



WINTER – 16 EXAMINATION

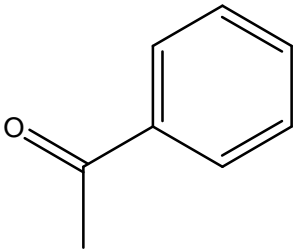
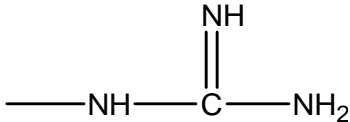
Model Answer

Subject Code:

0812

**Important Instructions to examiners:**

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills).
- 4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions credit may be given by judgement on part of examiner of relevant answer based on candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on equivalent concept.

Q. No.	Sub Q. N.	Answer	Marking Scheme
Q.1	a)	<p><b>Attempt any <u>FIVE</u> of the following</b></p> <p><b>Write the structure of the following organic groups (Any four)</b></p> <p>i) Benzoyl</p> <div style="text-align: center;"> Or <math>\text{—CO—C}_6\text{H}_5</math></div> <p>ii) Guanidino</p> <div style="text-align: center;"></div>	5x4=20M  1M  1M



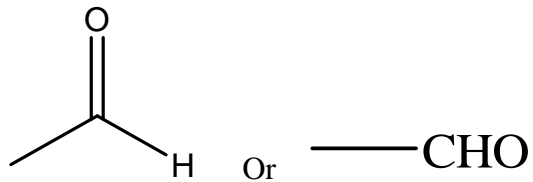
WINTER – 16 EXAMINATION

Model Answer

Subject Code:

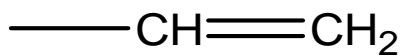
0812

iii) Formyl



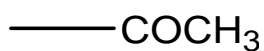
1M

iv) Vinyl



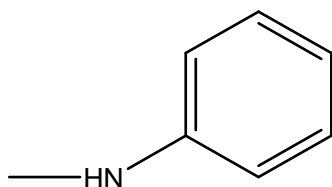
1M

v) Acetyl



1M

vi) Anilino

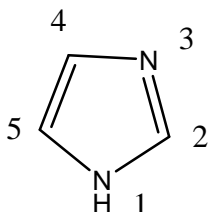


1M

b)

**Write structure with numbering (any four)**

i) Imidazole



1M



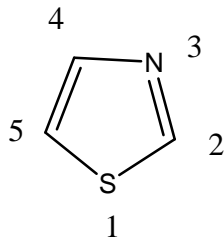
WINTER – 16 EXAMINATION

Subject Code:

0812

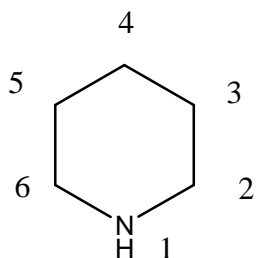
Model Answer

ii) Thiazole



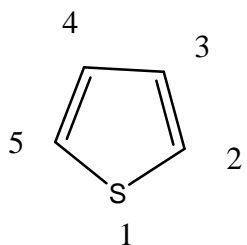
1M

iii) Piperidine



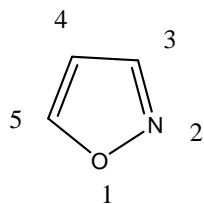
1M

iv) Thiophene



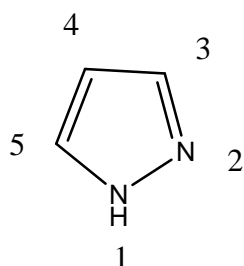
1M

v) Isoxazole



1M

vi) Pyrazole



1M



WINTER – 16 EXAMINATION

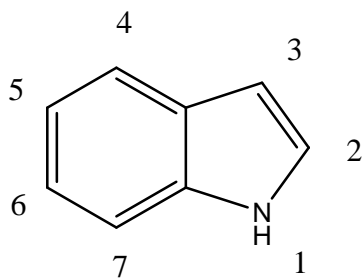
Model Answer

Subject Code:

0812

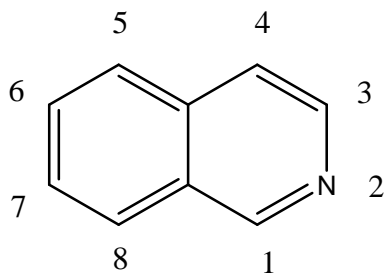
c) Write structure with numbering (any four)

i) Indole



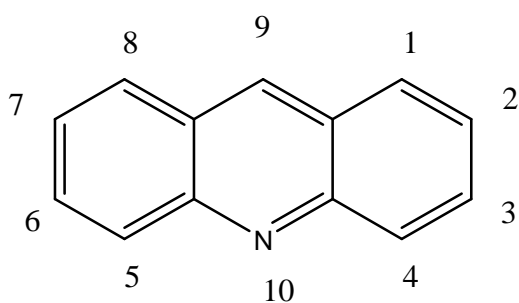
1M

ii) Isoquinoline



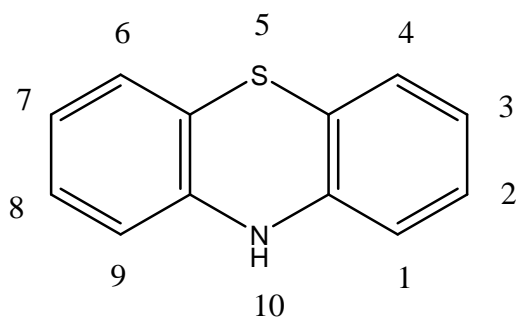
1M

iii) Acridine



1M

iv) Phenothiazine



1M

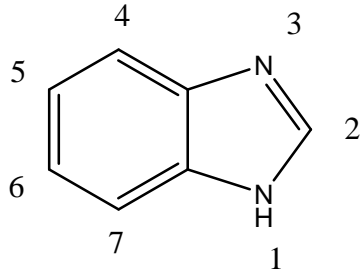
WINTER – 16 EXAMINATION

Model Answer

Subject Code:

