1. Define drug absorption

2. Enumerate factors affecting absorption of drugs

3. Define pka and mention its clinical significance

4. Define bioavailability

5. Define Volume of distribution and its clinical significance

6. Enumerate factors affecting drug distribution

7. What is clinical significane of plasma protein binding

8. Mention two phases of drug metabolism

9. Compare between microsomal enzyme inducers and inhibitors

10. Mention the cause of breakthrough pregnancy

11. Calculate

What is the renal clearance (Cl) of Drug X if 600 mL of urine was collected in one hour and the concentration of Drug X in the urine was 1 mg/mL and the midpoint plasma concentration was 0.1 mg/mL?

12. Compare between zero order kinetics and first order kinetics

13. Define t1/2 and mention 2 of its clinical significane

14. Define steady state plasma concentration

15. Enumerate main targets of drug action

16. Define ligand

17. Enumerate types of drug receptor bond

18. Define receptors and enumerate 3 types of them

19. Define agonist

20. Define antagonist

21. Define Partial agonist

22. Define affinity and efficacy

23. Compare between graded and quantal responses and give example

24. Enumerate clinical significance of dose response relationship

25. Define LD 50 / ED 50 /TD 50

26. Enumerate 3 types of antagonism and one example for each

27. Enumerate factors affecting dose response relationship (3 factors related to drug and 3 related to patient)

28. Define synergism and addition

29. Define tolerance

30. Mention possible mechanisms of tolerance

31. Define rebound and mention its mechanism

32. Enumerate effects of adrenaline on CVS

33. Enumerate 4 clinical uses of adrenaline

34. Mention adverse effects of adrenaline

35. Enumerate 2 uses and 2 side effects of beta 2 agonists

36. Mention 2 uses and 2 side effects of phynylephrine

37. Enumerate side effects of clonidine

38. Mention indication and side effects of phenoxybenzamine

39. Enumerate uses of prazosin

40. Enumerate side effects of alpha 1 blocker

41. Mention mechanism of lowering Bp in use of beta blocker

42. Enumerate uses of beta blockers

43. Enumerate 4 adverse drug reaction of beta blocker

44. Enumerate 2 absolute and 2 relative contra indication of beta blockers

45. Mention mechanism of action of alpha methyl dopa and 2 side effects

46. Enumerate uses of physiostgmine

47. Mention mechanism of action of neostgmine

48. Enumerate uses of neostgmine

49. Enumerate side effects of parasympathomimetics

50. Mention effects of parasympathatolytics on eye

51. Enumerate therapeutic uses of antimuscrnics

52. Enumerate side effects of atropine (parasympatholytic)

53. Enumerate contraindications of atropine(parasympatholytic)

54. Compare between bacteriocidal and bacteriostatic effects of antibiotic with examples

55. Define MIC

56. Compare between conc dependent killing and time dependent killing with examples

57. Classify types of antibiotic according to spectrum and one example for each

58. Mention the basic mechanisms of bacterial resistance to antibiotics

59. How to prevent bacterial resistance

60. Enumerate clinical values of antibiotic combinations

61. Enumerate genera side effects of antibiotics

62. Enumerate lines of treatment of superinfection

1) The bioavailability of a drug: A. Is defined as the actual blood concentration required to produce a pharmacological effect B. Will be unaffected by changes in formulation C. May be affected by liver damage D. Must be 100% for a drug given by mouth and is completely absorbed E. Is a term applied only to oral administration	**C**
2) All the following are phase I biotransformation reactions EXCEPT: A. Sulfate conjugation B. Xanthine oxidation C. Nitroreduction D. Ester hydrolysis E. Oxidative deamination	**A**
3) Metabolism (biotransformation) of drugs can lead to all the following results EXCEPT: A. Conversion of active compound into inactive metabolites B. Conversion of active compound into active metabolites C. Conversion of inactive compound into active metabolites D. Conversion of non-toxic compound into toxic metabolites E. Conversion of water-soluble compound into lipid-soluble metabolites	**E**
4) First-order kinetics EXCEPT: A. Apply to most drugs in clinical use B. Apply to salicylate (aspirin) metabolism within small dose. C. The concentration versus time curve is non-linear. D. The rate of elimination depends on plasma concentration of the drug E. Steady state plasma concentration can be reached after 5 half lives	**C**
5) All the following statements are true for zero-order kinetics EXCEPT: A. Elimination rate is independent of the dose B. Elimination depends on saturable enzyme system C. Plasma concentration of the drug cannot be expected at any time D. The t1/2 of the drug is not constant E. There is no fear from drug cumulation or interactions	**E**

6) A pro-drug is: A. The prototype member of a class of drugs. B. The oldest member of a class of drugs C. An inactive drug that is transformed in the body to an active metabolite. D. A drug that is stored in the body tissues and is then gradually released in the circulation. E. Ionized drug trapped in breast milk.	**C**
7) If the rate of infusion of a drug were doubled, what response in the steady state concentration would be expected? A. Remain unchanged B. Doubled C. Increase 50% D. Decrease 50% E. Decrease 100%	**B**
8) Half-life of a drug may be helpful to determine: A. Elimination of the drug B. Level of absorption C. Rate of absorption through the GIT D. Time to reach the steady state E. Distribution into body systems	**D**
9) What determines the degree of movement of a drug between body compartments? A. Partition constant B. Degree of ionization C. pH D. Molecular size E. All of the above	**E**
10) For intravenous (IV) dosages, what is the bioavailability assumed to be? A. 0% B. 25% C. 50% D. 75% E. 100%	**E**

11) **Which of the following can produce a therapeutic response? A drug that is:** A. Bound to plasma albumin B. Concentrated in the bile C. Concentrated in the urine D. Not absorbed from the GI tract E. Unbound to plasma proteins	**E**
12) **Aspirin is a weak organic acid with a pKa of 3.5. What percentage of a given dose will be in the lipid-soluble form at a stomach pH of 1.5?** A. About 1% B. About 10% C. About 50% D. About 90% E. About 99%	**E**
13) **Concerning the renal excretion of drugs:** A. Drugs that are ionized in the renal tubules are more likely to undergo passive reabsorption. B. Low MW drugs are much more likely to be actively secreted than filtered. C. Only the fraction of the drug that is unbound (free) to plasma proteins is filtered by the glomerulus. D. Decreasing urinary pH enhance excretion of weakly acidic drugs. E. Renal clearance cannot exceed the GFR (125 ml/min).	**C**
14) .**Which route of administration is most likely to subject a drug to first pass metabolism?** A. Intravenous B. Sublingual C. Oral D. Inhalation E. Intramuscular	**C**
15) .**If a drug was given by a constant infusion rate, which of the following factors determines how long it will take for the drug to reach a steady-state concentration (Cpss) in the blood?** A. Apparent volume of distribution B. Bioavailability C. Clearance D. Half-life E. Infusion rate (mg of drug/min)	**D**

16) Drug A undergoes a series of Phase I metabolic reactions before being eliminated. Which of the following statements best describes the characteristics of Drug A, or the role of Phase I reactions in its metabolism? A. Complete metabolism of Drug A by Phase I will yield products that areless likely to undergo renal tubular reabsorption B. Drug A is a very polar substance C. Drug A will be biologically inactive until it is metabolized D. Phase I metabolism of Drug A involves conjugation with glucuronic acid or sulfate E. Phase I metabolism of Drug A will increase its intracellular access and actions	**A**
17) Stimulation of microsomal enzymes can: a) Require the dose increase of some drugs b) Require the dose decrease of some drugs c) Prolong the duration of the action of a drug d) Intensify the unwanted reaction of a drug e) Potentiate the efficacy of drugs	**A**
18) Conjugation: a) Process of drug reduction by special enzymes b) Process of drug oxidation by special oxidases c) Coupling of a drug with an endogenous substrate d) Solubilization in lipids e) Unionization of drugs	**C**
19) Metabolic transformations (phase 1) is: a) acetylation & methylation of substances b) transformation of substances due to oxidation, reduction, hydrolysis c) glucuronide formation d) binding to plasma proteins	**B**
20) Loading dose of a drug is given: a) To achieve steady state concentration in short time b) For drugs with short half life c) For drugs with long half life d) To reduce complications e) When the drug eliminated by first order kinetic	**A**

21) The loading dose of a drug is governed by its: a) Renal clearance b) Plasma half-life c) Volume of distribution d) Elimination rate constant	**C**
22) About biotransformation. Untrue is: a) inactive metabolites are formed b) active metabolites are formed c) generally more fat-soluble metabolites are formed d) generally more water-soluble metabolites are formed e) toxic metabolites are formed	**C**
23) To be excreted from the system ……drugs need to be made water soluble, ……..is oxidation / reduction/hydrolysis,……. is conjugation with glucuronide /sulphate : a) Lipophilic, phase I, phase II b) Hydrophilic, phase I,phase II c) Lipophobic, phase II, phase I d) Lipolytic, phase I, phase II e) Lipophilic ,phase II,phase I	**A**
24) Gentamicin, an aminoglycoside antibiotic, is sometimes given in intermittent intravenous bolus doses of 100 mg 3 times a day to achieve target peak plasma concentrations . Your patient, however, is found to have a creatinine clearance one third of normal. What should your modified dosage regimen for this patient be? a) 20 mg 3 times a day b) 33 mg 3 times a day c) 72 mg 3 times a day d) 100 mg 2 times a day e) 150 mg 2 times a day	**B**
25) The volume of distribution (Vd) relates: a) Single to a daily dose of an administrated drug b) An administrated dose to a body weight c) An uncharged drug reaching the systemic circulation d) The amount of a drug in the body to the concentration of a drug in plasma	**D**

26) As regards drug absorption one of the following statements is wrong: a) Large molecule is less absorbed than small molecule b) Dose and concentration of the drug can increase rate of absorption c) Lipid soluble drugs are more easily absorbed d) Acidic drugs are more absorbed at the intestine e) Vasoconstrictor drug decrease the rate of absorption	**D**
27) Biotransformation of the drugs is to render them: a) Less ionized b) More pharmacologically active c) More lipid soluble d) Less lipid soluble	**D**
28) Medication A is administered in a 100 mg daily dose orally and 60 mg of the drug is absorbed from the gastrointestinal tract unchanged. Thus, the bioavailability of Medication A is: a) 50% b) 60% c) 70% d) 80% e) 90%	**B**
29) Drug administered through the following route is most likely to be subjected to first-pass metabolism: a) Oral b) Sublingual c) Subcutaneous d) Rectal	**A**
30) Diazepam must cross the blood-brain barrier to be effective. Which of the following characteristics would help a drug molecule cross this barrier? a) Hydrophilicity b) Large size c) Lipid solubility d) Weak acid with pka of 4 e) Weak base with pKa of 9	**C**

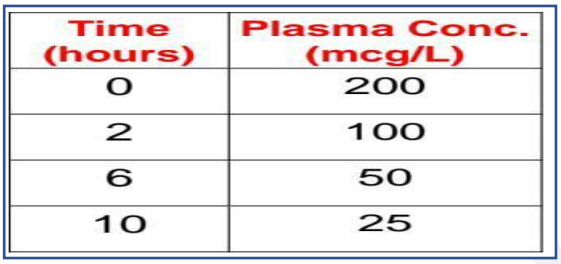
31) High plasma protein binding: a) Increases volume of distribution of the drug b) Facilitates glomerular filtration of the drug c) Minimizes drug interactions d) Generally makes the drug long acting	**D**
32) Drugs which undergo high degree of first-pass metabolism in liver: a) Have low oral bioavailability b) Are excreted primarily in bile c) Are contraindicated in liver disease d) Exhibit zero order kinetics of elimination	**A**
33) 400mg of a drug is administered to a patient and the drug is later measured in plasma to be 1 ug/ml. what is the apparent volume of distribution (Vd)? a) 0.04 L b) 0.4 L c) 40 L d) 400 L e) 4000 L	**D**
34) A drug with a half-life of 10 hours is administered by continuous intravenous infusion. Which of the following best approximates the time for the drug to reach steady state? a) 10 hours b) 20 hours c) 33 hours d) 40 hours e) 60 hours	**D**
35) Which statement is accurate for the drug shown in the example below? **(100 mg 2hr → 50 mg 2hr → 25 mg 2hr → 12.5 mg)** A. The rate of elimination is constant B. The elimination half-life varies with the dose C. The volume of distribution varies with the dose D. The clearance varies with the dose E. The rate of elimination varies directly with the dose	**E**

36) Biotransformation of a medicinal substance results in: A) faster urinary excretion B) slower urinary excretion C) easier distribution in organism D) higher binding to membranes E) higher efficacy	**A**
37) A patient requires an infusion of procainamide. Its half-life is 2 hrs. The infusion is begun at 9 to 11 AM on the same day, the blood concentration is found to be 3 mg/L. What is the probable steady state concentration after 2 days of infusion? A) 3 mg/L B) 4 mg/L C) 5 mg/L D) 6 mg/L	**D**
38) The clearance of drug means : a) Volume of plasma which is cleared of drug in unit of time. b) Amount of drug excreted in urine. c) Amount of drug metabolized in unit of time. d) Amount of drug cleared by liver in bile in unit time. e) Amount of drug cleared by both liver and kidney	**A**
39) A drug following first order kinetics is being administered by constant i.v. infusion at a rate of 10 mg/min. Its steady state plasma concentration is 3 mg/dl. If the dose rate is increased to 20 mg/dl, what will be the new steady state plasma concentration? a) 6 mg/dl b) 4 mg/dl c) 3 mg/dl d) 9 mg/dl e) 5 mg/dl	**A**
40) With IV infusion, a drug reaches 50% of its final steady state in 24 hours.The elimination half-life of the drug must be about: a) 2 h b) 12 h c) 6 h d) 24 h e) 30 h.	**D**

41) The plasma half-life (t ½) of drugs: a) Is expressed as the percentage that remains ½ hour after administration b) Will be short if the drugs get into the enterohepatic circulation c) Cannot be calculated if the drug is excreted through the bile d) Is constant for drugs having zero-order elimination e) can be prolonged by showing the rate of drug elimination	**E**
42) A patient was given a 200 mg dose of a drug IV, and 100 mg was eliminated during the first 2 hours. of the drug follows first-order elimination kinetics, how much of the drug will remain 6 hours after its administration? a) 25mg b) 50mg c) 75mg d) 100mg	**A**
43) Which organ is responsible for the elimination of drugs through bile? a) Kidneys b) Lungs c) Liver d) Intestine	**C**
44) Zero-order elimination of drugs occurs when: a) The rate of elimination is proportional to plasma concentrations b) The rate of elimination is not proportional to plasma concentrations c) The drug is excreted unchanged in urine d) The drug is metabolized to active metabolites	**A**
45) What organ is responsible for metabolism in the "first pass effect"? a. Brain b. Heart c. Kidney d. Liver	**D**

46) For calculating the volume of distribution (Vd) one must consider: a. Concentration of a substance in plasma b. Concentration of a substance in urine c. Therapeutic width of drug action d. A daily dose of drug	**A**
47) What is the most important plasma protein for drug binding? a) Hemoglobin b) Globulin c) Fibrinogen d) Albumin	**D**
48) Bioavailability is the fraction or percentage of administered drug that reaches the systemic circulation via a given route as compared to what route? a. oral b. IV c. SC d. IM	**B**
49) Drugs that are highly bound to albumin: a. Effectively cross BBB b. Are easily filtered at the glomerulus c. Have a large Vd d. Can undergo competition with other drugs for albumin binging sites	**D**
50) The bioavailability of a drug: a. Actual blood concentration required to produce a pharmacological effect b. Will be unaffected by changes in formulation c. May be affected by liver damage d. Must be 100% for a drug given by mouth and is completely absorbed	**C**

51) **Which of the following is the amount of a drug absorbed to systemic circulation per the amount administered?** a. Bioavailability b. Bioequivalence c. Drug absorption d. Distribution	**A**
52) **Half-life of a drug may be helpful to determine:** A. Elimination of the drug by liver B. Level of absorption C. Rate of absorption through the GIT D. Inter-dosage interval E. Distribution into the body system	**D**
53) **Despite your careful adherence to basic pharmacokinetic principles, your patient on digoxin therapy has developed mild digitalis toxicity. The plasma digoxin level is now 4 ng/mL. Renal function is normal, and the plasma t1/2 for digoxin is 1.5 days. How long should you withhold digoxin to reach a safer therapeutic level of 1 ng/mL?** a) 1.5 days b) 2.5 days c) 3 days d) 5 days e) 6 days	**C**
54) **A drug with a half-life of 12 hours is administered by continuous IV infusion. How long will it take for the drug to reach %90 percent of its final steady-state level?** A. 18 hours. B. 24 hours. C. 30 hours. D. 40 hours. E. 90 hours.	**D**

55) Administration of an IV loading dose to a patient of drug X yields an initial plasma concentration of 100 mcg/L. The table illustrates the plasma concentration of X as a function of time after the initial loading dose.What is the half-life (in hours) of drug X? A. 1 hr B. 2 hr C. 4 hr D. 5 hr E. 9 hr 	**C**
56) A 15-year-old adolescent was poisoned with drug X which is a weak base with a pKa of 7.2. Which of the following substances will enhance the urinary excretion of the drug X? a) Ammonia b) Ascorbic acid e) Hydrochloric acid d) Sodium bicarbonate e) Vitamin A	**B**
57) Which of the following is correct concerning first pass metabolism? a) It is biotransformation of a drug after exerting its action & effect. b) It increases drug activity. c) If the drug is completely metabolized, we must decrease the dose. d) If the drug is partially metabolized, we must increase the dose. e) It increases drug bioavailability	**D**
58) To calculate the loading dose of a drug, when you have a desired steady-state concentration intended, which of the following we must know? a) The steady-state concentration. b) The rate of clearance. c) The rate of elimination. d) The volume of distribution. c) The rate of infusion	**D**

