



SUMMER– 14 EXAMINATION

Subject Code: **0812**

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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.



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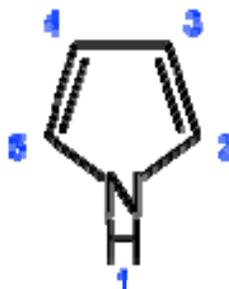
Q.1 Answer any FIVE of the following: (5 X 4) (20)

a) Draw the structure and give method of numbering any four of the following heterocycles:

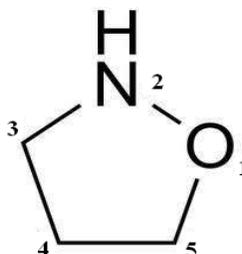
- i) Pyrrole ii) Isoxazolidine iii) Acridine iv) 2-pyrazoline v) Xanthene vi) Purine

Ans: (One mark to each structure)

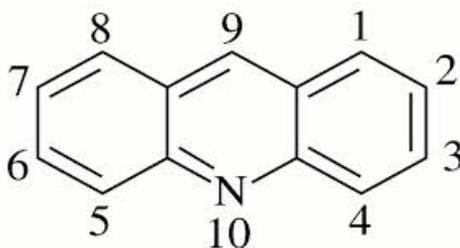
i) Pyrrole:



ii) Isoxazolidine:



iii) Acridine:





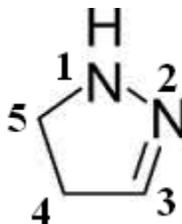
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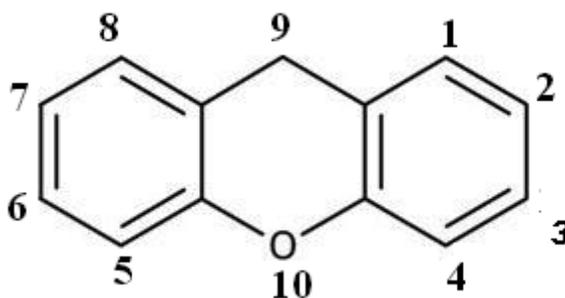
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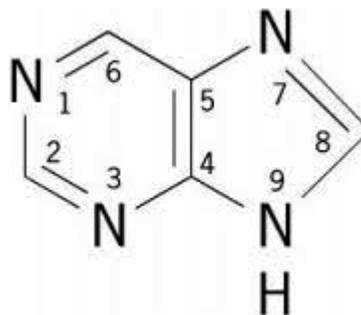
iv) 2-pyrazoline:



v) Xanthene:



vi) Purine:



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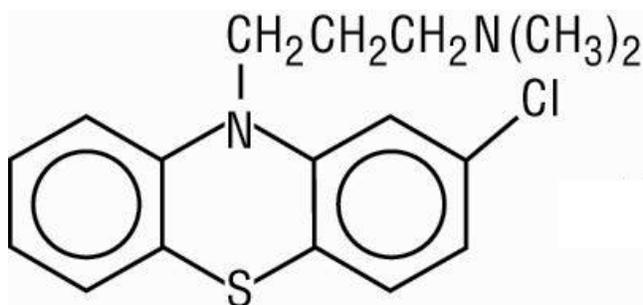
b) Name the drugs containing following heterocycles. Draw their structure and give category:

Ans: (One mark for structure, ½ mark for name and ½ mark for category)

i) Phenothiazine:

Name of drugs: Chlorpromazine, Prochlorperazine, Trifluoperazine, Promethazine etc.

a) Chlorpromazine

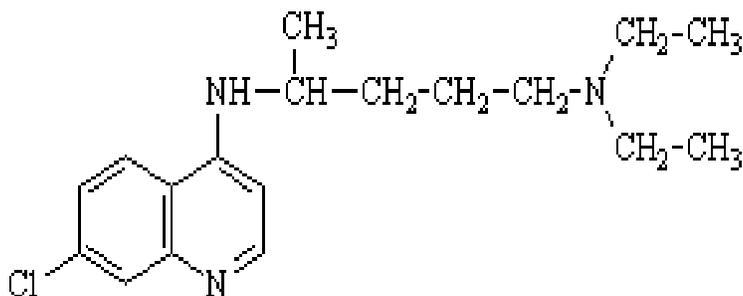


Category: Chlorpromazine is a prominent antipsychotic agent

ii) Quinoline:

Name of drugs: Chloroquine, Amodiaquine, Primaquine, Diiodohydroxy quinoline etc.

a) Chloroquine:



Category: Anti malarial agent



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c) Define the following terms and give their examples.

i) Tranquilizers:

ii) Antibiotics:

Ans: (One mark for definition and one mark for examples)

i) Tranquilizers:

Tranquillizers are CNS depressants which bring about a calming effect and induce a mild sedative effect.

