

PHARMACOLOGY & THERAPEUTICS

– PAST QUESTIONS (2007-19)

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▪ GENERAL PHARMACOLOGY

Introduction

1.
 - a) Define receptors what are the differences between receptors and inert binding site? **(3)**
 - b) Where in the body are special carriers? What is their role in transport of drugs across cell membrane? **(4)**
[Supple 2016 held in 2017]
2. Enlist three types of G-proteins and their receptors/effectors/signaling pathways. **(4)**
[Annual 2015]
3. What is effect of pH on lipid solubility of a drug which is a weak acid or base? How this knowledge is used in manipulation of drug excretion in urine?
[Supple 2014 held in 2015]
4. Name 7 common routes of drug administration and give 2 examples of drugs for each. **(7)** **[Supple 2014]**
5. Define receptor. What are targets for drug action? **(4)** **[Annual 2012]**
6. What are important features of drug binding to plasma proteins? **(3)** **[Annual 2012]**
7. What is the role of drug ionization in crossing the cell membrane? **(3)** **[Supple 2011]**
8. Explain the basis of alkalinization of urine in salicylate (weak acid poisoning).
[Annual 2008]

Pharmacokinetics

1.
 - a) Define bioavailability. How is it calculated? **(2)**

- b) Name three factors which affect bioavailability and briefly explain them. **(5)**
[Supple 2018 held in 2019]
2. Define plasma half-life. How plasma half-life of a drug is affected by drug's clearance rate and volume of distribution. **(3) [Annual 2018]**
3. What do you understand by bioavailability? **[Annual 2017]**
- 4.
- a) What is apparent volume of distribution of a drug? What is its significance?
- b) How will apparent volume of distribution be affected by a drug which avidly binds the molecules in the peripheral tissues?
[Annual 2016]
- 5.
- a) What is the loading dose? What is its relationship with half-life of a drug and how is it calculated? **(3)**
- b) Area Under Curve (AUC) of time-concentration curve is used to calculate bioavailability. Define bioavailability. When a drug is given by oral route, bioavailability is less than 100%. Give two reasons for that. **(4)**
[Annual 2016]
6. Write a short essay on therapeutic window. **(3) [Supple 2015 held in 2016]**
7. Define bioavailability of a drug. Enlist four factors affecting bioavailability after oral administration of a drug. **(3) [Annual 2015]**
- 8.
- a) A 30-year-old man is brought to your clinic by his friends. He is agitated and found underweight. His blood pressure, heart rate, temperature and respiration are all raised. The friends gave history of chronic methamphetamine use. Patient is treated symptomatically and also given ammonium chloride parenterally. What is the role of ammonium chloride in this case? **(4)**
- b) Define volume of distribution. **(3)**
[Annual 2014]
9. A pharmacologist is testing a new drug for treatment of a disease. He gave 40 mg of this drug orally at an interval of 8 hours that is equal to drug's half-life. No other interactive substances are given that can interfere with its pharmacological effects.

- a) Write down formula and time to calculate the time drug will reach the steady state plasma concentrations.
- b) With help of quantal dose response curve, how will he able to determine the therapeutic index of this drug.

[Annual 2014]

10. Define volume of distribution. **[Annual 2013]**

11. What is zero order kinetics? **[Annual 2013]**

12. Define therapeutic index. **[Annual 2013]**

13. What is drug clearance? Give its role in drug elimination. **(1+2)**
[Annual 2011, Annual 2010]

14. Define bioavailability. What is its clinical significance? **(1+2)**
[Supple 2010, Annual 2009]

15. Define plasma half-life of drug. Give factors affecting it. **(3.5) [Supple 2009]**

16. What is therapeutic window? Give clinical significance. **(3.5) [Supple 2009]**

17. Give one example of drug that shows the following types of drug tolerance:
pharmacodynamic tolerance, cross-tolerance, pharmacokinetic tolerance
[Annual 2008]

18. Define bioavailability. **[Supple 2008]**

19. Define volume of distribution. **[Supple 2008]**

20. Define plasma half-life of the drug. What knowledge can be derived from the plasma half-life of a drug? **[Annual 2007]**

21. Define the following:

- a) Bioavailability
- b) Volume of distribution

[Supple 2007]

Pharmacodynamics

1. The graded dose-response curve expresses an individual's response to increasing doses of a given drug and it includes some parameters like intrinsic efficacy, potency, maximal efficacy and slope of graph. Explain these terms with example. **(4) [Annual 2018]**
2. Patient may require administration of more than one drug at a time for one disease or concurrent illness. So, role of drug-drug interactions is very important. What are different types of pharmacodynamic drug-drug interactions? Explain with examples. **(7) [Supple 2017 held in 2018]**
3. What do you understand by orphan drugs? **[Annual 2017]**
4. What is a receptor? Explain briefly the concept of pure receptor with examples. **(1+3) [Annual 2011, Annual 2010]**
5. How partial agonists act as antagonists? Explain with examples. **(4) [Supple 2011]**
6. What are various types of drug antagonism. Explain each with examples. **(4) [Supple 2010, Annual 2009]**
7. What is therapeutic window? Give clinical significance. **(3.5) [Supple 2009]**
8. Give one example of drug that shows the following types of drug tolerance: pharmacodynamic tolerance, cross-tolerance, pharmacokinetic tolerance **[Annual 2008]**

Drug Metabolism

1. What do you understand by enzyme induction? **[Annual 2017]**
2. Drug interaction is a common problem in medical practice. Write 5 common examples of drugs which can induce P450 mediated metabolism in humans and 5 examples of drugs which can inhibit it. **(4) [Supple 2015 held in 2016]**
3. Define first-pass effect. What are sites of first-pass effect for orally administered drugs? Name 2 drugs with extensive first pass effect. **[Supple 2014 held in 2015]**

4. Name 3 drugs that exhibit extensive 1st pass effect. **[Annual 2008]**

Pharmacogenomics

1. Give factors which contribute to differences in drug responsiveness in individuals. **(2) [Supple 2013]**
2. Write three examples where genetic defects in phase 1 metabolism of drugs account for the individual differences in drug response. **(5) [Supple 2013]**
3. Write short essay on idiosyncrasy. **[Supple 2007]**
4. Define Tachyphylaxis. **[Supple 2007, Supple 2008]**

▪ AUTONOMIC NERVOUS SYSTEM

Introduction to ANS Pharmacology

1. Give in tabulated form the sites, structural features and post-receptor mechanisms of muscarinic receptor types 1,2 and 3. **[Annual 2010]**
2. How do different drugs or toxins affect the cholinergic transmission presynaptically? **[Annual 2011]**

Cholinoceptor-Activating & Cholinesterase-Inhibiting Drugs

1. What are ophthalmic uses of cholinergic agonists? **(3) [Supple 2016 held in 2017]**
2. A patient is suffering from diplopia, ptosis, difficulty in speaking and swallowing with severe muscle weakness. He is diagnosed as a case of Myasthenia Gravis. Name two cholinergic drugs for treatment of this patient. Give role of edrophonium in diagnosis of Myasthenia Gravis. **(3) [Annual 2015]**
3. Name six indirectly acting cholinomimetic drugs. **[Supple 2014]**
4. A farmer was spraying insecticide on his crop. He was found unconscious by his co-workers and brought to emergency department. On examination, he was salivating profusely, his breath was shallow with wheezing. BP was 130/85 mm Hg, pulse was 68 bpm, pupils were constricted. I/V line was maintained and he was given atropine and pralidoxime intravenously. **[Supple 2015]**