Time (hours)	Plasma Conc. (mcg/L)
0	200
2	100
6	50
10	25

59) If the total amount of a drug present in the body at a given moment is 2.0g and its plasma concentration is 25 µg/ml, its volume of distribution is: a. 100 L. b. 80 L. c. 60 L. d. 50 L.	**B**
60) Drugs which undergo high degree of first-pass metabolism in liver: a. Have low oral bioavailability. b. Are excreted primarily in bile. c. Are contraindicated in liver disease. d. Exhibit zero order kinetics of elimination	**A**
61) The following statements are true for Vd of drugs except: a. It can exceed the volume of water in the body. b. Drugs with small Vd cannot be removed by dialysis. C. Would be expected to be less than 5L if the drug is confined to plasma. d. Highty tipid soluble drugs would be expected to have large Vd. e. It can help in the calculation of the total amount of the drug in the body	**B**
62) Which of the following statements related to the binding of drugs by plasma proteins is true? a. Bound drug is unable to diffuse into tissues until it becomes unbound. b. A drug that is bound by plasma proteins will have a smaller apparent volume of distribution than if it were not bound. c. Displacement of the bound drug by another drug can increase the effects of a given dosage of the first drug. d. Acidic drugs are bound mostly to plasma albumin. e. All of the above.	**E**
63) Which of the following would be the likely of a decrease In urinary pH? a. Decreased urinary excretion of a weak base. b. Increased urinary excretion of weak acid. c. Increased urinary excretion of a weak base. d. Decreased urinary excretion of a nonionized drug. e. Increased urinary excretion of a completely ionized drug	**C**

64) The rate of urinary excretion of acidic drugs such as aspirin and barbiturates i increased by: a. Administration of sodium bicarbonate. b. Administration of ammonium chloride. c. Administration of ascorbic acid. d. Keeping the urine at neutral PH. e. None of the above	**A**
65) Ionized and/or Lipid-insoluble drugs: a. May pass through the small aqueous channels, cells of many tissues. b. Generally do not gain entry to brain cells. c. Cross biologic lipid membranes less readily than do non-ionized drugs. d. All of the above. e. None of the above.	**D**
66) for which of the following drugs will excretion be most significantly accelerated by acidification of the urine? a. Weak acid with pka of 5.5. b. Weak base with pka of 3.5 c. Weak acid with pka of 7.5 d. Weak base with pka of 6.5	**D**
67) All of the following could increase drug absorption EXCEPT: a. Increased blood flow to the site of administration. b. Increased surface area dedicated to absorption. c. Increased bioavailability. d. Increased lipid solubility. e. Increased pH when the drug is a weak acid.	**E**
68) **All of the following would increase bioavailability of a drug administered by oral route EXCEPT**: a. Increased time of gastric emptying. b. Increased lipid solubility of drug. c. Increased hepatic metabolism of drug. d. Increased rate of drug dissolution. e. Increased proportion of drug remaining uncharged	**C**

69) The plasma concentration of a drug declines with "first-order kinetics" this means that: a. There is only one metabolic path for drug disposition. b. The half-Life is the same regardless of the plasma concentration. c. The drug is largely metabolized in the liver after oral administration and has low bioavailability. d. The rate of elimination is always proportionate to the rate of administration. e. The drug is not distributed outside the vascular system.	**B**
70) pharmacokinetics include: a) Localization of the drug b) mechanism of drug action c) excretion of substances d) interaction of substances e) the effect of drug on body control system	**C**
71) Predominant form of Aspirin in the stomach is : a) ionized b) non ionized	**B**
72) ioavailability is: a) plasma protein binding of a substance b) permeability through the BBB c) fraction of a drug reaching the systemic circulation following any route administration d) amount of a substance in urine relative to initial dose e) presystemic degradation of a drug	**C**
73) A hydrophilic (water-soluble) medicinal agent has the following property: a) low ability to penetrate through the cell membrane lipids b) penetrates through membranes by means of endocytosis c) easy permeation through the BBB d) high reabsorption in renal tubules	**A**

74) **Bioavailability is the fraction or percentage of administered drug that reaches the systemic circulation via a given route as compared to what route?** a) oral b) IV c) SC d) CSE e) IM	**B**
75) **MS. Smith, a 65-year-old woman with pneumonia, was given Tobramycin antibiotic, 150mg, iv. After 20 minutes, the plasma concentration was measured & was found to be 3mg/L. Assuming no elimination of the drug in 20 minutes, what is the apparent volume of distribution of Tobramycin in MS. Smith?** a) 3L/min b) 3L c) 50L d) 7L e) 0.1mg/min	**C**
76) **For which of the following drugs is excretion most significantly accelerated by acidification of urine:** a) weak acid with pKa of 5.5 b) weak acid with pKa of 3.5 c) weak base with pka of 7.5 d) weak base with pKa of 7.1 e) weak base with pka of 8.1	**E**
77) **Weak acids are excreted faster in ……. urine and weak bases are excreted faster in ……. urine** : a) Acidic : alkaline b) Alkaline : acidic c) Acidic : neutral d) Neutral : alkaline e) Alkaline : neutral	**B**

78) Which of the following types of drug metabolizing enzymes are inducible: a) Microsomal enzymes b) Non-microsomal enzymes. c) Bothe microsomal and non-microsomal enzymes d) Mitochondrial enzymes .	**A**
79) The bioavailability of a drug: a) Is a defined as the actual blood concentration required to produce a pharmacological effect b) Will be unaffected by changes in formulation c)May be affected by liver damage d) Must be 100% for a drug given by mouth and is completely absorbed e)Is a term applied only to oral administration	**C**
80) What does "pharmacokinetics" include? A. Localization of drug action B. Mechanisms of drug action C. Excretion of substances D. The effect of drug on body control systems E. The adverse effects of drug on body systems	**C**
81) Pharmacokinetics is the study of: A) mechanisms of drug action B) genetic variation in drug response C) methods of new drug development D) biological and therapeutic effects of drugs E) absorption, distribution, metabolism & excretion of drugs	**E**
82) The drug X is extensively bound to plasma protein. If you give the therapeutic dose of it to a person with severe hypoalbuminemia, which one of the following effects would you expect to occur? A) A greater than normal (possibly toxic) response to the drug B) A longer duration of action C) A slower onset of action D) A drug effect completely different from what normally occur E) No effect of drug X at all	**A**

83) What percentage of the drug elimination is achieved after 4 half life? a. 20% b. 25% c. 50% d. 94% e. 75%.	**D**
84) When the same dose of a drug is repeated at half-life intervals, the steady□state (plateau) plasma drug concentration is reached after: A. 2–3 half lives B. 4–5 half lives C. 6–7 half lives D. 8–10 half lives	**B**

1) drug may act by all the following mechanisms EXCEPT: A. Interaction with protein macromolecules embedded in the cell membranes B. Interaction with cell membrane ion channels C. Interaction with intracellular enzymes D. Interaction with cell membrane phospholipids E. Interaction with gene functions	**D**
2) Ion-channel-linked receptors (direct ligand-gated ion channels) are characterized by: A. They are the type of receptors principally present in autonomic ganglia and skeletal ms motor end plate B. They are the type of receptors principally present in vascular endothelium C. They are rosette-shaped structures consist of 7 membrane subunits D. Their response is slower than other receptors E. Activation of these receptors leads to activation of a second messenger	**A**
3) Which of the following is classified as belonging to the tyrosine kinase family of receptors: A. GABA receptors B. B-Adrenergic receptors C. Insulin receptors D. Nicotinic acetylcholine receptors E. Hydrocortisone receptors	**C**
4) All the following are true for intracellular (DNA-linked) receptors EXCEPT: A. They regulate transcription of genes inside the nucleus B. Their response is very fast but persists for long time C. Their agonists must enter inside the cell to reach them inside the nucleus D. Sex hormones act on these types of receptors E. Corticosteroids act on these types of receptors	**B**
5) The following statements are true for graded dose-response relationship EXCEPT: A. It is the response to most drugs B. The response is directly proportional to drug concentration (linear relation) C. It could be tested in one animal D. It can be used for comparing the potencies and efficacies of drugs E. It can be used for calculation of the LD50 of drugs	**E**

6) The following statements are true for quantal dose-response relationship EXCEPT: A. It is the response to anticonvulsant and antiarrhythmic drugs B. The response to the drug is not directly proportional to drug concentration (all-or-none) C. It could be tested in one animal D. It helps in calculation of the ED50 and LD50 of drugs E. It helps in estimation of the degree of drug safety	**C**
7) When a drug has a steep dose- response curve, this means: A. The drug is lethal B. The drug is expensive C. The drug is efficacious D. The drug is safe E. Minimal change in the dose can lead to dramatic effect.	**E**
8) The following statements are true for drug's therapeutic index EXCEPT: A. It is the relation between the lethal dose in 50% of animals to the curative dose in 50% of them B. The lower the TI, the safer will be the drug. C. It should be done to any drug before it's being approved for human use D. For theoretically useful drugs, it must be greater than 1 E. It could be applied in animal testing	**B**
9) The following is true for competitive antagonism: A. It never occurs with enzymes B. Is the same as physiological antagonism C. The agonist can never abolish the effect of the antagonist D. Is best exemplified by the use of neostigmine to treat curare toxicity E. Best described as non-surmountable process	**D**
10) A drug is said to be reversible antagonist when A. It blocks the receptors by making covalent bonds with the B. The duration of blockade is too long C. Increasing the dose of the agonist will reverse the bloc D. The response curve of the agonist in presence of this drug is not parallel to that of the agonist alonE E. Termination of the drug effect depends on synthesis of new receptors	**C**

11) The interaction that may occur between acidic and basic drugs is called: A. Chemical antagonism B. Physical antagonism C. Physiological antagonism D. Biological antagonism E. Receptor antagonism	**A**
12) The following is true for interactions between drugs: A. Is not harmful if occurred between drugs having steep dose-response curves B. Is not harmful if occurred between drugs having narrow therapeutic ratios C. Is not harmful if occurred between drugs undergoing zero-order kinetics D. May lead to valuable therapeutic effects E. Is described as addition if the action of one drug abolishes the effects of another	**D**
13) A drug may interact with ion channels by all of the following mechanisms EXCEPT: A. The drug may change the ion channel structure B. The drug may block the channel physically C. The drug may change an intracellular ATP on which the channel depends D. The ion channel may be part of ion channel-linked receptors E. The ion channel may be modulated by G-protein linked receptors	**A**
14) The following are true for overshot phenomenon (drug intolerance) EXCEPT: A. It occurs due to down-regulation of receptors B. It occurs after sudden stoppage of some drugs given for long time C. It may lead to serious withdrawal effects D. It can be avoided by gradual cessation of drugs E. It is best exemplified by occurrence of severe tachycardia after sudden stopping of beta blockers.	**A**
15) Drugs X and Y have the same mechanism of diuretic action. Drug X in a dose of 5mg produces the same magnitude of diuresis as 500 mg of drug Y. This suggests that: A. Drug Y is less efficacious than drug X B. Drug X is about 100 times more. potent than drug Y. C. Toxicity of drug X is less than that of drug Y. D. Drug X is a safer drug than drug Y. E. Drug X will have a shorter duration of action than drug Y because less of drug X is present for a given effect	**B**

16) Which of the following terms best describes the antagonism of leukotriene's bronchoconstrictor effect (mediated at leukotriene receptors) by terbutaline (acting at adrenoceptors) in a patient with asthma? A. Pharmacologic antagonist. B. Partial agonist. C. Physiologic antagonist. D. Chemical antagonist. E. Noncompetitive antagonist.	**C**
17) Which of the following best describes what the term "tachyphylaxis" means? A. An increase in the rate of the response, for example, an increase of the rate of muscle contraction B. Immediate hypersensitivity reactions (i.e., anaphylaxis) C. Prompt conformational changes of the receptor such that agonists, but not antagonists, are able to bind and cause a response D. Quick and progressive rises in the intensity of drug response, with repeated administration, even when the doses are unchanged E. Rapid development of tolerance to the drug's effects	**E**
18) Which effect may lead to toxic reactions when a drug is taken continuously or repeatedly? A. Refractoriness B. Cumulative effect C. Tolerance D. Tachyphylaxis E. Intolerance	**B**
19) Tolerance and drug resistance can be a consequence of: A. Change in receptors, loss of them or exhaustion of mediators B. Increased receptor sensitivity C. Decreased metabolic degradation D. Decreased renal tubular secretion E. Activation of a drug after hepatic first-pass	**A**

20) If two drugs with the same effect, taken together, produce an effect that is equal in magnitude to the sum of the effects of the drugs given individually, it is called as a) Antagonis b) Potentiatio c) Synergism d) D. Additive effect	**D**
21) All of the following statements about efficacy and potency are true EXCEPT: A. Efficacy is usually a more important clinical consideration than potency B. Efficacy is the maximum effect of a drug C. Potent drugs usually given in small dose. D. Potency is a comparative measure, refers to the different doses of two drugs that are needed to produce the same effect E. The ED50 is a measure of drug's efficacy	**E**
22) Which of the following provides information about the variation in sensitivity to the drug within the population studied? A. Maximal efficacy. B. Therapeutic index. C. Drug potency. D. Graded dose-response curve. E. Quantal dose-response curve.	**E**
23) Which of the following provides information about the largest response a drug can produce, regardless of dose? A. Drug potency. B. Maximal efficacy. C. Mechanism of receptor action. D. Therapeutic index. E. Therapeutic window.	**B**
24) A drug that binds to a receptor and produces a biological response that mimics the response to the endogenous ligand is known as: a) Agonist b) Antagonist c) Functional antagonist d) partial agonist e) Partial antagonist	**A**

25) The phrase "ability to bind to a receptor" fits the definition of a) Agonist b) Efficacy c) Antagonist d) Potency e) E) Affinity	**E**
26) A drug that binds to a receptor and produces no response: a) Agonist b) Antagonist c) Functional antagonist d) Partial agonist e) Partial antagonist	**B**
27) Which of the following factors will determine the number of drug_receptor complexes formed: a) Efficacy of the drug. b) Receptor affinity for the drug. c) Therapeutic index of the drug. d) Half-life of the drug.	**B**
28) Graded and quantal dose-response curves are being used for evaluation of a new antiasthmatic drug in the animal laboratory and in clinical trials. Which of the following statements best describes quantal dose-response curves? a. Used to determine the variation in sensitivity of subjects to the drug b. Adrenaline effect on heart measured by quantal curve c. Used to determine the minimum efficacy of the drug d. Obtainable from the study of intact subjects but not from isolated tissue preparations	**A**
29) Which branch of pharmacology studies the way drugs work in living organism? a. Pharmacotherapeutics b. Pharmacokinetics c. Pharmacogenetics d. Pharmacodynamics e. Drug potency	**D**

30) Pharmacodynamics involves the study of following? a) Mechanisms of drug action b) Biotransformation of drugs in the organism c) Distribution of drugs in the organism d) d) Excretion of drug from the organism	**A**
31) What does pharmacokinetic include : a) Localization of drug action b) Mechanism of drug action c) Excretion of substances d) Effect of drug on body control systems e) Adverse effect of drug	**C**
32) Which of the following is a G protein coupled receptor a. Muscarinic cholinergic receptor b. Nicotinic cholinergic receptor c. Insulin receptor d. Glucocorticoid receptor	**A**
33) Example of intracellular receptor is: a) receptor of throxine b) receptor of cortisol c) receptor of adrenaline d) receptor of insulin	**B**
34) What does "affinity" mean? a) A measure of how tightly a drug binds to plasma proteins b) A measure of how tightly a drug binds to a receptor c) A measure of inhibiting potency of a drug d) A measure of bioavailability of a drug	**B**
35) Number of transmembrane subunits of G protein linked receptor is: a) 3 b) 5 c) 7 d) 9	**C**

36) Type of antagonism () Gentamycin and carpencillin is: a) Physical b) Chemical c) Physiological d) Pharmacokinetics	**B**
37) Type of antagonism () heparin and protamine sulfate is : a) Physical b) Chemical c) Physiological d) Pharmacokinetics	**A**
38) Type of antagonism () adrenaline and histamine is : a) Physical b) Chemical c) Physiological d) Pharmacokinetics	**C**
39) In the absence of any ß-receptor acting drugs, pindolol causes an Increase in heart rate by activating beta adrenoceptors. In the presence of highly effective beta stimulants, however, pindolol a dose-dependent, decrease in heart rate. Therefore, pindolol Is probably: a) An Irreversible antagonist. b) physiologic antagonism c) chemical antagonist. d) A partial agonist. e) A Spare receptor agonist.	**D**
40) In the presence of naloxone, a higher concentration of morphine is required to elicit full pain relief. Naloxone by itself has no effectWhich of the following is correct regarding these medications? A. Naloxone is a competitive antagonist B. Morphine is a full agonist, and naloxone is a partial agonist C. Morphine is less efficacious than is naloxone. D. Morphine is less potent than is naloxone. E. Naloxone is a noncompetitive antagonist	**A**

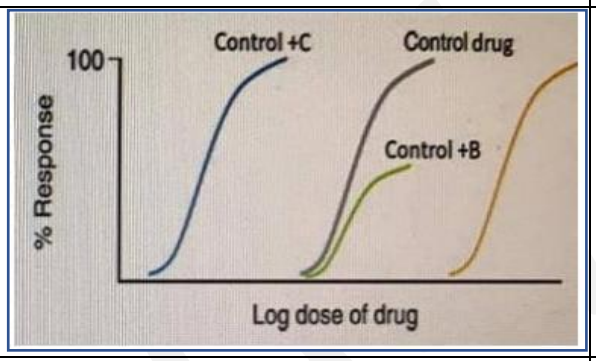
41) Which of the following terms best describes the Beneficial effect ofepinephrine in anaphylaxis: A. Pharmacologic antagonist. B. Physical agonist. C. Physiologic antagonist. D. Chemical antagonist. E. Competitive antagonist.	**C**
42) Which of the following parameters is used to define the relation between the desired therapeutic effect and the toxic effect? a) Potency b) Intrinsic activity c) Therapeutic index d) Efficacy e) Bioavailability	**C**
43) Partial agonist has a) Partial affinity and efficacy b) Affinity and partial efficacy. c) Efficacy and partial affinity d) Neither affinity nor efficacy	**B**
44) In presence of pentazocine, a higher concentration of morphine is required to elicit full pain relief. Pentazocine by itself has a smaller analgesic effect than does morphine, even at the highest dose. Which of the following is correct regarding these medications? a) Morphine is a full agonist, and pentazocine partial agonist. b) Pentazocine is a competitive antagonist. c) morphine is less effective than is pentazocine d) morphine is less potent than is pentazocine	**A**
45) If 10 mg of naproxen produces the same analgesic response as 100 mg of ibuprofen, which of the following statements is correct? a) Naproxen is more efficacious than is ibuprofen. b) Naproxen is more potent than ibuprofen. c) Naproxen is a full agonist, and ibuprofen is a partial agonist. d) Naproxen is a competitive antagonist. e) Naproxen is a better drug to take for pain relief than is ibuprofen.	**B**

