



MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION  
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MODEL ANSWER

WINTER- 18 EXAMINATION

**Subject Title: Pharmacology & Toxicology**

**Subject Code: 0813**

**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.



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Q. No	Sub Q. N.	Answer	Marking Scheme
1		<b>Define any EIGHT of the following terms with one example of each.</b>	<b>16M</b>
1	a)	<b>Haematinics:</b> Are the agents which raise the number of RBCs & the amount of haemoglobin to normal level when they are below normal. <b>Examples:</b> Iron, folic acid, Vit B <sub>12</sub> .	<b>1M def.</b> <b>Any <u>one</u> example</b> <b>1M.</b>
	b)	<b>Miotics:</b> These are the agents that produce miosis or constriction of pupil. Eg. Parasympathomimetics like physostigmine, pilocarpine	
	c)	<b>Anti-hypertensives:</b> These are the agents used in treatment of hypertension. Eg. Clonidine, Atenolol, Losartan, Methyl dopa, Hydralazine, Reserpine, Propranolol, Diazoxide, Thiazides etc	
	d)	<b>Antiemetics:</b> These are the agents used in treatment of vomiting. Eg: Phenothiazine derivative (Chlorpromazine), Hyoscine, Meclozine, Promethazine, Diphenhydrazine	
	e)	<b>Analgesics:</b> These are the pharmacological agents which relieve or suppress the pain sensation. <b>Examples:</b> Narcotic analgesics like Morphine, Codeine etc., Non narcotics like Aspirin, Paracetamol, Indomethacin, Ibuprofen, Piroxicam, Diclofenac etc.	
	f)	<b>Nasal Decongestants:</b> These are the agents which help in relieving nasal congestion & decrease resistance to airflow through the nose. Eg. Ephedrine, Pseudoephedrine, Phenylephrine, Oxymetazoline, Xylometazoline etc.	



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g)	<p><b>Carminatives:</b></p> <p>These are the pharmacological agents which when administered expel gas from the stomach or intestine during the treatment of flatulence and colic.</p> <p>Examples: Peppermint oil, Dill oil, Cardamom tincture, Ginger tincture, Simethicone etc</p>	
h)	<p><b>Antibiotics:</b></p> <p>These are the chemical substances produced by microorganisms having the property of inhibiting the growth of, or destroying other microorganisms in high dilution.</p> <p>E.g Penicillins,(Penicillin-G, Amoxicillin etc.) Cephalosporins, (Cefadroxil, Cefalor etc.), Aminoglycoside, antibiotics (Streptomycin, Kanamycin etc.) Erythromycin, Azitromycin etc.</p>	
i)	<p><b>Local anesthetics:</b></p> <p>These are the pharmacological agents which when applied or injected block the conduction as well as generation of impulses in localized area &amp; bring reversible loss of sensation without affecting degree of consciousness</p> <p><b>Examples :</b> Cocaine, Procaine, Amethocaine, Xylocaine, Cinchocaine</p>	
j)	<p><b>Antifungals:</b></p> <p>These are the agents which selectively eliminate fungal pathogen from a host and are used in treatment of fungal infections.</p> <p>Eg.Nystatin,AmphotericinB,Clotrimazole,Miconazole,Ketoconazole,Fluconazole, Terbinafin, Griseofulvin, Benzoic acid, Salicylic acid, Selenium sulphide etc.</p>	
k)	<p><b>Disinfectants:</b></p> <p>These are the pharmacological agents having bactericidal properties that can be directly applied to inanimate objects like surgical instruments, O. T. area, wards etc., for making them free from microorganisms.</p> <p>Examples: Phenols, Formaldehyde.</p>	
l)	<p><b>Anorexiant;</b></p> <p>These are the agents which suppress appetite &amp; help in treatment of obesity.</p> <p>Eg. Amphetamine,Fenfluramine,Mazindol,Phenylpropanolamine.</p>	



