WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No: 1 /27**

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.

WINTER - 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No:2/27**

Q1 Define the following terms and give two suitable examples of each(Any FIVE) (1+1)

a) **Expectorants:** These are the drugs which causes production of demulcent respiratory tract fluid that covers the irritant mucosa.**OR**

These are the drugs which increases the secretion of the respiratory tract, thereby reducing the viscosity of the mucus and help in removal of the content from the respiratory tract.

Eg: Ammonium chloride, potassium iodide, ammonium bicarbonate, ipecac etc.

b) Antibiotics: Are the agents produced by microbes having the property to inhibit the growth or destroy other microbes in high dilution.

Eg: Penicillin, streptomycin,tetracycline etc.

c) Therapeutic Index: Is the ratio of median toxic (lethal) dose and median effective dose, it indicates the relative margin of safety of a drug.

Eg: Diazepam 100:1, Morphine 70:1, cocaine 15:1, Digoxin 2:1 etc.

d) **Antiseptics:** These are the agents which are used to prevent microorganisms and can be applied to living tissues.

Eg:Phenol, potassium permanganate, boric acid, crystal violate etc.

e) Anthelmintic: Are the agents used to treat the helminthiasis (worm infestation)

OR

Are the drugs used to eradicate or reduce the number of helminthic parasites from intestine of human or other animals.

Eg: Piperazine, mebendazole, albendazole, pyrantal pamoate etc

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No: 3/27**

f) Sympathomimetics: Are the drugs that produce actions similar to that of sympathetic nerve stimulation.

Eg: adrenaline, isoprenaline,dopamine,ephedrine etc.

g) Haematinics: Are the drugs which when administered favors erythropoiesis ie synthesis of red blood cells and increase the oxygen carrying capacity of the blood.

Eg: cynocobalamine, folic acid, iron etc.

Q.2 Attempt any FOUR of the following:

a) State the factors affecting absorption of drugs. Explain any two. (1.5+1+1)

Ans: 1) Physical state of the drug 2) Particle size 3) Concentration 4) Absorbing surface 5) Functional integrity of Gastrointesinal tract 6) pH of drug 7) Formulation

Can explain any two factors in detail

1) Physical properties
   a) Physical state:
      Liquids are better absorbed than solids

   b) Lipid and water solubility
      Higher the lipids solubility, greater is the rate of absorption from git
      Eg. Fat soluble vitamins A, D, E and K are better absorbed
2) Dosage form
   a) Particle size : Smaller the particle size greater is a rate of absorption
      Eg. Chloramphenicol, Steroids etc

b) Formulation: substances like lactose, sucrose, starch, calcium phosphate, calcium lactate are used as an inert diluents in formulating tablets and powders.
These are the agent that may interfere with the active drug and affect the absorption. Eg. A calcium and magnesium ion reduces absorption of tetracycline.

3) Physiological factors

a) pH: pH of GIT and Blood may interfere with absorption of drug.
Eg. Acidic drugs are better absorbed in stomach – Salicylates, Barbiturates
Basic drugs are well absorbed in alkaline environment of intestine – Pethidine and Ephedrine

b) Ionization: unionized drugs are lipid soluble while ionized drugs are water soluble agents. Hence unionized drugs are better absorbed than ionized drugs.

c) Presence of other agents: Liquid paraffin reduces absorption of fat soluble vitamins like A, D, E and K

d) Presence of disease: in presence of disease absorption is reduced.
Eg. Liver cirrhosis, Achlorhydria, Diarrhea and Dysentery.

e) Area of absorption: Drugs are better absorbed in the intestine than in the stomach because of large surface area of intestine.

f) Gastro intestinal transit time: Absorption of drug is influenced by food, volume, viscosity, tone of gastric content.
Rapid absorption occurs if drugs are administered before meals.

WINTER – 15 EXAMINATION

b) Explain triple response of histamine and classify Antihistaminic drugs with example.(1.5+2)

On local application on skin produces a typical response called triple response. It is characterized by 3 signs i.e. flush, flare and wheal.