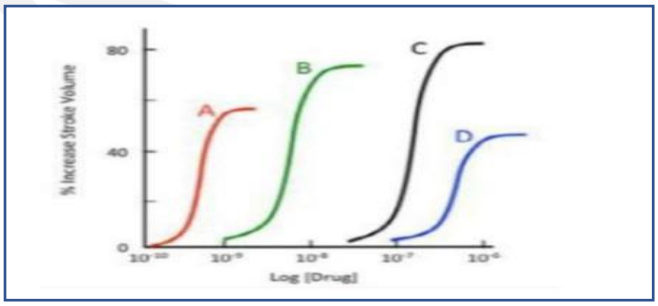
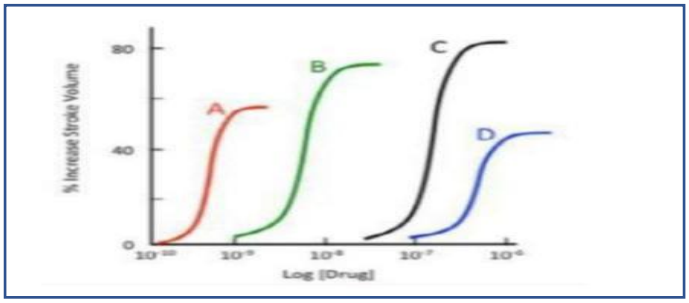
46) Isoproterenol-induced contraction of cardiac muscle acts in a manner like epinephrine. Which of the following best describes isoproterenol? a) Full agonist b) Partial agonist c) Competitive antagonist d) Irreversible antagonist e) Inverse agonist	**A**
47) Which of the following is a criterion of a non-competitive antagonists? a) Alters the mechanism of action of an agonist, b) Alters the potency of an agonist. c) Shifts the dose-response curve of an agonist to the right. d) Decreases the maximum response to an agonist. e) Binds to the same site on the receptor as the agonist.	**D**
48) Two drugs may act on same tissue or organ through independent receptors resulting effects in opposite reaction that known as: a) Competitive antagonism b) Non-competitive antagonism c) Chemical antagonism d) Physical antagonism e) Physiological antagonism	**E**
49) Which of the following terms best describes the antagonism of Broncho constrictor effect of leukotrienes by bronchodilator terbutaline in a patient with bronchial asthma? a) Physical antagonism. b) Competitive antagonism. c) Physiological antagonism. d) Chemical antagonism e) Non-competitive antagonism	**C**
50) The therapeutic index of a drug is a measure of its: a. Safety b. Potency c. Efficacy d. Dose variability	**A**

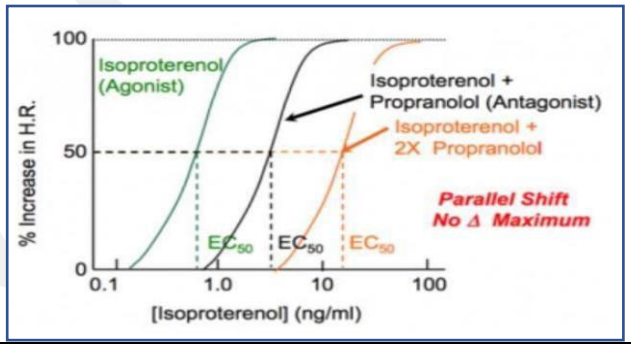
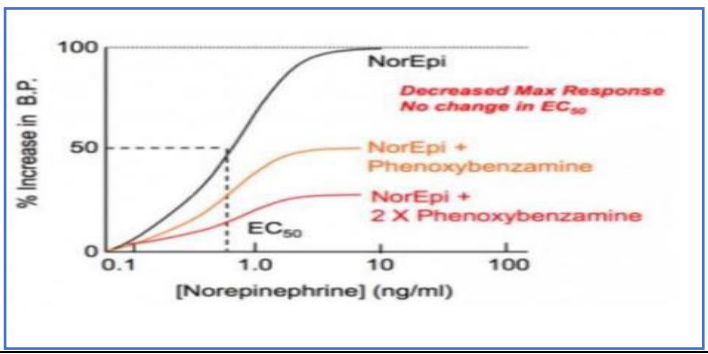
51) Which of the following drug equations exemplifies the concepts of synergism? a) Drug AB > Drug A + Drug B M b) Drug AB = Drug A = Drug c) Drug AB < Drug A < Drug B d) Drug AB = Drug B> Drug A e) Drug AB Drug B+ Drug,	**A**
52) Irreversible interaction of an antagonist with a receptor is due to: a) lonic bonds b) Hydrogen bonds c) Covalent bonds d) All of the above	**C**
53) Which of the following terms is used to describe gradual decrease in responsiveness to drugs? A. Potentiation. B. Cumulative effect C. Tolerance D. Tachyphylaxis E. Synergism	**C**
54) Down regulated receptors for the daily dose are due to: A) Continuous agonist. B) Prolonged use of antagonist. C) Intolerance. D) Tolerance. E) Withdrawal effect of antagonist.	**A**
55) Drug tolerance is: a) Decreased response to the usual dose of a drug b) Increased response to the usual dose of a drug c) Abnormal reaction to drug due to genetic defect d) Inactivation of a drug by the kidney e) Immediate hypersensitivity reaction	**A**

56) Which of the following would up-regulate postsynaptic ß1 adrenergic receptors? a. Daily use of amphetamine that causes norepinephrine to be released. b. A disease that causes an increase in the activity of norepinephrine neurons. c. Daily use of isoproterenol, a ß1 receptor agonist. d. Daily use of formoterol, a ß2 receptor agonist. e. Daily use of propranolol, a ß1 receptor antagonist	**E**
57) Drugs larger than ….. can not be absorbed orally or cross placenta : a. 500 da b. 1000 da c. 100 da d. 50 da	**B**
58) Chronopharmacology is the study of the: a) Effects of drugs on the body b) Timing of drug administration c) Chemical properties of drugs d) Drug interactions with other substances	**B**
59) Withdrawal effects of a drug occur when: a) The drug is administered for the first time. b) The drug is abruptly stopped or reduced after a period of regular use. c) The drug is taken in higher doses than prescribed. d) The drug interacts with another medication.	**B**
60) Which of the following can be used as a relative indicator of the margin of safety of a drug? A. T.I. B. LD50 C. ED50 D. EC50 E. TD50	**A**

61) TWO drugs with same mechanism of action , combined together leading to combined effect greater than their individual effects : A. addition or summation B. synergism C. potentiation D. antagonism	**B**
62) Which of the following receptor has intrinsic ion channel: a) Histamine H 1 receptor b) Histamine H2 receptor c) Adrenergic alpha receptor d) GABA benzodiazepine receptor	**D**
63) Tolerance and drug resistance can be a consequence of: a) Drug dependence b) Increased metabolic degradation c) Depressed renal drug excretion d) Activation of a drug after hepatic first-pass	**B**
64) Failure of some children with rickets to respond to therapeutic doses of vitamin D is most likely to be due to: A. Differences in sex B. Differences in body weight C. Genetic variation D. Tolerance E. Intolerance	**C**
65) Diminished pharmacological response to the usual dose of the drug after administration for 2 days is termed: a) Tolerance b) Tachyphylaxis c) Anaphylaxis d) Hypersensitivity e) Hypersusceptibility	**B**

66) Diminished pharmacological response to the usual dose of the drug after repeated administration is termed: a) Tolerance b) Tachyphylaxis c) Anaphylaxis d) Hypersensitivity e) Hypersusceptibility	**A**
67) Drug B is: a. Reversible antagonist to control drug b. Potentiator to control drugs c. Irreversible antagonist to control drug d. Partial agonist e. full agonist with same potency of control drug 	**C**
68) Receptors are protein macromolecules that: a) Combine with ligands and produce effects b) Block the action of agonists c) Inactivate enzymes d) Transport drugs across the cell membrane	**A**
69) Quantal response refers to a response that: a) Increases proportionally to the dose of the agonist b) Does not increase proportionally to the dose of the agonist c) Occurs only in the presence of an antagonist d) Occurs only in the presence of a carrier molecule	**B**
70) Which best describes graded dose-response curves? a) More precisely quantitated than quantal dose-response curves b) Obtainable from isolated tissue preparations but not from the study of intact subjects c) Used to determine the maximal efficacy of the drug d) Used to determine the therapeutic index of the drug	**C**

71) Agonists are ligands that: a) Activate receptors b) Inhibit receptors c) Bind to receptors but have no effect d) Block receptors	**A**
72) Quantal response refers to a response that: a) Increases proportionally with the dose of the drug b) Occurs in some individuals c) Is all-or-none, either present or absent d) Varies between different animal species	**C**
73) Lithium has a narrow therapeutic index. Which of the following describes a narrow therapeutic index? a) The chance of toxicity is remote at the therapeutic dose b) The ratio of TD50 to ED50 equal 1 c) The ratio of TD50 to ED50 is less than 1 d) The therapeutic dose approaches the toxic dose	**D**
74) Dose response data was collected during the preclinical testing of four drugs for the treatment of acute heart failure, Which drug studied was the most Efficacious ? A. a B. b C. c D. d 	**C**
75) Dose response data was collected during the preclinical testing of four drugs for the treatment of acute heart failure, Which drug studied was the most potent ? A. a B. b C. c D. d 	**A**

76) The ability of a drug to produce a response after binding to the receptor is called: a) Affinity b) Efficacy c) Potency d) Safety	**B**
77) **Drugs with a high therapeutic index are considered**: a) More potent b) More effective c) More safe for clinical use d) More specific to their target receptors	**C**
78) Which best describes a drug that blocks the action of epinephrine at its receptors by occupying those receptors without activating them? a) Physiologic antagonist b) Pharmacologic antagonist c) Partial agonist d) Chemical antagonist	**B**
79) This graph illustrates the dose response relationship for the effect of the isoproterenol beta agonist on an isolated perfused heart. both alone and in the presence of different field concentrations of Drug X. Based upon the data shown. Drug X IS MOST LIKELY: a. full agonist b. Reversible antagonist c. Irreversible antagonist d. Partial agonist 	**B**
80) This graph shows the concentration dependent effects of norepinephrine on arterial blood pressure, both alone, and in the presence of a fixed concentration of Drug X. Which type of antagonist is drug: a) Silent b) Reversible antagonist c) Irreversible antagonist d) Inverse agonist 	**C**

81) Which of the following drug equations exemplifies the concepts of addition? a) Drug AB > Drug A+ Drug B b) Drug AB = Drug A = Drug B c) Drug AB < Drug A < Drug B d) Drug AB = Drug B+ Drug A	**D**
82) Immunologically mediated reaction to drug Observed soon after administration. a) Anaphylaxis. b) Hyposensitivity. c) super sensitivity. d) Tachyphylaxis.	**A**
83) Which type of bond between a receptor and a drug is strong but reversible? a) Ionic bond b) Hydrogen bond c) Covalent bond d) Van der Waals bond	**A**
84) Which type of bond between a receptor and a drug is weak and reversible? a) Ionic bond b) Hydrogen bond c) Covalent bond d) Van der Waals bond	**B**

1) Increasing the concentration of NE in adrenergic synapses leads to activation of ? (A) Dopa decarboxylase (B) Increased release of norepinephrine (C) Activation of presynaptic Gi coupled receptors V (D) Stimulation of MAO (E) Activation of tyrosine hydroxylase	C
2) A 45-year-old man has recently been the recipient of a heart transplant. Which one of the following drugs is least likely to cause tachycardia in this patient? (A) Amphetamine (B) Dobutamine (C) Epinephrine (D) Isoproterenol	**A**
3) Regarding adrenergic α 1 receptors, all are true EXCEPT: A. Molecular techniques revealed the presence of a number of subclasses. B. Their stimulation can contract the pregnant human uterus. C. Their stimulation can increase peripheral resistance D. Their effect is more potent and shorter duration than β 2 receptors. E. Their activation leads to increase intracellular calcium	**D**
4) Regarding adrenergic β 2 receptors, all are true EXCEPT: A. Their stimulation can relax the non□pregnant human uterus. B. Their activation on mast cells leads to stabilization of mast cell membrane. C. Their activation leads to increase intracellular cAMP. D. Their selective antagonists have no clinical uses. E. Continuous and prolonged stimulation can lead to down-regulation	**B**
5) Physiological events mediated by stimulation of β 1 adrenoceptors include all the following EXCEPT: A. Increase insulin secretion B. Increase systolic blood pressure C. Shorten myocardial cell refractoriness D. Increase outflow resistance in patients with obstructive cardiomyopathy E. Increase renin release by juxtaglomerular cells of the kidney	**A**

6) the actions of norepinephrine at adrenergic receptors are terminated by which of the following: A. Metabolism by MAO in the liver B. Reuptake into the nerve terminal C. Conversion into 5-HIAA D. Conversion to dopamine	**B**
7) The following is correct about the action of sympathomimetics: A. Adrenaline has almost exclusively β □adrenoceptor agonist actions B. Noradrenaline has an approximately equal mix of α -and β -adrenoceptor agonist actions C. Isoprenaline has predominantly α □adrenoceptor agonist actions D. Phenylepherine has predominantly β □adrenoceptor agonist actions E. Dopamine acts on specific D□receptors as well as other adrenoceptors.	**E**
8) The following statements about the action of sympathomimetics (i.v.) are correct EXCEPT: A. Adrenaline infusion causes rise in both systolic and diastolic blood pressure with tachycardia B. Noradrenaline infusion causes rise in both systolic and diastolic blood pressure with bradycardia C. Dopamine infusion causes decrease in renal blood flow and GFR. D. Salbutamol causes fall of blood pressure with tachycardia	**C**
9) For the treatment of acute anaphylactic shock, adrenaline must be given by the following route: A. Inhalation B. Subcutaneous C. Intravenous D. Intramuscular E. Intracardiac	D
10) .Ritodrine hydrochloride can be used in the management of: A. Parkinson's disease B. Bronchial asthma C. Depression D. Premature labor E. Bradycardia	**D**

11) Nasal decongestants carry the risk of cerebral stroke in which of the following conditions: A. Arterial hypertension B. Allergic rhinitis C. Epistaxis D. Benign prostatic hypertrophy E. Sinusitis	**A**
12) Oxymetazoline has which of the following actions: A. Bronchodilation B. Vasoconstriction C. Hyperglycemia D. Tachycardia E. Inhibition of ejaculation	**B**
13) Which of the following drugs will decrease heart rate in a patient with a normal heart but will have no effect on heart rate in a cardiac transplant recipient? A. Epinephrine B. Salbutamol C. Norepinephrine D. Phenylephrine E. Dopamine	**D**
14) The following alpha blocker is best prescribed to decrease symptoms of urine retention due to senile enlarged prostate: A. Prazosin B. Tremazosin C. Phenoxybenzamine D. Terazosin E. Tamsulosin	**E**
15) Alpha blockers can worsen which of the following urinary problems: A. Urine retention due to senile enlarged prostate B. Urine retention due to atonic bladder C. Urine retention with over flow due to spinal cord injuries D. Urine incontinence due to pelvic floor pathology in women E. Dysuria and frequency associated with bladder inflammation	**D**

16) All the following conditions can be effectively treated by beta-blockers EXCEPT: A. Angina pectoris B. Essential hypertension C. Raynaud's disease D. Open angle glaucoma E. Supraventricular tachycardia	**C**
17) Beta-blockers are contraindicated in bronchial asthma because: A. They produce bradycardia and fall in COP B. They increase bronchial secretions C. They decrease pulmonary blood flow D. They increase airway resistance and E. They inhibit the respiratory center and impair ventilation	**D**
18) Essential tremors can be best decreased by which of the following beta blockers? A. Atenolol B. Propranolol C. Betaxolol D. Nebivolol E. Bisoprolol	**B**
19) he following beta-blocker is preferred to control tachycardia when peripheral vascular disease is also associated: A. Propranolol B. Dilevalol C. Timolol D. Pindolol E. Sotalol	**B**
20) One of the following drugs is best chosen for the control of hypertension during pregnancy: A. Captopril B. Propranolol C. Reserpine D. Phenoxybenzamine E. Alpha methyldopa	**E**

21) Which of the following is correct regarding responses mediated by adrenergic receptors? a. Stimulation of α 1 receptors increases blood pressure. b. Stimulation of α 1 receptors reduces blood pressure. c. Stimulation of sympathetic presynaptic α 2 receptors increases norepinephrine release. d. Stimulation of β 2 receptors increases heart rate (tachycardia). e. e. Stimulation of β 2 receptors causes bronchoconstriction.	A
22) All of the following are true about salbutamol except? A. It is selective β 2 agonists. B. It can lose its selectivity in high doses. C. Tolerance is a common side effect of its use. D. It is used in the treatment of abortion. E. It is used in the treatment of bronchial asthma.	D
23) Which of the following drugs is considered indirect sympathomimetic? a. Epinephrine b. Clonidine c. Ephedrine d. Dopamine e. Amphetamine	D
24) Stimulation of beta 1 adrenergic receptors produce which of the following? a) Dilatation of pupil. b) Relaxation of airway smooth muscles. c) GIT sphincter contractions. d) contraction of splenic capsule. e) secretion of renin from kidney.	E
25) Which of the following is a therapeutic use for dopamine? A. Chronic bronchial asthma management B. Management of sleep cycles C. Management of tachyarrhythmias D. Treatment of shock E. Treatment of Raynaud's phenomenon	D