- a) What is possible agent for his signs and symptoms? How does it act?
 - b) What is rationale for giving atropine and pralidoxime?
 - c) Enumerate adverse effects of atropine.
5. Mr. Ditta, a 50-year-old man gets exposed to an organ phosphorus compound poison while spraying his cotton crop due to opposite wind direction and brought to hospital. The signs observed were miosis, sweating, bronchoconstriction, salivation vomiting, diarrhea and convulsions.
What immediate measures will you take and the drugs be given to save the patient?
[Annual 2013]
6. A field worker after spraying the cotton crop is showing signs and symptoms of excessive cholinergic stimulation because he had his skin contaminated with the thiophosphate (malathion/parathion) insecticide. In what aspects do you expect malathion to differ from parathion as an insecticide? **[Annual 2011]**
7. What is pharmacological basis of muscarinic agonists for their use in eye and GIT problems? **[Annual 2010]**
8. Explain why neostigmine is preferred to physostigmine in myasthenia gravis.
[Supple 2007]

Cholinoceptor Blockers and Cholinesterase Regenerators

1. Write pharmacological basis for the use of atropine as a pre-anesthetic agent **(1.5)**
[Annual 2018]
2. Enlist five clinical applications of antimuscarinic drugs and name one important drug for each. **(3)** **[Supple 2016]**
3. A young man was given promethazine intravenously in an operation theatre for a minor surgery. He stood up after the surgery but fainted. His heart rate was observed rapid (110 bpm) and blood pressure only 105/65 mm Hg. What autonomic effects the drug had and why the heart rate increased and blood pressure dropped?
[Supple 2014]
4. Write down different clinical uses of antimuscarinic drugs with examples.
[Annual 2012]

5. What are the pharmacologic effects of atropine on different smooth muscles of body? **[Supple 2011]**
6. Classify antimuscarinics according to their clinical use. **[Annual 2009]**
7. Name two oximes. How these are useful in organophosphate poisoning? **[Supple 2009]**
8. What are oximes? Explain their role in poisoning with organophosphorus compounds. **[Annual 2007]**

Sympathomimetics

1. A 12-year-old boy suffering from meningitis was administered an antibiotic intravenously. Within few minutes, he developed angioedema, bronchospasm and severe hypotension; indicative of anaphylactic reaction. Epinephrine was immediately administered intramuscularly, with marked relief. Activation of which receptors, by epinephrine, is important in reversing the pathophysiologic process underlying anaphylaxis? Briefly explain the role of each. **(6)**
Why norepinephrine is not used in this condition? **(1)**
[Supple 2018 held in 2019]
2. Enlist the therapeutic uses of sympathomimetic drugs. **(2) [Annual 2018]**
3. A middle-aged man was admitted to cardiology ICU. He has cardiogenic shock after acute myocardial infarction. He was given intravenous infusion of dopamine along with other medications. **[Annual 2017]**
 - a) Why dopamine was given by intravenous route and in infusion form?
 - b) Briefly describe dose-dependent actions of dopamine on CVS.
 - c) Why dopamine is preferred over norepinephrine in some shocks. What is the advantage of norepinephrine over dopamine?
4. Enumerate cardiovascular uses of sympathomimetic agents. Give at least one example of each. **(4) [Supple 2016 held in 2017]**
5. A patient was given injection of an antibiotic. Few months later, he developed angioedema, bronchospasm and severe hypotension. He was immediately given I/M injection of epinephrine with marked improvement. **[Annual 2016]**
 - a) Enumerate four clinical applications of epinephrine. **(4)**

b) How epinephrine improved the condition of above-mentioned patient? Explain with reference to receptors involved. **(3)**

6. A 19-year-old girl, a new resident of a pine tree locality has developed breathlessness, dyspnea and wheeze suggestive of acute attacks of asthma. Enlist the sympathomimetics that can be given in her case.

Enumerate mechanism of action of terbutaline at receptor level.

Enumerate therapeutic uses of clonidine. **[Annual 2014]**

7. Enlist five clinical uses of sympathomimetic drugs with one drug example of each use. **[Supple 2008]**

Adrenoceptor Blockers

1. How different autonomic drugs decrease intraocular pressure in open angle glaucoma? **(2) [Annual 2018]**

2. Write pharmacological basis for the use of prazosin in benign prostatic hyperplasia **(1.5) [Annual 2018]**

3. A 70 years old male patient complains of urgency and frequency of micturition. On examination he has enlarged prostate (BPH) for which surgical treatment is advised. As he is not willing for surgery, which group of drugs may be prescribed to relive the symptoms? Give two examples. **(2)**

What are other indications and adverse effects of this group of drugs? **(5)**

[Supple 2017 held in 2018]

4. A 30-year-old male is diagnosed as a case of essential mild hypertension and is advised one B-adrenoceptor blocking drug. Classify these drugs based on relative blocking activity for B1 and B2 receptors and give one/two examples for each group as applicable. **(4) [Supple 2016]**

5. Enlist four clinical uses of alpha-receptor blockers. Give one drug of choice for each indication. **(4) [Annual 2015]**

6. Write down the clinical uses of alpha-adrenoceptor blockers with examples. **[Annual 2012]**

7. How different autonomic drugs lower intraocular pressure? **[Supple 2011]**

8. Enumerate 7 important uses of propranolol with order of preference. **[Annual 2009]**
9. What could be the answer of a medical student who was asked to enumerate 7 uses of beta adrenoceptor blockers? **[Supple 2009]**

▪ **CARDIOVASCULAR SYSTEM**

Drugs used in Hypertension

1. A middle-aged man presents with blood pressure of 150/100 mm Hg. He has sedentary lifestyle and family history of hypertension. Apart from lifestyle changes, he is advised to take Amlodipine 5 mg twice daily. To which group of drugs does Amlodipine belong? Enumerate cardiovascular uses of this group with mechanism of beneficial effect for each indication. **(7) [Supple 2018 held in 2019]**
2. A 50 years old patient has complaint of frequent headache. He visited outpatient department and his clinical examination revealed blood pressure of 160/100 mm Hg. Name four groups of drugs out of which physician may choose to start initial therapy as a single agent. Briefly write the mechanism of antihypertensive effects of each. Which one of these groups may adversely affect lipid profile of patient? **[Annual 2017]**
3. A 50-year-old man come to OPD with history of headache. His BP is 150/90 mm Hg. He is advised low salt diet and to keep record of his BP. In spite of taking low salt diet, his BP is not controlled. **[Supple 2015]**
 - a) Name four groups of drugs which may be used as monotherapy for his hypertension.
 - b) Which two groups of drugs are preferred in case of diabetes too? Explain their mechanism of antihypertensive effects.
4. A general practitioner decides to administer short acting oral nifedipine preparation to a 65-year-old hypertensive with BP 180/100 mm to bring down his BP. What can be the risk? **[Supple 2013]**
5. Which drugs may be useful in a 35-year-old newly diagnosed patient with mild hypertension? How will they lower bp? **[Supple 2011]**

6. Which drugs may be useful in a 35-year-old newly diagnosed patient with mild hypertension? How these will lower his blood pressure? **[Supple 2011]**

Drugs used in the Treatment of Angina Pectoris

1. Name three groups of drugs commonly used in Angina of Effort along with their mechanism of antianginal effect. Which group of drugs is contraindicated in vasospastic angina? **[Annual 2016]**
2. A 60-year-old patient suffering from Angina of Effort is treated with metoprolol (a beta blocker). Enlist beneficial and deleterious effects of beta blockers in the treatment of angina. Which drug is combined with beta blocker to correct the deleterious effect? **(4) [Annual 2015]**
3. A 65-year-old male complains of precordial pain radiating towards his shoulder even after moderate exercise. Pain is relieved after 5-10 minutes of rest. His is diagnosed of stable angina. What treatment should be given to subside pain and secondly to prevent further attacks? **[Supple 2014]**