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2		<b>Attempt any FOUR of the followings</b>	<b>12M</b>
2	a)	<p><b>Write mechanism of action &amp; uses of Penicillin.</b></p> <p><b>Mechanism of action-</b> Penicillin is a 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.</p> <p><b>Uses:</b></p> <p>In treatment of Respiratory Tract Infection like Diphtheria, Urinary Tract Infections, Tetanus, Venereal diseases such as Syphilis, Gonorrhoea. Infections of Endocardium (Bacterial endocarditis) It is used against Pneumococcal, Streptococcal, Staphylococcal, Meningococcal Infections.</p>	<b>1.5 M</b> <b>MOA.</b> <b>1.5M any three uses.</b>
2	b)	<p><b>Give symptoms &amp; treatment in barbiturate poisoning.</b></p> <p><b>Symptoms:-</b></p> <p>Shallow respiration, fall in B.P., cardiovascular collapse, decreased or no urinary output (anuria) pulmonary complications.</p> <p><b>Treatment:-</b></p> <p>Gastric lavage: - 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.</p> <p>Artificial respiration: Endotracheal intubation: to treat hypoventilation</p> <p>Supportive measures: Intravenous fluids to prevent dehydration, to maintain blood volume and use of vasopressor if needed.</p> <p>Alkaline diuresis: - with sodium bicarbonate 1meq/kg iv. With or without mannitol (is helpful only in the case of long acting barbiturates which are eliminated primarily by renal excretion).</p>	<b>1M</b> <b>Symptoms</b> <b>ms</b> <b>2M For Treatment</b> <b>nt</b>



2	c)	<p><b>Mention various routes under Parenteral administration.</b></p> <p><b>Explain advantages &amp; disadvantages of Intravenous route of administration of drugs.</b></p> <p><b>Parenteral routes:</b></p> <p><b>Injections:</b> Intravascular, Intramuscular, Intradermal, Subcutaneous, Intrathecal, Intraperitoneal, Intramedullary, Intraarticular</p> <p><b>Inhalation.</b></p> <p><b>Advantages of IV: (any three points)</b></p> <ul style="list-style-type: none"><li>• Useful for Unconscious or uncooperative patients</li><li>• Useful in case of Vomiting, diarrhoea</li><li>• No irritation of stomach</li><li>• Provides rapid onset of action</li><li>• Useful in case of Emergencies (lifesaving route)</li><li>• Accuracy of dosage is achieved.</li></ul> <p><b>Disadvantages of IV: (any three points)</b></p> <ul style="list-style-type: none"><li>• Once injected drug can't be withdrawn.</li><li>• Irritation of veins may cause thrombophlebitis</li><li>• Only aqueous solutions can be given</li><li>• Self-medication is difficult</li><li>• Trained personnel required for administering drug</li><li>• There is risk of embolism.</li></ul>	1M EACH
2	d)	<p><b>Define Drug tolerance. Mention different types of drug tolerance.</b></p> <p><b>Definition:</b> When an unusually large dose is required to elicit an effect produced by the normal therapeutic dose of drug, the phenomenon is called drug tolerance. OR It is the insensitivity towards the use of the drug which earlier had shown the therapeutic effect.</p> <p><b>Different types of drug tolerance:-</b></p> <p><b>1. True tolerance</b></p> <p>a) Natural: Species, Racial</p> <p>b) Acquired: Tissue, Cross</p>	1M Def. 2M Types



