ring substitution pattern.</p> <p>[a] Increases the drug distribution [b] Increases resistance to metabolism by COMT [c] Provides selectivity for <math>\beta</math>2-receptors [d] Gives orally active bronchodilator</p>

8	Following are structural requirements essential for sympathomimetic activity of arylethanolamines EXCEPT? [a] (1S)-OH      [b] Catechol ring      [c] $\beta$ -phenylethylamine      [d] (1R)-OH
9	Identify the triazole ring fused benzodiazepine from the following. [a] Chlordiazepoxide    [b] Diazepam      [c] Oxazepam      [d] Alprazolam
10	The benzodiazepine analog which has the least sedative activity [a] ortho-substituted 5-aryl benzodiazepine      [b] di-ortho-substituted 5-aryl benzodiazepine [c] para-substituted 5-aryl benzodiazepine      [d] unsubstituted 5-aryl benzodiazepine
11	Droperidol is a member of ---- class of antipsychotic agents. [a] Phenothiazine    [b] Butyrophenone    [c] Benzazepine      [d] Benzoisoxazole
12	The spacer group present between the ring nitrogen and the side chain amino nitrogen in phenothiazines for optimum antipsychotic activity is [a] Butyl      [b] Methyl      [c] Ethyl      [d] Propyl
13	Identify the name of ring present in phenytoin from the following [a] Succinimide    [b] Oxazolidinedione    [c] Hydantoin    [d] Iminostilbene
14	Which of the following phenothiazine derivatives contains piperidine side chain. [a] Thioridazine    [b] Prochlorperazine    [c] Triflupromazine    [d] Chlorpromazine
15	Which of the following is structural isomer of Enflurane [a] Isoflurane    [b] Sevoflurane      [c] Methoxyflurane      [d] Desflurane
16	Which of the following is not an example of Inhalation anaesthetics [a] Halothane    [b] Enflurane      [c] Ketamine      [d] Sevoflurane
17	Which of the following is INCORRECT statement about Methadone [a] Methadone is a synthetic opioid [b] R-enantiomer is more potent than S enantiomer [c] Methadone is opioid antagonist [d] N-demethylation is major metabolic pathway for Methadone
18	Which of the following is not a structural feature of Opioid Antagonist [a] Presence of allyl/cyclopropyl methyl group at 17th position [b] Replacement of 6-OH with keto group [c] Presence of 7-8 double bond [d] Substitution of 14 OH
19	The isosteric replacement of the indole ring with the Indene ring system resulted in which of the following anti-inflammatory drug [a] Sulindac    [b] Diclofenac    [c] Tolmetin      [d] Naproxen
20	Identify the given anti-inflammatory agent  [a] Piroxicam    [b] Tolmetin    [c] Phenacetin    [d] Mefenamic acid

Q.2 Answer <u>any one</u> of the following two questions.		12M
A	<p>(I) State whether following statements are true or false in relation to the compounds (structure drawn below) active as antimuscarinic agents. If false, correct the statement and justify. Support your answer with relevant structures.</p> <div style="text-align: center; border: 2px solid black; padding: 10px; width: fit-content; margin: 10px auto;"> </div> <ol style="list-style-type: none"> <li>1. Substitution of R<sub>2</sub> and R<sub>3</sub> by naphthalene ring increases the anticholinergic activity.</li> <li>2. Introduction of hydroxyl group at R<sub>1</sub> increases the anticholinergic activity.</li> <li>3. Compound belong to the amino alcohol ether class if X = -COO- and R<sub>1</sub> = -OH.</li> </ol> <p>(II) Outline the synthesis of Salbutamol along with reaction conditions and necessary reagents and give its mechanism of action.</p> <p>(III) Phenoxybenzamine and Prazosin are two α-adrenergic antagonists. Is their mechanism of action the same? Explain.</p>	<p>6M</p> <p>4M</p> <p>2M</p>
B	<p>(I) Answer the following questions</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p><b>a</b></p> </div> <div style="text-align: center;"> <p><b>b</b></p> </div> <div style="text-align: center;"> <p><b>c</b></p> </div> <div style="text-align: center;"> <p><b>d</b></p> </div> </div> <ol style="list-style-type: none"> <li>1. Indicate the chemical classes of 'a' and 'b'</li> <li>2. Predict the effect of attaching a methyl group on both the ring nitrogens of 'a'</li> <li>3. Write the mechanism of action of 'c'</li> <li>4. Predict the effect of replacing the ring methyl group of 'b' by H</li> <li>5. Name the enzymes involved in the metabolism of 'd'</li> </ol> <p>(II) Explain the basis of GI side effects, generally caused by the non-selective class of NSAIDs.</p> <p>(III) (1) Give two examples of Narcotic antagonists with structure.  (2) Give two examples of flexible opioid agonists with structure.</p>	<p>6M</p> <p>2M</p> <p>4M</p>