E.g.: Chlorpromazine, Haloperidol, Prochlorperazine, Diazepam, Lorazepam etc

ii) Antibiotics:

Definition: Antibiotics are chemical substances produced by certain species of microorganisms and having the property of inhibiting the growth of or destroying other microorganisms in high dilutions or low concentration.

E.g.: Ampicillin, Amoxicillin, Cephalothin, Cephaloridine, Erythromycin, Azithromycin, Tetracycline, Gentamicin, Rifampicin, Chloramphenicol Etc.

d) Enlist the parasites of human intestine. Give uses and popular brand names of mebendazole.

Ans: (2 marks for parasites of human intestine and 2 marks for uses and popular brand names)

List of the parasites of human intestine:

Entamoeba histolytica, Giardia lamblia, Balantidium coli, Trematodes like Schistosoma mansoni, Schistosoma japonicum, Cestodes like tapeworm, Nematodes like round worms, hook worms, pin worms etc.

Uses:

1. Broad-spectrum antihelminthic.
2. Used in the treatment of nematode infestations.

Popular brand name

Lomper, Meberix, Mebex, Mebezol, Mebfil, Mebutar, Mebzol, Mendazole, Mezole



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e) What is amphotericin-B? Give its properties, stability and storage condition and uses.

Ans: (1 mark for explanation and 1 mark for properties, stability-storage condition and uses)

Amphotericin B is a polyene antifungal drug, often used intravenously for systemic fungal infections. It was originally extracted from *Streptomyces nodosus*, a filamentous bacterium. These are organic compounds containing a lactone ring of at least twelve members and having many conjugated double bonds.

Properties:

1. It is yellow to orange colored powder, odorless and tasteless.
2. It is practically insoluble in water.
3. It is light sensitive.
4. In dilute solution it is inactivated at low P^H.

Stability and storage condition:

It is light sensitive so it should be stored in a light resistant container at a temperature between 2° to 10°C.

Uses:

1. It is used as antifungal agent
2. It is used in the treatment of candidiasis.
3. It is used in treatment of cutaneous leishmaniasis.



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f) Describe structural features of streptomycin and write its uses.

Ans: (Two marks for structural features and two marks for uses)

Structural features of streptomycin:

- They have an amino sugar linked glycosidically called N-methyl glucosamine.
- It has one pentose lacking an amino group called α -streptose
- In addition it has a highly substituted 1, 3-diamino cyclohexane central ring called streptidine.

Uses:

1. It is used as anti-TB drugs.
2. It is used in the treatment of plague.
3. It is used in treatment of bacterial endocarditis.
4. In veterinary medicine, streptomycin is used as an antibiotic.

g) Define antiseptics and disinfectants. Classify them with examples

Ans: (1 mark for each definition and 2 marks for Classification)

Definition:

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) Alcohols & Aldehydes

E.g. Alcohol, Formaldehyde

2) Halogen Compounds.

E.g. Chloramine T, Chlorhexidine Acetate, Dibromopropamide Isothionate.

3) Phenols & Related Compounds

E.g. Phenol, Chlorocresol, Chloroxylenol, Cresol, Hexachlorophene, Thymol.

4) Mercury Compounds.

E.g. Merbromin (Mercurochrome), Thiomersal.



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5) Dyes.

E.g. Aminacrine Hydrochloride, Proflavine Hemisulphate, Acriflavine, Brilliant Green, Crystal Violet (Gentian Violet), Methylene Blue.

6) Surface Active Agents

E.g. Benzalkonium Chloride, Cetrimide, Cetylpyridinium Chloride, Domiphen Bromide, Octaphonium Chloride.

7) Miscellaneous Agents.

E.g. Dequalinum Sulphate, Nitrofurazone.

h) Define hypnotics and sedative. Classify them with examples

Ans: (1 mark for each definition and 2 marks for Classification)

Definition: 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.

CLASSIFICATION

1. Barbiturates-

a) Long acting barbiturates-

E.g. Barbital, Phenobarbitone, Mephobarbitone

b) Intermediate acting barbiturates-

E.g. Butobarbital, Amobarbitone, Cyclobarbitone

c) Short acting barbiturates-

E.g. Secobarbitone, Pentobarbitone

d) Ultra short acting barbiturates

E.g. Thiopentone, Hexobarbitone

2. Non- barbiturates

a) Benzodiazepines: Diazepam, Nitrazepam

b) Aldehydes: Paraldehyde,

c) Alcohols: Chloral hydrate, Ethyl alcohol Triclofos sodium

d) Miscellaneous: Glutethimide, , Zopiclone, Phenacemide, Primidone, Methaqualone etc.



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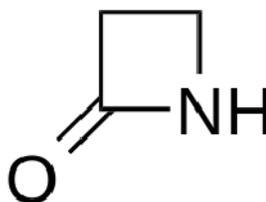
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Q.2 Answer any THREE of the following: (3 X 4) (12)

a) What are β - lactum antibiotics? Discuss the properties and uses of Ampicillin.