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		<b>2. Pseudotolerance,</b> <b>3. Acute Tolerance / Tachyphylaxis.</b>	
2	e)	<b>Classify antineoplastic agents with examples.</b>  I. Alkylating agents: <ul style="list-style-type: none"><li>• Nitrogen mustards:E.g.: Chlorambucil, Mechlorethamine , Chlorambucil</li><li>• Ethylenimines:E.g.: Triethylenemelamine, Triethylene thiophosphamide</li><li>• Alkylsulphones:E.g. : Busulphan</li></ul> II. Antimetabolites: <ul style="list-style-type: none"><li>• Folic acid antagonists:E.g.: Methotrexate</li><li>• Purine Antagonist:E.g.: 6-mercaptopurine</li><li>• Pyrimidine Antagonist:E.g.: 5-Flurouracil, Cytosine</li></ul> III. Radioactive Isotopes: E.g.: Radioiodine, Radiophosphorous <li>IV. Antibiotics: E.g.: Actinomycin-D, Mitomycin</li> <li>V. Hormones: E.g.: Androgens, Estrogens, Corticosteroids</li> <li>VI. Enzymes:E.g.: L-asparaginase</li> <li>VII. Miscellaneous Agents: Vinca alkaloids: E.g.: Vincristine, Vinblastin Others:E.g.: Hydroxyurea, Cis- platin</li>	<b>3M.</b>
2	f)	<b>Explain the terms Pharmacokinetics and Pharmacodynamics.</b>  <b>Pharmacokinetics:</b> It is the study of movement or passage of drug across the body. It is what body does to the drug.  It includes study of Absorption, Distribution, Metabolism & Excretion (ADME) of drug.  <b>Pharmacodynamics:</b>  It is the study of how drugs affect our body or Study of mechanism of action & pharmacological effects of drug. It is the study of what drug does to our body	<b>1.5M.</b> <b>EACH</b>



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3		<b>Attempt any FOUR of the followings</b>	<b>12M</b>
3	a)	<b>Mention the drug of choice for the following condition</b>  i. <b>Glaucoma:</b> Pilocarpine, Timolol, Betaxalol, Physostigmine, Acetazolamide, Glycerine, Mannitol.  ii. <b>Insomnia:</b> Diazepam, Alprazolam, Nitrazepam, Barbiturates  iii. <b>Cardiac Arrhythmia:</b> Quinidine, Lignocaine, Propranolol, Practolol, Procainamide	<b>1M each</b>
3	b)	<b>Mention the drug contraindicated in following conditions:</b>  i. Head injury: Morphine  ii. Peptic ulcer: Hydrocortisone, Heparin and other anticoagulants, Aspirin and other NSAIDs.  iii. Liver cirrhosis: Phenobarbitone sodium / Alcohol	<b>1M each</b>
3	c)	<b>Mention use and adverse effect of the following:</b>  i) <b>Streptomycin:</b>  Use: Antibiotic, Antibacterial agent, TB., Meningitis, UTI, RTI, Plague, Dysentery  Adverse effect:- Ototoxicity, skin rash, dermatitis,  ii) <b>Quinine sulphate:</b>  Use: Antimalarial agent  Adverse Effect:-Cinchonism include tinnitus, deafness, optic neuritis  iii) <b>Reserpine:</b>  Use: Antihypertensive, Tranquilizer.  Adverse Effect:-Nasal congestion, salivation, vasodilation, increased motility of gut, weight gain, mental depression, nightmares, insomnia, suicidal tendency gastric ulceration, stomach cramps, hypotension, etc.	<b>0.5M Use</b> <b>0.5M</b> <b>ADE.</b>



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3	d)	<b>Give the route of administration of the following drugs.</b>  i. <b>Diclofenac:</b> Orally, IM,IV, topical  ii. <b>Griseofulvin:</b> Orally  iii. <b>Mannitol:</b> - Parenteral (IV )	1M each
3	e)	<b>Mention antidotes in case of poisoning due to:</b>  i. <b>Atropine :</b> Physostigmine ii. <b>Morphine:</b> Naloxone, Nalorphine iii. <b>Organophosphorous compounds:</b> Atropine Sulphate, Pralidoxime (PAM), Diacetyl monoxime (DAM),Obidoxime.	1M each
3	f)	<b>Name one drug which produces following effects.</b>  i. Mydriatics: Atropine , Homatropine, Cyclopentolate, Tropicamide,Ephedrine etc ii. Hypolipidemic: Ciprofibrate,Fenofibrate,Atorvastatin and other Statins,Nicotinic acid, Gemfibrozil, iii. Brochodilator : Adrenaline , Salbutamol, Isoprenaline,Orciprenaline,Ephedrine,	1M EACH
4		<b>Attempt any FOUR of the followings</b>	12M
4	a)	<b>Classify hypnotics with examples.</b>  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	3M