26) Which of the following drugs can be injected by slow intravenous infusion to raise blood pressure? A. Clonidine B. Isoprenaline C. Noradrenaline D. Phenoxybenzamine E. Salbutamol	C
27) A beta-2 adrenergic receptor-selective agonist(s), may be used in management of both chronic and acute asthma: A) Ritodrine. B) Timolol C) Propranolol. D) Salbutamol. E) Ephedrine.	**D**
28) Which of the following is the route of administration of norepinephrine in acute hypotensive states? A. Intramuscular B. Intravenous infusion. C. Subcutaneous. D. Transdermal patches E. Inhalation	B
29) Which of the following(s) adrenergic receptors regulate noradrenaline secretion from adrenergic nerve fibers? a) Alpha 1. b) Alpha 2. c) Beta 1. d) Beta 2.	B
30) The following action of adrenaline is not mediated by B receptors: a) Dilatation of blood vessels b) Dilatation of pupil c) Bronchodilation d) Renin release from kidney e) Tachycardia	**B**

31) The principal process which terminates the action of noradrenaline released from adrenergic nerve ending is: a) Degradation by MAO b) Methylation by COMT c) Axonal uptake d) Extra neuronal uptake e) Degradation by CYP450	C
32) One of the following receptor subtypes relaxes smooth muscle and causes liver glycogenalysis and gluconeogenesis: a. α 1 b. α 2 c. β 1 d. β 2 e. β 3	**D**
33) A 32 year old man presents to his primary care physician because of a 4- year-history of nasal stuffiness, cough and sinus pain. He is prescribed with phenylephrine, He must be aware of which of the following potential adverse effect: a) Constipation b) Diarrhea c) Rhinorrhea d) Hypertension e) Tinnitus	D
34) Epinephrine has all the action listed EXCEPT: a) Raises systolic blood pressure b) Branchodilatation c) Contracts internal sphincter of bladder d) Stimulation of central nervous system e) increases salivation	**E**
35) One of the following is the most likely to occur with parenteral administration of an α 1-agonist drug: a) Hypotension b) Hypertension c) Tissue necrosis d) Vasodilation	**B**

36) Which of the following drugs is the drug of choice in anaphylaxis associated with bronchospasm and hypotension? a) Epinephrine b) Isoproterenol c) Norepinephrine d) Phenylephrine	A
37) Catecholamine have all of the properties below except: a) Highly polar b) Orally absorbed c) Short duration of action, d) Rapid metabolism e) Rapid onset of action	B
38) Which of the following drugs will decrease heart rate in a patient with a normal heart but will have no effect on heart rate in a cardiac transplant recipient? A. Epinephrine B. Salbutamol C. Norepinephrine D. Phenylephrine E. Dopamine	**D**
39) A 7-year -old boy with a previous history of bee sting allergy is brought to the emergency department after being stung by 3 bees. If this child has signs of anaphylaxis, what is the treatment of choice? a. Diphenhydramine (an antihistamine) b. Ephedrine c. Epinephrine d. Isoproterenol e. Methylprednisolone (a corticosteroid)	C
40) Which of the following drugs has selective alpha 2 agonistic activity? a. Epinephrine b. Clonidine c. Ephedrine d. Dopamine e. Phenylephrine	B

41) Which of the following drugs can be used in shock states ? a. Epinephrine b. Isoproterenol c. Ephedrine d. Dopamine e. Phenylephrine	D
42) Which of the following drugs is considered selective beta 1 agonist? a. Dobutamine b. Epinephrine c. Isoproterenol d. Norepinephrine e. Phenylephrine	A
43) You would note that β 2 stimulants frequently cause? a. Direct stimulation of renin release b. Hypoglycaemia c. Itching d. Skeletal muscle tremor e. Vasodilation in the skin	**D**
44) Mr Green, a 54-year -old banker, had a cardiac transplant 6 months ago. His current blood pressure is 120/70 mm Hg and heart rate is 100 bpm. Which of the following drugs would have the least effect on Mr Green's heart rate? a. Salbutamol b. Epinephrine c. Isoproterenol d. Norepinephrine e. Phenylephrine	**E**
45) Which of the following sympathomimetic acts both direct & indirect? a. Epinephrine b. Clonidine c. Ephedrine d. Dopamine e. Amphetamine	**C**

46) Albuterol will cause bronchodilation in the asthmatic because it is a: a. α agonist b. β 1 agonist c. β 2 agonist d. α antagonist e. β 2 antagonist	C
47) Phenylephrine has which of the following actions: a. Bronchodilation b. Vasoconstriction c. Increases blood sugar d. Cardiac acceleration e. Inhibition of ejaculation	B
48) Which of the following drugs is a good choice when pupillary dilation—but not cycloplegia—is desired? a. Isoproterenol b. Norepinephrine c. Phenylephrine d. Pilocarpine e. Tropicamide	C
49) The presence of epinephrine in a solution of local anesthetic enhances the duration of local anesthesia because it: a. Aids the penetration of the local anesthetic into the nerve axon b. Blocks the enzymic biotransformation of the local anesthetic c. Causes local vasoconstriction at the site of injection d. Has intrinsic local anesthetic action of its own e. Blocks pain fibers	C
50) Selecting an agent to elicit an increase in peripheral resistance without direct cardiac effects, the agent of choice would be: a. Norepinephrine. b. Dopamine. c. phenylephrine. d. Phentolamine. e. propranolol	**C**

51) In the presence of cocaine which of the following drugs would be potentiated? a. Acetylcholine b. Tyramine. c. norepinephrine. d. Phentolamine. e. Mecamylamine.	C
52) Which of the following drugs will potentiate the effects of norepinephrine: a. Reserpine b. Cocaine c. Scopolamine d. Propranolol e. Mecamylamine	B
53) agonists will cause which one of the following actions: a. Cardiac slowing b. Vasoconstriction c. Breakdown of fats d. Breakdown of glycogen e. Release of norepinephrine	C
54) non catecholamine adrenergic amines differ from catecholamines in that they: a. Have a short duration of action b. Are not effective if administered orally c. Do not act indirectly, but usually combine directly with adrenergic receptors of the α 1 and β 2 subtypes d. Tend to have greater central nervous system (CNS) effects following oral administration e. Are metabolized at a more rapid rate.	D
55) Which of the following adrenergic drugs can be used in treatment of hypertension? A. Clonidine B. Dopamine C. Isoprenaline D. Phenylephrine E. Terbutaline	A

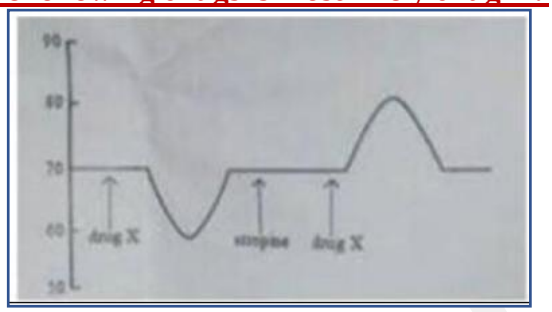
56) Which of the following drugs may cause autoimmune hemolytic anemia? A. Phenoxybenzamine B. Alpha methyldopa C. Yohimbine D. Tamsulosin E. Propranolol	**B**
57) Which of the following is a side effects of prazosin? A. Urine retention B. First-dose hypotension C. Depression D. Reflex tachycardia. E. Miosis	B
58) Which one of the followings is a sympatholytic drug? A. Dobutamine B. Dopamine C. Prazosin D. Isoprenaline	C
59) Reflex tachycardia caused by the systemic administration of albuterol can be blocked by what drug? a. Dobutamine b. Prazosin c. Phenylephrine d. Atenolol e. Low-dose epinephrin	D
60) Which of the following drugs is a beta blocker with additional vasodilator action? A. Carvedilol B. Atenolol C. Metoprolol D. Propranolol E. Pindolol	A

61) An example of covalent drug receptor interaction is: a) Noradrenaline binding to β adrenergic receptor b) Acetylcholine binding to muscarinic receptor c) Prazosin binding to α adrenergic receptor d) Phenoxybenzamine binding to alpha adrenoreceptor	D
62) In treatment of pheochromocytoma, which adrenergic receptor blocker can be used? A. Prazosin B. Phenoxybenzamine C. Yohimbine. D. Tamsulosin E. Atenolol	B
63) Which of the following drugs blocks alpha 2 receptors? A. Phenoxybenzamine B. Prazosin C. Yohimbine D. Tamsulosin E. Phentolamine	C
64) Reflex tachycardia caused by the systemic administration of albuterol can be blocked by what drug? a) Dobutamine b) Prazosin c) Phenylephrine d) Metoprolol e) Low-dose epinephrine	D
65) Select the ultra-short acting cardio selective B adrenergic blocker a) Bisoprolol b) Esmolol c) Timolol d) Sotalol e) Propranolol	B

66) 60-year old man has a blood pressure of 160/100 mmHg and slightly enlarged prostate. Which of the following medications would be useful in treating both of these conditions? a) prazoxin b) Labetalal c) Phantolamine d) Propranolol e) Bethanechal	A
67) Which group or patients is mostly at risk for adverse effect of β 2-blockers? a) Asthmatics b) Patients with congestive heart failure c) Traumatic patients d) Diabetics e) Patients with deep vein thrombosis (DVTS)	A
68) Which of the following is a selective α 1A receptor blocker that affords symptomatic relief in benign prostatic hypertrophy without producing significant fall in blood pressure? a) Terazosin b) Doxazosin c) Trimazosin d) Tamsulosin e) prazosin	**D**
69) One of the following is MOST contraindicated for methyldopa: a) Renal insufficiency b) Caronary insufficiency c) Mental depression d) Liver disease e) Asthma	C
70) One of the following its storage acts by Increasing the release of norepinephrine from its storage sites: a) Amphetomine b) Dopomine c) Phenylephrine d) Reserpine e) Clonidine	A

71) Select the drug which affords faster and greater symptomatic relief in benign hypertrophy of prostate: a) Tamsulosin b) Demopressin c) Finasteride d) Sildenafil e) Prazosin	A
72) Which of the following actions of adrenaline would be blocked byphenoxybenzamine but not by propranolol? a) Cardiac stimulation b) Contraction of the radial smooth muscle of the iris c) Increase renin secretion. d) Relaxation of bronchial smooth muscle. e) Relaxation of the uterus	B
73) The following disease is worsened by propranolol: a. Glaucoma b. Benign prostatic hypertrophy c. Bronchial asthma d. Parkinsonism	C
74) One of the following drugs is best chosen for the control of hypertension during pregnancy: A. Captopril B. Propranolol C. Reserpine D. Phenoxybenzamine E. Alpha methyldopa	**E**
75) Which of the following side effects occur with prazosin? a. Tachycardia b. Hypotension c. Urine retention d. Miosis e. Dry mouth	B

76) In the presence of phenoxybenzamine, an injection of epinephrine will cause which of the following: a. Bronchoconstriction b. Hypotension c. Inability to micturate d. Low blood sugar e. Rise in body temperature	**B**
77) To lower and maintain blood pressure in the hypertensive individual for long periods of time, which one of the following drugs would be effective: a. Isoproterenol b. Phentolamine c. Propranolol d. Dopamine e. Atropine	C
78) β 1 Adrenergic blockers are effective in treating all this conditions EXCEPT: a. Angina pectoris b. Hypertension c. Glaucoma d. Migraine e. Benign prostatic hypertrophy	E
79) The mechanism of action of prazosin involves: a. Activation of β 1-receptors b. Specific activation of α 2-receptors c. Blockade of a receptors d. Elimination of β 2-effects e. Nonequilibrium α -adrenergic blockade	**C**
80) Blockade of this receptor would lead to increased levels of catecholamines in the neuroeffector junction. a. α 1 b. α 2 c. β 1 d. β 2 e. Dopamin	B

81) IV injection of drug X was given before & after atropine, and heart rate was recorded. The results was recorded below.Which of the following drugs is most likely drug X? a) Epinephrine b) Norepinephrine c) Prazocin d) Albuterol 	**B**
82) Sudden withdrawal is important contraindication with ___ a. Propranolol (B- blocker) b. Prazosin c. Captopril d. Metronidazole	A
83) Cardiovascular effects of a new drug (that activates autonomic receptors are shown in the table below The most probable receptor affinities of drug X are a) α 1 , α 2 b) α 1 , α 2 , β 1 c) β 1 , β 2 d) α 1 e) β 1 Parameter / Control / Drug X Systolic BP: 120 mm Hg / 110 mm Hg Diastolic BP: 85 mm Hg / 55 mm Hg Heart rate: 60/min / 120/min	C
84) Clinical studies have shown that adrenoceptor blockers have many useful effects in patients. However, a number of drug toxicities have been documented. Adverse effects that limit the use of adrenoceptor blockers include which one of the following? a. Bronchoconstriction from α -blocking agents b. Acute heart failure exacerbation from β blockers c. Impaired blood sugar response with α blockers d. Increased intraocular pressure with β blockers e. Sleep disturbances from α -blocking drugs	B

1) Which one of the following effects is caused by the ingestion of mushrooms that contain pilocarpine? a) Tachycardia b) Bronchodilation c) Diarrhea d) Hypertension	C
2) A patient develops urinary retention after an abdominal surgery. Urinary obstruction was ruled out in this patient. Which strategy would be helpful in promoting urination? a) Activating nicotinic receptors b) Inhibiting the release of acetylcholine c) Inhibiting cholinesterase enzyme d) Blocking muscarinic receptors	C
3) In Alzheimer disease, there is a deficiency of cholinergic neuronal function in the brain. Theoretically, which strategy is useful in treating symptoms of Alzheimer disease? A. Inhibiting cholinergic receptors in the brain B. Inhibiting the release of acetylcholine in the brain C. Inhibiting the acetylcholinesterase enzyme in the brain D. Activating the acetylcholinesterase enzyme in the brain	C
4) Atropine is one of the ingredients in the antidiarrheal combination diphenoxylate/atropine available in the United States. Which of the following effects is produced by atropine that contributes to its antidiarrheal effect? a. Increase in gastrointestinal motility. b. Reduction in gastrointestinal motility. c. Increase in salivation. d. Increase in acid secretion	B
5) An II-year-old boy was brought to the ER by some of his friends after eating seeds from a plant. The boy was incoherent; his skin was hot and dry. His pupils were dilated and unresponsive to light. Blood pressure was 180/105 mm Hg, pulse 150/min, and . The presumptive diagnosis was drug toxicity due to the ingestion of a compound like... (A) cannabis (B) digoxin (C) mescaline (D) phencyclidine (E) scopolamine	E

6) A woman with facial muscle spasms is treated with an agent that inhibits the release of acetylcholine. Which side effect is most likely to occur in this patient? a) bradycardia b) urinary incontinence c) dry mouth d) diarrhea e) constriction of the pupils	**C**
7) Which one of the following effects is caused by the ?ingestion of mushrooms that contain pilocarpine A.Constipation B.Bronchodilatation C Hyperthermia D.Bradycardia E Hypertension	**D**
8) Which one of the following drugs has only muscarinic effect? a) Carbachol b) Bethanechol c) Physostigmine d) Neostigmine e) Echothiopate	**B**
9) Which one of the following drugs has cholinesterase enzyme inhibitory effect? a) Acetylcholine b) Edrophonium c) Bethanechol d) Pilocarpine e) Carbachol	**B**
10) Which of the following is atropine substitute that could be used for treatment of bronchial asthma a) Ipratropium b) Tropicamide c) Pirenzepine d) Hyoscine butyl bromide e) Darifenacin	**A**

11) **The following statements about pilocarpine are correct EXCEPT:** A. It is a natural plant alkaloid B. It acts selectively on muscarinic receptors C. It can block the hypotensive effect of neostigmine D. It is not metabolized by AChE enzyme E. It has a clinically useful miotic action	**C**
12) **The following statements about anti-ChE drugs are correct EXCEPT:** A. Physostigmine lowers IOP B. Neostigmine may be used with atropine to treat myasthenia gravis C. Pyridostigmine have fewer visceral side effects than neostigmine. D. Rivastigmine can be used to treat paralytic ileus E. Edrophonium has short duration of action	**D**
13) **A central AChE inhibitor that is used to improve symptoms of Alzheimer's disease is:** A. Pyridostigmine B. Edrophonium C. Donepezil D. Neostigmine E. Echothiophate	**C**
14) **A short acting AChE inhibitor used in the diagnosis of myasthenia gravis is:** A. Edrophonium B. Neostigmine C. Pyridostigmine D. Rivastigmine E. Donepezil	**A**
15) **Which of the following drugs has the longest duration of AChE inhibition**: A. Echothiophate B. Neostigmine C. Physostigmine D. Pyridostigmine E. Donepezil	**A**

16) The cause of death in organophosphate toxicity is: A. Bradycardia B. Increased bronchial secretions C. Paralysis of the respiratory muscles D. Depression of the respiratory center E. All of the above	**E**
17) All the following are known contraindications for the use of atropine EXCEPT: A. Closed angle glaucoma B. Senile prostatic enlargement C. Paralytic ileus D. Postpartum urine retention E. Acute cystitis	**E**
18) A muscarinic blockers that is used as a standard treatment of motion sickness is: A. Pirenzepine B. Oxybutinine C. Atropine D. Scopolamine E. Tolterodine	**D**
19) A muscarinic agonist given orally to increase salivary secretion and decrease symptoms of dry mouth associated with Sjögren syndrome is: A. Cevimeline B. Carbachol C. Bethanechol D. Pyridostigmine E. Rivastigmine	**A**
20) Which one of the following statements is true regarding Pilocarpine: A. Is used to lower intraocular pressure in glaucoma b. s cleaved by acetylcholinesterase c. Inhibits exocrine secretions D. Selectively binds to nicotinic receptors e. Has shorter duration of action than acetylcholine	**A**

