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 anyequivalent 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
1		**Define any EIGHT of the following terms with two examples of each.**	**16M**
1	**a)**	**Mydriatics:** Mydriatics are the agents which cause dilation of the pupil. Examples: Sympathomimetic drugs like adrenaline, phenylephrine. Anticholinergic drugs like atropine & homatropine.	**1M def. Any two examples 1M.**
	b)	**Purgatives:** These are the pharmacological agents which facilitate or accelerate evacuation of bowel so that faeces may be expelled with ease. Examples:-Senna, Bisacodyl, Dioctyl sodium sulfosuccinate(DOSS), Liquid Paraffin, Castor oil, Magnesium sulphate, Methyl cellulose etc	
	c)	**Diuretics:** These are the pharmacological agents which when administered, increase rate of formation of urine as well as excretion of urine. Examples: Mannitol, Theophylline, Acetazolamide, Furosemide, Spironolactone, Chlorothiazide.	
	d)	**Sympathomimetics:** These are the drugs which produce actions similar to those seen by stimulation of sympathetic nervous system. Examples: Adrenaline, Noradrenaline, Ephedrine, Dopamine, Amphetamine.	
	e)	**Contraceptives:** These are pharmacological agents when administered prevent conception and thus prevent pregnancy.	

		Examples: Estrogen, Progesterone or combination of both, centchroman etc.	
	f)	**Antiemetics:** An antiemetic is a drug that is effective against vomiting and nausea. Examples: Domperidone,Ondasetron,Dolasetron,Cinnarizine,Hyoscine, Meclizine, Promethazine, Chlorpromazine etc.	
	g)	**Narcotics:** They are psychoactive compounds with sleep inducing properties & can cause addiction. Examples: Morphine ,Codeine, Heroine, Fentanyl, Oxymorphone	
	h)	**Antiseptics:** It is a chemical substance which prevents the growth of microorganisms as long as it remains in contact with them. It is safe for application to living tissues (intact skin, mucous membrane or wounds). Examples: Phenol, Alcohol, Iodine, Mercurochrome, Potassium permanganate, Boric acid, Benzalkonium chloride, Crystal violet, Hydrogen peroxide, etc.	
	i)	**Plasma expander:** These are the agents with high molecular weight when administered parenterally remain in blood stream & increase circulatory fluid volume by exerting an osmotic pressure. Examples: Dextran 60, Dextran 40, Gelatin 6% solution, Polyvinyl pyrrolidone, Physiological saline, Gum acacia 6% in normal saline	
	j)	**Antibiotics:** These are the chemical substances produced by microorganisms having the property of inhibiting the growth of, or destroying other microorganisms in high dilution. Examples: Penicillins, (Penicillin G, Amoxicillin etc.) ,Cephalosporins(Cefadroxil, Cefalor etc.), Aminoglyoside , Streptomyin, Kanamycin, Erythromyin, Azithromycin etc.	

2		**Attempt any FOUR of the followings**	**12M**
2	**a)**	**What are parenteral route of administration? Give its advantages & disadvantages.** Parenteral route of administration means other than enteral (oral) route administration and generally includes injectable administration of drugs. The parenteral routes include Intramuscular (IM), Subcutaneous (SC) and Intravenous (IV) Intradermal, Intra-arterial, Intrathecal, Intraperitoneal injections etc. **Advantages** • Onset of action is very quick. • In unconscious or non-co-operative patients, drugs can be administered by this route. • In nausea and vomiting, drugs can be administered by the route • 100% absorption is possible as there is no degradation by gastric enzymes. • Accuracy of dosage is possible • Low doses are effective • Irritant, unpalatable drugs can be given. • Useful in case of emergency, lifesaving route **Disadvantages:** • It's a costly route • Aseptic technique is required • It is inconvenient • Self-medication is not possible • Once administered, action cannot be halted and hence risky route. • Skilled person required	**1M** **Adv:1M** **Disadv: 1M**
2	**b)**	**Define drug absorption. Explain various processes of drug absorption**. Absorption of drugs means entry of drug in the blood circulation, it may take place by following processes **i) Passive diffusion**- it's the commonest process, the drug passes from higher	**1M defn, 2M explain any 4**