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		b) Alcohols e.g. Chloral hydrate c) Aldehydes e. g. Paraldehyde d) Miscellaneous e.g. Hyoscine.	
4	b)	<b>Enlist factors modifying drug action and explain any two of them.</b> <ul style="list-style-type: none"><li>• Body weight</li><li>• Age</li><li>• Sex</li><li>• Presence of disease</li><li>• Route of administration</li><li>• Time of administration</li><li>• Genetic factor</li><li>• Emotional factor</li><li>• Metabolic disturbances</li><li>• Cumulation</li><li>• Drug-drug interaction</li><li>• Additive effect</li><li>• Synergism</li><li>• Antagonism</li><li>• Drug tolerance</li><li>• Drug dependence</li></ul> <p>i)Age- Metabolic &amp; excretory systems are not well developed in infants &amp; may be less functional in geriatric patients. So dose in pediatric &amp; geriatric patients has to be adjusted. Children are more sensitive to CNS depressants. Infants below 1 yr. do not have fully developed enzymes that metabolize drugs. This must be considered while calculating optimum dosage for infants. In aged individuals, the normal dose may prove</p>	1M Enlist 2M Exp.



to be excessive due to their inability to metabolize drugs.

ii) **Presence of disease-** antibiotics like streptomycin and kanamycin are mainly excreted by the kidneys. So they may prove toxic on parenteral administration in patients with improper kidney function. It is also observed that drugs like barbiturates produce unusually long effects in cirrhotic patients.

iii) **Synergism-** synergism is a pharmacological cooperation which usually results in total effect greater than the sum of their individual effects.

E.g Codeine and aspirin as analgesics. Sometimes synergism results in prolongation of action of one of the drugs called time synergism. Eg. Procaine and adrenaline in combination increases the duration of action of the local anaesthetic procaine.

iv) **Additive effect :**

When the total pharmacological effect of two or more drugs administered together is equal to the sum of their individual pharmacological actions, the effect is called additive effect.

e.g. Ephedrine and Aminophylline show additive effect in the treatment of bronchial asthma.

v) **Drug-drug interactions**

Drug-drug interactions are the result of the use of two or more drugs, they may occur either outside the body or within the body. They may be useful or harmful to our body.

Eg: Interaction between Tetracycline antibiotics and antacids, calcium supplements, milk products etc

Interaction between Ciprofloxacin and antacids, calcium supplements, milk products etc

Antacids enhance ionization & so excretion of weakly acidic salicylates.

Administration of Dimercaprol in treatment of arsenic poisoning.

Synergistic effect of trimethoprim & sulphamethoxazole

vi) **Antagonism**

Phenomenon of opposing actions of two drugs on the same physiological system.



		<p>Types:</p> <p>Chemical: . Eg: Between acid &amp;alkali.</p> <p>Competitive / Reversible Eg: Acetylcholine&amp; atropine antagonize at muscarinic receptors.</p> <p>Noncompetitive Eg: Acetylcholine &amp; papaverine on smooth muscles</p> <p>Physiological Antagonism Eg; Adrenaline in histamine reaction.</p> <p>Functional: One drug opposes another drug by virtue of its function.eg acetylcholine and adrenaline.</p> <p><b>(Explanation of any other factors can be considered)</b></p>	
4	c)	<p><b>Explain mechanism of action of sulphonamides.</b></p> <p>Many microorganisms require Para amino benzoic acid (PABA) for the synthesis of folic acid. PABA &amp; sulphonamides are similar in chemical structure such that bacteria are not able to differentiate them. There is also competition between these two substances for same receptor site. Bacteria take up sulphonamide instead of PABA &amp; inhibit formation of folic acid which is required for the bacterial growth and have bacteriostatic action. Sulphonamides are useful against the microorganisms which synthesise their own folic acid.</p>	3M
4	d)	<p><b>Define Cardiotonics. Explain the action of digitalis in CCF.</b></p> <p>Cardiotonics: These are the drugs which increases work performance of heart.</p> <p>OR Drug which increases force of contraction of heart (positive inotropic action).</p> <p>Digitalis improves cardiac functions in CCF by following ways</p> <ul style="list-style-type: none"><li>• It strengthens the heart muscles, increases the force of cardiac contraction,</li></ul>	1M def. 2M Expl.