Ans: (2 marks for explanation and 2 marks for properties and uses)

β - Lactum antibiotics (beta-lactum antibiotics) are a broad class of antibiotics, consisting of β -lactum ring in their molecular structures. This includes penicillin derivatives, cephalosporin, etc. Most β -lactum antibiotics work by inhibiting cell wall biosynthesis in the bacterial organism and are the most widely used group of antibiotics.



β - Lactum ring

Important antibiotics which include β -lactum in their structures:

1. Penicillin
2. Cephalosporin
3. Carbapenem
4. Monobactam
5. β -Lactamase inhibitor

Properties and Uses of Ampicillin

Properties:

1. It is white, crystalline powder.
2. It is odorless and bitter in taste.
3. It is sparingly soluble in water, slightly soluble in alcohol, practically insoluble in ether, chloroform, acetone and fixed oils.

Uses:

1. Ampicillin is used to treat a wide variety of bacterial infections.
2. It is used to treat Respiratory Tract Infections.
3. It is used to treat Bacterial Meningitis.
4. It is used to treat Septicemia and Endocarditis.
5. It is used to treat Urinary Tract Infections.



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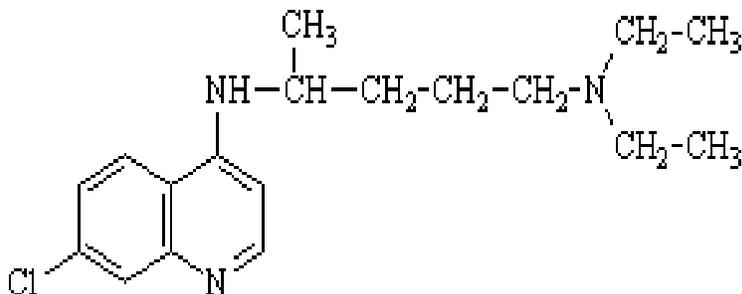
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b) Draw the structure of chloroquine and write its chemical name, give official preparations of chloroquine.

Ans: (Two marks for structure, one mark for chemical name and one mark for official preparations)



Chemical name: 7-chloro-4-(4'-diethylamino-1-methyl butyl) amino quinoline.

Official Preparations:

1. Chloroquine sulphate tablet I.P, B.P
2. Chloroquine sulphate injection I.P, B.P
3. Chloroquine phosphate tablet I.P, B.P
4. Chloroquine phosphate injection I.P, B.P



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c) Define antimycobacterial agents. Classify them with examples

Ans: (1 mark for definition and 3 marks for classification)

Definition:

The drugs or agents used to treat Mycobacterium infection are known as antimycobacterial agents. Antitubercular and Anti leprotic drugs are antimycobacterial agents.

Classification:

Classification of Antitubercular drugs:

1. Synthetic drugs

E.g: Para amino salicylic acid, Isoniazid, Pyrazinamide, Ethionamide, Thioacetazone etc.

2. Antibiotics

E.g: Streptomycin, Rifampin, Cycloserin etc.

OR

It can be also be classified as

1. First line drugs

E.g: Isoniazid, Rifampin, Ethambutol, Pyrazinamide, Streptomycin etc.

2. Second line drugs

E.g: Ethionamide, Cycloserin, Para amino salicylic acid etc.

3. Third line drugs

E.g: Clarithromycin, Thioacetazone, Arginine, Vit.D etc.

Classification of Anti leprotic drugs:

1. Sulphones

E.g: Dapsone, Solapsone

2. Non Sulphones

E.g: Clofazimine

3. Miscellaneous

E.g: Ethionamide



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d) Write uses of Procaine and Thiopentone sodium.

Ans: (2 marks for uses of Procaine and Thiopentone sodium)

Uses of Procaine:

1. Procaine is a local anesthetic.
2. It is also used in dentistry.
3. It is used primarily to reduce the pain of intramuscular injection of penicillin.
4. It is used therapeutically as anti-inflammatory.

Uses of Thiopentone sodium:

1. Thiopentone sodium is a general anesthetic.
2. It is also used for hypnotic.
3. For the control of convulsive states.
4. It is also used as a weak analgesic and muscle relaxant.

e) What is drug synergism? Give composition, dosage forms and popular brand names of Co-trimoxazole.

Ans: (1 marks for each)

Drug Synergism:

Two drugs that produce overtly similar effects will sometimes produce exaggerated or increased effects when used concurrently. **OR** The combination of two or more drugs administered together to produce an effect greater than the sum of their individual effects.

Composition:

It consists of 1 part trimethoprim to 5 parts of sulfamethoxazole.

Dosage Forms: tablet, injection, oral suspension

Popular Brand Names:

Bactrim, Bactrimel, Co-trimoxazole, Cotrim, Septra, Sulfatrim, Biseptol, Trisul, Bactrom, Septram, Vactrim, Bibactin etc.



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Q.3 Answer any three of the following (3 X 4) (12)

a) What are antimetabolites? Give properties and uses of methotrexate.