		concentration gradient to lower concentration gradient, Its energy independent. Many lipid soluble drugs such as barbiturates, morphine are absorbed by this process **ii) Active transport**- It's a specialized transport which requires energy and a carrier molecule, it can work against the concentration gradient. Drugs of larger molecular size use active transport system.eg vitamins **iii) Facilitated diffusion**- this is carrier mediated transport independent of energy and independent of lipid solubility. This is highly selective. Eg Glucose **iv) Pinocytosis**- the ability to surround & engulf molecules of liquid is called Pinocytosis. The cell takes up the fluid from its surrounding. **v) Filtration**: Is the process by which water soluble drugs of low molecular weight cross the membrane through certain pores which are present in the membrane .eg Urea	**correct processes**
2	**c)**	**Define & classify sedative & hypnotics with suitable examples.** Sedatives are the agents which act on CNS , relieve anxiety or calm down the patients. Hypnotics- These are the drugs that produce sleep that resembles to natural sleep. Classification- I) Barbiturates- a) Long acting barbiturates e.g. Phenobarbitone b) Intermediate acting barbiturates e.g. Cyclobarbitone c) Short acting barbiturates e. g. Hexobarbitone d) Ultra short acting barbiturates e. g. Thiopentone II) Non barbiturates a) Benzodiazepine e.g. Diazepam b) Alcohols e.g. Chloral hydrate c) Aldehydes e. g. Paraldehyde d) Miscellaneous e.g. Hysocine	**Def. 0.5M each Class. 2M**
2	**d)**	**Discuss mode of action & therapeutic uses of sympatholytics.** Sympatholytic agents or adrenergic antagonists that bind to adrenergic receptor and	**1M Uses:2M**

		inhibit the sympathetic stimulation at the sympathetic nerve endings. They can be either alpha or beta blockers. Alpha receptor antagonists block adrenergic responses mediated through alpha 1 or 2 adrenergic receptors. Beta blockers block the actions of catecholamines mediated through beta receptors. **Therapeutic uses:** Alpha blockers: eg Prazosin Phentolamine Phenoxybenzamine Uses: Hypertension ,Pheochromocytoma ,Congestive cardiac failure, Peripheral vascular diseases Beta blockers: eg Atenelol,Sotalol,Propranalol,Timolol Uses: Hypertension: Angina pectoris, Cardiac arrhythmia ,Thyrotoxicosis ,Glaucoma	
2	**e)**	**Write the pharmacological actions of quinine.** 1. Quinine is cinchona alkaloid used mainly in treatment of Malaria 2. It destroys erythrocytic & gametocytic forms of malarial parasite, 3. It also shows mild analgesic & antipyretic activity. 4. It's a myocardial depressant. IV administration can cause significant hypotension. 5. It has local irritant and local anaesthetic properties 6. It's causes skeletal muscle relaxation 7. It causes Cinchonism as major side effect (tinnitus, visual disturbances etc) 8. It can be used for the treatment of leg cramps caused by vascular spasm.	**3M** **Any 6**
2	**f)**	**What is tuberculosis? Explain chemotherapy of tuberculosis.** Tuberculosis (TB) is an airborne infection caused by bacteria mycobacterium tuberculosis that most often affect lungs but can also affect other parts of the body. Tuberculosis is curable and preventable. When people with pulmonary TB cough, sneeze or spit, they spread the TB germs into the air.	**1Mdefn** **Therapy** **2 M**

		Chemotherapy of TB:- tuberculosis is long treatment which requires 8 month to 3 years If tackled within time, it is no longer incurable infection 1) First Line agent:- streptomycin, isoniazid, rifampicin, ethambutol, pyrazinamide 2) Second line agent:- PAS, ethionamide, kanamycin, amikacin 3) other agents: Ofloxacin, ciprofloxacin, 4) TB requires long term treatment and if left halfway, development of resistance is common. Synergistic multidrug treatment is given for such purpose, combination of 2-4 drugs are prescribed at a time for minimum of 6 months period Examples: Four drug regime:- i) INH + Streptomycin + Rifampin + Pyrazinamide DOTS (Directly observed treatment short course) is a Government strategy in which free of charge treatment of TB is given under direct observation.	
3		**Attempt any FOUR of the followings**	**12M**
3	**a)**	**Name atleast one drug contraindicated in:** i. Hyperacidity –. Aspirin, ibuprofen and other NSAIDs ii. Head injury- Morphine iii. Insomnia- Caffeine or other CNS stimulants iv. Liver damage- Phenobarbitone sodium / Alcohol. v. Constipation- Morphine,Atropine vi. Pregnancy- Tetracycline, Morphine, clofibrate, Cortisone.	**0.5 M each**
3	**b)**	**Give the dose of following drugs:** ~~i.~~ Aspirin-300-600mg	**0.5 M each**