		<p>positive inotropic action</p> <ul style="list-style-type: none"><li>• It decreases heart rate,</li><li>• It increases cardiac output and it improves blood perfusion to all organs, decreases heart size</li><li>• Decreases venous congestion</li><li>• Increase renal blood flow and perfusion.</li><li>• Relieves edema by producing diuresis.</li></ul>	
4	e)	<p><b>Give Pharmacological action of insulin and mention various types of Insulin preparations.</b></p> <p><b>Insulin is the hormone secreted by beta cells islets of Langerhans of pancreas.</b></p> <ul style="list-style-type: none"><li>• Simulates the uptake of glucose – Insulin decreases blood glucose concentration by inducing intake of glucose by the cells.</li><li>• Insulin also increases synthesis and storage of glycogen in peripheral tissue such as heart and skeletal muscles.</li><li>• Insulin increases fat storage in adipose tissue by stimulating lipogenesis and inhibiting lipolysis.</li><li>• Decreases gluconeogenesis and glycogenolysis.</li><li>• Insulin facilitates amino acid uptake and protein synthesis and inhibits protein breakdown.</li></ul> <p><b>Insulin preparation are as follows</b></p> <ul style="list-style-type: none"><li>• Insulin injection I.P (soluble insulin)</li><li>• Insulin zinc suspension<ul style="list-style-type: none"><li>○ Insulin zinc suspension I. P. (amorphous) (insulin semilente)</li></ul></li></ul>	<p><b>1.5M Types</b></p> <p><b>1.5M Action Any 3</b></p>



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		<ul style="list-style-type: none"><li>○ Insulin zinc suspension I. P. ( Insulin lente)</li><li>● Insulin zinc suspension I. P. ( Insulin ultra-lente) protamine Zinc insulin I.P</li></ul> <p>Isophane insulin, globin Zinc insulin</p>	
4	f)	<b>Enumerate types of epilepsy and mention one drug used in treatment of each type.</b> <ul style="list-style-type: none"><li>i) Grandmal epilepsy : Phenytoin, Phenobarbitone.</li><li>ii) Petitmal epilepsy: Ethosuximide, Trimethadione, Clonazepam, Valproic acid</li><li>iii) Myoclonic jerking : Phenobarbitone, Clonazepam</li><li>iv) Atonic/Akinetic epilepsy: Diazepam, Clonazepam</li><li>v) Infantile spasms: Phenobarbitone, Diazepam, Clonazepam</li><li>vi) Psychomotor : Carbamazepine, Phenobarbitone, Divalproex, Phenytoin etc</li><li>vii) Status Epilepticus :Diazepam</li></ul>	3M
5		<b>Attempt any <u>FOUR</u> of the following:</b>	12M
5	a)	<b>Enlist properties of ideal general anaesthetics.</b> <b>Properties of an ideal General Anaesthetic:</b> <ol style="list-style-type: none"><li>1. It should be pleasant, nonirritant, should not cause nausea or vomiting which if occur may disturb the stitches.</li><li>2. It should be potent so that oxygenation of patient does not suffer.</li><li>3. Induction and recovery should be fast with no unpleasant after effects.</li><li>4. It should provide adequate analgesia i.e. loss of pain sensation,</li><li>5. It should produce adequate muscle relaxation so that surgeon can perform surgery with ease.</li><li>6. Its administration should be easy.</li><li>7. It should have wide margin of safety.</li></ol>	3M Any6
5	b)	<b>What is Angina pectoris? Discuss different drugs used in the treatment of angina</b>	1M def.