**Q.3 Answer any four of the following five questions.**

**48M**

**A** (I) Match the following

	Drugs		Column A		Column B
1	Clonidine	a	Metabolized to $\alpha$ -methyl NE	i	2-Arylimidazoline
2	Naphazoline	b	Contains resorcinol nucleus	ii	Non-catecholamine $\beta$ 2-selective agonist
3	Methyldopa	c	Indirect acting adrenergic agonist	iii	Phenylethylamine
4	Terbutaline	d	Contains naphthalene ring	iv	2-aminoimidazoline
5	Isoproterenol	e	Presence of o-chlorine groups and NH bridge	v	Phenyl propanolamine
6	Pseudoephedrine	f	Non-selective $\beta$ -agonist	vi	Catecholamine with isopropyl N-substituent

6M

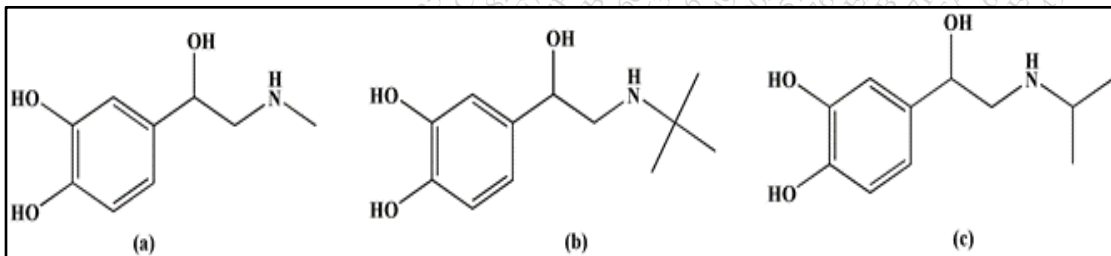
**12M**

(II) Which structural modifications in sympathomimetics bestow the following properties -

- (1) Resistance to COMT      (2) Resistance to MAO      (3) Oral activity

3M

(III) Answer the questions with respect to the structures given below



3M

- Which of the above structures is a selective  $\beta$ 2-agonist?
- Predict the effect of isopropyl group on selectivity in structure C.
- Arrange the above structures in the increasing order with respect to rate of metabolism by MAO.

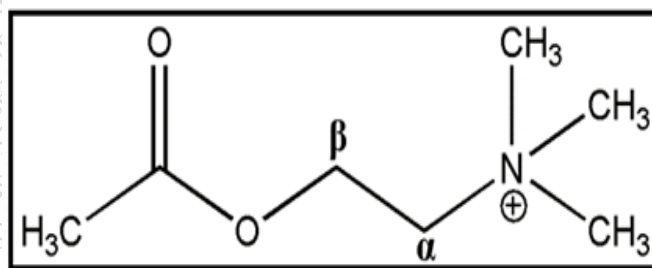
**B** (I) Describe biosynthesis, storage, release and metabolism of acetylcholine.

6M

**12M**

(II) Explain the effect of following structural changes on the activity of muscarinic agonist (structure drawn below).