		ii. Morphine hydrochloride- 8-20mg iii. Ibuprofen-200mg to 400mg iv. Dapsone -first week -100mg daily, next 4weeks 25mg twice a week, 5th & 6th week 50mg twice a week thereafter 100mg thrice a week v. Ranitidine-150-300mg vi. Castor oil- 5 to 15ml in early in the morning.	
3	**c)**	**Name the drug of choice in following conditions:** i. Anxiety-Diazepam, Clonazepam, Meprobamate, ~~ii.~~ Schizophrenia-Chlorpromazine,Clozapine, Olanzepine, Resperidone. Haloperidol, iii. Gout-Diclofenac, Probencid, Piroxicam, Colchicin, Allopurinol,any other NSAIDs. iv. Glaucoma- Pilocarpine, Carbachol, Timolol, Acetazolamide, Physostigmine, Mannitol. v. Raynauds disease- Nifedifine,, Phenoxybenzamine,other vasodilators vi. Pernicious anemia- Vit. B12, Folic acid	**0.5 M each**
3	**d)**	**Write route of administration of following drugs:** i. Diazepam- Oral /IV ii. Mannitol- Parenteral, IV iii. Mebendazole- Oral iv. Nitroglycerin- Sublingually/oral /parenteral/topical **v.** Insulin- Parenteral, SC/IM/IV vi. Heparin- Parenteral, IV.	**0.5 M each**
3	**e)**	**Name the one drug each which producing following effect:** **Sub questions i) & iv) are same. Any correct answer be considered.** i) Anaphylaxis- Penicillin, Aspirin, Ibuprofen, NSAIDs. ii) Cinchonism- Quinine, Quinidine iii) Grey baby syndrome- Chloramphenicol iv) Anaphylaxis- Penicillin, Aspirin, Ibuprofen, NSAIDs.	**0.5 M each**

		v) Bone and teeth deformity- Tetracycline vi) Agranulocytosis- Clozapine, Sulpha drugs, Metamizole, Methimazole, Chloramphenicol	
3	**f)**	**Mention antidote with its mechanism in case of poisoning due to:** i) Barbiturates- Sodium bicarbonate **Mechanism**- Alkalinisation of urine helps in elimination of drug. CNS Stimulants like Bemegride may be used to overcome respiratory depression. ii) Heavy metal poisoning- BAL/ Dimercaprol **Mechanism-** Formation of complexes with certain heavy metals and excretion through urine. iii) Digitalis- Potassium chloride **Mechanism**- Hypokalemia can be reversed, Arrhythmia can be treated with IV Phenytoin or Lignocaine. Bradycardia can be treated with Atropine	**0.5 M each for antidote & mechanism**
4		**Attempt any FOUR of the followings**	**12M**
4	**a)**	**Define and classify Haematinics with examples.** **Haematinics:** Are the drugs which when administered favors erythropoiesis ie synthesis of red blood cells and increase the oxygen carrying capacity of the blood. **Classification:** A) Oral iron compounds:-Examples; Ferrous sulphate, Ferric ammonium citrate, Iron choline citrate, Iron hydroxyl poly maltose C) Parenteral iron compounds:- Examples ;- Iron-dextran, Iron sorbital-citric acid complex D) Vitamins/Maturation factors:- Examples :- Cynocobalamin (vit B12), Folic acid E) Hormone: Examples. Erythropoietin	**1M def. 2M Classify**