21) **Which one of the following is characteristic of parasympathetic stimulation**: a) Decrease in intestinal motility. b) Increase in pupil size of the eye. c) Relaxation of the bronchial smooth muscles d) Constipation. e) Decrease in heart rate	**E**
22) Which one of the following is characteristic of parasympatheticstimulation: a) Decrease in intestinal motility b) Contraction of sphincter muscle in the iris of the eye (miosis) c) Contraction of sphincter of urinary bladder d) Increase in heart rate e) Anhyrosis	**B**
23) Cholinergic stimulation causes: A. Urine retention B. Bronchodilatation C. Sweating D. Tachycardia E. Reduced gut motility	**C**
24) **Stimulation of cardiac M2 cholinoceptors cause which of the following**: A. Decrease myocardial contractility B. Decrease SA nodal activity and heart rate C. Decrease conduction velocity through the Purkinje fibers D. Decrease coronary blood flow E. All of the above.	**B**
25) Nicotinic acetylcholine receptors are found in all the following sites EXCEPT: A. Sympathetic ganglia B. Presynaptic nerve endings C. Central nervous system D. Skeletal muscles motor end plate E. Vascular endothelium	**E**

26) A direct acting cholinomimetic that is lipid soluble and often used in the treatment of glaucoma is: a) Acetylcholine. b) Bethanechol c) Physostigmine. d) Pilocarpine. e) Neostigmine	**D**
27) All of the following would be direct effects of bethanechol therapy EXCEPT: a. Salivation b. Decreased blood pressure c. Urine retention d. Diarrhea	**C**
28) The following is true for true cholinesterase: A. Is found in autonomic ganglia and myoneural junctions B. Is found in plasma and liver C. It needs 2 weeks to be regenerated D. It can metabolize acetylcholine as well as other choline esters E. Its presence is not necessary for life	**A**
29) All of the following compounds are direct acting cholinergic agonists EXCEPT: a. Acetylcholine b. Pilocarpine c. Carbachol d. Pralidoxime	**D**
30) All of the following statements arc true for pilocarpine EXCEPT: a. Causes contraction of the intestinal tract b. may be used to treat asthma c. Induces vasodilation d. Is effective for open-angle glaucoma e. Produces marked diaphoresis (sweating)	**B**

31) Pilocarpine, which is used in the treatment of glaucoma, is classified as: a. cholinomimetic b. A dopamine receptor antagonist c. A cholinesterase inhibitor d. An adrenergic neuron blocker	**A**
32) All of the following would be direct effects of pilocarpine therapy EXCEPT: a. mydriasis b. Decreased intraocular pressure c. Increased sweating d. miosis	**A**
33) Acetylcholine is the neurotransmitter at all of the following sites EXCEPT a. muscarinic receptor sites b. nicotinic (nn) receptor sites c. nicotinic (nm receptor sites d. adrenergic ganglia e. a adrenergic receptor sites	**E**
34) Actions of cholinoceptor agonists and their clinical uses include which one of the following? a. Bronchodilation (asthma). b. Cyclospasm, improved aqueous humor drainage (glaucoma) c. Decreased gastrointestinal motility with resulting postoperative gastrointestinal relaxation (abdominal surgery). d. Decreased neuromuscular transmission and impaired recovery after neuromuscular blockade (surgical anesthesia). e. Both (1) and (3) are correct.	**B**
35) Which of the following reversible cholinesterase inhibitors is used for atropine intoxication? a) Neostigmine b) Physostigmine c) Edrophonium d) Donepezil e) Pyridostigmine	**B**

36) Which of the following drugs produce irreversible anti cholinesterase effect? a) Edrophonium b) Echothiophate c) Rivastigmine d) Tacrine e) Donepezil	**B**
37) Neostigmine differs from pilocarpine in having effect on: a) Bladder tone. b) Bowel motility. c) Heart rate. d) Salivary gland. e) Skeletal muscle	**E**
38) Which of the following is NOT an expected symptom of poisoning with Organophosphorus compound? a) Increased bronchial secretions b) Miosis c) Tachycardia d) Convulsions e) Bronchospasm	**C**
39) Which of the following is the most appropriate in the treatment of organophosphorus poisoning? a) Morphine b) Atropine c) Physostigmine d) Aspirin	**B**
40) AChE inhibitor used in the ttt of myasthenia gravis is: A. Bethanicol B. Neostigmine C. Pilocarpine D. Atropine E. Donepezil	**B**

41) A patient requires mild cholinomimetic stimulant following surgery. Neostigmine and Bethanechol in moderate dose have significantly different effects on which of the following? a) Gastric secretion b) Neuromuscular blocker. c) Salivary glands. d) Sweat gland. e) Erection	**B**
42) One of the following is a very short-acting anti-cholinesterase: a) Neostigmine. b) Pyridostigmine. c) Edrophonium. d) Physostigmine e) Ambenonium	**C**
43) Which of the following drugs might a physician give as an antidote to atropine? (A) Dopamine (B) Epinephrine (C) Physostigmine (D) Pralidoxime (E) Scopolamine	**C**
44) Neostigmine is preferred over physostigmine for treating myasthenia gravis because: A. It is better absorbed orally B. It has longer duration of action C. It has additional direct agonistic action on nicotinic receptors at the muscle end plate D. It penetrates blood-brain barrier	**C**
45) In the human eye, echothiophate causes which one of the following? (A) Ciliary muscle relaxation (B) Decrease in the incidence of cataracts (C) Increase in intraocular pressure (D) Mydriasis (E) Reversal of cycloplegia	**E**

46) Neostigmine: a. Has a shorter duration of action than edrophonium b. Decreases the acetylcholine concentration at the neuromuscular junction c. May result in bowel hypermotility, salivation, and sweating d. Exacerbates tubocurarine poisoning	**C**
47) Atropine may produce the following actions: a) Diarrhea b) Intestinal smooth muscle spasm c) Dryness of eye secretion d) Miosis e) Spasm of accommodation	**C**
48) Which ONE of the following drugs most closely resembles atropine in its pharmacologic actions? a) Scopolamine b) Trimethaphan c) Physostigmine d) Acetylcholine e) Mecamylamine	**A**
49) Which ONE of the following drugs does not produce miosis? a) Echothiophate b) Atropine c) Pilocarpine d) Neostigmine e) Edrophonium	**B**
50) Drug of choice for bradycardia due to beta blocker overdose is: a) Atropine b) Dopamine c) Adrenaline d) Isoprenaline	**A**

51) Which one of the following drugs is a mydriatic cycloplegic atropine substitute drug? a) Ipratropium b) Scopolamine c) Homatropine d) Benztropine	**C**
52) Which of the following is a parasympatholytic drug that decrease HCI secretion and can be used for treatment of peptic ulcer? a) Pirenzepine b) Oxybutynin c) Ipratropium d) Probantheline	**A**
53) Atropine overdose may cause which one of all of the following: a) Gastrointestinal smooth muscle cramps b) Increased heart rate c) Increased gastric secretion. d) Pupillary constriction. e) Urinary frequency.	**B**
54) All the following are known contraindications for the use of atropine EXCEPT: A. Closed angle glaucoma B. Senile prostatic enlargement C. Paralytic ileus D. Postpartum urine retention E. Acute cystitis	**E**
55) A muscarinic blocker that is used as a standard treatment of motion sickness is: A. Pirenzepine B. Oxybutinine C. Atropine D. Scopolamine E. Tolterodine	**D**

56) Which one of the following best describes the mechanism of action of scopolamine? a) Irreversible antagonist at nicotinic receptors. b) Irreversible antagonist at muscarinic receptors. c) Physiologic antagonist at muscarinic receptors. d) Reversible antagonist at nicotinic receptors e) Reversible antagonist at muscarinic receptors	**E**
57) One of the following is NOT a feature of Atropine poisoning: a) Mydriasis. b) Hallucinations. c) Hypothermia. d) Coma. e) Dry mouth.	**C**
58) Atropine causes the following: a) Bradycardia, hypotension and bronchoconstriction b) Tachycardia, little effect on blood pressure and bronchodilatation c) Decrease in contractile strength, conduction velocity through the AV node d) Tachycardia, hypertensive crisis and bronchodilatation e) Bradycardia, hypertensive crisis and bronchodilatation	**B**
59) Atropine causes the following: a) Bradycardia, hypotension and bronchoconstriction b) Tachycardia, little effect on blood pressure and bronchodilatation c) Decrease in contractile strength, conduction velocity through the AV node d) Tachycardia, hypertensive crisis and bronchodilatation e) Bradycardia, hypertensive crisis and bronchodilatation	**C**
60) Atropine: a) Is difficult to use without troublesome side effect b) Effectively decrease gastric acid secretion in low doses c) Produces mydriasis without cycloplegia d) Can be given to produce cycloplegia without mydriasis e) Are relatively nontoxic and can be safely employed in large doses	**A**

61) Urination in the human subject is decreased by: A. Muscarinic agonists B. Muscarinic antagonists C. AChase inhibitors D. Nicotinic agonists E. Spider Venom	**B**
62) Which of the following is the most dangerous effect of belladonna alkaloids in infants and toddlers? (A) Dehydration (B) Hallucinations (C) Hypertension (D) Hyperthermia (E) Intraventricular heart block	**D**
63) Which one of the following can be blocked by atropine? (A) Decreased blood pressure caused by hexamethonium (B) Increased blood pressure caused by nicotine (C) Increased skeletal muscle strength caused by neostigmine (D) Tachycardia caused by exercise (E) Sweating caused by exercise	**E**
64) Atropine is contraindicated in: A. Pulmonary embolism B. Digitalis toxicity C. Iridocyclitis D. Raised intraocular tension	**D**
65) A 58-year-old man with Parkinson's disease presents to the clinic for follow-up. What anticholinergic is the most appropriate treatment? (A) Benztropine (B) Bromocriptine (C) Ipratropium (D) Scopolamine (E) Tropicamide	**A**

66) Which one of the following drugs causes vasodilation that can be blocked by atropine? (A) Benztropine (B) Bethanechol (C) Botulinum toxin (D) Cyclopentolate (E) Edrophonium	**B**
67) All of the following may cause cycloplegia (paralysis of accommodation) when used topically in the eye EXCEPT: (A) Atropine (B) Cyclopentolate (C) Physostigmine (D) Scopolamine (E) Tropicamide	**C**
68) Which one of the following can be blocked by atropine? (A) Decreased blood pressure caused by hexamethonium (B) Increased blood pressure caused by nicotine (C) Increased skeletal muscle strength caused by neostigmine (D) Tachycardia caused by exercise (E) Bradycardia caused by infusion of acetylcholine	**E**
69) Atropine therapy in the elderly may be hazardous because: (A) Atropine can elevate intraocular pressure in patients with glaucoma (B) Atropine frequently causes ventricular arrhythmias (C) Urinary retention is often precipitated by atropine in women (D) The elderly are particularly prone to develop dangerous hyperthermia when given atropine (E) Atropine often causes excessive vasodilation and hypotension in elderly	**A**

1) Which antibiotic is primarily bacteriostatic but becomes bactericidal at higher concentrations: A. Erythromycin. B. Tetracycline. C. Chloramphenicol. D. Ampicillin. E. Sulphonamide	**A**
2) Superinfections are more common with: A. Use of narrow spectrum antibiotics. B. Short courses of antibiotics. C. Use of antibiotics that are completely absorbed from stomach. D. Use of antibiotics that are completely absorbed from the small intestines. E. Use of antibiotic combinations covering both gram positive and gram negative bacteria	**E**
3) The aims of Antimicrobial drug combinations are not include one of the following: A. Faster and more complete elimination of the infecting organism. B. Treated infection when nature and sensitivity of the infecting organism is not definite. C. Prevent emergence of resistant stains. D. Prevent superinfection. E. In presence of mixed infection	**D**
4) What does the term "antibiotics" mean: a) Non-organic or synthetic substances that selectively kill or inhibitthe growth of other microorganisms b) Substances produced by some microorganisms and their synthetic analogues that selectively kill or inhibit the growth of another microorganisms c) Substances produced by some microorganisms and their synthetic analogues that inhibit the growth of organism cells d) Synthetic analogues of natural substances that kill protozoa e) Synthetic analogues of natural substances that kill helminthes	**B**

5) Which type of antimicrobial drug combination is most likely to exhibit antagonism: A. Bactericidal + Bactericidal. B. Bactericidal + bacteriostatic for a highly sensitive organism. C. Bactericidal + bacteriostatic for a marginally sensitive organism. D. Bacteriostatic + bacteriostatic. E. Antimicrobial acting on cell + Antimicrobial acting on protein synthesis	**B**
6) Clavulanic acid is combined with amoxicillin because: a) It kills bacteria that are not killed by amoxicillin b) It retards renal excretion of amoxicillin c) It counteracts the adverse effects of amoxicillin d) It inhibits beta lactamases that destroy amoxicillin	**D**
7) A 19-year-old woman with recurrent sinusitis has been treated with different antibiotics on several occasions. During the course of one such treatment she developed a severe diarrhea and was hospitalized. Sigmoidoscopy revealed colitis, and pseudomembranes, were confirmed histologically. Which of the following drugs, administered orally, is most likely to be effective in the treatment of colitis due to C difficile? a. Ampicillin b. Azithromycin c. Clindamycin d. Metronidazole e. Tetracycline	**D**
8) What is the principle of selective toxicity in antimicrobial chemotherapy? A. The drug kills both pathogenic organisms and human cells equally. B. The drug inhibits a vital function of the infectious organism that differs from human cells. C. The drug stimulates the immune system to attack pathogens. D. The drug broadens the spectrum of activity to target all bacteria.	**B**
9) A bacteriostatic drug primarily: A. Kills bacteria rapidly. B. Inhibits bacterial growth but requires the immune system to eliminate bacteria. C. Destroys bacterial cell walls. D. Is only effective in immunocompromised hosts.	**B**

10) Broad-spectrum antibiotics are preferred when: A. The causative organism is clearly identified. B. Treating a life-threatening infection with an unknown pathogen. C. Minimizing bacterial resistance is the goal. D. Targeting a single bacterial species.	**B**
11) Which mechanism of action describes penicillins? A. Inhibition of protein synthesis B. Inhibition of cell wall synthesis C. Disruption of cell membranes D. Inhibition of nucleic acid synthesis	**B**
12) Bacterial resistance to antibiotics can occur through: A. Increased drug accumulation in bacteria. B. Modification of the drug target. C. Enhanced immune response. D. Synergistic drug combinations.	**B**
13) What is the primary goal of using antibiotic combinations? A. To reduce the cost of treatment. B. To achieve synergy or broaden coverage in life-threatening infections. C. To eliminate the need for bacterial culture. D. To increase the risk of superinfection.	**B**
14) An example of a synergistic antibiotic combination is: A. Penicillin + Aminoglycoside B. Tetracycline + Erythromycin C. Sulfonamide + Penicillin D. Fluoroquinolone + Daptomycin	**A**
15) Which drug class inhibits folic acid synthesis in bacteria? A. Fluoroquinolones B. Sulfonamides C. Aminoglycosides D. Macrolides	**B**

16) A combination of amoxicillin + clavulanic acid is an example of: A. Synergy (enhanced killing). B. Potentiation (inactivation of a resistance mechanism). C. Antagonism (reduced efficacy). D. Additive effect (sum of individual effects).	**B**
17) Why is a narrow-spectrum antibiotic preferred over a broad-spectrum one when possible? A. To reduce the risk of superinfection and resistance. B. To ensure coverage of all potential pathogens. C. To minimize the need for microbial culture. D. To enhance the drug's concentration-dependent effects.	**A**
18) Which of the following best describes the post-antibiotic effect (PAE)? A. The time during which bacterial growth resumes after drug concentration falls below MIC. B. The period when bacterial growth remains suppressed even after drug levels drop below MIC. C. The phase where drug concentration exceeds the MIC for optimal killing. D. The delay in bacterial resistance development after drug exposure.	**B**
19) Which of the following is a bactericidal drug? A. Tetracyclines B. Erythromycin (at low concentrations) C. Aminoglycosides D. Sulfonamides	**C**

1. **The study of the actions, mechanisms, uses and adverse effects of drugs is.....:**

   A. Pathology

   B. Pharmacology

   C. Parasitology

   D. Microbiology

2. **Regarding drugs all of the following are true except.....**

   A. They are used for the prevention, treatment and diagnosis of diseases

   B. They alter the physiological state of a living organism

   C. They could be natural or synthetic

   D. Some drugs are free of adverse effects

3. **The effect of the body on the drug is called.....**

   A. Pharmacodynamics

   B. Pharmacokinetics

   C. Pharmacogenetics

   D. None of the above

4. **The effect of the drug on the body is called.....**

   A. Pharmacodynamics

   B. Pharmacokinetics

   C. Pharmacogenetics

   D. None of the above

5. **The branch of pharmacology studying the movement and disposition of drugs within and by the body .....**

   A. Pharmacodynamics

   B. Pharmacokinetics

   C. Pharmacogenetics

   D. All of the above

1. B	2. D	3. B	4. A	5. B

6. Pharmacokinetics include.....:

A. Absorption
B. Distribution
C. Metabolism
D. Excretion
E. All of the above

7. Passage of drug molecules from the site of administration to the systemic circulation is called.....

A. Absorption
B. Distribution
C. Metabolism
D. Excretion

8. The process of drug absorption applies to all routes of administration, except .....

A. Oral route
B. Inhalation route
C. Topical route
D. Intravenous route
E. C & D

9. All of the following factors affecting drug absorption are related to the drug except .....

A. Molecular size
B. Dose and concentration of the drug
C. Route of administration
D. Lipid solubility

10. Regarding drug absorption which of the following is true .....

A. Small molecules are absorbed < large molecules.
B. Absorption increases with increasing the dose with no limit
C. Ischemia decreases absorption
D. IM route is slower than oral route

6. E	7. A	8. E	9. C	10. C

11. Nonionized form of the drug.....:

A. The polar form

B. Water soluble

C. Can cross biological membranes

D. All of the above

12. The pH at which 50% of the drug is ionized and 50% is non-ionized is.....

A. The pKa

B. Bioavailability

C. Volume of distribution

D. None of the above

13. Regarding aspirin which of the following is true .....

A. It is a weak base

B. It is ionized in the stomach

C. It is more absorbable in the stomach than the intestine

D. Its absorption increases when PH increases

14. Aspirin toxicity can be treated by .....

A. Acidification of urine

B. Alkalinization of urine

C. Decreasing urine PH

D. All of the above

15. Regarding amphetamine which of the following is true .....

A. It is a strong base

B. Its absorption increases in the acidic medium

C. Its toxicity can be treated by acidification of urine

D. It is more ionized in the basic medium

11. D	12. A	13. C	14. B	15. C

16. The fraction of the administered dose of a drug that reaches the systemic circulation is called.....:

A. Bioavailability
B. The pKa
C. Drug metabolism
D. Volume of distribution

17. Which of the following has 100% bioavailability

A. Oral route
B. IM route
C. IV route
D. Inhalation route

18. Which of following drugs will be absorbed to the least extent in stomach?

A. Ampicillin (pka-2.5)
B. Warfarin (pKa—5)
C. Phenobarbital (pka-7.9)
D. Amphetamne (pKa-9.9)

19. Which of following will be the result of a decrease in urinary pH?

A. Decreased urinary excretion of a weak base
B. Increased urinary excretion of a weak acid
C. Increased urinary excretion of a weak base
D. None of the above

20. MS. Smith, a 65-year-old woman with pneumonia, was given Tobramycin antibiotic, 150mg, iv. After 20 minutes, the plasma concentration was measured & was found to be 3mg/L. Assuming no elimination of the drug in 20 minutes, what is the apparent volume of distribution of Tobramycin in MS. Smith.....