Ans. (One mark for definition, 1 ½ marks each for properties and uses of Methotrexate)

An antimetabolite is a chemical that inhibits the use of a metabolite, which is another biochemical that is part of normal metabolism. Such substances are often similar in structure to the metabolite that they interfere with, such as the antifolates that interfere with the use of folic acid. The presence of antimetabolites can have toxic effects on cells, such as halting cell growth and cell division, so these compounds are used as chemotherapy for cancer.

Properties of Methotrexate-

1. Methotrexate occurs as yellow to orange crystalline powder.
2. It is slightly soluble in water, chloroform, ether and in alcohol. It is soluble in dilute solutions of alkali hydroxides and carbonate.

Uses of Methotrexate

1. Methotrexate is the primary folate antagonist used as a chemotherapeutic agent. It may be used alone or in combination with other anticancer drugs.
2. Methotrexate maintains its significant role in the treatment for breast cancer, soft tissue sarcoma, and acute lymphoblastic leukemia.
3. Treatment of choriocarcinoma, acute myeloid leukemia.



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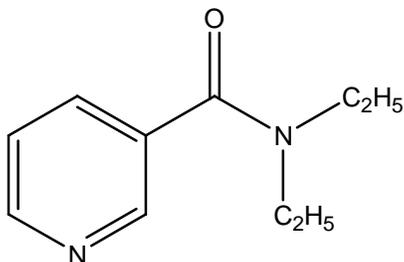
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b) Draw structure and write chemical name of any two of the following:

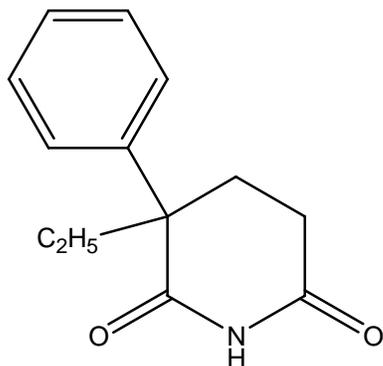
Ans. (One mark for structure and one mark for chemical name)

i. Nikethamide



Chemical name- N,N-Diethyl-nicotinamide

ii. Glutethimide



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

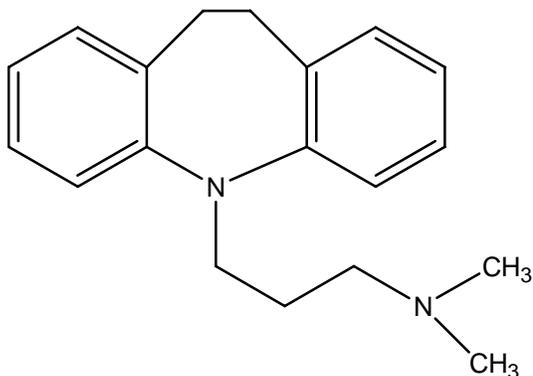
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iii. Imipramine



Chemical name- 5-[3-(Dimethylamino)propyl]-10,11-dihydro-5-H-dibenz[b,f]-azepine hydrochloride.

OR

[3-(10,11-Dihydro-dibenzo[b,f]azepin-5-yl)-propyl]-dimethyl-amine.

c) What is Arrhythmia? Enlist the membrane stabilizing antiarrhythmic agents. Name the antiarrhythmic alkaloid and give its dosage forms.

Ans. (One mark for definition, one mark for examples of membrane stabilizing antiarrhythmic agents, one mark for name of antiarrhythmic alkaloid and one mark for dosage forms)

An arrhythmia is a problem with the rate or rhythm of the heartbeat. During an arrhythmia, the heart can beat too fast, too slow, or with an irregular rhythm. A heartbeat that is too fast is called tachycardia and heartbeat that is too slow is called bradycardia.

Membrane stabilizing antiarrhythmic agents:

Procainamide, lignocaine, Quinidine, Phenytoin etc.

Antiarrhythmic alkaloid: Quinidine

Dosage forms of Quinidine: Tablet, Capsule, Injection



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d) Give properties and popular brand names of any two of the following:

- i. Indomethacin**
- ii. Lignocaine**

Ans. (One mark for properties and one mark for brand name)

i) Properties of Indomethacin

1. It occurs as a pale yellow to brownish yellow crystalline powder
2. It is odorless and almost tasteless
3. It is very slightly soluble in water and sparingly soluble in alcohol.
4. It is stable in neutral or slightly acidic media. It is decomposed by strong alkali and sunlight.

Brand names of Indomethacin: Artisid, Clinoril, Indoflam, Indocin-TR, Indocap, Inacid, Indacin, Indocid etc.

ii) Properties of Lignocaine

1. It occurs as a white crystalline powder
2. It is odorless, slightly bitter taste.
3. It is insoluble in water, freely soluble in alcohol, ether and benzene.