Flush: is redness at the site of application because of hyperemia

Flare: in the vicinity of flush occurs vasodilation and forms flare due to reflex action

Wheal: around flare there occurs permeation of fluid elating the surface called wheal.

Classification: Chemical or clinical classification may be considered

Class	**Example**
Ethanolamines	Diphenhydramine
Ethylenediamines	Mepyramine
Alkylamines	Chlorpheniramine
Piperazines	Chlorcyclizine
Phenothiazines	Promethazine
Piperidines	Azatidine
Miscellaneous	Cyproheptadine

Or

H 1 Receptor Blockers: Chlorpheniramine, Cetirizine

H 2 Blockers: Ranitidine, Famotidine

Or

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No: 6/27**

I. First generation compound (Sedating)

Diphenhydramine

Dimenhydrinate

Pheniramine

Chlopheniramine

II. Second generation compounds (Less sedating)

Cetirizine

Cinnarizine

levocetirizine

c) Explain Dale's vasomotor reversal. (2+1.5 for fig.)

Adrenaline is a mixed agonist for alpha and beta 2 receptors.. It produces an increase in systolic but decrease in diastolic blood pressure. This is biphasic response on blood pressure. If α-blocker i.e. ergot alkaloid or tolazoline is given to an animal, then administration of Adrenaline produces fall in BP instead of rise since alpha receptors are blocked and only beta 2 mediated action is produced. This phenomenon of conversion of biphasic response to monophasic response,is known as Dale's Vasomotor reversal

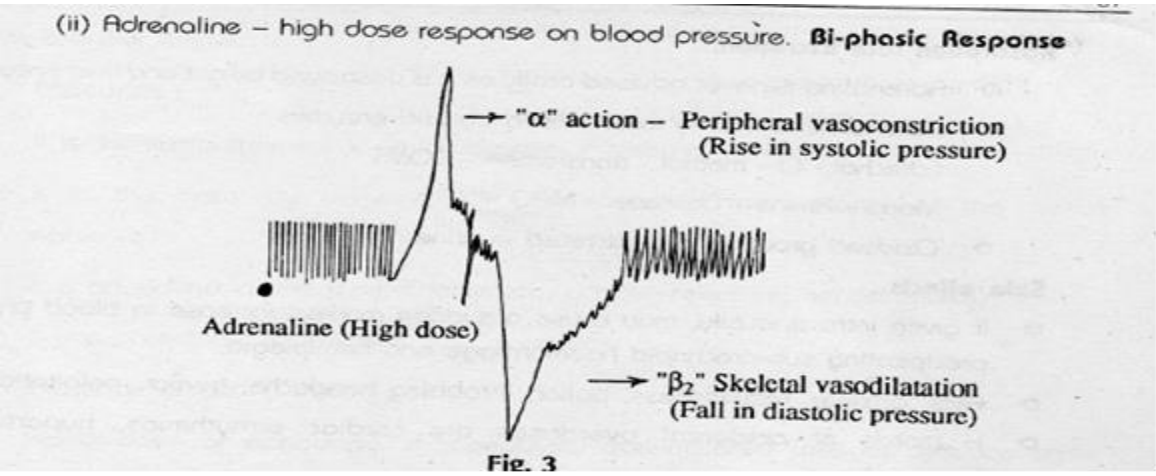
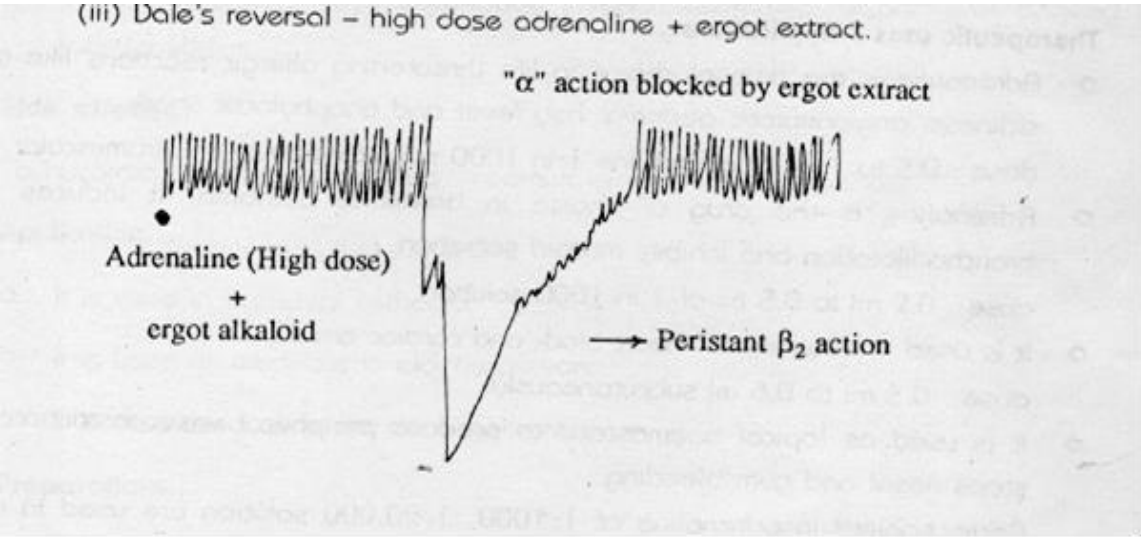