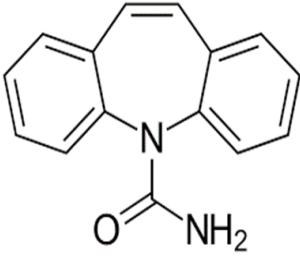
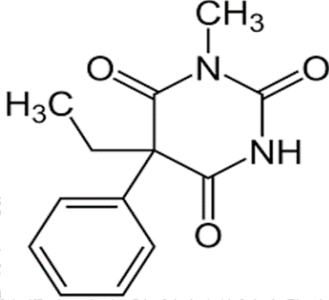
4M



- Replacement of acetyl group with propionyl group
- Replacement of all three  $-CH_3$  groups on the quaternary nitrogen with  $-C_2H_5$
- Replacement of acetyl group of acetylcholine with carbamate
- Addition of methyl group on  $\alpha$  carbon atom

(III) Differentiate between reversible and irreversible acetylcholine esterase inhibitors.

2M

<p><b>C</b></p>	<p>(I) Answer the following questions. Support your answer with relevant structures wherever required</p> <ol style="list-style-type: none"> <li>1. Protein binding can prolong the duration of action. Explain</li> <li>2. 'Geometrical isomerism influences biological activity'. Explain with suitable examples.</li> <li>3. Enlist Phase I reductive metabolic reactions</li> <li>4. Explain the concept of bioisosterism with suitable examples</li> <li>5. Give an example of 'hydrolysis' as biotransformation pathway.</li> </ol> <p>[II] Elaborate on factors affecting drug metabolism</p> <p>[III] Write the structure of any two Phase I metabolites of following</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>[a]</b></p> </div> <div style="text-align: center;">  <p><b>[b]</b></p> </div> </div>	<p>5M</p> <p>3M</p> <p>4M</p>	<p><b>12M</b></p>
<p><b>D</b></p>	<p>(I) Classify antipsychotic drugs based on their chemical structures with at least one example from each class. (Structures needed)</p> <p>(II) Outline the synthetic scheme of chlorpromazine indicating the reagents and reaction conditions used.</p> <p>(III) Compare the antipsychotic activity and side effect profile of chlorpromazine with prochlorperazine.</p>	<p>4M</p> <p>4M</p> <p>4M</p>	<p><b>12M</b></p>
<p><b>E</b></p>	<p>(I) Explain why morphine has poor oral bioavailability. Discuss the structure activity relationship of morphine analogues with suitable examples.</p> <p>(II) Classify the following drugs into various subclasses of NSAIDs and give their structures and mechanism of action</p> <p>Indomethacin, Diclofenac, Aspirin, Acetaminophen, Antipyrine, Ketorolac</p>	<p>6M</p> <p>6M</p>	<p><b>12M</b></p>

**Subject: Physical Pharmaceutics- II**  
**Duration:3 Hrs.**

**Class: S. Y. B. Pharm. (Sem.-IV) R-2019**  
**Maximum Marks: 80**

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

**Q. I Choose the appropriate option for the following multiple choice based questions. 20M**

1. Dilatant flow is characterized as a reverse phenomenon of:
  - a. Newtonian flow
  - b. Plastic flow
  - c. Pseudoplastic flow
  - d. Rheopexy
2. A plot of shear rate, as a function of shear stress is called
  - a Rheogram
  - b Standard Plot
  - c Humidity Chart
  - d Histogram
3. Brook-field viscometer is an example of \_\_\_\_\_ viscometer.
  - a. Cone and plate
  - b. Extrusion
  - c. Rotating sphere
  - d. Rotating spindle
4. During elastic deformation, the stress–strain relationship for a specimen is described by
  - a. Hooke's law
  - b. Boyle's law
  - c. Beer Lambert's law
  - d. Charle's law
5. A deformation that recover after the release of stress is known as
  - a plastic deformation
  - b elastic deformation
  - c pseudoplastic deformation
  - d creep
6. The ratio of void volume to bulk volume is known as
  - a. Porosity
  - b. Tapped density
  - c. Granule volume
  - d. Bulk Density
7. Helium pycnometer is used to determine
  - a. Size
  - b. True density
  - c. Sedimentation rate
  - d. Surface area
8. The powder having low bulk density or large bulk volume is known as
  - a. Bulk powder
  - b. Heavy powder
  - c. Light powder