Brand names of Lignocaine: Xylocaine, Gesicain, Ressocaine, Lignox, Lidocaine etc.

e) Define and classify ‘Sympathomimetic agents’ and draw structure of Ephedrine.

Ans. (One mark for definition, two marks for classification and one mark for structure)

Sympathomimetic agents:

Drugs that mimic the responses obtained as a result of stimulation of the sympathetic or adrenergic nerves are called as Sympathomimetic agents or adrenergic agents.



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Classification of Sympathomimetic agents:

I Based on pharmacological action:

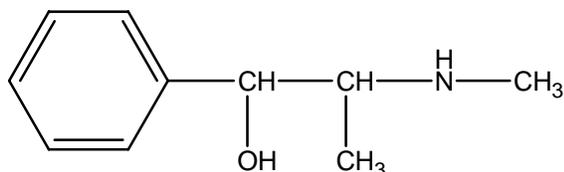
1. Vasoconstrictors (Increases B. P.): Noradrenaline (Norepinephrine), Dopamine, Ephedrine
2. Cardiac stimulants: Dopamine, Adrenaline, Isoprenaline
3. CNS stimulants: Amphetamine
4. Smooth muscle relaxants: Adrenaline, Isoprenaline, Salbutamol etc.
5. Drugs used in allergic reactions: Ephedrine
6. Local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

OR

II. The Sympathomimetic agents can also be classified based on their chemical structure.

- 1) Catecholamines e.g : Adrenaline, Nor-adrenaline, Isoprenaline
- 2) Non-Catecholamines eg. Phenylephrine, Salbutamol, Terbutaline, Ephedrine, Pseudoephedrine
- 3) Imidazoline derivatives eg. Naphazoline, Tetrahydrozolum

Structure of Ephedrine





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Q.4 Answer any three of the following (3 X 4) (12)

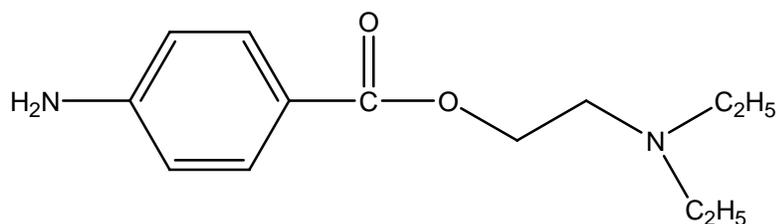
a) Classify Local anesthetics. Give structure and chemical name of procaine.

Ans. (Two marks for classification, one mark for structure and one mark for chemical name)

Classification of Local anesthetics

1. Natural Products- Cocaine
2. Synthetic Compounds
 - a) Benzoic acid derivatives- hexylcaine, Isobucaine
 - b) Para-amino benzoic acid derivatives- Benzocaine, Procaine
 - c) Amides- Lignocaine, Dibucaine
 - d) Miscellaneous- Benzyl alcohol, Clove Oil, Phenol, Orthoform etc.

Structure of procaine



Chemical name of procaine- 2-(Diethyl amino-ethyl)-4-amino-benzoate OR

4-Amino-benzoic acid 2-diethylamino-ethyl ester



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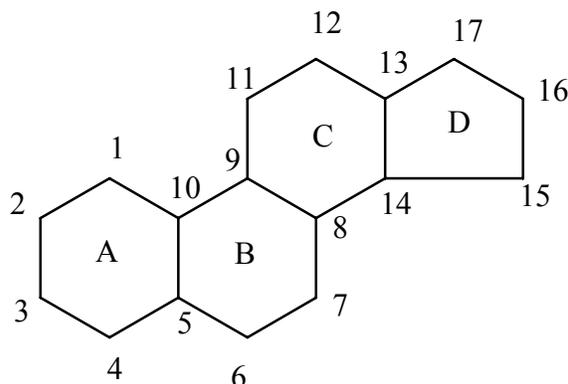
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b) Draw the structure of steroidal nucleus with numbering. Write uses of Testosterone.

Ans. (Two marks for structure of steroidal nucleus with numbering, two marks for uses)

Steroidal nucleus with numbering-



Uses of testosterone

1. It has both androgenic and anabolic activity. Its primary use is as androgen replacement therapy in men at maturity age in case of testosterone deficiency.
2. It is useful in certain anemias, osteoporosis and to stimulate growth in undergrown boys.
3. It is used to increase athletic performance and maintain muscle tone.
4. Used in palliative treatment of disseminated breast cancer in postmenopausal women.
5. Used in treatment of gynaecomastia.

c) Define anti-inflammatory agents. Give name, structure and chemical name of pyrazole containing anti-inflammatory agents.

Ans. (One mark for definition, one mark for name, one mark for structure and one mark for chemical name)

Anti-inflammatory agents: Anti-inflammatory drugs are used to reduce inflammation and pain in inflammatory conditions like arthritis, rheumatism etc.