Drugs used in Heart Failure

1. Enumerate beta blockers which can be given in chronic heart failure along with their mechanism. **(1+2) [Annual 2018]**
2. Tabulate briefly the effects of therapeutic dosage of Digoxin on SA node, atrial muscle, AV node and Electrocardiogram. **[2016 Supple]**
3. Treatment is being planned for 60-year-old female with chronic congestive heart failure. Write specific indications for administration of Digoxin to patient of CCF to improve clinical condition. How ACE inhibitors work and what edge do they have over Digoxin? **[Supple 2013]**
4. A 40-year-old patient has been diagnosed with congestive heart failure. Enumerate the different drug groups commonly used for heart failure to select proper management for him. **[Annual 2010]**
5. Explain the reason for clinical usefulness of digoxin in atrial fibrillation. **[Supple 2010]**

Antiarrhythmic Drugs

1. Name drug of choice in ventricular tachycardia, its cardiac effects along with toxicity. **(2+2) [Annual 2018]**
2. Enumerate Class II antiarrhythmic drugs and write their clinical uses. **[Annual 2012]**

Diuretics & Other Drugs That Act on the Kidney

1. Enumerate four clinical indications of loop diuretics with rationale for use in each condition. What are their adverse effects? **(4+3) [Supple 2017 held in 2018]**
2. Classify diuretics according to the site of action. Give in a tabulated form the effects of Carbonic Anhydrase Inhibitors, Loop Diuretics, Thiazides and Potassium Sparing Diuretics on urinary electrolytes (Na⁺, K⁺, Ca²⁺, HCO₃⁻) and blood pH. **[2016 Supple held in 2017]**
3. Enlist the effects of Carbonic Anhydrase Inhibitors, Loop Diuretics, Thiazides and Potassium Sparing Diuretics on urinary electrolytes (Na⁺, K⁺, Ca²⁺, HCO₃⁻) and blood pH. **(3) [Supple 2016]**
4. Enlist six side effects of thiazide diuretics. **[Annual 2015]**
5. An elderly man was diagnosed with CHF. The symptoms included breathlessness on walking, swollen ankles. Patient was prescribed Bendroflumethiazide 10 mg daily. Soon after starting treatment he felt unusually fatigued and lethargic. **[Annual 2014]**
 - a) Why a thiazide diuretic was prescribed and what alternative drug treatments are available?
 - b) Why he had breathlessness and swollen ankles?
 - c) What is the possible cause of patient's fatigue and lethargy and how might they be corrected?
6.
 - a) A 40-year-old lady reported to your clinic with unexplained tiredness. She had a healthy look but moderately overweight and gave family history of hypertension and myocardial infarction. Bp was 150/110 mm Hg. Her total cholesterol, HDL cholesterol, blood sugar and chest x ray were normal. What measures and drugs are advised for this patient?
 - b) Enumerate toxic effects of potassium sparing diuretics. **[Annual 2013]**

7. Write down the clinical uses and adverse effects of loop diuretics. **[Annual 2012]**
8. Explain the reason for clinical usefulness of thiazide diuretics in mild to moderate hypertension. **[Supple 2010]**

▪ **RESPIRTORY SYSTEM**

1. A 19-year-old moves from a small town to your city, and is now your patient. He has a history of asthma and his previous primary care physician was managing it with albuterol and theophylline. What is the main mechanism that accounts for the beneficial effect of these drugs? **(3) [Annual 2018]**
2. What is the route of administration of ipratropium in COPD and why is it considered better than atropine in this condition? **(3) [Supple 2017 held in 2018]**
3. Which drugs/drug groups are used for long term control of asthma? Briefly write the mechanism of action of each in controlling asthma. **(4) [Annual 2017]**
4. Enumerate three groups of bronchodilators available for treatment of acute bronchospasm. Which group is considered as first-line therapy? Give its mechanism of action, adverse effects and preferred route of administration. **(7) [Supple 2016 held in 2017]**
5. A 12-year-old is brought to emergency room with shortness of breath and wheezing. His pulse rate and respiration are increased and he is restless. His father gave previous history of asthma. What emergency measure will you take to treat and what is long term control? **[Annual 2016]**
6. Classify drugs for the prevention and treatment of bronchial asthma with two examples for each group. **[Supple 2016]**
7. A patient is suffering from bronchial asthma. Enlist steroids used by inhalation route. Give mechanism of beneficial effects of steroids in asthma. **[Annual 2015]**
8. An eight-year-old boy has mild persistent bronchial asthma (broncho-constrictive episodes more than 2 times/week). Long term control with low dose inhaled

corticosteroids can be achieved but the parents do not agree to administer corticosteroids (due to steroid phobia). The physician decided to give cromolyn by inhalation regularly, to avoid broncho-constrictive episodes. By what mechanism will cromolyn achieve long-term control? **[Supple 2013]**

9. Write down the role of methylxanthines in bronchial asthma and its common adverse effects too. **[Annual 2012]**
10. A physician is intended to prescribe some agonist for his 30-year-old known asthmatic patient. Name them with their preferred route of administration and important adverse effects. **[Supple 2011]**
11. A 10-year-old child suffers from a severe attack of asthma whenever he runs while playing with his friends. How can you manage him? **[Annual 2011, Annual 2010]**
12. A 25-year-old girl is suffering from an acute severe attack of bronchial asthma. Which drugs may be used for her treatment? **[Supple 2010]**
13. A 25-year-old is suffering from an acute severe attack of bronchial asthma. Which drugs may be useful for her treatment? Give their usefulness. **[Annual 2009]**
14. A 25-year-old girl is suffering from an acute severe attack of bronchial asthma. Enumerate four drugs that may be used in the treatment along with their routes of administration. **[Supple 2009]**
15. A mother brought her 10 years old child with complains of severe breathlessness, wheezing and cough. She stated that attacks occurred in spring season. Case was diagnosed to be as bronchial asthma. **[Annual 2008]**
 - a) Name the drug used to terminate the acute attack of bronchial asthma.
 - b) Enlist common adverse effects of inhaled steroids used in this disease.
 - c) What prophylactic therapy is required before the seasonal attack?
16. A 20-year-old female patient was injected aminophylline to control and acute attack of bronchial asthma. What is the mechanism of action of the drug? Briefly give its effects on organ system. **[Supple 2008]**

▪ CENTRAL NERVOUS SYSTEM

Sedative-Hypnotic Drugs

1. A young patient presented to emergency room with convulsions for which he was given I/V Diazepam. **[Annual 2016]**
 - a) Briefly describe its mechanism of action and enumerate six organ level effects of this class of drugs.
 - b) If there is overdose with diazepam, what will be the consciousness level and how it can be reversed?
2. A 50 years old man complains of disturbed sleep and prescribed a sedative hypnotic drug, these drugs are classified into different groups. Classify and name one common drug for each group. **[Supple 2016]**
3. A 30-year-old female was brought to the emergency with convulsions. A relative gave past history of such attacks. She was immediately given IV of diazepam. Later EEG was taken and she was prescribed valproic acid orally. **[Supple 2015]**
 - a) Enumerate indications of Diazepam.
 - b) What are the adverse effects of diazepam and valproic acid?
4. Write down the mechanism of action, clinical uses and adverse effects of benzodiazepines. **[Annual 2012]**
5. Enumerate clinical uses of benzodiazepines. **[Supple 2009, Annual 2010]**
6. What is the rationale for clinical uses of benzodiazepines?
[Annual 2009, Supple 2010]

Alcohols

1. Write short note on mechanism of action of ethanol on CNS. **[Supple 2016]**
2. A 25-year-old man consumed a heavy quantity of whisky while sitting with his friends in a bar. He felt nauseating and lost consciousness. He was rushed to the hospital and blood alcohol concentration levels checked which was 400 mg/dl. **[Supple 2014]**
 - a) What pharmacologic and other measures will you take to save the patient?
 - b) If patient dies, what would be the cause of death?