- d. Granular powder
9. Which of the following is the half-life of First order reaction?  
a.  $t_{1/2} = 2/k$   
b.  $t_{1/2} = A_0/2k$   
c.  $t_{1/2} = 0.693/2k$   
d.  $t_{1/2} = 0.693/k$
10. Climate zone III is  
a. Hot/dry climate  
b. Subtropical and Mediterranean climate  
c. Hot/humid climate  
d. Moderate climate
11. The dielectric constant is used to measure  
a. Spreadability of the solvent  
b. Polarity of the solvent  
c. Viscosity of the solvent  
d. Temperature of the solvent
12. \_\_\_\_\_ is the reaction of compounds and molecular oxygen  
a. Photolysis  
b. Hydrolysis  
c. Auto-Oxidation  
d. Thermolysis
13. The type of emulsion can be easily identified using the following test except \_\_\_\_\_ test.  
a. Dye solubility  
b. Creaming  
c. Dilution  
d. Redispersibility
14. As the viscosity of the emulsion is \_\_\_\_\_ the flocculation of globules will be reduced.  
a. Increased  
b. Decreased  
c. Maintained zero  
d. Lowered
15. In an emulsion, the relative volume of water and oil is expressed as \_\_\_\_\_.  
a. Phase ratio  
b. Phase volume ratio  
c. Phase inversion  
d. Viscosity
16. \_\_\_\_\_ is an example of hydrophilic colloid used in preparation of an emulsion.  
a. Acacia



- b. Spans
  - c. Bentonite
  - d. Veegum
17. \_\_\_\_\_ surfactants do not impart charges on interfacial films.
- a. Ionic
  - b. Non ionic
  - c. Cationic
  - d. Anionic
18. Donnan membrane effect means:
- a. Driving the drug ion of similar charge to the opposite side of the semipermeable membrane
  - b. Driving the drug ion of opposite charge to the opposite side of the semipermeable membrane
  - c. Driving the drug ion of neutral charge to the opposite side of the semipermeable membrane
  - d. Stopping the transfer of drug ion of similar charge to the opposite side of the semipermeable membrane.
19. Which of the following is an example of lyophilic colloid?
- a. Gold
  - b. Silver
  - c. Sulphur
  - d. Albumin
20. Lyophobic colloids are:
- a. Easy to prepare and thermodynamically stable
  - b. Easy to prepare but thermodynamically unstable
  - c. Difficult to prepare but thermodynamically stable
  - d. Difficult to prepare and thermodynamically unstable

**Q. II A) Answer any one question. 12M**

- a. Explain the optical properties of colloids in detail
- b. Classify viscometers. Describe the principle, construction and working of cup and bob viscometer.

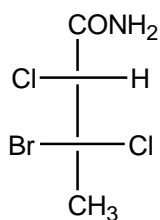
**Q. II B) Answer any four questions. 48M**

1. a. Describe types of particle deformation. 6M
- b. Describe the mechanical behaviour of solids in terms of elastic modulus. 6M
2. a. What do you understand by particles packaging arrangements in powders? How is powder porosity evaluated? 6M
- b. What are the methods used for determining particle size? Explain in detail any two. 6M
3. a. Enlist the various theories of emulsification. Discuss any two theories in brief. 6M
- b. State Stoke's law and its significance in sedimentation of suspension 6M

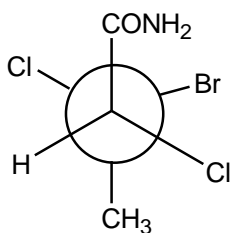
4. a. Discuss the various factors influencing particle settling in suspension 6M
- b. Discuss the various identification tests used to differentiate the type of emulsion 6M
5. a. What are the limitations of Arrhenius equation for determination of accelerated stability studies? 6M
- b. The half-life of drug which decomposes according first order kinetics is 75 days. Calculate shelf life and k. 6M

S. Y. B. PHARM. SEM-IV-POC-III-MCQ-FH2022

1. Identify the relationship between the molecule X and Y.

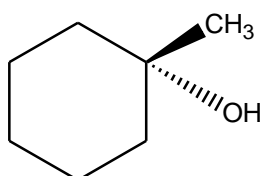


(X)

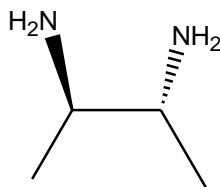


(Y)

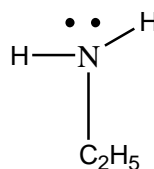
- A. Diastereomers
  - B. Enantiomers
  - C. Identical
  - D. Structural isomers
2. Which of the following molecules is chiral?