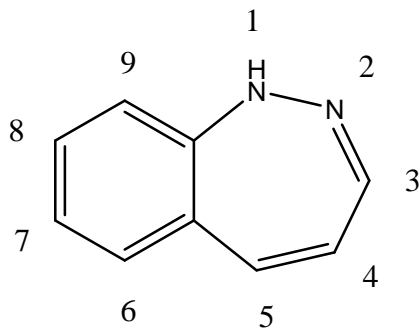
0812

v) Benzimidazole

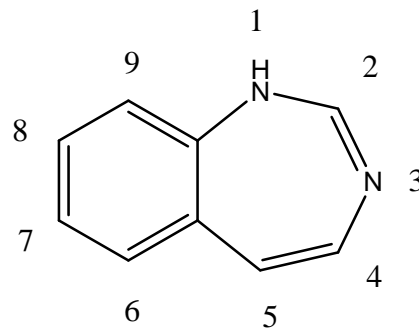


1M

vi) Benzodiazepine



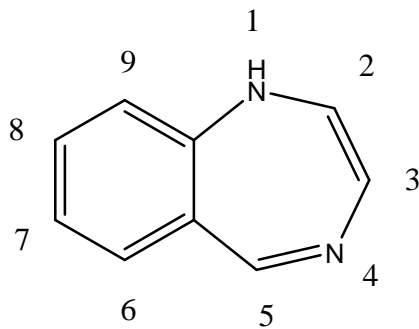
1,2-Benzodiazepine



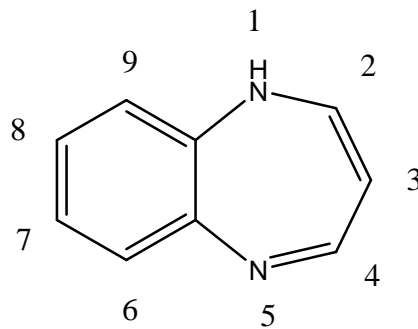
1,3-Benzodiazepine

OR

**OR**



1,4-Benzodiazepine



1,5-Benzodiazepine

OR

1M

WINTER – 16 EXAMINATION

Model Answer

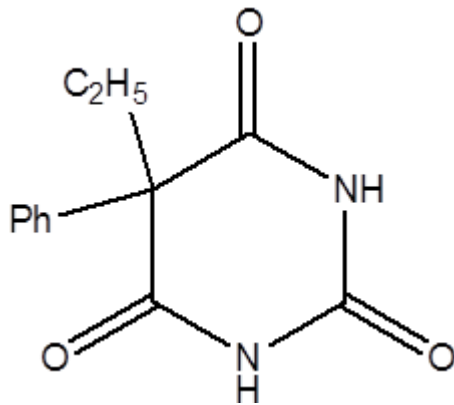
Subject Code:

0812

d) Write the name and structure of drug possessing following moiety (Any two)

i) Barbituric acid

Name of Drug: Phenobarbitone

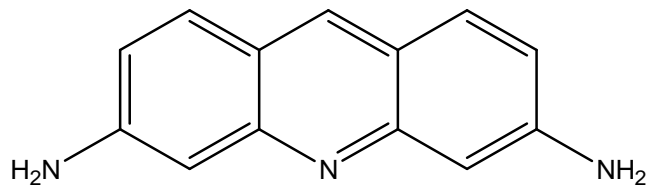


Name  
1M

Struct.  
1M

ii) Acridine

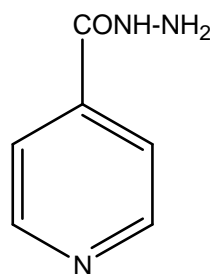
Name of drug: Proflavine



Name  
1M

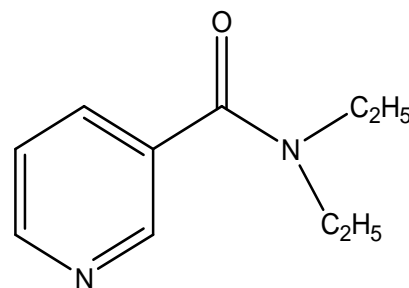
Struct.  
1M

iii) Pyridine



Isoniazid

OR



Nikethamide

Name  
1M

Struct.  
1M

WINTER – 16 EXAMINATION

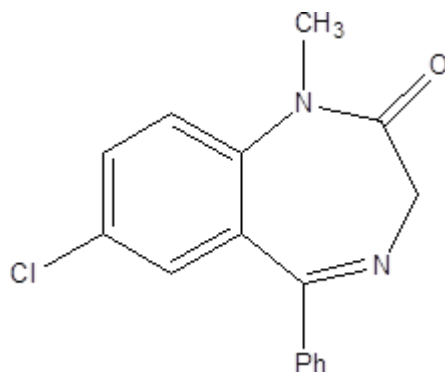
Model Answer

Subject Code:

0812

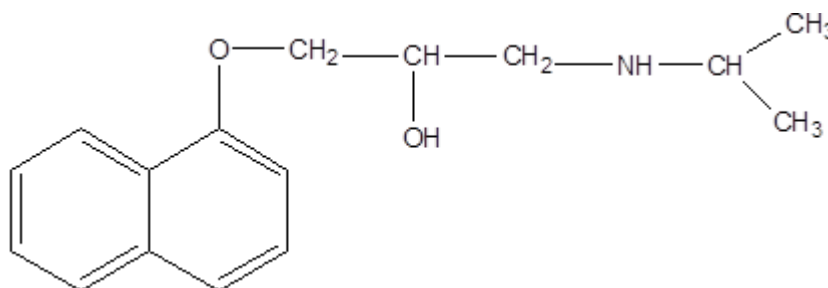
e) Draw structure of drug from given chemical name (any Two)