Fig. 3



d) Classify routes of administration with examples.(3.5)

Route with names of any one dosage form or a any suitable drug to be considered as an example

1) Enteral – Oral Eg. Aspirin,Paracetamol (tablets,capsules,syrups etc)

- Sublingual Eg. Nitroglycerin (tablets)

- Rectal :Enema or Suppositories

Eg.Paraldehyde enema or .Soap water enema, Glycerine suppositories,bisacodyl suppositories

2) Parenteral -Injection: eg IV,IM,SC,ID etc

Eg IV- Amhotericin B suspension ,IM – Gammaglobuline etc.

-Inhalation :Eg. Amyl nitrite.,general anesthetics ,inhalers

3) Topical application : Eg ointment.,eye drops,creams,powders,solutions,ear drops

e) Define drug tolerance. Describe different types of drug tolerance. (1+2.5)

Definition: On repeated administration of some drugs they may prove ineffective at the usual therapeutic dose or insensitivity towards the use of drug is called as tolerance. Progressive increase in the dose is required to produce the desired effect. This phenomenon is described as drug tolerance.

Types of tolerance:-

a) Natural or Congential:-It is by birth.

1) Species tolerance:- eg. Belladona alkaloid like atropine is toxic to human being when given in high dose but rabbits can tolerate high amount of atropine because they have enzyme known as atropine esterase which metabolises high amount of atropine very rapidly hence no toxicity is seen.

2) Racial Tolerance:- eg. After administration of drug Ephedrine ,Mydriasis is not produced in Negros because they are tolerant to drug ephedrine and related amines.

WINTER – 15 EXAMINATION

b) Acquired tolerance:- Repeated administration of some drugs leads to acquired tolerance.

1) Tissue Tolerance: In case of tissue tolerance ,tolerance is developed to certain effects of the drugs e.g Morphine is able to produce its euphoria effect but the pupil & gastrointestinal tract effects never develop tolerance.

2) Cross tolerance: this phenomena when tolerance is developed to a drug belonging to particular group then there could be tolerance to all other drugs in the same group. Eg. when tolerance is developed to alcohol, patient may develop tolerance for use of general anesthetic and other CNS depressants.

3) Pseudo tolerance: Observed only in oral route. When small dose of poison is taken repeatedly, tolerance to it is developed by the gastrointestinal tract. But if other route is chosen, poisoning will occur.

4) Tachyphylaxis: It is also known as acute tolerance, observed with certain drugs such as Ephedrine when administered repeatedly at very short intervals & the pharmacological response to that drug decreases

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No: 10/27**

f) Give the symptoms and treatment for atropine poisoning.

Symptoms:

1) Muscarinic symptoms- mydriasis, blurred vision, dry mouth, tachycardia, urinary retention and dry skin.

2) Central symptoms- restlessness, confusion, weakness, hallucinations, convulsions, coma and respiratory depression and failure.