		<p><b>pectoris.</b></p> <p><b>Angina pectoris:</b> - It is a symptom resulting due to cardiac ischemia (localised anemia). It is described as a condition in which there is a compressing type of pain in the chest.</p> <p><b>1. Nitrates:-</b></p> <p>a) Short acting:- eg. Glyceryl trinitrate, nitroglycerine.</p> <p>b) Long acting:- eg. Isosorbide dinitrate, isosorbide mononitrate, pentaerythritol tetranitrate.</p> <p><b>2. Beta blockers:-</b> eg. propranolol, metoprolol, atenolol</p> <p><b>3. Calcium channel blockers:-</b></p> <p>eg. Verapamil, Diltiazem, Nifedipine, felodipine, amlodipine</p> <p><b>4. Potassium channel blockers:-</b> eg. Nicorandil</p> <p><b>5. Others:-</b> Ranolazine, oxyphedrine.</p>	<p><b>2M.</b></p> <p><b>Different drugs</b></p>
5	c)	<p><b>What are cough suppressants and expectorants? Explain with examples.</b></p> <p><b>1. Cough Suppressants:-</b></p> <p>These are the drugs that act in the central nervous system to raise the threshold of cough centre or act peripherally in the respiratory tract to reduce tussal impulses or both these actions.</p> <p><b>Ex.</b> Codeine, Ethylmorphine, Noscapine, Dextromethorphan.</p> <p><b>2. Expectorants:</b> These are the drugs which cause production of demulcent respiratory tract fluid that covers the irritant mucosa.</p> <p><b>OR</b></p> <p>These are the drugs which increase the secretion of the respiratory tract, thereby reducing the viscosity of the mucus and help in removal of the content from the respiratory tract.</p> <p><b>Eg:</b> Ammonium chloride, Potassium iodide, Ammonium bicarbonate, Ipecac etc.</p>	<p><b>1.5M</b></p> <p><b>EACH</b></p>
5	d)	<p><b>What are diuretics? Give major clinical uses of diuretics.</b></p> <p><b>Diuretics:-</b> These are the pharmacological agents which when administered, increase</p>	<p><b>Defn 1M</b></p> <p><b>Uses 2M</b></p> <p><b>For Any</b></p>



		<p>rate of formation of urine as well as excretion of urine.</p> <p>Examples: Mannitol, Theophylline, Acetazolamide, Furosemide, Spironolactone, Chlorothiazide.</p> <p><b>Clinical uses:-</b></p> <ol style="list-style-type: none"><li>1. Oedema</li><li>2. Cerebral oedema</li><li>3. Acute renal failure</li><li>4. Acute pulmonary oedema</li><li>5. Forced diuresis</li><li>6. Hypertension</li><li>7. Renal stones</li><li>8. Drug Poisoning</li></ol>	<b>4</b>
<b>5</b>	<b>e)</b>	<p><b>Classify Parasympathomimetics with examples of each class.</b></p> <p><b>Parasympathomimetics-</b> These are the drugs which produce the actions similar to those seen by the stimulation of parasympathetic nervous system.</p> <p><b>Classification:</b></p> <ul style="list-style-type: none"><li><input type="checkbox"/> Esters of choline- Methacoline, carbachol, Acetylcholine</li><li><input type="checkbox"/> Cholinomimetic alkaloids- Piolcarpine, Muscarine</li><li><input type="checkbox"/> Cholinestrse inhibitors-<ol style="list-style-type: none"><li>a) Reversible :-Neostigmine, physostigmine, pyridostigmine.</li><li>b) Ireversible:- Organophosphorus compounds, (malathion, parathion)</li></ol></li><li><input type="checkbox"/> Synthetic compounds- Futrethonium</li></ul>	<b>3M</b>
<b>5</b>	<b>f)</b>	<p><b>Explain the term bioavailability of drug and mention factor affecting the same.</b></p> <p><b>Bioavailability:</b> It is the amount of drug which actually reaches systemic circulation or</p>	<b>1M Expl.</b> <b>2M</b>