		OR Haematinics in iron deficiency anaemia Examples: Iron preparations Haematinics in vitamin deficiency anaemia Examples: Vit.B12, Folic acid.	
4	**b)**	**Define autocoids. What is triple response of histamines?** Autocoids- These are local hormones with high biological activity and naturally found in the body either in active or inactive form. They play important role in the allergic reaction. Ex. Histamine, 5-HT, Bradykinin, angiotensin, prostaglandins When histamine is applied locally or injected intradermally on skin it produces a typical response known as "triple response" which is characterised by three distinguished signs: i. Flush- it is redness at the site of application because of hyperaemia (increase blood flow) ii. Flare- Patch formation in the vicinity of 1.5 cm of flush occurs due to vasodilation & this is called as flare. iii. Wheal- around 1.5cm of flare, permeation of fluid occurs, raising the surface and is called as wheal (swelling formation).	**1M def.** **2M triple response**
4	**c)**	**Discuss mode of action of diuretic drugs.** Diuretics are commonly used drugs. They act by diminishing sodium reabsorption at different sites in the nephron, thereby increasing urinary sodium and water losses. **Loop diuretics** inhibit the sodium-potassium-chloride cotransporter in the thick ascending limb **Thiazide diuretics**, which are the most commonly used diuretic, inhibit the sodium-chloride transporter in the distal tubule **Potassium-sparing diuretics**. Unlike loop and thiazide diuretics, some of these drugs do not act directly on sodium transport. Some drugs in this class antagonize the actions of	**3M**

		aldosterone (aldosterone receptor antagonists) at the distal segment of the distal tubule. **Carbonic anhydrase inhibitors** inhibit the transport of bicarbonate in proximal tubule which leads to less sodium reabsorption at this site and therefore greater sodium, bicarbonate and water loss in the urine.	
4	**d)**	**Define local anaesthetics. Classify with examples.** Local Anaesthetics : Are the pharmacological agents which when applied or injected block the conduction as well as generation of impulses in localized area &cause reversible loss of sensation without affecting degree of consciousness **Classification:** 1) Injectable anaesthetics: eg Lidocaine,Bupivacaine, Procaine, Mepivacaine 2) Surface anaesthetic: Lidocaine, Benzocaine,Cocaine, OR 1) Ester type:- eg Cocaine, Procaine, Tetracaine, Benzocaine. 2) Amide Type:-eg Lidocaine ,Bupivacaine, Mepivacaine, Prilocaine	**1M def.** **2M classify**
4	**e)**	**Mention different type of tumors. How cancer is treated in different ways.** **There are two types of tumors** 1) Benign tumor 2) Malignant tumor eg Lymphoma, Tumor of particular organ/tissue **Cancer can be treated in different ways:** Surgery. Radiation Therapy. Chemotherapy. Usually a combination therapy is used for better efficacy, reduced toxicity & reduced resistance development. **Chemotherapy includes use of anticancer drugs**:	**1 M Types** **2M treatment**

		I. Alkylating agents: • Nitrogen mustards:E.g.: Chlorambucil, Mechlorethamine , Chlorambucil • 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, Cisplatin	
4	**f)**	**Give symptoms and treatment for organophosphorus compound poisoning.** **Symptoms:** Nausea, vomiting, diarrhoea, anorexia on ingestion miosis, bronchospasm , tightness in chest Death due to respiratory failure.	**1M symptom 2M Treat.**

		Treatment: Rapid treatment is necessary to prevent fatal effect. Patient needs to be hospitalized ideally in I.C.U. Gastric lavage, Endotracheal intubation for proper respiration to be done Atropine sulphate injection by I.V. Injection of Pralidoxime (cholinesterase regenerator) PAM or Diacetyl-monoxime DAM by I.V.route Intravenous fluids to restore volume	
5		**Attempt any FOUR of the following:**	**12M**
5	**a)**	**What is sublingual route of administration? Give its advantages and disadvantages.** In sublingual route, the tablet of medicament is to be placed below the tongue. The active medicament gets absorbed through the buccal mucous membrane and then directly passed into the systemic circulation. **Advantages (any 2)** 1. This route shows rapid onset of action, so it is useful in medical emergency cases such as Angina pectoris. 2. The adverse effect of the drug can be prevented simply by spitting the tablet. 3. As the drug directly reaches the systemic circulation, degradation of drugs in the stomach is avoided. 4. Also, inactivation of the drugs in the liver is avoided as the drug bypasses the portal circulation before reaching the blood. **Disadvantages (Any two)** 1. The drugs having direct or toxic effects on heart should be cautiously administered by taking utmost care, to avoid any such effect. 2. Buccal ulceration can occur	**1M expl.** **1M Adv.** **1M Disadv.**