A. 3L
B. 30 L
C. 50L
D. 7L

16. A	17. C	18. D	19. C	20. C

21. For which of the following drugs excretion is most significantly accelerated by acidification of urine.....:

A. Weak acid with pka of 5.5
B. Weak acid with pka of 3.5
C. Weak base with pKa of 7.5
D. Weak base with pKa of 8.1

22. A 27-year-old Female with vulvovaginal candidiasis is given a one-time 100 mg dose oF oral Fluconazole. She has no other pertinent medical problems and takes no prescription medications. Administration oF the medication results in a peak plasma concentration oF 20 mg/L. What is the apparent volume oF drug distribution?

A. 0.5 L
B. 1 L
C. 5 L
D. 50 L

23. Which of following drugs will be absorbed to the least extent in stomach?

A. Ampicillin (pka-2.5)
B. Warfarin (pKa—5)
C. Phenobarbital (pka-7.9)
D. Amphetamne (pKa-9.9)

24. Which of following will be the result of a decrease in urinary pH?

A. Decreased urinary excretion of a weak base
B. Increased urinary excretion of a weak acid
C. Increased urinary excretion of a weak base
D. None of the above

25. MS. Smith, a 65-year-old woman with pneumonia, was given Tobramycin antibiotic, 150mg, iv. After 20 minutes, the plasma concentration was measured & was found to be 3mg/L. Assuming no elimination of the drug in 20 minutes, what is the apparent volume of distribution of Tobramycin in MS. Smith.....

A. 3L
B. 30 L
C. 50L
D. 7L

21. D	22. C	23. D	24. C	25. C

26. All of the following factors affect drug distribution except.....:

A. Molecular size of the drug
B. Lipid Solubility
C. Plasma Protein Binding
D. Route of drug administration

27. Regarding drug distribution which of the following is true?

A. Ionized molecules can penetrate blood-brain barrier
B. Heparin is widely distributed in the body fluids
C. Most drugs bind irreversibly to plasma proteins
D. Extent of plasma protein binding differs greatly between drugs from <10% to 99%.

28. 300 mg of an antibiotic was given IV to a patient. After 30 minutes, the plasma concentration was measured & was found to be 30mg/L. what is the site of distribution of this drug?

A. Blood
B. Extra-cellular fluid
C. Total body water
D. CSF

29. Volume of distribution above which the drug can not be removed from blood by dialysis?

A. 2 L
B. 4 L
C. 5 L
D. 40 L

30. Primary plasma protein to which drugs are bound.....

A. Albumin
B. Globulin
C. Transferrin
D. Fibrinogen

26. D	**27. D**	**28. B**	**29. D**	**30. A**

31. Pharmacological effect of the drug is related to.....:

A. The free part
B. The bound part
C. Both free and bound parts
D. None of the above

32. Regarding warfarin which of the following is true?

A. 99% free in the plasma
B. Has high volume of distribution
C. Its excretion rate is high
D. Its duration of action is long

33. Warfarin toxicity can occur in case of.....?

A. Sulfonylurea administration
B. Erythromycin administration
C. Liver disease
D. All of the above

34. The main site of drugs biotransformation is.....?

A. Liver
B. Kidney
C. Brain
D. Heart

35. Drug-metabolizing enzymes turn the drug into.....metabolites

A. More active
B. More lipid soluble
C. More water soluble
D. Non polar

31. A	32. D	33. D	34. A	35. C

36. Which of the following contribute to the elimination of the active drug.....:

A. Metabolism
B. Excretion
C. All of the above
D. None of the above

37. Drugs that are inactive in their administered forms and metabolized to their active forms?

A. Apodrugs
B. Prodrugs
C. Placebo
D. None of the above

38. Drug administered by which of the following routes bypass the hepatic portal circulation .....?

A. Oral
B. Sublingual
C. Rectal
D. B & C

39. Drug administered sublingually has.....?

A. Extensive first-pass metabolism
B. High bioavailability
C. Low bioavailability
D. 100 % bioavailability

40. Which of the following reactions is phase II metabolism of drug.....

A. Glucuronidation
B. Oxidation
C. Hydrolysis
D. Reduction.

36. C	37. B	38. D	39. B	40. A

41. The most common type of phase I reaction of metabolism is.....:

A. Conjugation
B. Oxidation,
C. Reduction,
D. Hydrolysis

42. Drug administered through the following route is most likely to be subjected to first-pass metabolism?

A. Oral
B. Sublingual
C. Subcutaneous
D. Rectal

43. The major isoenzyme of cytochrome P450 enzyme system is.....?

A. CYP2C
B. CYP2D6
C. CYP3A
D. CYP2E1

44. Stimulation of microsomal enzymes can.....?

A. Require the dose increase of some drugs
B. Require the dose decrease of some drugs
C. Intensify the unwanted reaction of a drug
D. Potentiate the efficacy of drugs

45. A female patient was taking contraceptive pills started to have signs and symptoms of pregnancy she has a history of recent TB for which she had to take medication which of the following drug could be the cause of contraceptive pills failure.....

A. Erythromycin
B. Cimetidine
C. Phenobarbitone
D. Rifampicin

41. B	42. A	43. C	44. A	45. D

46. The primary organs for drug excretion is.....:

A. Kidney
B. Liver
C. Brain
D. Heart

47. Routes of drug excretion from the body include.?

A. Bile,
B. feces,
C. Breast milk
D. All of the above

48. 57 year old patient with renal failure is taking warfarin for thrombotic episodes he started complaining of nose bleeding his physician should .....?

A. Increase the dose of warfarin
B. Decrease the dose of warfarin
C. Stop warfarin
D. Keep the same dose of warfarin

49. The molecular weight of the drug above which it will not be filtered through glomeruli .....?

A. 15000 daltons
B. 20 000 daltons
C. 10000 daltons
D. 25000 daltons

50. The amount of drug undergoes reabsorption from the renal tubules back into the circulation depends on .....

A. The lipid solubility of the drug
B. Dose of the drug
C. Concentration of the drug
D. All of the above.

46. A	47. D	48. B	49. B	50. A

51. .....drugs are NOT reabsorbed from kidney tubules

A. Ionized
B. Polar
C. Lipid insoluble
D. All of the above

52. Phenobarbital toxicity can be treated by administration of.....?

A. NaHCO3
B. Vitamin C
C. NH4Cl
D. All of the above,

53. Renal clearance of penicillin is .....?

A. 1200 mg/min
B. 400 mL/min
C. 200 mL/min
D. 600 mL/min

54. The plasma concentration of a drug declines with "first-order kinetics" this means that.....?

A. A constant amount of drug is eliminated per unit time
B. The rate of drug elimination is constant and independent of plasma drug concentration
C. Half-life (t1/2) is constant
D. Drug cumulation is common (drug is not safe)

55. The Steady state plasma concentration is reached after t1/2

A. 2
B. 3
C. 4
D. 5

51. D	52. A	53. B	54. C	55. D

1. Regarding receptors which of the following is correct.....:

A. They are lipid macromolecules

B. They are present only on the cell surface

C. They combine chemically with small molecules called ligands

D. All of the above

2. A ligand that activates the receptor is called.....

A. Agonist

B. Antagonist

C. Synergist

D. Catalyst

3. All of the following are types of drug-receptor bond except.....

A. Hydrogen

B. Ionic

C. Covalent

D. Sulphur

4. The effect of the drug on the body is called.....

A. Pharmacodynamics

B. Pharmacokinetics

C. Pharmacogenetics

D. None of the above

5. Regarding ion channel-linked receptors which of the following is correct.....

A. The receptor is an ion channel consist of 7 transmembrane subunits

B. The response of these receptors is very fast

C. Their duration is very long

D. Example for theses receptors is Insulin receptors

1. C	2. A	3. D	4. A	5. B

6. Thyroxin receptors are.....:

A. Direct ligand-gated ion channels

B. G-protein linked receptors

C. Tyrosine kinase linked receptors

D. Intracellular receptors

7. Nicotinic Ach receptors in the motor end plate are an example of.....

A. Direct ligand-gated ion channels

B. G-protein linked receptors

C. Tyrosine kinase linked receptors

D. Intracellular receptors

8. Which of the following are tyrosine kinase linked receptors .....

A. Corticosteroid receptors

B. Insulin receptors

C. sex hormones receptors

D. Opioid receptors

9. Regarding G-protein linked receptors all of the following is correct except .....

A. When the G-protein is activated , its β subunit binds to GTP to be phosphorylated

B. The receptor consists of 7 membrane subunits

C. Their response is longer than ion channel receptor

D. Example for these receptors are Opioid receptors

10. Regarding intracellular receptors which of the following is correct.....

A. They are located only in the cytoplasm

B. They regulate transcription of genes in the nucleus or in the mitochondria

C. Their agonist can activate them from the outside of the cell

D. Their response is fast & their effect remains for short time

6. D	7. A	8. B	9. A	10. B

11. In the absence of any B-receptor acting drugs, pindolol causes an Increase In heart rate by activating beta adrenoceptors. In the presence of highly effective beta stimulants, however, pindolol a dose- dependent, decrease in heart rate. Therefore, pindolol Is probably .....:

A. An Irreversible antagonist.
B. physiologic antagonism
C. chemical antagonist.
D. A partial agonist.

12. If 10 mg of naproxen produces the same analgesic response as 100 mg of ibuprofen, which of the following statements is correct .....

A. Naproxen is more efficacious than ibuprofen.
B. Naproxen is more potent than ibuprofen.
C. Naproxen is a full agonist, and ibuprofen is a partial agonist.
D. Naproxen is a competitive antagonist.

13. Which of the following parameters is used to define the relation between the desired therapeutic effect and the toxic effect .....

A. Potency.
B. Therapeutic index.
C. Efficacy.
D. Bioavailability

14. Which of the following factors will determine the number of receptors occupied by the drug .....

A. Efficacy of the drug.
B. Receptor affinity for the drug.
C. Therapeutic index of the drug.
D. Half-life of the drug.

15. Regarding competitive antagonism which of the following is correct .....

A. It binds another site on the receptor and prevent the action of the agonist
B. It is always irreversible
C. Competitive irreversible antagonism makes covalent bond with the receptor
D. In competitive irreversible antagonism you can overcome the inhibition by giving high doses of agonist

11. D	12. B	13. B	14. B	15. C

16. Mark the true statement .....:

A. Potency of a drug is usually a more important clinical consideration than efficacy.
B. In competitive antagonism, the drug competes with the agonist for the same site on the receptor.
C. The higher the therapeutic index of a drug the less safe is the drug.
D. Affinity of a drug means its ability to produce biological response .

17. Drug is said to be reversible antagonist when.....

A. It blocks the receptors by making covalent bond with them
B. The duration of blockade is too long
C. Increasing the dose of the agonist will reverse the block
D. Termination of the drug effect depends on synthesis of new receptors

18. Partial agonist has?

A. Partial affinity and efficacy
B. Affinity And partial efficacy.
C. Efficacy and partial affinity
D. Neither affinity nor efficacy

19. Which of the following terms best describes the antagonism of gentamycin to carbenicillin?

A. Physical antagonism.
B. Competitive antagonism.
C. Physiological antagonism
D. Chemical antagonism

20. Two drugs with the same effect were given together the net effect produced was equal to the sum of their individual effects. This phenomenon is termed.....

A. Potentiation
B. Synergism
C. Addition
D. Tachyphylaxis

16. B	17. C	18. B	19. D	20. C

21. A drug that binds to a receptor and produces no response.....:

A. Agonist

B. Antagonist

C. Partial agonist

D. Partial antagonist

22. Antagonism between two drugs producing opposite effects by acting on different receptors?

A. Non-competitive antagonism

B. Chemical antagonism

C. Physical antagonism

D. Physiological antagonism

23. Which of following has affinity but no efficacy.?

A. Agonist

B. Antagonist

C. Partial agonist

D. Partial antagonist

24. Regarding Partial agonist which of the following is true?

A. It may cause response by inhibiting the action of endogenous substance.

B. It gives maximal response at full concentration

C. In the presence of the full agonist, it acts as an inhibitor.

D. It may give E max

25. The empathy of the receptor to the ligand is.....

A. Potency.

B. Affinity

C. Therapeutic index.

D. Efficacy.

21. B	**22. D**	**23. B**	**24. C**	**25. B**

26. The ability of a drug to produce response after binding to the receptor. .....:

A. Potency.

B. Affinity

C. Therapeutic index.

D. Efficacy.

27. The response of the heart to adrenaline is considered.....?

A. Graded response

B. Quantal response

C. All-or-none response

D. Accelerated response

28. Regarding quantal response all of the following is correct except.....?

A. An example of it is the prevention of convulsions by antiepileptic drugs.

B. The response is increased proportionally to the dose of the agonist

C. it is all-or-none response

D. All of the above

29. Efficacy is measured by.....?

A. ED50

B. TD50

C. E max

D. LD50

30. Effective Dose is.....

A. The maximal response that a drug can elicit at full concentration

B. The dose of the drug that gives 50% of the Emax

C. The dose of the drug needed to cause harmful effect in 50% of tested population

D. A measure of the margin of safety of given drug

26. D	27. A	28. B	29. C	30. B

31. Regarding digoxin there is a low difference between its dose that produces the desired effect and its dose that produces a toxic effect. This means that.....:

A. Digoxin has a large therapeutic index
B. Digoxin is more safe for clinical use
C. Digoxin has narrow safety margin
D. Digoxin doesn't require careful therapeutic monitoring

32. Antagonism that occurs at level of absorption, distribution, metabolism or excretion is.....?

A. Physical antagonism
B. Chemical antagonism
C. Pharmacodynamics antagonism
D. Pharmacokinetic antagonism

33. Protamine antagonism of heparin is considered.....?

A. Physical antagonism
B. Chemical antagonism
C. Competitive antagonism
D. Physiological antagonism

34. One acidic drug when added to a basic drug can cause precipitation of each other's is.....?

A. Physical antagonism
B. Chemical antagonism
C. Competitive antagonism
D. Physiological antagonism

35. Which of the following is the physiological antagonist of histamine in anaphylactic shock

A. Heparin
B. Warfarin
C. Morphine
D. Adrenaline

31. C	32. D	33. A	34. B	35. D

36. Antagonism between two drugs carrying opposite charges is.....:

A. Physical antagonism
B. Chemical antagonism
C. Competitive antagonism
D. Physiological antagonism

37. Which of the following is a drug related factor modifying dose–response relationship?

A. Hyperreactivity to drugs.
B. Pathological status of the patient
C. Pharmacogenetic factors
D. Time of drug administration

38. Regarding factors modifying dose–response relationship which of the following is correct .....?

A. The receptor usually fits for all stereoisomers of the drug
B. Most drugs have molecular weight larger than 1000 Dalton
C. It is better to give the anti-asthmatic medications in the evening.
D. Cumulation of the drug occurs when the rate of drug elimination exceeds the rate of its administration

39. .....is tailoring drug medication according to the circadian rhythm of the body to get better response ?

A. Meta-pharmacology
B. Chrono-pharmacology
C. Psycho-pharmacology
D. None of the above

40. The use of penicillin with aminoglycosides to exert bactericidal effect is an example of .....

A. Summation
B. Addition
C. Synergism
D. Antagonism

36. A	37. D	38. C	39. B	40. C

41. Regarding drug summation which of the following is correct.....:

A. It means that the combined effect of two drugs is equal to the sum of their individual effects
B. It usually occurs between drugs having the same mechanism.
C. The use of two simple analgesics together is an example of it
D. All of the above

42. Which of the following is a patient related factor modifying dose–response relationship?

A. Drug cumulation
B. Hyporeactivity to drugs.
C. Time of drug administration
D. Drug combination

43. .....is decreased response to the same dose of the drug that occurs over a long period after repeated administration?

A. Antagonism
B. Tachyphylaxis
C. Tolerance
D. Withdrawal

44. .....is a type of tolerance, which occurs very rapidly?