Treatment:

1) Treatment instituted in darkened room to relieve photophobia

2) Gastric lavage- Is performed to remove unabsorbed drug from stomach

3) Administration of antichoninestrase such as physostigmine may be given IM or SC routes at intervals till dryness of mouth is relived

4) Catheterization for urinary retention

5) CNS stimulants are administered to treat CNS depression

6) Give IV fluids if necessary.

WINTER – 15 EXAMINATION

Subject Code: **0813** **Model Answer** Page No: 11/27

3. Attempt any FOUR of the following

a) Name the drug of choice in the following conditions.(0.5 marks for any one example)

I. **Angina pectoris**: Glyceryl trinitrate, Isosorbide dinitrate

II. **Glaucoma:** Pilocarpine,carbachol,Timolol,Betaxalol, Physostigmine, Acetazolamide, Glycerine ,Mannitol.

III. **Organophosphorus compounds poisoning:** Pralidoxime (PAM) injection (cholinesterase regenerator) or Diacetyl Monooxime (DAM), Atropine sulphate injection

IV. **Gonorrhoea**: Ceftriaxone, Penicillin G, Sulpha drugs

V. **Leprosy:** Dapsone (4-4 diamino diphenyl sulphone DDS)

VI. **Congestive heart failure:** Digoxin, amrinone,milrinone,ouabain

VII. **Gout:** Diclofenac,piroxicam,colchicin,allopurinol. probenecid, corticosteroids,any other NSAIDs

b)Give the dose of each drug (any one correct dose:0.5 marks each)

I.	Diazepam	-	2-30mg daily in divided doses, 2-20mg IM/IV every 3-4hr.
II.	Paracetamol	-	0.5g to 1g orally every 4hr max 4g/day
III.	Tetracycline	-	1-2 g daily in 4 divided doses Oral
IV.	Cetrizine	-	5 mg to 10 mg or 20 mg orally
V.	Ranitidine	-	150-300mg 1-2 times daily for 4-8 weeks
VI.	Furosemide	-	20-80mg orally/20-4-mg IV
VII.	Sulfamethaoxazole	-	400 mg,800 mg orally

WINTER – 15 EXAMINATION

c) Name of drug which produce following effects (0.5 mark each for one correctly written drug, either from below examples or other suitable drug)

I.	Teratogenecity	-	Tetracycline
II.	Anaphylactic shock	-	Penicillin, Cephalosporins
III.	Pin point pupil	-	Morphine
IV.	Cinchonism	-	Quinine, quinidine
V.	Gray baby syndrome	-	Chloramphenicol
VI.	Tinnitus	-	quinine, quinidine,aspirin
VII.	Hypoglycemia	-	Insulin / oral hypoglycemic agents

d) Digitalis glycosides are called cardiotonics. Explain.

Digitalis glycosides are positive inotropic agents, they show direct action on myocardium of heart by inhibiting Na/K ATpase in cardiac cells and increases force of systolic contraction. They cause,complete ventricular emptying which results into increased cardiac output. Diastolic size of heart is reduced. Hence oxygen expenditure for given work out is reduced and thus heart's working capacity is increased. Hence they are called as cardiotonics and are used in treatment of congestive cardiac failure.

e) Name the insulin preparations and Give side effects of insulin.

Insulin preparation are as follows(2.5 m)

- **Insulin injection I.P (soluble insulin)**
- **Insulin zinc suspension**

  Insulin zinc suspension I. P. (amorphous) (insulin semilente)

  Insulin zinc suspension I. P. (Insulin lente)

WINTER – 15 EXAMINATION

Insulin zinc suspension I. P. (Insulin ultra lente)

- **protamine Zinc insulin I.P**
- **Isophane insulin, globin Zinc insulin**

Side Effects(1 m for any two)

- Redness, swelling, and itching at the injection site
- changes in the feel of your skin, skin thickening (fat build-up), or a little depression in the skin (fat breakdown)
- weight gain
- constipation
- over dose - hypoglycemia

f) Define and classify antihypertensive with examples (1 m definition and 2.5 m for classification)

Antihypertensive drugs are the agents used in treatment of hypertension or abnormal elevation in blood pressure.