(I)



(II)

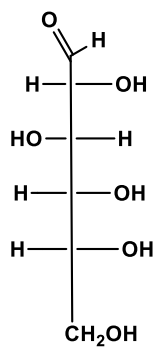


(III)



(IV)

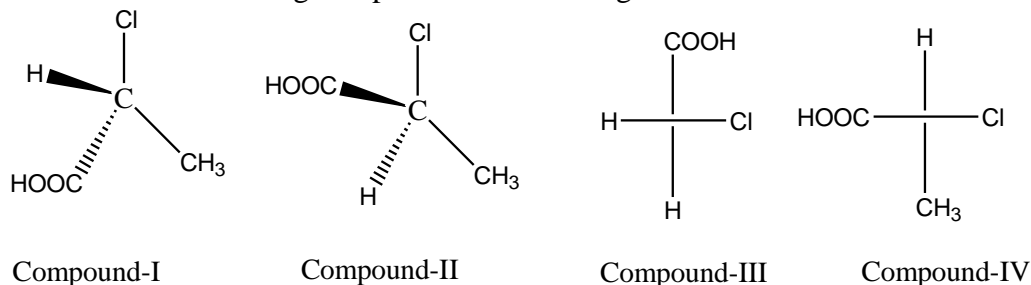
- A. I
  - B. II
  - C. III
  - D. IV
3. Nomenclate the given molecule:



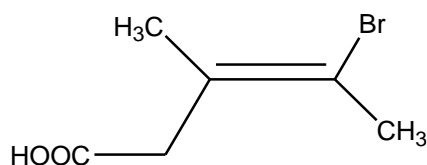
- A. L-Glucose
  - B. 2R,3S,4R,5R-Glucose
  - C. 2R, 3R, 4S, 5R- Glucose
  - D. D-Glucose
4. A mixture of equal quantities of two enantiomers is called as.....
- A. Diastereomeric mixture

- B. Mesomer
- C. Racemic mixture
- D. Optical isomers

5. Which of the following compound has R-Configuration?



- A. Compound-I
  - B. Compound-II
  - C. Compound-III
  - D. Compound-IV
6. Identify the correct name with configuration of the following compound

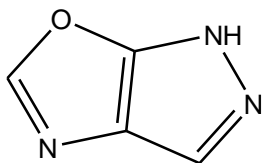


- A. (Z)-4-Bromo-3-methyl-pent-3-enoic acid
  - B. (Z)-2-Bromo-3-methyl-pent-2-enoic acid
  - C. (E)- 4-Bromo-3-methyl-pent-3-enoic acid
  - D. (E)-2-Bromo-3-methyl-pent-2-enoic acid
7. Which of the following decrease in order of stability of cyclohexane conformation is correct?
- A. Chair > twist boat > boat > half chair
  - B. Chair > boat > twist boat > half chair
  - C. Half chair > twist boat > boat > chair
  - D. Chair > boat > half chair > twist boat
8. ....are stereoisomers resulting from hindered rotation about single bonds where the steric strain barrier to rotation is high enough to allow for the isolation of the conformers.
- A. Enantiomers
  - B. Diastereomers
  - C. Mesomers
  - D. Atropisomers
9. Identify the wrong statement about geometrical isomers
- A. It must contain a carbon-carbon double bond in the molecule
  - B. Two different atoms or groups must be linked to each doubly bonded carbon atoms.