i) 7-Chloro-1,3-dihydro-1-methyl-5-phenyl-1,4-benzodiazepine-2-one



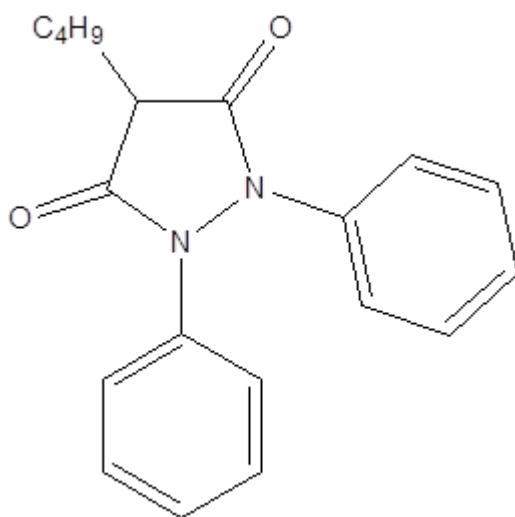
2M

ii) 1-(Isopropyl amino)-3-(1-naphthyloxy)propan-2-ol



2M

iii) 4-Butyl-1,2-diphenyl pyrazolidine-3,5-dione



2M

WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

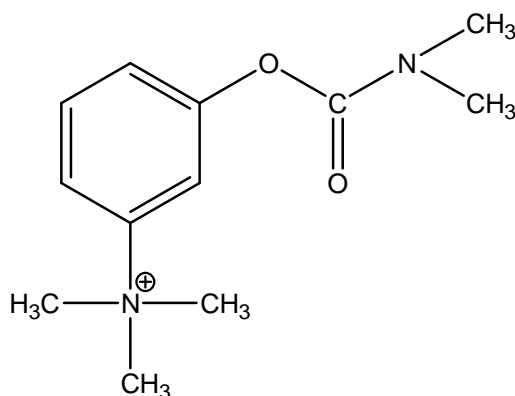
f) Give popular brand names of (any four)

- i) Metronidazole: Aristogyl, Flagyl, Metrogyl, Aldezol, Unimezol
- ii) Furosemide: Fru, Lasix, Frusenex
- iii) Diazepam: Calmpose, Valium, Elcion-CR
- iv) Metformin: Dideta SR, Formin, Metchek, Forminal
- v) Propranolol: Ciplar, Inderal, Corbeta, Betacap TR
- vi) Ibuprofen: Ibugesic, Ibuspan SR, Ibuflamar, Brufen

Two  
brands  
1M

g) Write structure and chemical name of (any two)

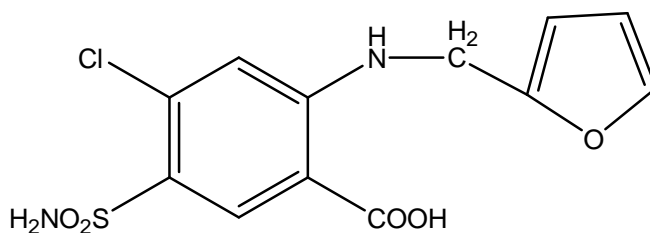
i) Neostigmine



(3-Dimethylcarbamoyloxy-phenyl)-trimethyl-ammonium

Struct.  
1M  
Chem.  
Name  
1M

ii) Furosemide



4-Chloro-N-furfuryl-5-sulphamoyl anthranilic acid OR

4-Chloro-2-[(furan-2-ylmethyl)-amino]-5-sulfamoyl-benzoic acid

Struct.  
1M  
Chem.  
Name  
1M



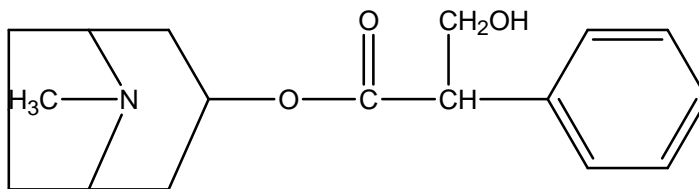
WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

**iii) Atropine**



3-Hydroxy-2-phenyl-propionic acid 9-methyl-9-aza-bicyclo[3.3.1]non-3-yl ester

OR

(RS)-(8-Methyl-8-azabicyclo[3.2.1]oct-3-yl) 3-hydroxy-2-phenylpropanoate

Struct.

1M

Chem.  
Name

1M

**h)**

**Give uses of (any two)**

**i) Iopanoic acid:**

- 1) It is used in Cholecystography (X ray examination of Gall bladder)
- 2) Treatment of Thyrotoxicosis

**ii) Nystatin**

- 1) It has wide range of activity against fungi and yeast
- 2) Treatment of candida local infection of mucous membrane, skin, nails
- 3) Pessaries are used in the treatment of vaginal candidiasis
- 4) Treatment of GIT candidiasis

**iii) Fluorescein sodium**

- 1) Fluorescein sodium is a diagnostic agent.
- 2) It is used to detect diseased or damaged areas of cornea.
- 3) It is used to detect foreign bodies in the eye.

2M

2M

2M



WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

Q. 2	<p><b>Attempt any <u>THREE</u> of the following</b></p> <p>a) <b>Define ‘Cardiovascular agents’. Classify them based on their therapeutic applications with examples.</b></p> <p>Cardiovascular agents:- Cardiovascular agents represents a group of drugs which have direct action on heart or other parts of vascular system so that they modify the total output to the heart or the distribution of blood to certain parts of circulatory system. These drugs are used in the treatment of various cardiac diseases like hypertension, angina pectoris, arrhythmia, CHF, myocardial infarction etc.</p> <p><b>Classification:</b></p> <p>1) <b>Cardiotonic drugs:</b></p> <p>Cardiac glycosides obtained from Digitalis, stropanthus like Digoxin, Digitoxin, Gitoxin.</p> <p>2) <b>Antiarrhythmic agents:</b></p> <p>a) Membrane stabilizing agent: - Quinidine, Procainamide, Diisopyramide, Phenytoin</p> <p>b) Beta blockers: Propranolol</p> <p>c) Drugs that prolong the duration of action potential:-Amiodarone</p> <p>d) Calcium channel blocker: Verapamil, Amlodipine, Diltiazem</p> <p>3) <b>Antianginal agents:</b> - a) Organic nitrates –Amyl nitrate, Glycerol trinitrate, Isosorbide nitrate</p> <p>b) Calcium channel blocker:-Verapamil</p> <p>c) Beta blockers:-Propranolol</p> <p>4) <b>Antihypertensive drugs: -</b></p> <p>a) Centrally acting drugs:- alpha-methyl Dopa, Clonidine</p> <p>b) Ganglionic blockers - Pentolinium, Mecamylamine</p>	3x4=12M
		Def. 1M
		Class. 3M



WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

- c) Adrenergic neuron blockers -Reserpine, Guanethidine
- d) Beta blockers: - Propranolol, Atenolol
- e) Alpha blockers: - Prazocin, Tolazoline
- f) Direct acting vasodilators -Hydralazine ,Minoxidil
- g) Calcium channel blocker:-Verapamil, Diltiazem, Nifedipine
- h) Angiotensin converting enzyme inhibitors:-Captopril, Enalapril, Lisinopril
- 5) Antihyperlipidemic drugs:-Clofibrate, Simvastatin, Atorvastatin**
- 6) Anticoagulants:-Heparin**
- 7) Antiplatelet agents:-Aspirin**
- 8) Diuretics:-Frusemide, Thiazides**

**b) Write the composition, mechanism of antibacterial action and official preparations of Cotrimoxazole.**

Cotrimoxazole is the combination of two drugs i.e. Sulphamethoxazole and Trimethoprim.

It is a mixture of 5 parts of Sulphamethoxazole and 1 part of Trimethoprim. Sulphonamides block the biosynthesis of folic acid from p-amino benzoic acid. Trimethoprim inhibits the enzyme folate reductase and blocks the conversion of folic acid to tetrahydrofolic acid (THF). THF is the form required for coenzyme synthesis. Combination of Sulphamethoxazole and Trimethoprim by synergism produces bactericidal effect.

Official preparations:

1. Cotrimoxazole Tablets I.P., B.P.C.
2. Cotrimoxazole Mixture B.P.C.
3. Cotrimoxazole Injection B.P.C.
4. Cotrimoxazole Dispersible tablets B.P.C.
5. Pediatric Cotrimoxazole mixture B.P.C.

1M

2M

1M



WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

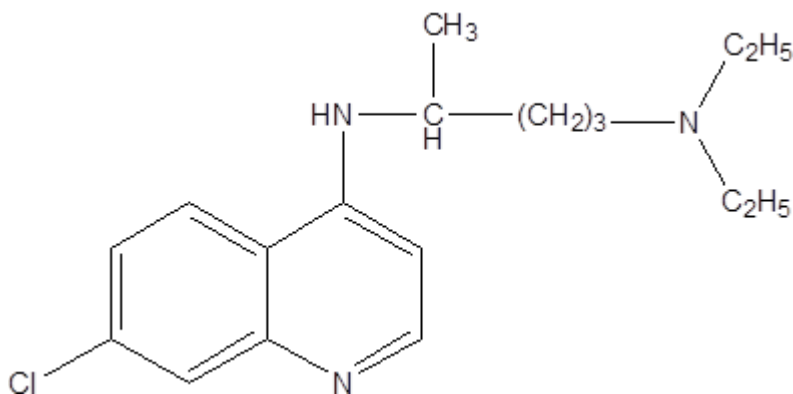
d)

**Define and classify Antimalarials. Give structure of Chloroquine.**

Definition: Antimalarial drugs are used in the treatment of malaria caused due to Plasmodium Vivax, P. falciparum, P. Ovale, P. malariae, P. Knowlesi.

Classification:

1. Cinchona alkaloids: Quinine
2. 4-amino quinolines: Chloroquine, Amodiaquine, Santaquin
3. 8- Amino quinolines: Primaquine, Pentaquine, Isopentaquine
4. 9-Amino acridines: Quinacrine
5. Pyrimidines: Pyrimethamine, Trimethoprim
6. Biguanides: Proguanil, Cycloguanil
7. Sufonamides and sulfone: Sulfadoxin, Dapsone
8. Miscellaneous: Tetracycline, Artesunate, Artemether



1M

2M

1M



WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

e)	<p><b>Define Diabetes Mellitus and Hypoglycemic agents. Enumerate different Insulin preparations.</b></p> <p>Diabetes Mellitus: - Diabetes Mellitus is a condition characterized by hyperglycemia (excessive sugar in blood, than the threshold value) &amp; glycosuria (presence of sugar in urine).The disease is caused by deficiency of insulin, a protein hormone secreted by beta cells of islets of Langerhans, responsible for proper carbohydrate metabolism.</p> <p>Hypoglycemic agents are the drugs that decrease the level of glucose in the blood and are used in the treatment of diabetes mellitus characterized by hyperglycemia, glycosuria, polyuria, polydypsia etc.</p> <p>Insulin Preparations:</p> <ol style="list-style-type: none"><li>1) Insulin injection</li><li>2) Insulin injection biphasic</li><li>3) Neutral insulin injection</li><li>4) Globin zinc insulin injection</li><li>5) Isophane insulin injection</li><li>6) Protamine zinc insulin injection</li></ol>	1M  1M  2M
----	--	------------------------



WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

Q. No.	Sub Q. N.	Answer	Marking Scheme
Q. 3	a)	<p>Attempt any <b>THREE</b> of the following</p> <p><b>Classify antihistaminic agents giving suitable examples. Write structure of Diphenhydramine</b></p> <p><b>Classification :</b></p> <p><b>1. H<sub>1</sub> blockers or H<sub>1</sub> antagonist:</b></p> <p>a) Aminoalkylethers e.g. Diphenhydramine</p> <p>b) Ethylenediamine e.g. Mepyramine, Tripeleennamine</p> <p>c) Alkylamines e.g. Pheniramine, Chlorpheniramine, Triprolidine</p> <p>d) Phenothiazine derivatives e.g. Promethazine, Trimeprazine</p> <p>e) Piperazine derivatives. E.g Meclizine, Cyclizine, Chlorcyclizine</p> <p>f) Miscellaneous e.g. Cyproheptadine, Phenindamine tartrate</p> <p><b>2. H<sub>2</sub> Blockers or H<sub>2</sub> receptor antagonist</b></p> <p>e.g. Ranitidine, Cimetidine, Famotidine</p> <p><b>3. An inhibitor of histamine release</b></p> <p>e.g. Sodium Cromoglycate</p> <p><b>Structure: Diphenhydramine</b></p> <p><chem>CN(C)CCOC(C1=CC=CC=C1)C2=CC=CC=C2</chem></p>	<p>3x4=12M</p> <p>3M</p> <p>1M</p>
	b)	<p><b>Define local anesthetics. Write structure, chemical name, physical properties and brand name of Lignocaine hydrochloride.</b></p>	