		3. Irritant, unpalatable drugs cannot be given by this route.	
5	**b)**	**Define and classify antihypertensive with examples.** Antihypertensive drugs are the agents used in treatment of hypertension or abnormal elevation in blood pressure. **Classification** 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 b) Catecholamine depletors: Reserpine 4. Drugs acting on adrenergic receptors: a) Alpha adrenergic blockers: Phentolamine, Phenoxy benzamine b) Beta adrenergic blockers: Propranolol 5. Vasodilators: Hydralazine, Minoxidil 6. Drugs acting reflexly by stimulating baroreceptors: Veratrum 7. Oral Diuretics: Thiazides, Frusemide, Spironolactone 8. Calcium Channel Blockers: Nifedipine, Amlodipine 9. Drugs acting on rennin angiotensin system: a) ACE inhibitors: Enalapril, Ramipril b) Angiotensin receptor blockers: Losartan, Telmisartan	**1 M Define 2.M Classify (any 8 classes with one example)**

		10. Miscellaneous: MAO inhibitors (Pargyline)	
5	**c)**	**What is diabetes? Differentiate between sulfonyl ureas and biguanides** Diabetes is chronic metabolic disorder caused due to deficiency of insulin and characterized by a rise in blood glucose level. **Difference between sulfonylureas and biguanides** 1. Sulfonyl ureas stimulate beta cells of islets of langerhans in pancreas to secrete insulin. Biguanides don't stimulate beta cells, they act on liver. 2. Sulfonyl ureas are effective in patients who have residual insulin. Biguanides are effective in absence of functioning pancreatic beta cells or residual insulin. 3. Sulfonyl ureas don't accelerate peripheral utilization of glucose. Biguanides inhibit glucose absorption & accelerate peripheral utilization of glucose and inhibit gluconeogenesis. 4. Sulfonylureas may stimulate appetite. Biguanids are anorexiant. 5. Sulfonyl ureas can cause hypoglycemia as side effect. Biguanides don't cause such side effects. 6. Sulfonyl ureas Eg. Tolbutamide, Glibenclamide, Chlorpropamide Biguanides Eg. Phenformin, Metformin	**1M Expl. 2M Difference (any 4 correct)**
5	**d)**	**Classify non-steroidal anti-inflammatory drugs.** 1. Salicylates: eg. Aspirin, Sodium salicylate 2. Para amino phenol derivative: eg.Paracetamol, Phenacetin 3. Indole acetic acid derivative: eg. Indomethacin 4. Anthranilic acid derivative: eg. Mefenamic acid	**3M (Minimum 6 categories with one correct**

		5. Propionic acid derivative: eg. Ibuprofen, Naproxen 6: Oxicam derivatives: eg.Piroxicam 7. Pyrazolone derivatives: eg.Phenyl butazone, oxyphenbutazone 8. Phenyl acetic acid derivatives: eg Diclofenac 9. Miscellaneous: eg.Nimesulide, rofecoxib	**example)**
5	**e)**	**Define and classify synergism with example.** Synergism is the phenomenon of facilitation of pharmacological response by use of two drugs at the same time. This results in the total effect greater than the sum of their individual effect. **Examples (any two correct examples**):- Levodopa + Carbidopa, As antiparkinsonian Acetyl Choline+ Physostigmine as Parasympathomimetics Codeine and Aspirin as analgesic, Reserpine/Losartan and Hydrochlothiazide as Antihypertensive etc. Sometimes synergism results in prolongation of action of one of the drugs. It is termed as **Time synergism**. E.g. Procaine and adrenaline combination increases the duration of action of procaine which is a local anaesthetic drug.	**1M define 1M example 1M type**
5	**f)**	**What is parkinsonism? Give its treatment.** It is progressive neurodegenerative disorder characterized by rigidity, tremors & akinesia. In parkinsonism there is progressive loss of the dopaminergic fibres and–imbalance between Dopamine and Acetylcholine in the brain.	**1M Explain. 2M Treat.**