C. Cis and trans are geometric isomers

D. It occurs due to the rotation of carbon-carbon single bond

10. Nomenclature the following structure



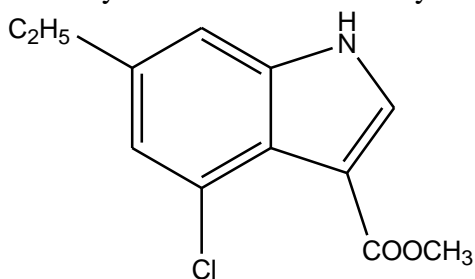
A. 1H-Pyrazolo[3,4-d]isoxazole

B. 1H-Pyrazolo[4,3-d]oxazole

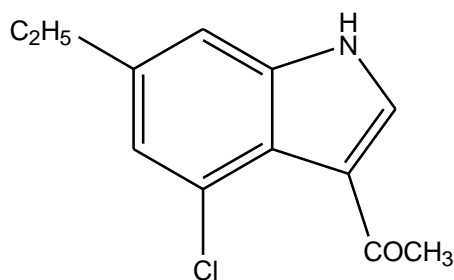
C. 1H-Pyrazolo[2,3-c]oxazole

D. Oxazolo[4,3-d]1H-pyrazole

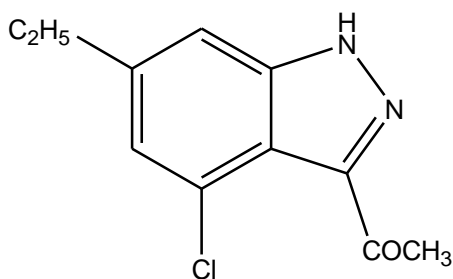
11. Identify the structure of 3-Acetyl-4-chloro-6-ethyl-1H-indole.



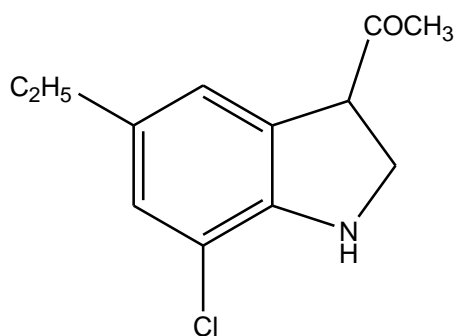
(Compound-I)



(Compound-II)



(Compound-III)



(Compound-IV)

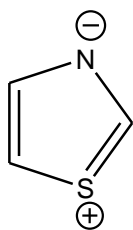
A. Compound-I

B. Compound-II

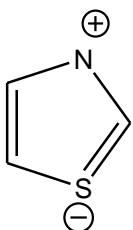
C. Compound-III

D. Compound-IV

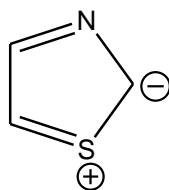
12. Which of the following resonating structures of Thiazole is incorrect?



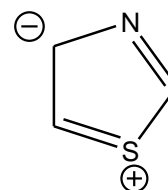
(Structure-I)



(Structure-II)



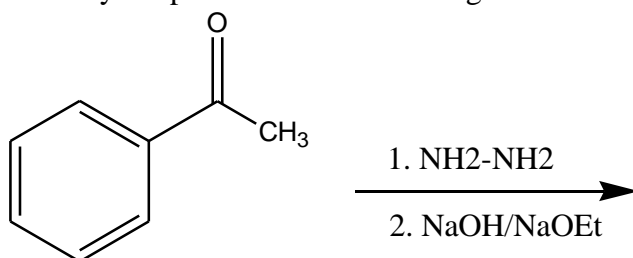
(Structure-III)



(Structure-IV)

A. Structure-I

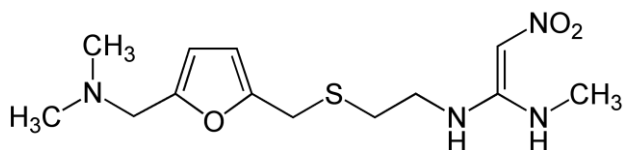
- B. Structure-III  
 C. Structure-IV  
 D. Structure-II
13. Which of the following five membered heterocyclic rings is most basic?  
 A. Imidazole  
 B. Pyrazole  
 C. Thiazole  
 D. Oxazole
14. Which heterocycle is synthesized from malonic ester and urea?  
 A. Pyridine  
 B. Imidazole  
 C. Pyrimidine  
 D. Indole
15. Paal-Knorr synthesis of furan is.....  
 A. Cyclization of 1,4-diketone under acidic condition  
 B. Cyclization of 1,2-diketone under acidic condition  
 C. Cyclization of 1,3-diketone under acidic condition  
 D. Cyclization of 1,4-diketone under basic condition
16. What is Chichibabin reaction?  
 A. Conversion of pyridine to 3-bromopyridine  
 B. Conversion of quinoline to 2-hydroxyquinoline  
 C. Conversion of pyridine to 2-aminopyridine  
 D. Conversion of quinoline to 8-bromoquinoline
17. Bromination of thiophene gives....  
 A. 2,3-dibromothiophene  
 B. 3-bromothiophene  
 C. 3,4-dibromothiophene  
 D. 2-bromothiophene
18. Identify the product of the following reaction