WINTER – 16 EXAMINATION

Model Answer

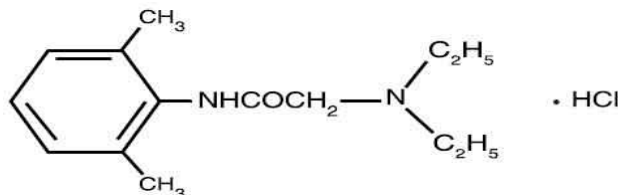
Subject Code:

0812

**Local anesthetics:** Local anesthetics are drugs which produce insensitivity in a limited area around the site of application or injection of the drug by preventing generation and conduction of impulses along nerve fibers and nerve ending and the effects are reversible.

1M

**Structure**



1M

**Chemical Name:** 2-(diethylamino)-N-(2,6-dimethylphenyl)acetamide hydrochloride

1M

**Physical Properties:**

- Hydrochloride salt occurs as white crystalline powder
- Odourless
- Slightly bitter numbing taste
- Very soluble in water
- Freely soluble in alcohol and soluble in chloroform

0.5 M

**Brand names:** Anestacon, Dalcaine, Ultacaine, Xylocain, Xylocard, Lignox, (Any one)

0.5 M

c) **Define and classify Sympathomimetics. Write structure of Isoprenaline.**

**Sympathomimetics:** Drugs that mimic the actions obtained as a result of stimulation of the sympathetic or adrenergic nerves are called Sympathomimetics.

1M

**OR**

The drugs that produce pharmacological effects like adrenaline or nor adrenaline or drugs which bring about stimulation of adrenergic nerves are called Sympathomimetics.

**Classification:**

2M

- Catecholamines e.g : Adrenaline, Nor-adrenaline, Isoprenaline, Dopamine
- Non-Catecholamines eg. Phenylephrine, Salbutamol, Terbutaline, Ephedrine, Pseudoephedrine



WINTER – 16 EXAMINATION

Model Answer

Subject Code:

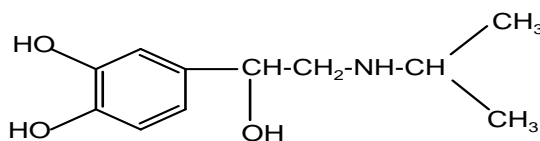
0812

- Imidazoline derivatives eg. Naphazoline, Xylometazoline

**OR**

1. **Vasoconstrictors (↑ B. P.):** Noradrenaline (Norepinephrine), Dopamine, Ephedrine
2. **Cardiac stimulants:** Dopamine, Adrenaline (Epinephrine), Isoprenaline
3. **CNS stimulants:** Amphetamine
4. **Smooth muscle relaxants:** Adrenaline, Isoprenaline, Salbutamol, Terbutaline
5. **Drugs used in allergic reactions:** Ephedrine
6. **Local vasoconstrictor/ nasal decongestants:** Phenylephrine, Pseudoephedrine, Naphazoline
7. **Anorectics (↓ Appetite):** Amphetamine, Phentermine.

**Structure:**



Isoprenaline

1M

d) **Define vitamins. Classify giving suitable examples.**

**Vitamins:** Vitamins are the constituents of the diet other than carbohydrates, fats, proteins and inorganic salts and are necessary for the normal metabolic functions of the body.

1M

**Classification:**

- I) Fat soluble vitamins: Vitamin A (Retinol), Vitamin D (Calciferol), Vitamin E (Tocopherol), Vitamin K (Menadione)
- II) Water Soluble vitamins: Water Soluble vitamins (includes Vitamin B-Complex and Vitamin C): Vitamin B<sub>1</sub> (Thiamine), Vitamin B<sub>2</sub> (Riboflavin), Vitamin B<sub>3</sub> (Niacin), Vit. B<sub>5</sub> (Pantothenic acid), Vitamin B<sub>6</sub> (Pyridoxine), Vitamin B<sub>7</sub> (Biotin), Folic acid, Vitamin B<sub>12</sub> (Cyanocobalamine) Vitamin C (Ascorbic acid).

3M



WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

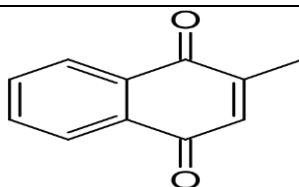
Q. 4	e)	<p><b>Define diuretics, Write structure, chemical name and mechanism of action of urea as a diuretic.</b></p> <p><b>Diuretics:</b> The drugs which increase the rate of formation &amp; excretion of urine through kidneys primarily by inhibiting tubular reabsorption of sodium and its osmotic equivalent amount of water.</p> <p><b>Structure</b> <math>\text{NH}_2\text{-CO-NH}_2</math></p> <p><b>Chemical Name: Carbonyl diamide, Carbamide</b></p> <p><b>Mechanism of action:</b> Urea is an osmotic diuretic. Osmotic diuretics work by expanding extracellular fluid and plasma volume, therefore increasing blood flow to the kidney. This washes out the cortical medullary gradient in the kidney. This stops the loop of Henle from concentrating urine, which usually uses the high osmotic and solute gradient to transport solutes and water.</p> <p><b>Attempt any <u>THREE</u> of the following.</b></p>	1M 1M 1M 1M
	a)	<p><b>Name one drug each used in (any four)</b></p> <p>i) Gout- Diclofenac, Ibuprofen, Naproxen, Celecoxib, Allopurinol, Colchicine ii) Myasthenia gravis – Neostigmine, Physostigmine, Pyridostigmine iii) Parkinsonism-Atropine, Levodopa, Amantadine, Biperiden iv) Raynaud’s disease- Calcium channel blockers- e.g. Amlodipine, Felodipine v) Vasodilators- Nitroglycerine, Losartan, Alpha blockers- Prazosin, Doxazosin vi) Fungal infection- Griseofulvin, Amphotericin, Nystatin, Miconazole, Ketoconazole, Econazole, Fluconazole</p>	3x4=12M 1M each
	b)	<p><b>i) Define coagulants. Write structure and chemical name of Menadione.</b></p> <p>Coagulants: These are the agents used in the treatment of severe hemorrhage, causing coagulation of blood.</p>	2M

WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

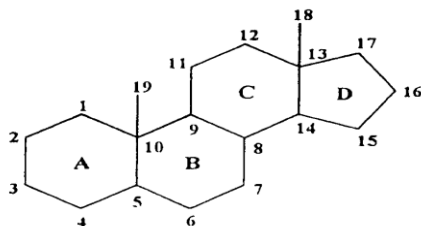


**Chemical Name:** 2-Methyl-1,4-naphthoquinone

**ii) What are steroids? Draw the basic steroidal nucleus with numbering. Give properties and uses of testosterone.**

2M

Steroids are polycyclic organic compounds containing 1,2 cyclopentanoperhydrophenanthrene skeleton. i.e. it contains four fused rings A, B, C, D and thus are polycyclic hydrocarbons. The ring A, B and C are six membered and ring D is five membered.



**Properties:** White crystalline powder, tasteless, odorless, practically insoluble in water, soluble in fixed oils. It is incompatible with oxidizing agent.

**Uses:**

- As a substitute in the male for replacement therapy in hypogonadism
- To correct penile size in childhood
- To treat male infertility
- For muscle development
- In the palliative treatment of disseminated breast cancer in females and management of some menopausal disorders.
- Labor pain relief





WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

	<p>5) Hormones and related drugs: Glucocorticoids, Tamoxifen</p> <p>6) Miscellaneous agents: Hydroxyurea, cisplatin</p> <p>e) <b>Define and classify Antitubercular agents with example.</b></p> <p><b>Definition:</b> The agents used in treatment of tuberculosis, a disease caused by <i>Mycobacterium</i> species (<i>M. Tuberculosis</i>, <i>M. bovis</i> or <i>M. africanum</i>) characterized by formation of nodular bodies or tubercles.</p> <p><b>Classification of Antitubercular drugs:</b></p> <p>i) p-amino salicylic acid derivative – e.g. PAS</p> <p>ii) Pyridine derivatives – e.g. Isoniazid, Ethionamide</p> <p>iii) Pyrazine derivatives- e.g. Pyrazinamide</p> <p>iv) Ethylene diamine derivatives – e.g. Ethambutol</p> <p>v) Antibiotics – e.g. Cycloserine, Streptomycin, Rifampicin</p> <p style="text-align: center;"><b>OR</b></p> <p>i) First line drugs e.g. Isoniazid, Rifampin, Ethambutol, Pyrazinamide, Streptomycin, Thioacetazone etc.</p> <p>ii) Second line drugs e.g. Ethionamide, Kanamycin, capreomycin, Cycloserin, Para amino salicylic acid etc.</p> <p>iii) Third line drugs e.g. Clarithromycin, Thioacetazone</p> <p style="text-align: center;"><b>OR</b></p> <p><b>1. Synthetic anti-tubercular drugs:</b> Para Amino Salicylic acid (PAS), Isoniazide, Ethambutol, Pyrazinamide, Ethionamide</p> <p><b>2. Antibiotics:</b> Streptomycin, Cycloserine, Rifampin, Clarithromycin</p>	<p>1M</p> <p>3M</p>
--	--	---------------------

WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

Q.5

a)

Attempt any **THREE** of the following.

3x4=12M

Define 'Analeptics'. Name an analeptic each, which is

(i) a Xanthine derivative

(ii) a Pyridine derivative

Also write structure with chemical name of the two.

**Definition:** Analeptics increases activity in certain areas or the whole of the brain. These drugs are used to stimulate central nervous system, so it reduces narcosis brought about by excess of depressant drugs.

1M

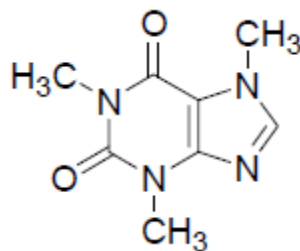
**Name an analeptic:**

(i) a Xanthine derivative :- Caffeine

1M

(ii) a Pridine derivative :- Coramine (Nikethamide)

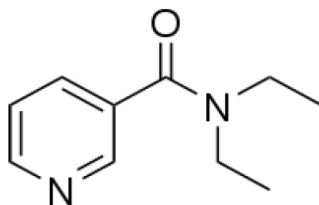
**Structure of caffeine**



1M

**Chemical name of Caffeine:** 1,3,7-Trimethyl xanthine

**Structure of Coramine**



1M

**Chemical name of Coramine:** N, N-diethyl, pyridine-3-carboxamide.

WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

b) **Define ‘Antiseptics and Disinfectants’. Classify with examples and write the structure of chlorocresol.**

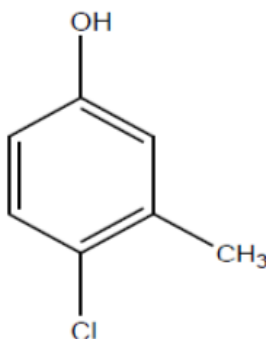
**Antiseptics:** Antiseptics are the agents that are used on living tissues & act as antimicrobial but don't kill them necessarily.