		Treatment: Anti-parkinsonian drug therapy is therefore aimed at restoring the balance. The drugs can be classified as follows: a) Drugs which increases dopaminergic activity: 1. Dopamine precursor: Levodopa 2. Peripheral dopamine decarboxylase inhibitor: Carbidopa 3. Dopaminergic agonist: Bromocriptine 4. Dopamine Facilitator: Amantadine 5. MAO-B inhibitor: Selegiline b) Drugs reducing cholinergic activity: 1. Central Anticholinergic: Benztropine	
6		**Give reasons for any <u>FOUR</u> of the following:**	**16M**
6	**a)**	**Why Toxicity studies are carried out on all medicines?** • Every drug has desirable therapeutic effect but also has several other effects on the body, some of which may be harmful side effects. • Every drug can act as medicine or a poison, the effect principally depends on the dose of that particular drug. For example, morphine in therapeutic dose produces analgesia, this is desirable effect of morphine while respiratory depression, seen with high dose of morphine which is its toxic effect. • It's important to study safety profile of the drug and establish therapeutic index, LD 50 and ED 50. • Toxicity studies are preclinical studies which are done on rodents (mice, rats) and safety of the drug is established before its tried in human beings (clinical trials)	**4M**
6	**b)**	**Aspirin is not given in peptic ulcer** • Aspirin causes irritation of stomach, gastric erosion, gastritis, gastric ulcer and GI	**4M**

		bleeding. • It also causes decrease in prostaglandin level leading to increased secretion of HCL and ulceration. • Aspirin stimulate the CTZ centre in brain causing epigastric distress, nausea and vomiting. Thus, aspirin will aggravate the condition of peptic ulcer. Hence it is not given in peptic ulcer	
6	**c)**	**Cheese and butter is contraindicated during MAO inhibitor therapy.** • Cheese and butter contains tyramine. Tyramine is metabolized in the liver by the enzyme monoamine oxidase. • If an individual is on MAO inhibitor therapy, then MAO inhibitors inhibit the detoxification or metabolism of tyramine. • Thus tyramine gets accumulated in the body. This tyramine causes release of noradrenaline from its binding sites. • Increased level of noradrenaline causes hypertensive crisis. Therefore, eating of cheese and butter is contraindicated during MAO inhibitor therapy.	**4M**
6	**d)**	**Chloramphenicol therapy is supplemented with iron preparations.** • Chloramphenicol is an antibiotic • The therapeutic dose of Chloramphenicol causes bone marrow depression, agranulocytosis and inhibit erythropoiesis. • This results in aplastic anaemia. • To overcome this side effect and to promote erythropoiesis process, iron preparations are supplemented with Chloramphenicol therapy	**4M**
6	**e)**	**Lactobacillus is given with some antibiotics.** • Lactobacillus is useful bacteria and is normally present in GI tract.	**4M**

		• When antibiotics are given for the treatment of disease, they may destroy the normal GI flora and leads to diarrhoea. • Lactobacillus is given to restore the normal GI flora and to avoid the diarrhoea. Lactobacillus prevents overgrowth of pathogenic bacteria, • Lactobacillus improves patient compliance for antibiotics, hence ensures completion of treatment.	
6	**f)**	**Aluminium hydroxide and magnesium hydroxide are given in combination.** • Aluminium hydroxide and magnesium hydroxide are non-systemic antacids. • Aluminium hydroxide reacts with hydrochloric acid in stomach to form aluminium chloride. In small intestine it is converted to aluminium phosphate, which relaxes the intestinal smooth muscles and produces constipation. • To overcome this constipation, the magnesium hydroxide is used. • Magnesium hydroxide is poorly absorbed and it retains water in the lumen of intestine and acts as a saline purgative. Thus, to counteract each other's effect, aluminium hydroxide and magnesium hydroxide are given in combination.	**4M**