Antiseizure Drugs

1. Enlist clinical uses of antiseizure drugs other than epilepsy. **(2.5)**
[2018 Supple held in 2019]
2. A young patient presented in emergency with tonic-clonic seizures. After initial control, he was discharged on valproic acid. Write down mechanism of action, clinical uses and drug interactions of valproic acid. **(2+3+2)** **[Supple 2017 held in 2018]**
3. Write clinical uses and drug interactions of carbamazepine. **[Supple 2016 held in 2017]**
4. A 30-year-old female was brought to the emergency with convulsions. A relative gave past history of such attacks. She was immediately given IV of diazepam. Later EEG was taken and she was prescribed valproic acid orally. **[Supple 2015]**
 - a) Enumerate indications of Diazepam.
 - b) What are the adverse effects of diazepam and valproic acid?
5. A 35-year-old epileptic female has been prescribed phenytoin to control her Grand Mal seizures. What adverse effects do you expect to see in this patient with the continued use of phenytoin? **[Supple 2013]**
6. Write down four therapeutic uses of carbamazepine. **[Supple 2008]**
7. Give therapeutic classification of anti-epilepsy drugs. **[Annual 2007]**

General Anesthetics

1. What factors influence the uptake and distribution of inhaled anesthetics? How does solubility of an anesthetic agent affect its onset of action? **[Supple 2013]**

Local Anesthetics

1. Give reasons for the use of vasopressor drugs with local anesthetic lignocaine. **[Annual 2012]**

Drugs used in Parkinsonism & Other Movement Disorders

1. A 57 years old man with a strong family history of Parkinson's disease sees a neurologist for an evaluation. On examination, the neurologist notes a slight pill-

rolling tremor and subtle gait abnormalities. He explains that because it is not yet possible to reverse the degenerative process, drugs are used to increase dopamine activity in corpus striatum. Briefly explain mechanism of action of drugs increasing dopamine functions in Parkinson disease. **(4) [Annual 2018]**

Antipsychotic Agents & Lithium

1. Enlist adverse pharmacological effects of typical antipsychotics with reference to receptors. **(4.5) [2018 Supple held in 2019]**
2. Enumerate the therapeutic uses of antipsychotic drugs. **(3) [Annual 2018]**
3. A 26-year-old man is referred to psychiatric OPD. History-taking revealed that he has both positive and negative symptoms of psychosis including suicidal tendency. He is prescribed chlorpromazine. After 4 months, he is again brought to OPD. His father tells the doctor that despite strict compliance many symptoms still persist and some other symptoms are added to the picture. This time he is switched to clozapine and advised blood white cell count weekly. **[Annual 2017]**
 - a) What are the adverse effects of chlorpromazine?
 - b) Why the patient is switched to clozapine and how does it work? What are the adverse effects of clozapine?
 - c) Why doctor has advised blood white cell count on weekly basis? What other drugs can be given to the patient if serious adverse effects of clozapine appear?
4. Write the neurologic and autonomic adverse effects of older antipsychotic drugs. **[Supple 2016 held in 2017]**
5. A patient suffering from schizophrenia is taking an antipsychotic drug. Enlist adverse effects of these drugs on autonomic nervous system and central nervous system. Give mechanism of the side effects. **[Annual 2015]**
6. A 24-year-old patient presents in OPD psychiatric unit. He complains of feeling very low, having suicidal thoughts and disturbed sleep for past 6 months. He says that people can hear his thoughts, song lyrics refer to him and he hear voices in his head. His family members claim that its increasing day by day and he stopped going to work. He looked shabby and unkept. **[Annual 2014]**
 - a) Classify drugs that can be used in this condition.
 - b) Name common adverse effects of these drugs.

7. A 25-year-old patient has been taking therapeutic doses of morphine and chlorpromazine since many months. What will be their adverse effects on his CNS?
[Supple 2011]
8. What are the differences between typical and atypical antipsychotic drugs?
[Supple 2009, Annual 2010]
9. Explain the MOA of typical and atypical antipsychotic drugs.
[Annual 2009, Supple 2010]
10. A 40-year-old lady was suffering from schizophrenia and taking chlorpromazine for the last 1 year. Enlist 6 common side effects of the drug which may appear during treatment. **[Supple 2008]**
11.
 - a) Enlist four features of clozapine in treatment of schizophrenia.
 - b) Why regular monitoring of blood count is required during clozapine therapy?
[Annual 2008]

Antidepressants

1. A 30 years old female gives you a history of fatigue, very early wakeup, insomnia and loss of weight and appetite, after a divorce a few weeks back. She is diagnosed as a case of major depression and prescribed fluoxetine. **[Annual 2013]**
 - a) What edge does it have over other antidepressant drug groups?
 - b) Enlist its adverse effects.
2. A 30 years old male has been prescribed benzodiazepines for Generalized Anxiety Disorder (GAD) by a psychiatrist. **[Supple 2010, Annual 2011]**
 - a) What are the advantages and disadvantages of benzodiazepines?
 - b) Which other class of drugs is being considered as drugs of first choice for GAD?
 - c) Name at least four serotonin selective reuptake inhibitors (SSRIs). What is the reason of preferring SSRIs over other antidepressants?
3.
 - a) Describe three comparative features of tricyclic antidepressants and SSRIs.
 - b) Explain the result of concurrent administration of MAO inhibitors and tricyclic antidepressants.
[Annual 2008]

Opioid Analgesics & Antagonists

1. Explain three different mechanisms by which tramadol exerts its effects. **(3)**
[Annual 2018]
2. Enlist six contraindications and cautions to the use of opioids. **[Annual 2015]**
3. A 25-year-old patient has been taking therapeutic doses of morphine and chlorpromazine since many months. What will be their adverse effects on his CNS?
[Supple 2011]

▪ DRUGS WITH IMPORTANT ACTIONS ON BLOOD, INFLAMMATION, & GOUT

Drugs used in Coagulation Disorders

1. Write toxic effects of heparin. **[Supple 2014]**
2.
 - a) A 60-year-old male has had a major surgical procedure after which he remained in bed for about a fortnight. Now he complains of discomfort in the right calf muscle. On examination there is erythema, edema and the calf is tender to touch. Ultrasound reveals deep venous thrombosis in the right lower extremity. Heparin is administered to this patient. How will heparin produce its anticoagulant effect and what are its toxic effect and its contraindications? **(4)**
 - b) How does argatroban differ in its action from heparin and what are its approved indications? **(3)**
[Supple 2013]
3. How do the following produce their beneficial effect?
 - a) Streptokinase in coronary thrombosis
 - b) Aspirin in post myocardial infarction patients
[Annual 2008]
4.
 - a) Name low molecular weight heparin.
 - b) What is the treatment of heparin overdose?
[Annual 2008]
- 5.