A. Tachyphylaxis
B. Anaphylaxis
C. Bradyphylaxis
D. Withdrawal

45. Regarding rebound effect which of the following is correct.....

A. The symptoms recur in mild form
B. Occurs when a drug is stopped over a long period
C. Can be explained by receptor down-regulation
D. None of the above

46. Which of the following drugs should not be stopped suddenly.....

A. Beta-blockers
B. B2 agonist
C. Aspirin
D. Penicillin

41. D	42. B	43. C	44. A	45. D	46. A

1. Which of the following is a neurotransmitter for sympathetic nervous system.....:

A. Acetylcholine

B. Norepinephrine

C. Serotonin

D. Morphine

2. Which of the following is a receptor for sympathetic nervous system .....

A. Beta receptors

B. Nicotinic receptors

C. Muscarinic receptors

D. Kappa receptors

3. .....is a non-catecholmine sympathomimetic

A. Adrenaline

B. Noradrenaline

C. Dopamine

D. Phenylephrine

4. .....is an indirect acting sympathomimetic

A. Adrenaline

B. Amphetamine

C. Ephedrine

D. All of the above

5. Regarding adrenaline which of the following is correct.....

A. It is a natural alkaloid with phenol ring

B. It should be given orally

C. It does not cross BBB

D. IM injection precipitates ventricular fibrillation.

1. B	2. A	3. D	4. B	5. C

6. Adrenaline.....:

A. Directly activates all α and β-adrenoceptors

B. Indirectly activates all α and β-adrenoceptors

C. Only activates α adrenoceptors

D. Only activates β adrenoceptors

7. Adrenaline action on B2 receptors causes.....

A. VC of blood vessels in the skin and mucous membranes

B. VD of skeletal muscle vessels

C. Increased rate and force of contraction of heart

D. Mydriasis

8. Pharmacological effects of adrenaline include all of the following except.....

A. Bronchodilatation

B. Relaxation of the pregnant uterus

C. Relaxation of wall muscles and contraction of sphincters of GIT

D. Contraction of detrusor muscle of bladder

9. Regarding adrenaline which of the following is correct .....

A. It increases systolic and diastolic blood pressure at therapeutic doses

B. It causes lipolysis by acting on B2 receptors

C. It decreases hepatic glycogenolysis

D. It causes mydriasis by acting on B2 receptors

10. Adrenaline action on α 1 receptors causes .....

A. VD of skeletal muscle vessels

B. Relaxation of the pregnant uterus

C. Relief of congestion due to decreased bronchial secretions

D. Relaxation of wall muscles of GIT

6. A	7. B	8. D	9. A	10. C

11. Adrenaline can be used to treat all of the following except .....:

A. Anaphylactic shock

B. Acute bronchial asthma

C. Pheochromocytoma

D. Cardiac arrest

12. Local adrenaline can be used for.....

A. Nasal bleeding

B. Cerebral hemorrhage

C. Cardiac arrest

D. None of the above

13. Regarding Noradrenaline which of the following is correct .....

A. It should be given IM or SC

B. IV injection is highly dangerous and is likely to precipitate ventricular

C. It causes reflex tachycardia

D. It acts on alpha 1 and 2 and beta 1 receptors

14. All of the following are adverse effects of adrenaline except .....

A. Cerebral hemorrhage

B. Hypokalemia

C. Cardiac arrhythmias

D. Gangrene of extremities

15. Which of the following is a therapeutic use of noradrenaline .....

A. Bronchial asthma

B. Raynaud's syndrome

C. Acute hypotensive states

D. Thyrotoxicosis

11. C	12. A	13. D	14. B	15. C

16. Dopamine action on D1 receptors lead to .....:

A. Selective vasodilation

B. Increasing cardiac output

C. Vasoconstriction

D. Increasing systemic vascular resistance

17. Dopamine is given by.....

A. SC injection

B. IM injection

C. IV infusion

D. Oral route

18. At small doses dopamine acts more on .....?

A. B1 receptors

B. B2 receptors

C. Alpha 1 receptors

D. D1 receptors

19. Dopamine is mainly indicated in.....?

A. Acute hypotensive states

B. Shock state with impaired tissue perfusion

C. Cardiac arrest

D. Anaphylactic shock

20. Which of the following is a selective B2 agonist .....

A. Salbutamol

B. Dopamine

C. Phenylephrine

D. Clonidine

16. A	17. C	18. D	19. B	20. A

21. Which of the following is a synthetic non-catecholamine that selectively act on B2 receptors.....:

A. Adrenaline
B. Terbutaline
C. Phenylephrine
D. Clonidine

22. Selective B2 agonists cause all of the following except.....?

A. Vasodilatation
B. Bronchodilation
C. Increase of cardiac output
D. Uterine smooth muscles relaxation

23. Which of following can be used to delay premature labor ?

A. Phenylephrine
B. Amphetamine
C. Clonidine
D. Ritodrine

24. Which of the following is a selective alpha 1 agonist?

A. Phenylephrine
B. Adrenaline
C. Ritodrine
D. Clonidine

25. Side effects of salbutamol include all of the following except.....

A. Tachycardia & arrhythmias in high doses
B. Hyperkalemia
C. Tremors
D. Tolerance

21. B	22. C	23. D	24. A	25. B

26. Oxymetazoline causes.....:

A. Local vasoconstriction
B. Systemic vasoconstriction
C. Bronchodilation
D. Local vasodilatation

27. Side effects of phenylephrine include.....?

A. Hypotension
B. Atrophic rhinitis
C. Sedation
D. Cardiac arrhythmias

28. Which of the following is a selective alpha 2 agonist .....?

A. Phenylephrine
B. Adrenaline
C. Ritodrine
D. Clonidine

29. Which of the following can be used to treat opioid withdrawal symptoms .....?

A. Salbutamol
B. Dopamine
C. Clonidine
D. Amphetamine

30. Side effects of clonidine include all of the following except.....

A. Sedation
B. Rebound nasal congestion
C. Salt and water retention
D. Dry mouth

31. Which of the following acts indirectly on adrenoceptors by inhibiting the reuptake

A. Amphetamine
B. Adrenaline
C. Noradrenaline
D. Cocaine

26. A	27. B	28. D	29. C	30. B	31. D

1. Which of the following is a centrally acting sympatholytic.....:

A. α-methyl dopa

B. Phenoxybenzamine

C. Prazosin

D. Atenolol

2. Which of the following is a selective α 1 blocker.....

A. Yohimbine

B. Prazosin

C. Phenoxybenzamine

D. Atenolol

3. Yohimbine is.....

A. Non-selective α blocker

B. Selective α1 blocker

C. Selective α2 blocker

D. Non-selective β-blockers

4. Which of the following is non-selective α blocker

A. Carvedilol

B. Prazosin

C. Propranolol

D. Phenoxybenzamine

5. Phenoxybenzamine can be used in the treatment of.....

A. Bronchial asthma

B. Pheochromocytoma

C. Hypotension

D. Anaphylactic shock

1. A	2. B	3. C	4. D	5. B

6. Which of the following can be used to treat benign prostatic hyperplasia with little effect on standing BP .....:

A. Propranolol

B. Clonidine

C. Tamsulosin

D. Prazosin

7. Tamsulosin antagonizes.....

A. α 1 A & α 1 B receptors

B. α 1 A & α 1 D receptors

C. α 1 B & α 1 D receptors

D. None of the above

8. Side effects of prazosin include all of the following except.....

A. First-dose hypotension

B. Fluid retention

C. Worsen incontinence in female with pelvic floor pathology

D. Heart block

9. Which of the following can be used in Raynaud's syndrome .....

A. Propranolol

B. Clonidine

C. Carvedilol

D. Prazosin

10. Which of the following is a cardio-selective β 1 blocker.....

A. Propranolol

B. Atenolol

C. Carvedilol

D. Salbutamol

6. C	7. B	8. D	9. D	10. B

11. Regarding Beta blockers which of the following is correct .....:

A. Carvedilol is the prototype

B. They have low bioavailability due to extensive first pass metabolism.

C. Propranolol is a selective B1 blocker

D. They are not absorbed with oral administration and need to be taken by IV route

12. Beta blockers decrease blood pressure through .....

A. Decreasing COP

B. Decreasing renin release from the kidney

C. Decreasing NE release

D. All of the above

13. Pharmacological effects of beta blockers include all of the following except .....

A. Bronchospasm

B. Increase plasma K+ in patients with renal failure

C. Increase essential tremors

D. Anti-anxiety action

14. Beta blockers can be used to treat all of the following except .....

A. Bronchial asthma

B. Hypertension

C. Ischemic heart diseases

D. Thyrotoxicosis

15. Adverse reactions of beta blockers include all of the following except.....

A. Heart failure

B. Vivid dreams night mare and hallucinations

C. Reflex tachycardia

D. Masking of hypoglycemia in diabetic patients

11. B	12. D	13. C	14. A	15. C

16. Which of the following is an absolute contraindication of beta blockers .....:

A. Peripheral vascular disease
B. Hypertrophic obstructive Cardiomyopathy
C. First degree heart block
D. In athletes

17. All of the following are absolute contraindications of beta blockers except.....

A. Bronchial asthma
B. Diabetes mellitus
C. Sudden withdrawal
D. Acute heart failure

18. Which of the following is used to treat hypertension in pregnancy .....?

A. α-methyl dopa
B. Phenoxybenzamine
C. Prazosin
D. Carvedilol

19. All of the following are side effects of alpha methyl dopa except.....?

A. Sedation
B. Night mares
C. Mental depression
D. Aggravation of hypoglycemic effect of insulin

20. Which of the following is a false chemical transmitter in the brain.....

A. Norepinephrine
B. α-methyl NE
C. Dopamine
D. Serotonin

16. C	17. B	18. A	19. D	20. B

1. The neurotransmitter of parasympathetic nervous system is.....:

A. Adrenaline

B. Noradrenaline

C. Acetylcholine

D. All of the above

2. Muscarinic effects of parasympathomimetics include all of the following except...

A. Miosis

B. Contraction of bronchial smooth muscle

C. Contraction of bladder smooth muscles

D. Decrease HCl secretion

3. Which of the following is a nicotinic effect of parasympathomimetics .....

A. Decrease AV conduction and heart rate

B. Skeletal muscles contractions

C. VD of all vascular beds

D. Increase motility and relaxation of sphincters of GIT

4. Which of the following receptors is present in autonomic ganglia

A. Nn

B. Nm

C. M1

D. M2

5. All of the following are direct-acting Parasympathomimetics except.....

A. Carbachol

B. Bethanechol

C. Pilocarpine

D. Physostigmine

1. C	2. D	3. B	4. A	5. D

6. Which of the following can be used as local eye drops to decrease IOP in glaucoma

A. Carbachol

B. Bethanechol

C. Pilocarpine

D. A & C

7. Which of the following can be given in Sjogren syndrome to decrease symptoms of xerostomia.....

A. Carbachol

B. Bethanechol

C. Cevimeline

D. Physostigmine

8. Which of the following is used to reverse post-operative urine retention and paralytic ileus .....

A. Carbachol

B. Bethanechol

C. Cevimeline

D. Physostigmine

9. Which of the following is an anti-cholinesterase drug .....

A. Carbachol

B. Bethanechol

C. Cevimeline

D. Physostigmine

10. Regarding physostigmine which of the following is correct.....

A. It is an irreversible cholinesterase inhibitor

B. It can not cross blood brain barrier

C. It acts on muscarinic receptors

D. It can be used to treat atropine over dosage

6. D	7. C	8. B	9. D	10. D

11. Regarding neostigmine which of the following is correct .....:

A. It is completely absorbed from the gastrointestinal tract

B. It can pass the blood brain barrier

C. It has a direct nicotinic action on skeletal muscles

D. It is an irreversible cholinesterase inhibitor

12. Which of the following can be used to reverse the effect of tubocurarine .....

A. Cevimeline

B. Neostigmine

C. Pilocarpine

D. Physostigmine

13. Therapeutic uses of neostigmine include all of the following except.....

A. Myasthenia gravis

B. Paralytic Ileus

C. Bronchial asthma

D. Postoperative urine retention

14. Adverse effects of parasympathomimetic drugs include all of the following except.....

A. Diarrhea

B. Diaphoresis

C. Bronchospasm

D. Urine retention

15. Regarding atropine which of the following is correct.....

A. It is a neuromuscular blocker

B. It is a tertiary amine

C. It can't pass to CNS

D. It is a synthetic derivative anti-muscarinic

11. C	**12. B**	**13. C**	**14. D**	**15. B**

16. Which of the following drugs is used mainly as a bronchodilator .....:

A. Ipratropium
B. Benztropine
C. Oxybutynin
D. Pirenzepine

17. Which of the following drugs is used mainly to decrease HCl secretion .....

A. Homatropine
B. Benztropine
C. Oxybutynin
D. Pirenzepine

18. Tropicamide is used mainly as.....?

A. Antispasmodic
B. Mydriatic
C. Bronchodilator
D. Anti-parkinsonian drug

19. Which of the following drugs is used mainly to treat parkinsonism .....?

A. Homatropine
B. Tolterodine
C. Benztropine
D. Hyoscine butyl bromide

20. Which of the following drugs is used mainly as an antispasmodic.....

A. Homatropine
B. Tolterodine
C. Pirenzepine
D. Hyoscine butyl bromide

16. A	17. D	18. B	19. C	20. D

21. Which of the following drugs is used mainly for genitourinary system.....:

A. Ipratropium
B. Homatropine
C. Oxybutynin
D. Pirenzepine

22. The following is not an adverse effects of atropine.....

A. Bradycardia.
B. Dry mouth.
C. Blurred vision
D. Urine retention

23. Atropine effects on the eye include.....?

A. Miosis
B. Cycloplegia
C. Decrease IOP
D. Lacrimation

24. Pharmacological effects of anti-muscarinics include.....?

A. Bradycardia
B. Increase salivation and HCl secretion
C. Bronchospasm
D. Dry skin and elevation of body temperature

25. Which of the following is the drug of choice in Organophosphate poisoning.....

A. Physostigmine
B. Adrenaline
C. Atropine
D. Pilocarpine

21. C	22. A	23. B	24. D	25. C

26. Therapeutic uses of anti-muscarinics include all of the following except.....:

A. Fundus examination

B. Pre-anesthetic medications

C. Glaucoma

D. Urine incontinence in adults

27. Side effects of anti-muscarinics include.....

A. Tachycardia

B. Dryness of the mouth

C. Atropine fever in children

D. All of the above

28. Anti-muscarinics are contraindicated in all of the following except.....?

A. Narrow angle glaucoma

B. Bradycardia & Heart block

C. Senile enlarged prostate

D. Children

26. C	**27. D**	**28. B**

1. Regarding antimicrobial chemotherapy which of the following is correct.....:

A. It is the use of drugs to eradicate pathogenic organisms

B. It is based on the principle of non-selective toxicity

C. Antimicrobial drug inhibits the same vital functions of the infectious organism and human cells

D. All of the above

2. Antimicrobial drugs include all of the following except.....

A. Antibacterial drugs

B. Antifungal drugs

C. Anthelminthic drugs

D. Antihypertensive drugs

3. The term antibiotic was used to describe ..... substances produced by microorganisms that suppress the growth of other microorganisms.....