- A. Toluene  
 B. Ethylbenzene  
 C. Phenol  
 D. 1-phenylethanol
19. Which of the following drug is used as anti-lipidemic?  
 A. Ranitidine  
 B. Celecoxib  
 C. Atorvastatin

D. Zidovudine

20. Identify the heterocycle in the given molecule



- A. Oxazole
- B. Pyrrole
- C. Isoxazole
- D. Furan

**S. Y. B. PHARM. SEM-IV-POC-III-DTQ-FH2022**

**Q.I Attempt ANY ONE of the following (12M)**

**Q.1 i)** Draw all possible resonating structures of pyrazole. Compare the reactivity of pyrrole, furan and thiophene. Which position of the imidazole ring is susceptible to electrophilic aromatic substitution? Justify your answer. (6M)

ii) Define the terms 'stereospecific' and 'stereoselective'. Discuss, in details, the mechanism of halogenation of cis-2-butene and trans-2-butene. Comment on whether halogenation is stereoselective &/or stereospecific. (6M)

**Q.2 i)** What is resolution of racemic modification? Describe in detail, the methods of resolution of racemic modification by giving examples. (6M)

ii) Give mechanism with reagents and reaction conditions for the following synthesis: (6M)

- a) Van-Leusen oxazole synthesis
- b) Hantzsch Pyridine synthesis

**Q.II Attempt ANY FOUR of the following (48M)**

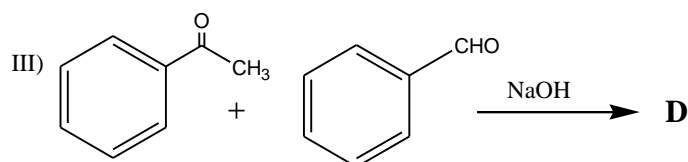
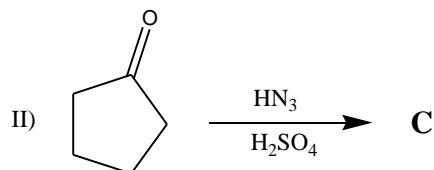
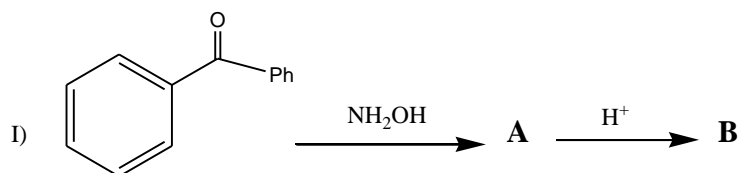
**Q.1 i)** Draw conformations of n-butane with energy profile diagram. Comment on the stability of every conformer. (4M)

ii) Draw all possible projections of 2-Chloro-2-methyl-3-nitro-3-phenylpropan-1-ol. (4M)

iii) What will be the product of Birch reduction of benzoic acid? Write its mechanism. (4M)

**Q.2 i)** What is asymmetric synthesis? Enlist methods of asymmetric synthesis; explain any one in detail by giving examples. (4M)

ii) Identify the products A, B, C and D of the following reactions. (4M)