- a) A 50 years old lady came to your hospital with complains of constant precordial pain for last few hours. On ECG findings, she was diagnosed with unstable angina. She was administered heparin but stopped due to gums bleeding. List four adverse effects of the drug and name the specific antidote.
- b) Enlist four antiplatelet drugs. **[Supple 2008]**

NSAIDs, Acetaminophen, and Drugs Used in Rheumatoid Arthritis & Gout

1. A 38-year-old woman presents with complaint of bilateral morning stiffness in her wrists. On examination, these joints are slightly swollen. Laboratory findings are negative except for elevated ESR. With a diagnosis of Rheumatoid arthritis, she is started on a non-steroidal anti-inflammatory drug regimen. Enumerate pharmacological actions and explain mechanism of action of this group. Which adverse effects are expected with chronic use of this group? **(3+4)**
[2018 Supple held in 2019]
2. Name four disease-modifying antirheumatic drugs (DMARDs) along with their mechanisms. **(4) [Annual 2018]**
3. Compare aspirin and acetaminophen regarding mechanism of action, pharmacological actions, uses and adverse effects. **(7) [Supple 2017 held in 2018]**
4. Enlist two drugs that can cause hyperuricemia and enumerate four drugs used to treat hyperuricemia. **[Annual 2017]**
5. What is the mechanism of action of allopurinol? Give it four side effects.
[Annual 2017]
6. A woman presented with acute gout was treated with Indomethacin followed by allopurinol. Explain the mechanism of action of both drugs in gout. Why allopurinol is not given in an acute attack? Name another use of allopurinol apart from gout.
[Supple 2017]
7.
 - a) Aspirin is prototype of salicylates and other NSAIDs. It is used as antiplatelet, analgesic, antipyretics and anti-inflammatory in various doses. Write briefly the mechanism of action of the above effects. **(4)**
 - b) Name the disease modifying anti-rheumatic drugs (DMARDs/Slow Acting ARDs) and enlist the toxic effects of any two when used for Rheumatoid Arthritis. **(3)**
[Annual 2016]

- 8.
- Disease modifying antirheumatic drugs are divided into non-biologic and biologic agents. Enlist four examples of each group. **(4)**
 - Write short essay on the antigout mechanism of action of allopurinol. **(3)**
[Supple 2016]
- 9.
- Enlist four cardiovascular applications of aspirin. Give mechanism of cardioprotective effects of aspirin in these applications. **(4)**
 - A patient suffering from headache and myalgia is treated with paracetamol (acetaminophen). Enlist indications where paracetamol is preferred to aspirin as an analgesic and antipyretic. **(3)**
[Annual 2015]
10. Compare aspirin and acetaminophen regarding:
- Pharmacological action
 - Indications
 - Adverse effects
- [Supple 2015]**
11. The eicosanoids are an important group of endogenous fatty acid derivatives that are produced from arachidonic acid. The major families of eicosanoids are leukotrienes, prostacyclins, prostaglandins and thromboxanes. Enlist the clinical applications of prostaglandins and the specific agent used for each purpose.
[Supple 2014]
12. Write briefly the antigout mechanism of action of colchicine. **[Supple 2014]**
13. Glucocorticoids have a number of clinical applications and are widely used. Write short essay on the inflammatory and immunosuppressant mechanism of these agents. **[Annual 2013]**
- 14.
- Write a short essay note on the anti-inflammatory mechanism of NSAIDs.
 - Enumerate the adverse effects of aspirin.
[Annual 2013]

15.

- a) Enumerate drugs of acute attack & prophylaxis of gout. **(3)**
 - b) Write down the mechanism of action and pharmacological effects of NSAIDs. **(4)**
- [Annual 2012]**

16. A 35-year-old known patient of gouty arthritis is unable to excrete uric acid properly. Which useful drugs can be given to him and how these will act? **(7) [Supple 2011]**

17. What is the pharmacokinetics of aspirin? Give the mechanism of action of aspirin for its different pharmacological effects. **(2+2) [Annual 2010]**

18.

- a) A 40-year-old lady is taking NSAIDs for arthritis since many months. What are various strategies for prevention of drug induced gastritis? **(4)**
 - b) What is the rationale for the use of allopurinol for lowering of urates? **(3)**
- [Annual 2009]**

19.

- a) How do NSAIDs exert their anti-inflammatory actions? **(3.5)**
 - b) Write down the mechanism of action of allopurinol. **(3.5)**
- [Supple 2009]**

20. A child was brought to emergency six hours after ingestion of toxic dose acetaminophen with vomiting and diaphoresis. Besides supportive treatment, he was prescribed N-acetylcysteine.

- a) What is the rationale of using N-acetylcysteine in this case?
 - b) Enlist two differences between aspirin and paracetamol.
- [Annual 2008]**

21.

- a) Name two drugs used in chronic gout.
 - b) Can allopurinol be given in acute gout?
- [Annual 2008]**

22. Name four common pharmacological effects of aspirin & write the mechanism of action. **[Supple 2008]**

23. Describe the mechanism of action and clinical uses of allopurinol. **[Annual 2007]**

▪ ENDOCRINE DRUGS

Hypothalamic & Pituitary Hormones

1. Give rationale for the use of oxytocin in antepartum and postpartum period **(2)**
[Annual 2018]

Thyroid & Antithyroid Drugs

1. A middle-aged woman complaints of weight gain, decreased appetite, constipation, lethargy and fatigue. On examination she has pale, puffy face and decreased deep tendon reflexes. Laboratory investigation reveals low T3, T4 and elevated TSH level. Considering his diagnosis of hypothyroidism, what should be prescribed to her? Write the mechanism of action of this drug and adverse effects if taken in excess.
[Supple 2017 held in 2018]
2. A 25-year-old patient receiving medication for hyperthyroidism develops rash, pruritis, fever, diarrhea, bitter taste in mouth and feeling of anxiety.
 - a) Which antithyroid drug is most likely to have caused these symptoms?
 - b) Explain its mechanism of action. **[Annual 2014]**
3. Write the role of B-blockers in hyperthyroidism. **[Annual 2012]**

Corticosteroids & Antagonists

1. A patient was suffering from severe symptomatic gout and was prescribed a glucocorticoid for short duration. If patient keeps on taking it for prolonged period, which adverse effects are expected? **(7) [Annual 2016]**
2. A 30-year-old man complains of loss of appetite, tiredness, dizziness and weight loss of 6 months duration. His physician got routine blood tests and found hyponatremia, hyperkalemia & acidosis. A standard ACTH stimulation test confirmed diagnosis of autoimmune Addison's disease and patient was prescribed hydrocortisone & fludrocortisone. Enlist the adverse effects and contraindications of hydrocortisone.
[Supple 2014]
3. Glucocorticoids have a number of clinical applications and are widely used. Write short essay on the inflammatory and immunosuppressant mechanism of these agents. **[Annual 2013]**

4. A 45-year-old lady is taking prednisolone since last 6 months. What could be the possible adverse effects in her due to glucocorticoids? **[Annual 2009]**
5. What could be the adverse effects of glucocorticoids in a 45-year-old lady who has been taking them since last 6 months for some chronic problem? **[Supple 2009]**
6. Name five glucocorticoids which belong to intermediate or long acting group. **[Supple 2008]**

Gonadal Hormones & Inhibitors

1. Give rationale for the use of hormonal therapy in postmenopausal women **(2)** **[Annual 2018]**
2. A middle age woman having four children visited family planning clinic for prevention of next pregnancy. She was advised oral contraceptive pills containing estrogen and progesterone. What are other clinical uses of oral contraceptive pills? Enumerate mild, moderate and severe effects of these pills. **[Annual 2017]**
3. Enlist 6 contraindications and cautions to the use of oral contraceptives. **[Annual 2015]**
4. Write the clinical uses and the different ranges of adverse effects seen with the continued use of oral contraceptive pills. **[Supple 2013]**
5. A 35-year-old married lady without any child due to anovulation wishes to become pregnant. Which may be the useful drug and how will it act? **[Supple 2011]**
6. What is the rationale for the use of clomiphene in infertility? **[Annual 2008]**