Classification (According to site of action): Any seven categories with at least one example

1. Centrally acting Drugs: Clonidine, Methyl Dopa
2. Drugs acting on autonomic ganglia: Hexamethonium
3. Drugs acting on post ganglionic sympathetic nerve endings

a) Adrenergic neuron blockers; Guanethidine

WINTER – 15 EXAMINATION

b) Catecholamine depletors: Reserpine

4. Drugs acting on adrenergic receptors:

a)Alpha adrenergic blockers: Phentolamine

b) Beta adrenergic blockers: Propranolol

5. Vasodilaors: Hydralazine

6. Drugs acting reflexly by stimulating baroreceptors: Veratrum

7. Oral Diuretics: Thazides, Frusemide, spironolactone, amiloride etc

8. Calcium Channel Blockers: Nifedipine, Amlodipine, Felodipine

9. Drugs acting on rennin angiotensin system:

a) ACE inhibitors: Enalapril, ramipril

b) Angiotensin Receptor Blockers: Losartan, Telmisartan

10.Miscellaneous: MAO inhibitors (Pargyline)

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No: 15/27**

4. Attempt any FOUR of the following

a. Which drug is called Largactil and Why? (1m+ 2.5m)

1. Chlorpromazine is the major tranquilizer possessing large no. of pharmacological actions. Hence called as largactil.
2. In patients with major psychosis it produces psychomotor slowing, emotional quieting and diminishes initiative and anxiety.
3. It acts as Antihistaminic ,
4. It depresses the CTZ and acts as antiemetic.
5. It is anti hiccup agent
6. Anti-cholinergic actions include dryness of mouth, reduced blood pressure, constipation etc
7. It may produce weight gain and pseudo pregnancy (lactation) condition.

b. State the therapeutic uses and side effects of the tetracycline(uses any four 2 m and side effects any three 1.5 m)

Tetracyclines are antibiotics and are used in following conditions:

1) Cholera
2) Pneumonia
3) Rickettsial infection
4) Chlamydia infection
5) Urinary tract infection
6) Bacillary infection
7) Plague
8) Sexually transmitted diseases
9) Dysentery
10) Acne vulgaris

WINTER – 15 EXAMINATION

Side effects- anaphylaxis, acute hepatic dysfunction, skin rash, dermatitis, fever, retardation of bone growth and tooth discolouration. Yellow staining of teeth, weakening of teeth & bones, teratogenicity

C. Classify β-blockers and give their therapeutic uses. (Classification 2m and side effects 1.5m any three)

CLASSIFICATION:

(1)Specific β-blockers- Sotalol, Timolol

(2)β-blockers with membrane stabilizing activity and intrinsic sympathomimetic activity- Dichloroisoprenalin

(3)β-blockers with membrane stabilizing activity - Propranalol

(4)β-blockers with additional α-blocking activity- Labetalol.

Or

Nonselective beta blockers :Propranalol

Cardio selective beta blockers: Atenelol

Therapeutic uses: They are used in the treatment of angina pectoris, cardiac arrhythmias, hypertension, migraine etc.

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No:17 /27**

d. Explain the stages of general Anesthesia.

Stages of anesthesia (1M for list +2.5M explanation in short can be considered)

i. Stage of analgesia

ii. Stage of delirium or excitement

iii. Stage of surgical anesthesia

iv. Stage of respiratory paralysis

STAGE 1- Stage of analgesia --- This stage is characterized by loss of pain sensation..Minor surgical operations and dental extractions are performed in stage

STAGE 2-Stage of delirium --- This stage is characterized by excitement, thus no surgical procedures are performed in this stage

STAGE 3- Stages of Surgical Anaesthesia:

As more anaesthetic agents gets in deep breathing starts and the patient passes into the third stage of anaesthesia. The stage extends from the end of second stage until cessation of spontaneous respiration.The effects of this stage are recognized by following signs:

1. Regular respiration is regained after second stage.
2. Skeletal muscles are relaxed.
3. The gradual loss of reflexes such as eyelid and conjunctival reflexes and
4. The eye balls are roving.

Major surgical operation is done in this stage.

STAGE 4- Stage of respiratory paralysis--- Excessive administration of anaesthetic agent may lead to this stage,. It is characterized by stoppage of breathing, fall of blood pressure and cardiac collapse. It leads to the death.