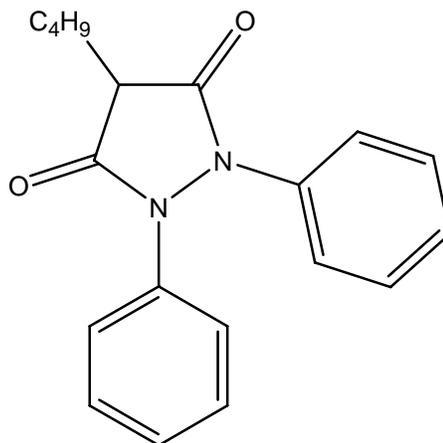
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Pyrazole containing anti-inflammatory agents: Phenylbutazone, Oxyphenbutazone



Phenylbutazone

Chemical name: 4-Butyl-1, 2-diphenyl-pyrazolidine-3, 5-Dione



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d) Write properties and uses of pethidine hydrochloride and promethazine.

Ans. (One mark for properties and one mark for uses)

Properties of pethidine hydrochloride:

1. It occurs as an odorless, white, crystalline powder.
2. It has a slight acidic or bitter taste.
3. It is soluble in water and alcohol. It is practically insoluble in ether and benzene.

Uses of pethidine hydrochloride:

1. It is used as an analgesic especially in the treatment of pain due to spasm of intestine, uterus, bladder, bronchi etc.
2. It is useful in pains of myocardial infarction, burns and obstetrical gynecology operation.
3. It is used as preanesthetic medication in all major surgeries.

Properties of Promethazine:

1. It occurs as a white or faintly yellow crystalline powder
2. It is odorless and has a bitter taste.
3. Promethazine is sparingly soluble in water and practically insoluble in ether, acetone, and ethyl acetate.

Uses of Promethazine:

1. It has antihistaminic properties.
2. Used as an antiemetic drug.
3. It also has tranquilizing action.
4. It potentiates the action of other analgesic and sedative drugs.
5. Used in allergic conditions .



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e) Define and classify antihistaminic agents with examples of each class. Draw structure of chlorpheniramine.

Ans. (One mark for definition, two marks for classification and one mark for structure)

Definition – Antihistaminic agents:

Antihistaminic drugs are the agents which diminish or prevent several actions of histamine in the body like allergic reaction, rhinitis, urticaria, mild asthma etc.

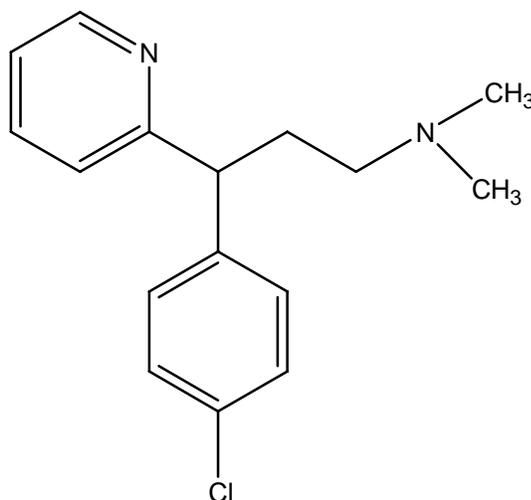
Classification:

1) **H1 receptor antagonist :-**

- a) Amino alkylethers : Diphenhydramine
- b) Ethylenediamines : Mepyramine , Tripelennamine
- c) Alkyl amines: - Pheniramine, Chlorpheniramine, Bromopheniramine, Triprolidine.
- d) Phenothiazine derivatives :- Promethazine, Trimeprazine
- e) Piperazine derivative :- Cyclizine, Chlorcyclizine, Meclizine, Buclizine,
- f) Miscellaneous: - Cyproheptadine, Diphenylpyraline, Phenindamine tartarate, Antazoline.

2) **H2 receptor antagonist:** - Cimetidine, Ranitidine, Burimamide, Metiamide.

Structure of chlorpheniramine:





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Q.5 A. What are 'Cardiotonic agents'? Name the three cardiac glycosides and give their hydrolysis products.

(One Mark each for the definition and Names of Glycosides and Two marks for their Hydrolysis products)

Ans:

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 stimulant properties of digitalis, stropanthus and squill are due to the cardiac glycosides present in them. On hydrolysis, they yield the corresponding aglycones and sugar.

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

Digitoxin on hydrolysis gives 3 molecules of D-digitoxose and an aglycone digitoxigenin. Digoxin on hydrolysis gives 3 molecules D-digitoxose and digoxigenin. Lanatoside C on hydrolysis gives 2 molecules of D-digitoxose, 1 molecule of acetyl digitoxose and one molecule of D-glucose. The aglycone moiety is digoxigenin. The cardiac activity resides in the aglycone moiety but the sugar residue provides favourable solubility and distribution characteristics.



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B) Write Properties, therapeutic uses, dosage forms and structure of Atropine.