Pancreatic Hormones, Antidiabetic Agents, & Glucagon

1. A 45-year-old woman presents to family physician with symptoms of fatigue, weight loss, increased thirst and frequent urination. Her random blood sugar is 300 mg/dl and fasting blood sugar 180 mg/dl. Treatment with glimepiride does not control blood sugar level after six months of regular medication. He is planned to switch over to insulin therapy. Name the principle types and briefly describe the characteristics of available insulin preparations. What are the most common complications of insulin therapy and how to combat it? **(4+3) [2018 Supple held in 2019]**

2. Give rationale for the use of biguanides as first line therapy for type II diabetes **(3)**
[Annual 2018]
3. A type II diabetic patient was well controlled on an oral antidiabetic drug. He required surgery for hip fracture. Before surgery he was switched over to insulin.
[Supple 2016 held in 2017]
 - a) What are the actions of insulin on liver, skeletal muscle and adipose tissue? **(3)**
 - b) Enumerate four types of insulin preparations with atleast one example of each type. **(4)**
4. A 50-year-old man presented with symptoms of polydipsia, polyuria and dyspnea of few months' duration. His pulse and bp were normal and lab tests revealed raised fasting and random sugar levels. He also gave familial history of diabetes. Name various drug groups of oral hypoglycemics with one example each. **[Supple 2016]**
5. A 60-year-old patient is suffering from type II Diabetes Mellitus. Enlist 3 second generation sulfonylureas which can be used in this patient. Give mechanism of action of these drugs. **[Annual 2015]**
6. A 12-year-old boy had history of weight loss, fatigue, polyuria, nocturia. His physical examination is normal and blood sugar level was 280 mg/dl.
 - a) Which treatment strategy is available in this case of type I Diabetes Mellitus?
 - b) What are complications of this treatment and how they can be dealt with?
[Supple 2015]
7. Write down different insulin preparations and their duration of action. Which drug other than insulin is used in the management of insulin dependent Diabetes Mellitus. Also justify its use. **[Annual 2012]**
8. A 48-year-old known type II diabetic patient is not responsive to insulin therapy. Which and how an oral drug can be effective in this case? **[Supple 2011]**
9. A 45-year-old newly diagnosed diabetic patient is frequently showing post meal rise in his blood glucose levels. **[Annual 2010]**
 - a) Which rapidly acting insulin analog can be used for more physiologic insulin replacement? **(1.5)**
 - b) What are their structural characteristics? **(2)**

c) Give their advantages over human insulin. **(3.5)**

10. A 30-year-old male is suffering from type I Diabetes Mellitus? What may be the role of oral antidiabetic drugs in him? **[Annual 2009]**

11. A 30-year-old male is suffering from type I Diabetes Mellitus. Why he should not be treated with oral antidiabetic drugs? **[Supple 2009]**

12. Classify and enumerate insulin preparations. **[Annual 2008]**

13. Write briefly the hypoglycemic mechanism of action of sulfonylureas. **[Supple 2008]**

14. Enumerate some sulfonylureas. Describe the mechanism of action. **[Annual 2007]**

▪ CHEMOTHERAPEUTIC DRUGS

Beta-Lactam Antibodies & Other Cell Wall Synthesis Inhibitors

1. Write down clinical uses of penicillin antibiotics. **(4) [Annual 2018]**

2. A 65-year-old elderly patient suffering from lobar pneumonia. His sputum culture is positive for beta-lactamase positive staphylococci. **[Annual 2014]**

a) What drugs can be used to treat this infection?

b) Explain mode of action of penicillins.

3. Write clinical uses and precautions for penicillin antibiotics. **(2) [Annual 2012]**

4. A 10-year-old boy is having cough and fever (chest infection). He had acquired this infection while staying with his mother, who is admitted in hospital for some chronic ailment. The culture sensitive of his sputum shows staphylococci which are resistant to penicillins and other B-lactams. By what mechanism do microorganism develop resistance against B-lactam drugs? **(4) [Supple 2012]**

5.

a) A 20-year-old patient suffering from endocarditis caused by methicillin-resistant staphylococci (MRSA). Which inhibitor of bacterial cell wall synthesis may be the 1st choice for treatment? Enumerate its other uses. **(4)**

b) What is the drug of choice for corynebacterial infection in a 6-year-old child? Give important adverse effects of this drug. **(3)**

[Annual 2011]

6. Classify penicillins. Write down their mechanism of action and common adverse effects. **[Supple 2011]**
7. Enumerate 4 drugs of 3rd generation cephalosporins. Enlist their therapeutic uses. **(4) [Supple 2009]**
8. Enumerate antimicrobials that inhibit cell wall synthesis. **[Annual 2007]**

Chloramphenicol, Tetracyclines, Macrolides, Clindamycin, Streptogramins & Linezolid

1. Write down the clinical uses of tetracyclines and their adverse effects. **(4) [Annual 2017]**
2. A patient suffering from meningitis was treated with chloramphenicol. Explain the adverse effects of this antibiotic. **(4) [Supple 2016 held in 2017]**
3. A patient suffering from community acquired pneumonia is treated with erythromycin. Give antimicrobial spectrum of erythromycin. Write two pharmacokinetic differences between azithromycin and erythromycin. **(3+2) [Annual 2015]**
4. Write down adverse effects of tetracyclines and which other drugs also produce Fanconi syndrome? **(2) [Annual 2012]**
5. Write antimicrobial spectrum of tigecycline. **(3) [Supple 2012]**
6. Enumerate adverse effects of tetracyclines. **(3) [Supple 2010, Supple 2009]**
7. Write down 6 clinical uses of tetracyclines. **[Supple 2008]**
8. Name microorganisms against whom erythromycin is considered as drug of choice. **[Annual 2007]**

Aminoglycosides

1. A young man is admitted in ICU with burns over 30% of his body. He is febrile and blood cell count shows leukocytosis. It is decided to treated with empiric

combination therapy including an aminoglycosides once daily. Which concepts form the basis of once daily dosing protocol of aminoglycosides? Briefly explain the mechanism of action of this group of antibiotics. **(3+4) [Supple 2018 held in 2019]**

2. Aminoglycosides have concentration dependent killing and significant post-antibiotic effect. Define post-antibiotic effect. Give reasons why certain antibiotics show this effect. **(3) [Annual 2018]**
3. A patient admitted in ICU for burns becomes febrile. Considering the danger of sepsis, he is treated with tobramycin once daily dosing. Due to which properties of aminoglycosides are administered as a single large daily dose? Write down their clinical uses and adverse effects. **(2+5) [Supple 2017 held in 2018]**
4. An elderly patient had gram negative infection for which he was treated with an aminoglycoside. Enumerate six clinical uses of this group of antibiotics. **(3) [Supple 2016 held in 2017]**
5.
 - a) A 30-year-old female presents to medical clinic with history of foul smelling, mucopurulent vaginal discharge after sexual contact and one miss period. Her urine test is found positive for chlamydial infection. What would be empiric approach to treat the patient (including posology) and the antibiotic contraindicated, if she is pregnant? **(3)**
 - b) Write down short essay on the antimicrobial mechanism of action of aminoglycosides. **(4) [Supple 2016]**
6. Enlist four common side effects of aminoglycosides. **(2) [Annual 2015]**

Sulfonamides, Trimethoprim & Fluoroquinolones

1. A 30 years old male is suffering from diarrhea and is not responding to routine antidiarrheal drugs. He is suspected to be suffering from a pathogenic gram-negative bacillus and is prescribed ciprofloxacin. Enlist the antimicrobial spectrum and adverse effects of this antibiotic. **(4) [Annual 2016]**
2. A 55-year-old lady attended your clinic with complains of dysuria, chills and fever for four days. She gave a history of urinary tract infection resolved with cotrimoxazole. Now she is advised a course of ciprofloxacin. Write down antimicrobial mechanism of action of this drug and enlist the antibacterial spectrum. **[Supple 2013]**