WINTER – 15 EXAMINATION

e) Discuss the mechanism of action of angiotensin converting enzyme inhibitors (3.5 m)

Mechanism of action :-

These drugs inhibit competitively the activity of Angiotensin converting enzyme (ACE) to prevent formation of the active angiotensin II, from the inactive angiotensin I. This occurs in blood and tissues including kidney, heart, blood vessels, adrenal gland and brain. Angiotensin II is a potent vasoconstrictor and promotes aldosterone release. Angiotensin converting enzyme inhibitors inhibit A II and thus control the level of water and sodium ions in blood to reduce blood pressure. Therefore, ACE inhibitors are used as antihypertensives. Eg Enalapril,ramipril

f) Discuss the symptoms and treatment of morphine poisoning (1.5m +2.0m) any 6 symptoms and any 4 treatment measures

Morphine symptoms – Euphoria, respiratory depression, constipation, pinpoint pupils or miosis, mental clouding, nausea, vomiting, headache, fatigue, drowsiness, hypotension, increase intracranial pressure.

Treatment –

1) If patient is conscious and within 4 hrs. of ingestion, patient can be induced vomiting with concentrated salt solution or syrup of ipecac. If patient is unconscious, simple stomach wash i.e. gastric lavage is performed.
2) If respiration is slightly affected, oxygen can be given by nasal catheter. If respiration is depressed considerably, endotracheal intubation is done.
3) Forced diuresis- diuretics like mannitol or furosemide is given to increase urinary excretion of barbiturates.
4) Administration of laxatives to counteract constipation
5) Administration of IV fluids –Forced diuresis may result in dehydration. So, administration of fluids is advised.
6) Nalaxone or nalorphine is used as antidote by parenteral route

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No: 19/27**

Q.5 Attempt any Four of the following:

a) Describe pharmacological profile of Oral contraceptives.(0.5+1.5+1+0.5 marks)

These are the pharmacological agents which are used orally to prevent conception. They contain estrogen/ progesterone either alone or in combination.

Mode of action:

They decrease the secretion of gonadotropin releasing factor by hypothalamus and the release by the pituitary of both LH and FSH and thus ovulation stops. Endometrium finally become thin, hypoplastic and unsuitable for implementation.

Progesterone affects the cervical mucus to become thick, tough and impermeable by spermatozoa.

Adverse effects:

Nausea,vomiting, headache, breast discomfort. Weight gain , acne, increased body hairsetc.

Contraindications:

Coronary and cerebro-vascular disease, active liver disease,porphyria etc.

b) Define drug interaction. Explain drug interaction during pharmacokinetic & pharmacodynamics. (Definition 1 m + 2.5 m Explanation or examples anything can be considered)

Drug interactions are the interaction of two or more drugs ,may alter pharmacological actions and they may be useful or harmful to the body.

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No: 20/27**

Pharmacokinetic Interactions:

- Includes interactions occurring at any of the pharmacokinetic stages i.e. A D M E of the drug.
- Interactions affecting Absorption of the drug:
- Eg: Absorption of tetracycline decreased due to formation of insoluble complexes with calcium or magnesium from milk or antacids.
- Interaction affecting Distribution of drug:
- Relates to interaction in protein binding level.
- Eg: Phenylbutazone replaces tolbutamide from protein binding & enhances hypoglycemic effect
- Interaction affecting Metabolism of drug:
- Activity of drug metabolizing enzymes is increased by no. of drugs.
- Eg: Barbiturates stimulate enzymes in liver & increase degradation of alcohol.
- Interactions affecting Excretion of drug:
- One drug may block or increase renal excretion of another drug.
- Eg: Antacids enhance ionization & so excretion of weakly acidic salicylates.
- **Pharmacodynamic Interactions:**
- May be direct interaction between the drugs or drug effects or interactions at receptor level. This may enhance or inhibit total effect.
- Eg: Synergistic effect of trimethoprim & sulphamethoxazole.