Ans: (One mark for each subpart)

Atropine

Properties:

- 1) Atropine is a white powder.
- 2) Slightly soluble in water.
- 3) Sulphate salt is very soluble in water.
- 4) The salts are required to be kept in well closed containers, protected from light.
- 5) The solutions are sterilized by autoclaving or filtration.

Therapeutic Uses:

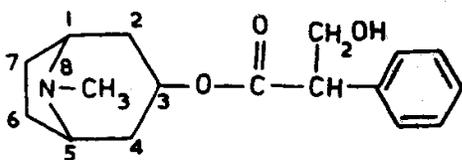
- 1) Atropine is categorized as Parasympatholytic agent.
- 2) It is an anticholinergic with both central and peripheral actions.
- 3) Has an antispasmodic action on smooth muscles, hence used for the treatment of gastric and duodenal ulcers and for the relief of renal and biliary colics.
- 4) Useful in symptomatic treatment of Parkinsonism.
- 5) It is one of the components of pre-anaesthetic medication, where it is given to reduce salivary and bronchial secretions and to diminish the risk of vagal inhibition of the heart.
- 6) Useful as a mydriatic for fundoscopic examination and in the treatment of iritis, iridocyclitis and keratitis.

Dosage forms:

Atropine sulphate eye Ointment, eye drop.

Atropine sulphate injection.

Atropine sulphate tablets.





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C) Give Properties, Uses and draw structure of Paracetamol.

(One Mark for Properties, 1 ½ marks each for uses and Structure)

Ans:

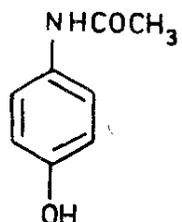
Paracetamol

Properties:

- 1) It occurs as white crystalline powder, odorless, less soluble in water, more soluble in boiling water, soluble in alcohol.
- 2) Aqueous solutions are slightly acidic in nature.
- 3) Reasonably stable to heat, light and moisture. Should be stored in well closed containers, protected from light.

Uses:

- 1) Paracetamol is used as a mild analgesic & antipyretic.
- 2) It is commonly used for the relief of headaches and other minor aches and pains and is a major ingredient in numerous cold and flu remedies.
- 3) In combination with opioid analgesics, paracetamol can also be used in the management of more severe pain such as post-surgical pain and providing palliative care in advanced cancer patients.



Paracetamol

D) Define and classify Antineoplastic agents.

(One Mark for definition and three marks for classification)

Ans: Definition: Antineoplastic agents, also known as Cytotoxic agents are used in the treatment of malignant diseases when surgery or radiotherapy is not possible or has proved ineffective. Also employed as an adjunct to surgery or radiotherapy.

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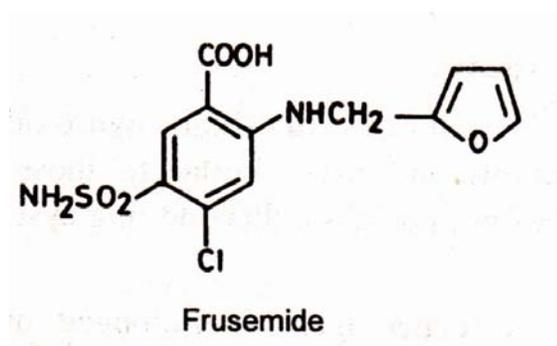
Classification:

- i) Alkylating agents- Ex. Chlorambuil, Busulphan, Cyclophosphamide Cisplatin
- ii) Antimetabolites- Ex. Azathioprine, Fluorouracil, Methotrexate, Mercaptopurine
- iii) Antitumour antibiotics- Ex. Actinomycin, Mitomycin, Daunorubion
- iv) Hormones and related compounds- eg. Adrenocorticosteroids
- v) Plant products- Ex. Vinblastin, Vincristin
- vi) Miscellaneous- Ex. Hydroxyurea, Mitobronital

E) Draw structure from the chemical name; also give name of the drug and their dosage forms.

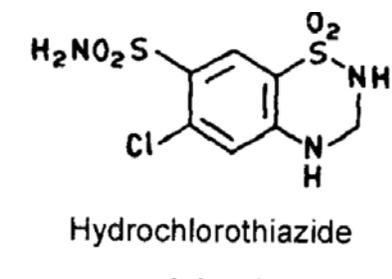
Ans: (One mark for structure, ½ mark for name and ½ mark for dosage forms)

i) Frusemide



Dosage forms: Frusemide injection, Frusemide tablets

ii) Hydrochlorothiazide



Dosage forms: Hydrochlorothiazide tablets



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Q.6 Write any THREE of the following: (3 X 4)

(12)

a) Write uses of fluorescein sodium and warfarin.