3. A 40-year-old male is admitted in emergency with life threatening anaerobic infection. Which 4th generation fluoroquinolones may be given to him? What are the other clinical uses of fluoroquinolones? **(4) [Supple 2010]**

4. Write a short essay on the mechanism of action of cotrimoxazole? **(4) [Supple 2014]**

Antimycobacterial Drugs

1. Name the alternative drugs for tuberculosis. **(3) [Annual 2018]**

2. A middle-aged man with three months history of low-grade fever and productive cough was diagnosed to have pulmonary tuberculosis. Treated was started with a combination of drugs. Name first line ant tuberculous drugs. Enumerate their important adverse effects. Why they are always given in combination?
[2017 Supple held in 2018]

3. A young patient came to pulmonology OPD with complaints of chronic productive cough, hemoptysis and low-grade fever. He was diagnosed as a case of pulmonary tuberculosis. Name first line ant tuberculous drugs. Write down important adverse effects of each. **[Annual 2016]**

4. For treatment of pulmonary TB, four drugs are given for three months and then two drugs are given for nine months. **[Supple 2015]**

a) What is the reason for giving drugs in combinations?

b) Name 1st line anti-tuberculous drugs with important adverse effects of each.

5. A young male patient reported to the emergency department with one-month history of productive cough, fever, chest pain and weight loss. His chest x-ray and sputum were found positive for pulmonary TB. Enlist 3 drugs as 1st line agents and 3 for the 2nd line agents to treat this patient. **[Annual 2013]**

6. Write clinical uses of rifampicin. **[Supple 2013]**

7. What is mechanism of action and basis of resistance of following? **(7)**

a) Isoniazid

b) Ethambutol

[Supple 2011 + Annual 2010]

8. A 20-year-old female has been diagnosed as patient of pulmonary tuberculosis. Which three bactericidal may be selected? Briefly give their mechanism of action and adverse effects. **[Supple 2010]**
9. A 16-year-old girl has been diagnosed as a fresh case of pulmonary TB. Enumerate atleast 4 drugs from the agents of first line therapy. Explain the rationale for prescribing pyridoxine along with isoniazid. **[Supple 2010, Annual 2009]**
10. Explain the rationale for prescribing pyridoxine along with isoniazid. **(3.5) [Supple 2009]**
11. A 30-year-old lady came to medical OPD with history of productive cough, low grade fever, anorexia and weight loss for last 88 weeks. She was diagnosed as a case of pulmonary TB and put on ant tuberculous therapy (4 drugs) by the physician. **[Annual 2008]**
 - a) Explain the pharmacological basis of multi-drug therapy in TB
 - b) What is the rationale of using pyridoxine with isoniazid?
 - c) What is the duration of four-drug regimen?
12. What is the rationale behind the use of multidrug therapy in TB? **[Annual 2007]**

Antifungal Agents

1. A neutropenic patient presents with cough, fever and difficulty in breathing. After extensive investigations, a diagnosis of fungal pneumonia is suspected. It is decided to start with amphotericin B followed by fluconazole. Briefly describe:
 - a) Adverse effects of amphotericin B. **(5)**
 - b) Mechanism of action of fluconazole. **(2)****[Supple 2018 held in 2019]**
2. A patient attends dermatology out-patient department with complains of dark colored round itchy patches on skin. He is prescribed topical terbinafine for four weeks and he gets complete relief. What was the diagnosis? What is the mechanism of action and adverse effects of terbinafine if it is administered orally? **[2017 Supple held in 2018]**
3. Write a note on terbinafine mentioning its mechanism of action, clinical use with route of administration and adverse effects. **(3) [Annual 2017]**

4. Enumerate antifungal drugs used topically for mucocutaneous infection. Give mechanism of action for each of them. **(7) [Annual 2016]**
5. The incidence of human fungal infections has increased due to advances in surgery, cancer chemotherapy and HIV epidemic. Liposomal amphotericin B is one of the highly effective drugs for serious systemic infection. Enlist the antifungal spectrum and toxic effects of this drug. **[Annual 2013]**
6. Name the azole antifungal drugs. What is their spectrum of activity and which of these is used topically? **[Supple 2013]**
7. Write names of azoles, mechanism of action and adverse effects. **[Annual 2012]**
8. A 45-year-old patient having black ulcer on his left leg which got infected due to some fungi. What various types of azoles can be used against it? **(3.5) [Annual 2010]**
9. A chronically ill female of 20 years suffered from systemic candida infection. Enumerate useful drugs against candida albicans. Write down mechanism of action of any of these. **(4) [Supple 2010, Supple 2009]**
10.
 - a) Describe mechanism of action of azole anti-fungal drugs
 - b) What is the major use of fluconazole?
[Annual 2008]
11. Write down the antifungal spectrum of azoles **[Supple 2008]**
12. Write briefly the mechanism of action of amphotericin B as antifungal. **[Annual 2007]**

Antiviral Chemotherapy & Prophylaxis

1. A 30 years old nursing mother is diagnosed as suffering from genital herpes. She had a history of this viral infection. Previously she responded to a drug used topically but now oral valacyclovir is also added by the physician.
 - a) What is the mechanism of action of valacyclovir? **(2)**
 - b) Which anti-retroviral agents are used in pregnancy? **(2)**
 - c) Describe mechanism of action and uses of INF-alpha. **(3)**
[Annual 2018]

2. Classify anti-retroviral agents according to mechanism of action. **[2017 Supple held in 2018]**
3. Draw a diagram of lifecycle of HIV and sites of action of antiviral agents. **(4) [Annual 2017]**
4. The antiviral chemotherapy began in early 1950s when the search for anticancer drugs generated several new compounds. These antiviral drugs act at different sites of viral life cycle. Name the major sites and give one example of the drugs which act at that site. **(7) [Supple 2016]**
5. Enlist four drugs for treatment of chronic Hepatitis B virus infection and two drugs for treatment of Hepatitis C virus infection. **[Annual 2015]**
6. What is the mechanism of action of acyclovir? Why it is less toxic to normal human cells? **[Supple 2015]**
7. Name the drugs used to treat chronic hepatitis B & C. **(4+3) [Supple 2014]**
8. Name drugs used for the treatment of herpes virus infection. What is their mechanism of action? **[Supple 2013]**
9. Enumerate drugs for herpes virus and write their clinical uses. **[Annual 2012]**
10. A 30-year-old female is suffering from painful genital herpes lesion. What agents are useful to treat her infection? **(3.5) [Annual 2010]**
11. A 25-year-old hepatitis C positive case is admitted in a hospital. Which drugs can be used for him? Give adverse effects of any one of these. **(4) [Supple 2010, Annual 2009]**
12. How is interferon effective as an antiviral agent? **[Annual 2008]**
13. Write briefly the mechanism of action of amantadine as antiviral. **[Annual 2007]**

Clinical Use of Antimicrobials

1. Define the following terms with examples:

- a) Concentration dependent killing
 - b) Time dependent killing
 - 3) Post antibiotic effect **[Annual 2017]**
2. Name drugs used for treatment of Salmonellosis (Typhoid fever) and write down mechanism of action of any one of them. **(3) [Annual 2016]**
 3.
 - a) Give two mechanisms by which resistance may develop to antimicrobial drugs (with one example for each)
 - b) Explain the basis for following drug combinations **[Annual 2008]**
 4. A 25-year-old young man came to your hospital with history of persistent high-grade fever for the last 10 days. On examination there was relative bradycardia and fever and splenomegaly. Widal test was positive and patient diagnosed as suffering from typhoid fever. Enlist four drugs from different group of antibiotics for the disease. **[Supple 2008]**
 5. A 50-year-old lady was admitted to intensive care unit and treated for community acquired pneumonia with ceftriaxone and azithromycin. She improved but develops diarrhea and eight bowel movements after a few days. The toxin assay confirmed a case of clostridium difficile associated colitis. What is the drug of first choice and the alternative drugs? **(2) [Supple 2014]**

Antiprotozoal Drugs

1. Enumerate:
 - a) Clinical uses of metronidazole. **(3.5)**
 - b) Adverse effects of chloroquine. **(3.5)**
[2018 Supple held in 2019]
2.
 - a) After backpacking trip in the mountains, a 24-year-old man develops diarrhea and malaria. Doctor prescribes him a drug which has antimalarial and antiamebic effects as well. Enumerate the toxicities of this drug. **(2)**
 - b) Write down the prevention of malaria in travelers. **(2)**
[Annual 2018]
3. A patient of hepatic amebic abscess was treated with metronidazole and diloxanide furoate for 10 days. Write down the mechanism of action of metronidazole.