  Acetylcholine & atropine oppose actions of each other by competitive antagonism

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No:21 /27**

c) Classify anticancer drugs with examples.(3.5m)

Classification with examples:

I. Alkylating agents:

- Nitrogen mustards:E.g.: Chlorambucil, Mechlorethamine , Chlorambucil
- Ethylenimines:E.g.: Triethylenemelamine, Triethylene thiophosphamide
- Alkylsulphones:E.g. : Busulphan

II. Antimetabolites:

- Folic acid antagonists:E.g.: Methotrexate
- Purine Antagonist:E.g.: 6-mercaptopurine
- Pyrimidine Antagonist:E.g.: 5-Flurouracil, Cytosine

III. Radioactive Isotopes: E.g.: Radioiodine, Radiophosphorous

IV. Antibiotics: E.g.: Actinomycin-D, Mitomycin

V. Hormones: E.g.: Androgens, Estrogens, Corticosteroids

VI. Enzymes:E.g.: L-asparaginase

VII. Miscellaneous Agents:

Vinca alkaloids: E.g.: Vincristine, Vinblastin

Others:E.g.: Hydroxyurea, Cis- platinum

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No:22 /27**

d) What is status asthmaticus? Give its treatment. (1.0m +2.5m)

- Serious medical emergency due to severe persistent asthmatic attack associated with respiratory failure or insufficiency. It is a medical emergency and needs hospitalization.

Initial treatment includes

- Careful administration of oxygen, salbutamol nebulizer, oral corticosteroids.
- If not controlled by above measure, repeat salbutamol nebulizer every 30 minutes . IV corticosteroids, IV aminophylline or salbutamol or antibiotics are used.

e) Give the mechanism of action of Penicillin & its side effects.(1.5m + 2m for any four)

Mechanism of action- Penicillin is bactericidal; it interferes with the synthesis of cell wall, by inhibiting mucopolypeptide of gram positive bacteria. This makes the cell membrane of microorganisms susceptible to damage by solutes in surrounding medium, i.e. plasma. Penicillins are effective mainly against multiplying organisms.

Side effects /Adverse effects –

i) Anaphylaxis- rare but serious reaction. It can develop with minute quantity of penicillin. It is characterized by cardiovascular collapse, bronchospasm.

ii) Serum sickness- with skin rash, fever, eosinophilia, asthama

iii) Renal complications- like haematuria, albuminuria

iv) Hyperkalemia

v) Intolerance which includes idiosyncrasy and allergic conditions

WINTER – 15 EXAMINATION

f) Define Local anesthetics .State its ideal properties.(1m + 2.5m for any 5)

Definition: Local anesthetics are pharmacological agents which when applied or injected, block the conduction as well as generation of impulses in localized area and bring reversible loss of sensation without affecting degree of consciousness.

OR

They are the compounds that when applied in appropriate concentration, block nerve conduction in the area of application.

Ideal local anesthetic is the one which

1. Has hydrophilic amino group & lipophilic aromatic group with an intermediate chain. Or it is a water soluble salt of lipid soluble substance.

2. Produces anesthesia quickly & is nonirritant.

3. Produces reversible action persisting for required time for operative procedure.

4. Is non habit forming

5. Doesn't cause any permanent damage to the nerves.

6. Has vasoconstrictor action so that there is delayed absorption (in general circulation) & prolonged action.

7. Non antigenic.

8. It should not decompose on standing

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer** **Page No: 24/ 27**

Q.6 Give reasons (2m each)

a) Atropine is used as preanaesthetic agent.

Preanaesthetic medication helps in preparing patient for safer & better use of anaesthetic agent. Atropine being parasympatholytic (anticholinergic) blocks all secretions. Certain anesthetics eg ether when used, it irritates respiratory passage & causes excessive secretion of mucus in the bronchi, lachrymal glands & nasopharynx. These secretions are likely to interfere with normal respiration,can cause coughing. Atropine acts as antisecretory agent and thus helps for smooth anaesthesia.

b) Aluminiumhydroxide & magnesium hydroxide antacids are given in combination.