**Disinfectants:-** Disinfectants are agents which are applied on inanimate objects & kill the microbes outright.

**Classification:-**

- 1) Phenols & related compounds: Phenol, Chlorocresol. Chloroxylenol, Hexachlorophene
- 2) Alcohols & aldehydes : Alcohol, Formaldehyde
- 3) Halogen compounds : Chloramine t, Chorhexidine acetate, Dibromopropamide
- 4) Organic mercurials: Merbromin (mercurchrome), Thiomersal
- 5) Dyes: Aminacrine hydrochloride, Brilliant green, Proflavine hemisulfate, Crystal Violet (gentian violet), Acriflavine.
- 6) Cationic surface-active agents. e.g. Cetylpyridinium chloride, Benzalkonium chloride, Cetrimide
- 7) Miscellaneous agents. e.g. Dequalinium chloride, Nitrofurazone

**Structure:** Chlorocresol



c) **Define the term ‘Cardiotonics’. Write about their hydrolysis products.**

**Cardiotonics:**

These are the drugs which have stimulating action on the cardiac muscles. They increase the force of muscle contraction without increasing oxygen consumption capacity of heart.

Cardiac glycosides on hydrolysis yield corresponding sugar and aglycones.



WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

Sr. No.	Glycoside	Products of Hydrolysis	
		Sugar	Aglycone
1	Digitoxin	3 molecules of digitoxose	Digitoxigenin
2	Digoxin	3 molecules of digitoxose	Digoxigenin
3	Lanatoside	2 molecules of digitoxose; 1 molecule of acetyl digitoxose and 1 molecule of glucose	Digoxigenin

3M

d)

**Define antidepressants. Give mechanism of action of MAO inhibitors. Write structure of Imipramine.**

**Antidepressants:** Antidepressants are drugs which counteract or overcome mental depression. These drugs are therapeutically useful in a variety of cases pertaining to mentally ill patients. Mental depression is a phenomenon which may arise in normal individuals or in mentally ill persons.

**Mechanism of mono amino oxidase Inhibitor**

These drugs block oxidative deamination of naturally occurring amines. MAO enzyme is present intracellularly in most of the tissues (highest conc. in liver). Enzyme oxidises active biogenic amines like 5HT, noradrenaline, & dopamine to inactive compounds. These amines are normally stored in granules in the neurons & get liberated by nervous stimuli. MAO inhibitors inhibit the enzyme & result in accumulation of these amines in the brain. Ultimately excitement, enhanced motor activity is observed. So MAO inhibitors are used as antidepressants.

1M

2M



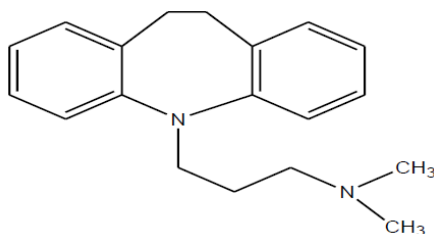
WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

**Imipramine:**

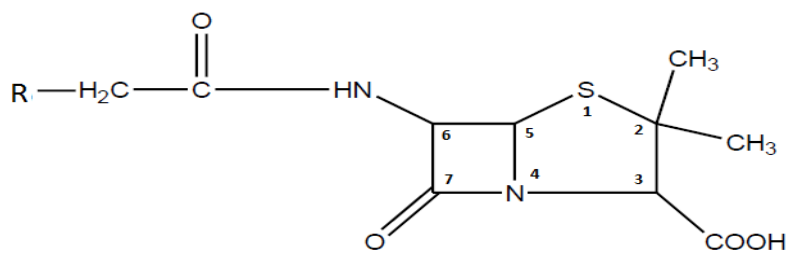


1M

e) **Explain basic chemical structure of Penicillin. Enlist different penicillin.**

Penicillin is the first antibiotic to be discovered. The various penicillins are obtained by fermentation using various strains of mold penicillium. The penicillins are strong monobasic acids. They readily form salts and esters. The penicillins are derivatives of 6- amino penicillanic acid. Penicillin contains  $\beta$ -lactum ring, a 4-membered cyclic amide, which is fused with thiazolidine ring. This bicyclic heterocyclic system is called penam.  $-\text{COOH}$  functional group is present at  $\text{C}_3$  and amide group at  $\text{C}_6$ .

1M



1M

Different penicillin:

1. Benzyl penicillin (Penicillin G)
2. Phenoxy methyl penicillin (Penicillin V)
3. Ampicillin
4. Amoxicillin
5. Cloxacillin
6. Carbenicillin

2M

WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

Q.6

a)

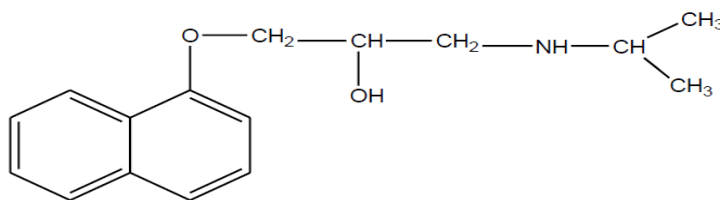
Attempt any **THREE** of the following.

**What are Beta adrenergic blockers? Give two examples and structure of any one of them and therapeutic uses.**

**Beta adrenergic blockers:** These drugs inhibit adrenergic responses mediated through the  $\beta$ -receptors. Beta blockers are competitive antagonists that block the receptor sites for the endogenous catecholamines epinephrine (adrenaline) and norepinephrine (noradrenaline) on adrenergic beta receptors, of the sympathetic nervous system. Some block activation of all types of  $\beta$ -adrenergic receptors and others are selective.

**$\beta$ -adrenergic blockers e.g.** Propranolol, Atenolol, Metoprolol, Betoxolol, Nodolol, Timolol, Acebutolol, Esmolol etc.

**Structure of Propranolol:**



**Therapeutic uses of Propranolol:**

1. It is a typical beta adrenergic receptor blocker used in the treatment of cardiac diseases like

- Angina pectoris
- Cardiac arrhythmia
- Hypertension
- Congestive heart failure
- Coronary atherosclerosis

2. Treatment of Pheochromocytoma

3x4=12M

1M

1M

1M

1M

WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

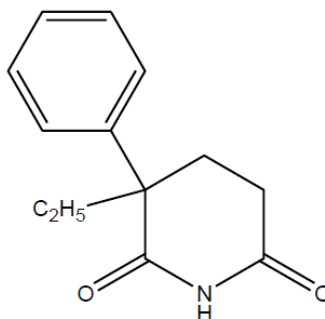
b) **Define ‘Sedatives and Hypnotics’. Give structure, chemical name and uses of a hypnotic having piperidine nucleus in its structure.**

**Hypnotics:** Hypnotics are drugs which induce sleep by depression of central nervous system function.

**Sedatives:** Sedatives are the agents which reduce excitement & motor activity & produce a calming effect without inducing sleep.