Enumerate its clinical uses and adverse effects. Why diloxanide furoate was given to this patient? **(7) [Annual 2017]**

4.

a) Enumerate four drugs used for the treatment of chloroquine resistant malaria. What is the role of primaquine as antimalarial agent? **(3.5)**

b) Enumerate seven clinical uses of metronidazole. **(3.5)**

[Supple 2016 held in 2017]

5. A 40 years old male presented with history of intermittent rigors, high fever and swats for a week. His temperature recorded was 104 F and examination revealed enlarged spleen. A blood smear showed presence of Plasmodium falciparum. Name different chemical groups with drug examples to treat this patient. **(7) [Supple 2015 held in 2016]**

6. A patient suffering from amebiasis is treated with metronidazole. He is also using alcohol. Give mechanism of action of metronidazole and its interaction with alcohol. **[Annual 2015]**

7.

a) Mr. Shams is diagnosed with case of acute malaria. He did not respond to chloroquine. How would you treat his chloroquine resistant malaria?

b) What are clinical uses and adverse effects of quinine?

[Annual 2014]

8. A 40-year-old man presented with history of chills, fever and sweats. The examination reveals high temperature and enlarged spleen. The blood smear shows ring form of plasmodium falciparum. Name the major drugs for the treatment and prophylaxis of this infection. **(7) [Supple 2014]**

9. Write briefly the clinical application of chloroquine. **[Supple 2013]**

10. Write down clinical uses of metronidazole. **[Supple 2013, Supple 2011, Annual 2007]**

11. What is mechanism of action and basis of resistance of Chloroquine? **(7) [Supple 2011 + Annual 2010]**

12. What is the mechanism underlying the chloroquine resistance in plasmodium falciparum? **[Supple 2010 + Annual 2009]**

13. Explain the rationale of combining diloxanide furoate with metronidazole.
[Supple 2009]

Antihelminthic Drugs

1. Mrs. Akbar Ali, a pregnant female has been diagnosed with neurocysticercosis. Which drug will you prefer in this case and also which drug is used to combat meningeal irritation during course of treatment? [Annual 2012]

Cancer Chemotherapy

- 1.
- a) Explain four advantages of using a combination of anticancer drugs. (4)
 - b) Explain three non-neoplastic uses and three adverse effects of methotrexate. (3)
- [Supple 2017]
2. A patient suffering from acute lymphocytic leukemia is treated with methotrexate in combination with other drugs. Give mechanism of action of this drug. Which drug is given as rescue therapy to protect normal cells from high dose toxicity of methotrexate? Enlist two non-cancerous indications of methotrexate. (4)
[Annual 2015]
3. Enumerate adverse effects of antineoplastic agents common in majority of patient groups. [Supple 2015]
4. A 45-year-old patient with malignant tumor was administered vincristine, a prototype of vinca alkaloids. [Annual 2014]
- a) Enlist four indications.
 - b) Enumerate its adverse effects.
- [Annual 2014]
5. Write short essay on the acute and delayed toxic effects of alkylating agents used in the treatment of cancer. [Supple 2014]
6. Enumerate the general adverse effects of anticancer drugs. [Supple 2013]
7. Classify anticancer drugs. Enumerate the uses of methotrexate. (7) [Supple 2011]
8. List the adverse effects of antineoplastic drugs due to their action on rapidly dividing healthy cells. (3) [Supple 2010, Annual 2009, Supple 2009]

- 9.
- a) Describe the mechanism of action of alkylating agents in cancer chemotherapy.
 - b) Name two agents that cause hemorrhagic cystitis.
 - c) Adverse effects of alkylating agents are seen in which organs?

[Annual 2008]

10. Classify cell cycle specific anticancer drugs and give one example for each.

[Supple 2008]

11. Enumerate anticancer drugs that act as spindle poison. Outline their general mechanism of action. **[Annual 2007]**

▪ **GASTROINTESTINAL SYSTEM**

1. A young female student complains of nausea, epigastric distress and heartburn after each meal. Classify drugs available to treat her acid peptic disease. **(3)**
Explain mechanism of action and enumerate adverse effects of proton pump inhibitors. **(4) [Supple 2018 held in 2019]**
2. A 50 years old male to emergency department with severe burning chest pain radiating into his neck. His electrocardiogram was normal and test for troponin was negative, but H. pylori stool antigen was positive. **[Annual 2018]**
 - a) Which different drug therapies can you give to treat this patient? **(2)**
 - b) Write down mechanism of action and uses of metoclopramide. **(2)**
3. A patient presenting with vomiting and diarrhea was given ORS for rehydration and metoclopramide for control of vomiting. What is its mechanism of action and other clinical uses? **(4) [Supple 2017 held in 2018]**
4. Name two drugs/drug groups used for motion sickness. Write adverse effects of each. **(3) [Annual 2017]**
5. A young patient with history of acid hypersecretion, gastrointestinal ulceration and malabsorption presents to your clinic. He is diagnosed as a case of gastrinoma. You prescribe omeprazole as being excellent acid suppressant. Write down its mechanism of action and toxicity. **(4) [Supple 2016 held in 2017]**

6. Classify drugs used for acid peptic disease. **(4) [Annual 2015]**
7. A lady presented with dyspepsia and heartburn. The physician diagnosed peptic ulcer disease and prescribed omeprazole which provides rapid relief. She continued to take the drug for a month and had no dyspepsia for other six months. However, over the next few months her symptoms reappeared and grew progressively worse. On a return visit to her, the ulcer showed the presence of H. pylori. **[Annual 2014]**
 - a) What drugs should be prescribed on the second visit?
 - b) Why did the ulcer relapse?
 - c) What drugs can be prescribed to relieve the symptoms of peptic ulcer?
8. One third of western population is suffering from dyspepsia and 50% of them are patient of GERD or acid peptic disease. Name various drug groups used in the treatment of acid peptic disease and give two examples of each group. **[Annual 2013]**
9. Write the clinical uses of omeprazole. **[Supple 2013]**
10. Compare metoclopramide with domperidone. **[Annual 2012]**
11. How omeprazole will act in patients of acid peptic disease? **[Supple 2011]**
12. How domperidone is useful in different clinical conditions? **[Annual 2011, Annual 2010]**
13. What is the mechanism of action of metoclopramide? Give its common adverse effects. **[Supple 2010, Annual 2009]**
14. Enumerate two proton pump inhibitors. Write down their mechanism of action. **[Supple 2009]**
15. Describe the mechanism of antiemetic and prokinetic effects of metoclopramide. **[Annual 2008]**
16. How do the following produce beneficial effects?
 - a) Omeprazole
 - b) Metoclopramide **[Supple 2008]**
17. Enumerate H₂ receptor blockers. Describe their clinical uses. **[Annual 2007]**