Aluminium Hydroxide and Magnesium Oxide are antacids. Aluminium hydroxide reacts with gastric HCL and forms aluminium chloride in small intestine. It is converted to aluminium phosphate which relaxes smooth muscle and causes constipation. Magnesium oxide retains water in the intestine and acts as a saline purgative. Thus, to counteract each other's effect aluminium hydroxide is combined with magnesium oxide which neither causes constipation nor diarrhea.

c) Antitubercular drugs are given in combination.

The combination is preferred because of following advantages:

- If single drug is used then resistance to antitubercular drug is developed very quickly.
- Combination therapy rapidly reduces the no.of multiplying bacteria
- Combined drug treatment gives synergistic effect.
- By combination therapy, the dosage of individual drug can be reduced which helps to reduce the side effects.
- It avoids cessation which tends to block the blood vessels supplying to necrotic area and making penetration by antitubercular drug difficult.

WINTER – 15 EXAMINATION

d) Water is called physiological diuretic

ADH (antidiuretic hormone) is secreted by posterior lobe of pituitary gland.

ADH increases the permeability of distal convoluted tubule & causes more reabsorption of water.

When excess water is taken it causes decrease in osmotic pressure of blood. This inhibits the ADH secretion & results into decreased reabsorption of water causing diuresis.

Hence water is called as physiological diuretic.

e) Adrenaline is present in the emergency kit of physician.

Adrenaline is a life saving drug. It is the drug of choice in following clinical conditions:

a)Anaphylactic shock- It causes bronchodilation in situations of severe bronchoconstriction such as anaphylactic shock.

Cardiac shock- As it is positive inotropic and positive chronotropic agent, it increases B.P.

Asthama- The bronchodilator action of Adrenaline relieves the asthama due to bronchospasm.

Haemostatic- The peripheral vasoconstrictor property of adrenaline is used to stop nasal and dental bleeding by using nasal or dental packs soaked in adrenaline solution.

With local anaesthetic- Adrenaline is frequently administered alongwith local anaesthetic to prolong the duration of anaesthesia.

So, adrenaline is always present in the emergency kit of physician.

f) Neostigmine is used along with Atropine in myasthenia gravis.

Myasthenia gravis is a skeletal muscle disorder causing muscle weakness and muscle fatigue**.**

Nicotinic receptors are present in skeletal muscles and muscarinic receptors are present in heart blood vessels and eye balls.

Neostigmine acts on both the receptors .

In myasthenia gravis , only nicotinic action of neostigmine is required.

Hence to mask the muscarinic actions of neostigmine, and thus to avoid the side effects, the muscarinic blocker atropine is given in combination

g) Sulphonamide is not given to patients, in treatment of pus .

PABA(p- amino benzoic acid) is required for synthesis of folic acid.

Due to structural similarity of sulfa drugs, it is a competitive inhibitor of PABA.

Since pus contains large amount of PABA, sulfonamides are ineffective in therapeutic doses.

If larger doses of sulfa drugs are used to compete with PABA, it results in renal complications such as crystaluria, haematuria and renal damage.

Hence they are not given to patients, in treatment of pus .

h) **Aspirin is administered after food.**

Aspirin if administered on empty stomach causes gastric irritation, gastritis, nausea, vomiting.

It is known to decrease prostaglandin levels which leads to ulceration

To avoid all these gastric side effects, aspirin is advised on full stomach.

i**) Levodopa is combined with Carbidopa in treatment of Parkinsonism.**

L dopa is the precursor of dopamine. And is used in treatment of parkinsonism.

L dopa can cross the blood brain barrier but dopamine cannot.

In brain, L-dopa is metabolized to dopamine thereby replenishing the deficient neurotransmitter.

The metabolism takes place in the presence of DOPA decarboxylase .

Large amount of L-Dopa gets peripherally converted to dopamine and thus small amount reaches the brain. To overcome this problem, higher dose of L Dopa is required to increase the clinically effective level of dopamine in the brain which results in toxicity.

Carbidopa does not cross the blood brain barrier but it inhibits peripherally dopa decarboxylase. Thus Carbidopa does not interfere with the conversion of L-dopa to dopamine in the CNS but prevents the conversion of l- dopa to dopamine peripherally.

WINTER – 15 EXAMINATION

Subject Code: 0813 **Model Answer**