**Hypnotic having piperidine nucleus in its structure is Glutethimide.**

**Structure of Glutethimide:**



**Chemical name -3-Ethyl-3-phenyl-piperidine-2,6-dione OR 3-Ethyl-3-phenyl-glutarimide**

**Uses of Glutethimide:**

1. It is used as Hypnotic and sedative in insomnia.
2. It is used in treatment of anxiety and tension

c) **What is Amoebiasis? Write structure, chemical name and uses of Metronidazole.**

**Amoebiasis:** Amoebiasis is a parasitic infection of the intestines caused by the protozoan *Entamoeba histolytica*. The symptoms of amoebiasis include abdominal pain, passage of soft stools with mucus & occasional blood, fatigue, excessive gas, rectal pain, unintentional weight loss etc.

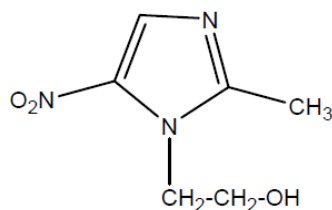
WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812

**Structure of Metronidazole:**



1M

**Chemical name :** 2-(2'-Methyl-5'-nitroimidazolyl)ethanol **OR**

1-(2'-hydroxyethyl)-2- methyl- 5-nitro imidazole.

1M

**Uses:**

1. It has antiprotozoal and antibacterial action
2. It is used in the treatment of severe intestinal amoebiasis
3. It is active against anaerobic bacteria like streptococci and H-Pylori
4. It is a primary drug in the treatment of hepatic amoebiasis
5. Treatment of *Trichomonous vaginalis*, infection due to *entamoeba histolytica*, *giardia lamblia* etc.

1M

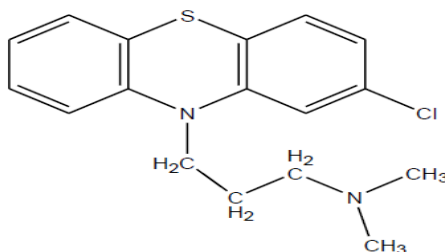
d)

**Name one tranquilizer with its structure and chemical name belonging to :-**

**I) Phenothiazine class:** Chlorpromazine

1M

**Structure**



1M

**Chemical name:** 2-Chloro-10-(3'-dimethylamino propyl) phenothiazine

WINTER – 16 EXAMINATION

Model Answer

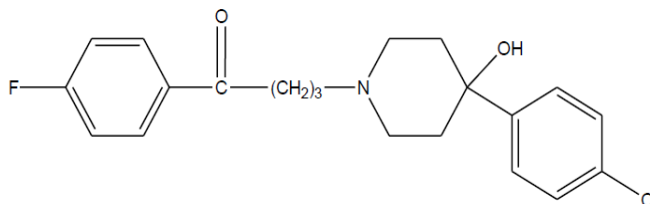
Subject Code:

0812

**II) Butyrophenone class : Haloperidol.**

1M

**Structure**



1M

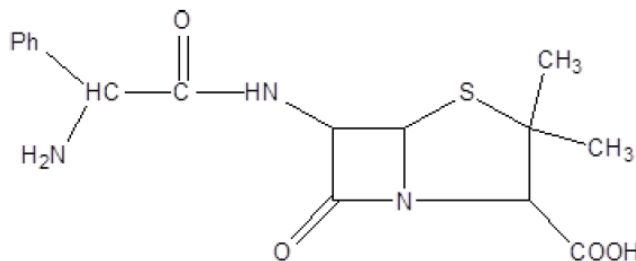
**Chemical name:** 4-[4'-(4''-chlorophenyl),4-hydroxy piperidine] 4-fluorobutyrophenone.

e)

**i) Write structure and chemical name (Any two):**

**1) Ampicillin**

**Structure:**



0.5 M

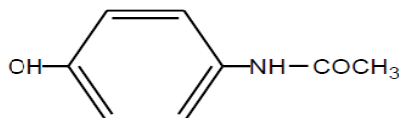
**Chemical name :** 6-(2-amino-2-phenylacetamido)-3,3-dimethyl penam-2-carboxylic acid.

**OR** (6R)-6-( $\alpha$ -phenyl-D-glycylamino)penicillanic acid

0.5M

**2) Paracetamol**

**Structure:**



0.5M

0.5M

WINTER – 16 EXAMINATION

Model Answer

Subject Code:

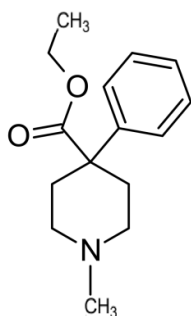
0812

**Chemical Name:** N-acetyl-p-aminophenol; OR 4-hydroxyacetanilide

0.5M

**3) Pethidine**

**Structure:**



0.5M

**Chemical name:** Ethyl-1-methyl-4-phenyl-piperdine-4-carboxylate.

**ii) Write stability storage conditions for (Any two):**

**1. Diethyl ether:**

- It is oxidized by atmospheric oxygen and is affected by light. Hence it is stored in tightly closed, light resistant containers in a cool place.
- If cork is used as a closer than it should be protected with metal foil. An antioxidant like hydroquinone or propyl gallate in suitable proportion should be added.

1M

**2. Adrenaline:**

- It contains catechol nucleus which can be oxidized readily with air or oxygen to get pink or red colored complex.
- It darkens on exposure to light and air, hence it should be stored in well closed, tight container and protected from light.

1M

**3. Insulin:**

- As insulin is affected by heat & light, all insulin preparations must be stored at low temperatures between 2-8°C in a dark place.
- It should not be allowed to freeze.

1M



WINTER – 16 EXAMINATION

Model Answer

Subject Code:

0812