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		<p>site of action from a given dosage forms after its administration. This amount of the drug is responsible for its therapeutic effect. Depending on the dosage forms, bioavailability differs. E.g. After Intravenous route bioavailability is 100%.</p> <p><b>Factor affecting:</b></p> <ul style="list-style-type: none"><li>○ Physical state of drug</li><li>○ Particle size</li><li>○ Concentration</li><li>○ Absorbing surface</li><li>○ Functional integrity of GIT.</li><li>○ pH of drug and pH of GIT</li><li>○ Formulation</li><li>○ Routes of administration</li><li>○</li></ul>	<b>factors</b>
<b>6</b>		<b>Give reasons for any <u>FOUR</u> of the following:</b>	<b>16M</b>
<b>6</b>	<b>a)</b>	<p><b>Chlorpromazine is called largactil.</b></p> <p>Chlorpromazine is the major tranquilliser possessing large number of pharmacological actions. Hence, called as largactil (large acting).</p> <p>Its actions are as follows:</p> <ul style="list-style-type: none"><li><input type="checkbox"/> In patients with major psychoses it produces psychomotor slowing, emotional quietening and diminishes initiative and anxiety.</li><li><input type="checkbox"/> It depresses cortical region and reduces spontaneous motor activity.</li><li><input type="checkbox"/> Antiemetic- chlorpromazine depresses C.T.Z and acts as antiemetic</li><li><input type="checkbox"/> Hypotensive- It decreases the blood pressure by decreasing sympathetic tone</li><li><input type="checkbox"/> Antihistaminic action</li><li><input type="checkbox"/> Anticholinergic action</li><li><input type="checkbox"/> It causes skeletal muscle relaxation</li></ul>	<b>4M</b>





6	b)	<p><b>Aspirin and other NSAIDS should be taken after food.</b></p> <p>Aspirin if administered on empty stomach causes gastric irritation, gastritis, nausea, vomiting.</p> <p>It is known to decrease gastroprotective prostaglandin levels which leads to ulceration</p> <p>To avoid all these gastric side effects, aspirin is advised on full stomach.</p>	4M
6	c)	<p><b>Eating of cheese is forbidden in patients with MAO inhibitor therapy.</b></p> <p>Cheese contains tyramine which is metabolized in the liver by the enzyme Monoamine Oxidase. If an individual is on MAO inhibitor therapy, overall amine metabolism is decreased and so there are already increased levels of amines in the body. When patient takes tyramine containing foods like cheese, then MAO inhibitors inhibit the metabolism of tyramine. Thus, tyramine gets accumulated in the body. Tyramine causes release of noradrenaline from its binding sites.</p> <p>Increased level of noradrenaline causes hypertensive crisis.</p> <p>Therefore, eating of cheese is forbidden while on MAO inhibitor therapy.</p>	4M
6	d)	<p><b>Ephedrine is preferred to atropine to produce mydriasis in elderly patients.</b></p> <p>Ephedrine interact with alpha adrenergic receptors in eye and produces mydriasis.</p> <ul style="list-style-type: none"><li><input type="checkbox"/> It does not cause paralysis of ciliary smooth muscles or tightening of suspensory ligament.</li><li><input type="checkbox"/> It does not result into cycloplegia or photophobia as in case of atropine.</li><li><input type="checkbox"/> So to avoid these visual complications Ephedrine is preferred to produce mydriasis in elder patients.</li></ul>	4M
6	e)	<p><b>Chloramphenicol therapy is supplemented with haematinics.</b></p> <ul style="list-style-type: none"><li>• The therapeutic dose of chloramphenicol also causes bone marrow depression and inhibits erythropoiesis.</li><li>• This results in aplastic anaemia.</li><li>• To overcome these side effects and to promote erythropoiesis process, haematinics like iron preparations are supplemented with chloramphenicol therapy.</li></ul>	4M



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MODEL ANSWER

WINTER- 18 EXAMINATION

**Subject Title: Pharmacology & Toxicology**

**Subject Code: 0813**

6	f)	<p><b>It is important to complete the course of antibiotics.</b></p> <p>Antibiotics are used to cure infections by killing bacteria or by inhibiting their growth.</p> <p>If antibiotic is discontinued abruptly all bacteria may not get killed. They have the potential to grow again or multiply &amp; may further aggravate the symptoms. Patient may become sick again, and the remaining bacteria may become resistant to that antibiotic. Resistance once developed, patient fails to respond to that particular antibiotic in future.</p> <p>So it is essential to complete the course of antibiotics.</p>	4M
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