Ans: (Two marks each for uses of fluorescein sodium and warfarin)

i) 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.
- 4) It is used in the fitting of hard contact lenses for ensuring correct fit.
- 5) It is also used to visualizing gall bladder and bile ducts.

ii) Warfarin

- 1) Warfarin is categorized as an anti-coagulant
- 2) It prolongs the coagulation time of blood and prevent coagulation
- 3) It is useful in a no. of clinical conditions such as venous thrombosis, pulmonary embolism and myocardial infarction
- 4) Useful as prophylactic to prevent thrombosis during and after surgical operations
- 5) Also used in blood transfusion process and in the preservation and storage of blood, in the blood banks

b) Explain Diabetes Mellitus. Classify hypoglycemic agents with examples.

(One Mark for 'Diabetes Mellitus' and three Marks for classification)

Ans: Diabetes Mellitus: -

- Diabetes Mellitus is a condition characterized by hyperglycemia (excessive sugar in blood, than the threshold value) and glucosuria (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.



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Classification of Hypoglycemic agents:-

1) Parenteral Hypoglycemic agents (Insulins)

- a. Short acting Insulin- Neutral or plain insulin
- b. Intermediate acting insulins –Isophane Insulin, Lente Insulin
- c. Long acting Insulin- Ultralente Insulin

2) Oral hypoglycemics:-

- a. Sulphonyl ureas:-Tolbutamide, Chlorpropamide etc
- b. Biguanides:- Phenformin, Metformin
- c. Thiazolidinediones: - Rosiglitazone, Pioglitazone
- d. Miscellaneous:-Acarbose, Miglitol

c) Define ‘Analgesic and antipyretics’. Give dosage forms and popular brand names of Aspirin.

(One and half Marks each for definition and dosage forms and One mark for brand names)

Analgesic-antipyretics as a class include compounds from different chemical categories and control both fever and pain; however they do not possess significant anti-inflammatory activity. They are widely used in pains, aches, febrile conditions and various musculo-skeletal disturbances.

Ans: Dosage forms:

Aspirin Tablets

Aspirin and Caffeine tablets

Aspirin and Codeine tablets

Dispersible Aspirin tablets with Codeine

Soluble Aspirin tablets

Paediatric Dispersible Aspirin tablets

Popular Brand names: Disprin, Dristan, Equagesic, Acetosal, Acetylin, Aspro, Saletin, Caprin, Asteric etc.



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d) Enlist fat soluble vitamins with their chemical name and write uses of vitamin E.

(One Mark each for list of vitamins and their chemical names and Two Marks for uses of Vitamin E)

Ans:

Fat soluble vitamins:

Vitamin	Chemical name
Vitamin A	Retinol
Vitamin D	Calciferol
Vitamin E	Tocopherol
Vitamin K	Menadione

Uses of Vitamin E

- 1) Vitamin E is used for treating vitamin E deficiency, which is rare, but can occur in people with certain genetic disorders and in very low-weight premature infants.
- 2) Some people use vitamin E for treating and preventing diseases of the heart and blood vessels including hardening of the arteries, heart attack, chest pain, leg pain due to blocked arteries, and high blood pressure.
- 3) Vitamin E is also used for treating diabetes and its complications.
- 4) It is used for preventing cancer, particularly lung and oral cancer in smokers; colorectal cancer and polyps; and gastric, prostate, and pancreatic cancer.
- 5) Some people use vitamin E for diseases of the brain and nervous system including Alzheimer's disease and other dementias, Parkinson's disease, night cramps, restless leg syndrome, and for epilepsy, along with other medications.



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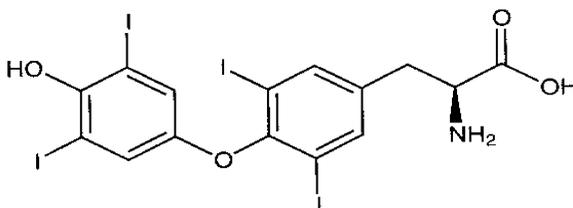
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e) Give Structure, Chemical name, Properties and Uses of Thyroxine.

(One mark each for each sub-part of the question)



Chemical Name: O-(4-hydroxy-3,5-diiodophenyl)-3,5-diiodo-tyroxine **OR**
3,5,3',5'- Tetraiodothyronine

Properties:

- 1) Thyroxine is official as sodium salt.
- 2) Occurs as the hydrate.
- 3) Triclinic crystals or cream coloured powder.
- 4) Odourless, tasteless, somewhat hygroscopic.
- 5) Very slightly soluble in water.
- 6) Soluble in mineral acids and in solutions of alkali hydroxides and carbonates.
- 7) More soluble in alcohol, very slightly soluble in chloroform, ether.
- 8) It may assume a light pink colour on exposure to light and should be stored in tightly-closed, light resistant containers.

Uses:

1. Treatment of metabolic insufficiency.
2. Treatment of Hypothyroidism.
3. Treatment of thyroid carcinoma.
4. Treatment of obesity.
5. It increases metabolism of carbohydrates, protein.
6. Rarely used in the treatment of male infertility and some gynecological disorders.
7. It decreases serum cholesterol level.