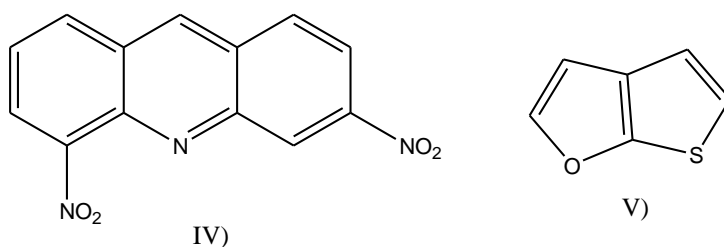
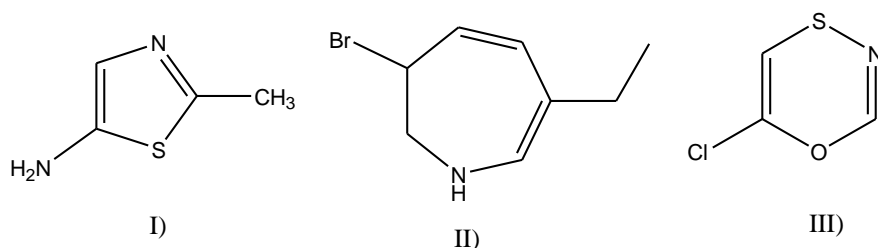
iii) Explain the two necessary conditions for biphenyl compounds to exhibit optical activity with suitable examples. (4M)

Q.3 i) Give mechanism for the following (6M)

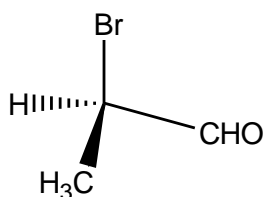
a) Radziszewski Imidazole synthesis

i. Friedlander synthesis of quinoline

ii) Nomenclature the following structures (5M)



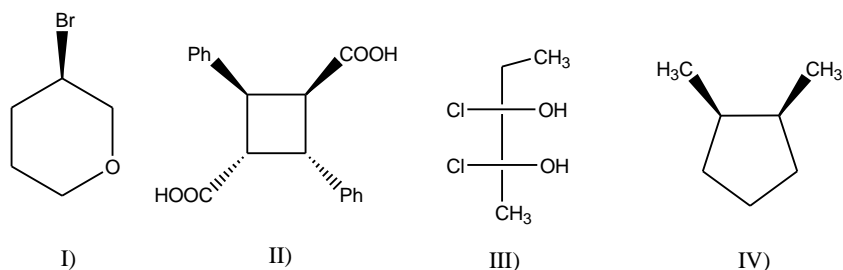
iii) Assign R/S configuration to the given molecule (1M)





**Q.4 i)** Write medicinal uses of Clonidine, Tacrine, Zidovudine and Pyrantel pamoate. (4M)

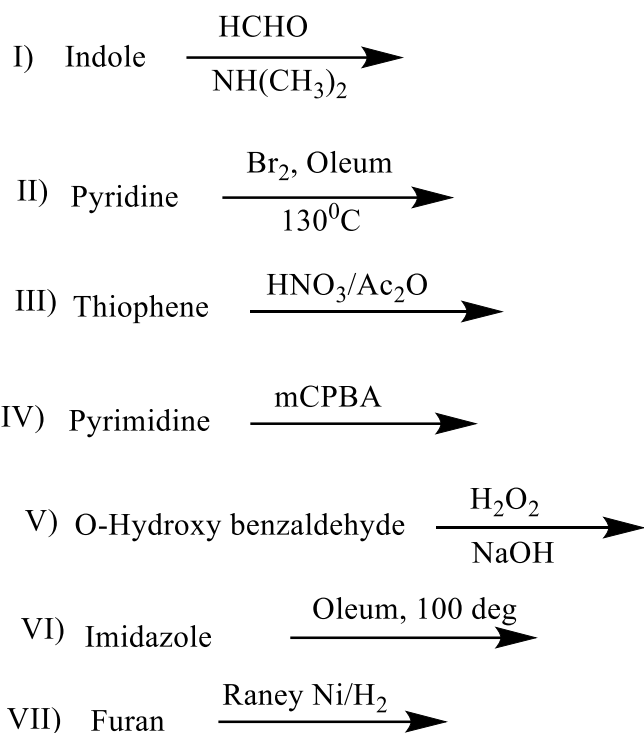
ii) Identify whether the following molecules are chiral/achiral. Justify the same. (4M)



iii) Draw structures of the following (4M)

- (Z) 2-Bromo-2-butenoic acid
- (E) 3-Hydroxy-2-butenal
- Cis and trans isomers of 1,2-dimethylcyclohexane

**Q.5** Give the products of following reactions (write structures). (7M)



ii) Using various oxidising and reducing agents, discuss oxidation and reduction of isoquinoline. (5M)