A. Synthetic,

B. Semisynthetic

C. Natural

D. All of the above

4. The primary considerations when selecting an antibacterial drug are .....

A. Interactions between the drug and the pathogenic bacteria

B. Interactions between the drug and the host

C. Interactions between the host and the pathogenic bacteria

D. None of the above

5. Bactericidal drug.....

A. Inhibits the growth of bacteria but does not kill them

B. The number of bacteria falls rapidly after exposure to this drug.

C. Immunologic mechanisms are required to eliminate bacteria during treatment with this type of drug.

D. All of the above

1. A	2. D	3. C	4. A	5. B

6. Bacteriostatic drug

A. Inhibits the growth of bacteria but does not kill them

B. The number of bacteria remains relatively constant in the presence of this drug

C. Immunologic mechanisms are required to eliminate bacteria during treatment with this type of drug.

D. All of the above

7. Regarding bacteriostatic drugs which of the following is correct.....

A. They cause very rapid clinical improvement

B. Used only in immunocompetent host

C. Bacterial resistance is less likely to occur with them

D. Can be used in life threatening and deep seated infections

8. Which of the following is a bactericidal antimicrobial drug.....

A. Tetracyclines

B. Macrolides

C. Aminoglycosides

D. Clindamycin

9. Which of the following is a bacteriostatic antimicrobial drug .....

A. Tetracyclines

B. Penicillin

C. Aminoglycosides

D. Vancomycin

10. The minimal inhibitory concentration of antibacterial drug is.....

A. The highest concentration of a drug that inhibits bacterial growth.

B. The lowest concentration of a drug that inhibits bacterial growth.

C. The lowest concentration of a drug that kills bacteria.

D. The highest concentration of a drug that kills bacteria.

6. D	7. B	8. C	9. A	10. B

11. The post-antibiotic effect is the period in which .....:

A. The serum drug concentration is below the MIC

B. Bacterial growth is suppressed

C. The serum drug concentration is above the MIC

D. A & B

E. B & C

12. Regarding time-dependent killing antibacterial drugs which of the following is correct.....

A. The extent of antibacterial effects increases with increasing plasma drug concentration

B. They have a prolonged post antibiotic effect

C. The goal is to increase the duration of exposure and decrease the drug dosage

D. All of the above

13. Regarding aminoglycosides which of the following is correct.....

A. They have a relatively short post antibiotic effect

B. Their effect increases with increasing plasma drug concentration above the MIC

C. Goal is to increase the duration of exposure and decrease the drug dosage

D. All of the above

14. Broad-spectrum antibacterial drugs .....

A. They are active against a single species or a limited range of bacteria

B. They are usually preferred for the initial treatment of an infection

C. They include aminoglycosides

D. None of the above

15. Tetracyclines are.....

A. Broad-spectrum anti bacterial drugs

B. Narrow-spectrum anti bacterial drugs

C. Extended-spectrum anti bacterial drugs

D. None of the above

11. D	12. C	13. B	14. D	15. A

16. Aminoglycosides are active against .....:

A. Single species or a limited range of bacteria

B. Wide range of bacteria

C. Intermediate range of bacteria

D. Gram positive bacteria mainly

17. Which of the following are cell wall synthesis inhibitors .....

A. Daptomycin

B. Aminoglycosides

C. Penicillins

D. Sulfonamides

18. Which of the following are folate synthesis inhibitors .....?

A. Daptomycin

B. Aminoglycosides

C. Fluoroquinolones

D. Sulfonamides

19. Fluoroquinolones are.....?

A. Cell membrane inhibitors

B. Nucleic acid synthesis inhibitors

C. Protein synthesis inhibitors

D. Folate synthesis inhibitors

20. Which of the following are protein synthesis inhibitors .....

A. Daptomycin

B. Fluoroquinolones

C. Aminoglycosides

D. Sulfonamides

16. A	17. C	18. D	19. B	20. C

21. Innate bacterial resistance to antibiotics is due to.....:

A. Mutations in the genes necessary for the antibiotic action

B. Acquisition of foreign DNA coding for resistance proteins

C. Natural structural characteristics of the microorganism

D. All of the above

22. The most common method of bacterial acquisition of foreign DNA coding for resistance proteins is .....

A. Transformation

B. Conjugation.

C. Transduction

D. Transposition

23. All of the following measures are used to prevent antibacterial resistance except...

A. Use only antibacterial drugs when they are clearly indicated.

B. Use a narrow-spectrum drug known to be effective against the pathogen.

C. Use antibacterial drugs for a very short time.

D. Use older antibacterial drugs whenever possible.

24. In synergistic antibiotic combination .....?

A. 1 + 2 > 3

B. 1 + 2 < 2

C. 1 + 2 = 3

D. 1 + 2 = 2

25. If 1 + 2 = 2, it means that antibiotic combination is.....

A. Antagonistic

B. Additive

C. Potentiation

D. Indifferent

21. C	22. B	23. C	24. A	25. D

26. Combination of penicillin with an aminoglycoside is an example of.....:

A. Synergistic combination
B. Additive combination
C. Indifferent combination
D. Potentiation combination

27. Combination of amoxicillin with clavulanic acid is an example of .....

A. Synergistic combination
B. Additive combination
C. Indifferent combination
D. Potentiation combination

28. Combination of sulfonamide with trimethoprim is an example of .....?

A. Synergistic combination
B. Additive combination
C. Indifferent combination
D. Potentiation combination

29. Combination of piperacillin with tazobactam is an example of .....?

A. Synergistic combination
B. Additive combination
C. Indifferent combination
D. Potentiation combination

30. Adverse effects of antimicrobial agents include all of the following except.....?

A. Hypersensitivity or allergic reactions
B. Bacterial resistance
C. Iron deficiency
D. Organ related toxicity

26. A	**27. D**	**28. A**	**29. D**	**30. C**

31. Pseudomembranous colitis is caused by.....:

A. Candida

B. Staph aureus

C. Streptococci

D. Clostridium difficile

32. Superinfection is due to.....

A. Significant alteration to bacterial flora by antibiotics

B. Short term use of broad-spectrum antibiotics

C. Bacterial resistance to antibiotics

D. None of the above

33. Staphylococcal enterocolitis can be treated with.....?

A. Oral metronidazole

B. Oral vancomycin

C. IV aminoglycosides

D. Oral tetracycline

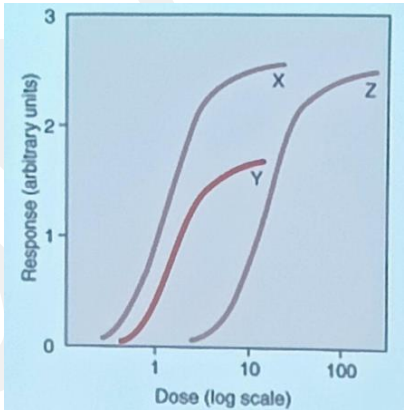
31. D	32. A	33. B

1. **Pharmacodynamics involves the study of one of the following…….:**
   A. Mechanisms of drug action
   B. Biotransformation of drugs in the organism
   C. Distribution of drugs in the organism
   D. Excretion of ding from the organism
   E. Tubular secretion of drugs
2. **The interaction that may occur between positive and negative charges is called**
   A. Chemical antagonism
   B. Physical antagonism
   C. Physiological antagonism
   D. Biological antagonism
   E. Receptor antagonism
3. **Drugs X & Y have the same mechanism of diuretic action. Drug X in a dose of 5mg produces the same magnitude of diuresis as 500 mg of drug Y. This suggests that:**
   A. Drug Y is less efficacious than drug X
   B. Drug X is about 100 times more potent than drug Y.
   C. Toxicity of drug X is less than that of drug Y.
   D. Drug X is a safer drug than dmg Y.
   E. Drug X will have a shorter duration of action than drug Y because less of drug X is present for a given effect
4. **Half life (t ½) is the time required to……..**
   A. Change the amount of a drug in plasma by half during elimination
   B. Metabolize a half of an introduced drug into the active metabolite
   C. Absorb a half of an introduced drug
   D. Bind a half of an introduced drug to plasma proteins
   E. Entering half of plasma concentration of a drug to site of its action
5. **A pro-drug is…..**
   A. The prototype member of a class of drugs.
   B. The oldest member of a class of drugs
   C. An inactive drug that is transformed in the body to an active metabolite.
   D. A drug that is stored in the body tissues and is then gradually released in the circulation.
   E. Ionized drug trapped in breast milk

6. **When the rate of drug administration exceeds the rate of elimination……:**

A. Steady state will be achieved
B. Drug cumulation occurs
C. The drug gives higher Emax
D. The potency of the drug will be higher
E. The duration of drug action will be shortened

7. **Three novel drugs to treat Mania have undergone phase I trials. A graph of the biologic effect versus log drug concentration is plotted in the following graph. Which of the following statements is true……**



A. Drug X is less potent than Drug Y
B. Drug X has lower efficacy than Drug Y
C. Drug Z shows lower potency than Drugs X and Y
D. Drug Z is best administered orally
E. Drug Y is most likely to be approved for use

8. **An agonist is a substance that…..**

A. Interacts with the receptor without producing any effect
B. Interacts with the receptor and produces response.
C. Increases concentration of another substance to produce effect
D. Interacts with plasma proteins and doesn't produce any effect
E. Increase the biotransformation of another drug

9. **A drug is said to be reversible antagonist when…….**

A. It blocks the receptors by making covalent bonds with them
B. The duration of blockade is too long
C. Increasing the dose of the agonist will overcome the block
D. The response curve of the agonist in presence of this drug is not parallel to that of the agonist alone
E. Termination of the drug effect dep-ends on synthesis of new receptors

10. **PKa of a drug:..**

A. Is the pH of medium at which the drug is 50% ionized
B. Is the time needed to eliminate 50% of the drug
C. Is the time in which the drug is ionized
D. Is the percentage of plasma protein binding to the drug
E. Is the volume of body fluid into which the drug will distribute

11. Which of the following drugs acts indirectly……:

A. Adrenaline
B. Phenylephrine
C. Ephedrine
D. Amphetamine
E. Dopamine

12. Which of the following drugs is selective alpha 1 agonist……

A. Adrenaline
B. Phenylephrine
C. Ephedrine
D. Isoprenaline
E. Dopamine

13. Which of the following sympathomimetics used as vasopressors to correct acute hypotension…..

A. Clonidine
B. Noradrenaline
C. Dobutamine
D. Salbutamol
E. Adrenaline

14. Which of the following is considered indication for dobutamine……

A. Bronchial asthma
B. Anaphylactic shock
C. Cardiac arrest
D. Cardiogenic shock
E. Nasal decongestant

15. Which of the following sympathomimetics used locally to relief nasal congestion…..

A. Clonidine
B. Noradrenaline
C. Dobutamine
D. Salbutamol
E. Oxymetazoline

16. What term is used to describe a decrease in responsiveness to a drug which develops in a few minutes……:

A. Refractoriness
B. Cumulative effect
C. Tolerance
D. Tachyphylaxis
E. Desensitization

17. Which of the following parameters is used to define the relation between the LD 50 and the ED 50……

A. Potency.
B. Intrinsic activity.
C. Therapeutic index.
D. Efficacy.
E. Bioavailability

18. If two drugs with the same effect, taken together, produce an effect that is more than magnitude to the sum of the effects of the drugs given individually, it is called as…….?

A. Antagonism
B. Potentiation
C. Additive effect
D. Synergism
E. Cumulative effect

19. A drug with a half-life of 10 hrs is administered by continuous intravenous infusion. Which of the following best approximates time for the drug to reach steady state

A. 10 hours
B. 20 hours
C. 33 hours
D. 40 hours
E. 60 hours

20. Which of the following is considered indication for salbutamol…..

A. Bronchial asthma
B. Anaphylactic shock
C. Cardiac arrest
D. Cardiogenic shock
E. Nasal decongestant

21. Stimulation of liver microsomal enzymes can.....:

A. Require the dose increase of some drugs
B. Require the dose decrease of some drugs
C. Prolong the duration of the action of a drug
D. Intensify the action of a drug
E. Prolong t l/2 of a drug

22. For intravenous (IV) dosages, what is the bioavailability assumed to be.....?

A. 0%
B. 25%
C. 50%
D. 75%
E. 100%

23. What does the term "bioavailability" mean?

A. Plasma protein binding degree of substance
B. Permeability through the brain-blood barrier
C. Fraction of drug reaching the systemic circulation following any route administration
D. Amount of a substance in urine relative to the initial doze
E. Percentage of the drug in the plasma after distribution to the tissues

24. If the rate of infusion of a drug were doubled, what response in the steady state concentration would be expected?

A. Remain unchanged
B. Doubled
C. Increase 50%
D. Decrease 50%
E. Decrease 100%

25. When a drug has a low therapeutic index, that drug should be.....

A. Used mostly orally
B. Used mostly intravenously
C. Considered a potentially toxic substance
D. Given only in submilligram doses
E. Considered a potentially safe drug

26. In the presence of naloxone, a higher concentration of morphine is required to elicit full pain relief. Naloxone by itself has no effect. Which of the following is correct regarding these medications……:

A. Naloxone is a competitive antagonist.
B. Morphine is a full agonist, and naloxone is a partial agonist.
C. Morphine is less efficacious than is naloxone.
D. Morphine is less potent than is naloxone.
E. Naloxone is a noncompetitive antagonist

27. All of the following about plasma protein binding of a drug are true except…….

A. Displacement of a drug from plasma protein binding sites results in a transient increased volume of distribution (VD)
B. Displacement of a drug from plasma protein binding sites makes more free drug available for glomerular filtration
C. Displacement of a potent drug that is normally more than 95% bound may cause toxicity
D. Albumin is the major protein involved in protein binding of drugs
E. Drugs that are highly bound to plasma proteins generally have a greater VD compared with drugs that are highly bound to tissue

28. If a drug, acting on receptors, can produce submaximal effects and has submaximal efficacy it's called…….?

A. Partial agonist
B. Antagonist
C. Agonist-antagonist
D. Full agonist
E. Inverse agonist

29. Which of the following drug equations exemplifies the concepts of synergism…….?

A. Drug AB > Drug A + Drug B
B. Drug AB = Drug A = Drug B
C. Drug AB < Drug A < Drug B
D. Drug AB = Ding B > Drug A
E. Drug AB = Drug B + Drug A

30. Which of the following is true for receptor action of a drug?…..

A. An antagonist has both efficacy and affinity for receptor
B. An antagonist has affinity but no efficacy for receptor
C. A partial antagonist has no efficacy or affinity for receptor
D. Intrinsic activity and affinity are not important for drug action

E. An antagonist has affinity and efficacy for receptor

31. For calculation of volume of distribution (Vd) one must take into account……:

A. Concentration of a substance in plasma

B. Concentration of substance in urine

C. Therapeutic window of drug action

D. A daily dose of drug

E. Ionization degree of a dug

32. Biotransformation (Metabolism) of the drugs is to render them……?

A. Less ionized

B. More pharmacologically active

C. More lipid soluble

D. Less lipid soluble

E. Less water soluble

33. Which route of administration is most likely to subject a drug to first pass metabolism?

A. Intravenous

B. Sublingual

C. Oral

D. Inhalation

E. Intramuscular

34. Which of the following sympathomimetics selectively stimulate B2?

A. Clonidine .

B. Dobutamine

C. Noradrenaline

D. Phenoxybenzamine

E. Ritoderine

35. Which of the Mowing sympathomimetics cause reflex bradycardia…..

A. Clonidine

B. Dobutamine

C. Phenylephrine

D. Salbutamol

E. Noradrenaline

36. Which of the following statement is correct about epinephrine……:

A. I.V injection is safe
B. Has CNS effects
C. Cause bronchoconstriction
D. Increase blood pressure
E. Can be used in thyrotoxicosis

37. Which of the following side effects occur with adrenaline……?

A. Bradycardia
B. Bronchospasm
C. Hypertension
D. Diarrhea
E. Miosis

❑ Q1

Which statement describes the finding of this experiment study involving drug X, Y & Z?

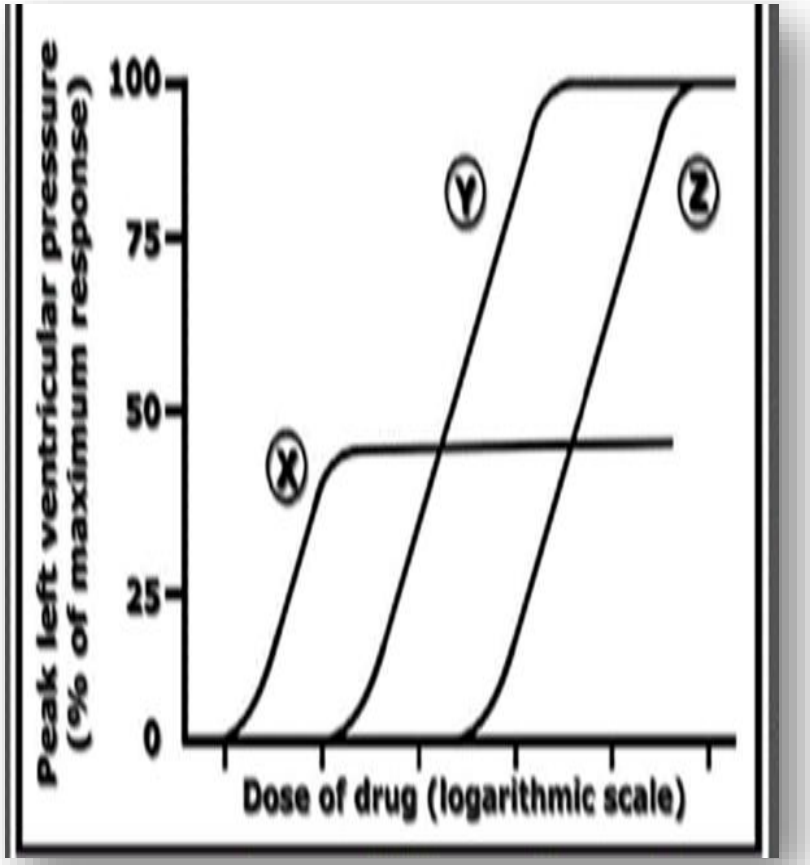
A. Drug X is the most efficacious because its ED50 is lowest

B. Drug Y is least potent drug among the three drugs

C. Drug Y is more potent than Z, more efficacious than X

D. Drug X is more potent than Y, more efficacious than Z

E. Drug Z is the most potent among three drugs



❑ Q2

Which of the following is true for receptor action of a drug:

A. An antagonist has both efficacy and affinity for receptor

B. An antagonist has affinity but no efficacy for receptor

C. A partial antagonist has no efficacy or affinity for receptor

D. Intrinsic activity and affinity are not important for drug action

E. An antagonist has affinity and efficacy for receptor

❑ Q3

A 55-year-old woman with hypertension is to be treated with a thiazide diuretic. Thiazide A in a dose of 5 mg produces the same decrease in blood pressure as 500 mg of thiazide B. Which of the following statements best describes these results?

A. Thiazide A is more efficacious than thiazide B

B. Toxicity of thiazide A is less than that of thiazide B

C. Thiazide A has a wider therapeutic window than thiazide B

D. Thiazide A is about 100 times more potent than thiazide B

E. Thiazide A has a longer half-life than thiazide B

❑ Q4

X is a new drug that reverses the action of rocuronium and certain other skeletal muscle-relaxing agents (nondepolarizing neuromuscular blocking agents). It appears to interact directly with the rocuronium molecule and not at all with the rocuronium receptor. Which of the following terms best describes X?

A. Chemical antagonist
B. Noncompetitive antagonist
C. Partial agonist
D. Pharmacologic antagonist
E. Physiologic antagonist

❑ Q5

Isoproterenol produces maximal contraction of cardiac muscle in a manner similar to epinephrine. Which of the following best describes isoproterenol?

A. Full agonist.
B. Partial agonist.
C. Competitive antagonist.
D. Irreversible antagonist.
E. Inverse agonist.

❑ Q6

In the presence of naloxone, a higher concentration of morphine is required to elicit full pain relief. Naloxone by itself has no effect. Which of the following is correct regarding these medications?

A. Naloxone is a competitive antagonist.
B. Morphine is a full agonist, and naloxone is a partial agonist.
C. Morphine is less efficacious than is naloxone.
D. Morphine is less potent than is naloxone.
E. Naloxone is a noncompetitive antagonist.

❑ Q7

An exaggerated normal pharmacological response to usual dose of a drug is termed

A. Tolerance
B. Hypersensitivity
C. Tachyphylaxis
D. Idiosyncrasy
E. Hyper- susceptibility

❑ Q8

Which of the following parameters is used to indicate the ability of a drug to produce the desired therapeutic effect relative to a toxic effect

A. Potency
B. Intrinsic activity
C. Therapeutic index
D. Bioavailability
E. Efficacy

❑ Q9

Which direction would a partial agonist shift the dose-response curve when added to a full agonist?

A. To the left
B. To the right
C. Down
D. Up
E. To the right and possibly down

❑ Q10

Pharmacodynamics involves the study of the following:

a) Mechanisms of drug action
b) Biotransformation of drugs in the organism
c) Distribution of drugs in the organism
d) Excretion of drug from the organism
e) Tubular secretion of drugs

❑ Q11

If a drug, acting on receptors, can produce submaximal effects and has moderate efficacy it's called:

a) Partial agonist
b) Antagonist
c) Agonist-antagonist
d) Full agonist
e) Inverse agonist

❑ Q12

An antagonist is a substance that:

a) Binds to the receptors and initiates changes in cell function, producing maximal effect

b) Binds to the receptors and initiates changes in cell function, producing submaximal effect

c) Interacts with plasma proteins and doesn't produce any effect

d) Binds to the receptors without directly altering their functions

e) Interact with plasma proteins and produce stimulatory effect

❑ Q13

A competitive antagonist is a substance that:

a) Interacts with receptors and produces submaximal effect

b) Binds to the same receptor site and progressively inhibits the agonist response

c) Binds to the nonspecific sites of tissue

d) Binds to one receptor subtype as an agonist and to another as an antagonist

e) Always binds to receptors with covalent bond

❑ Q14

What term is used to describe a more gradual decrease in responsiveness to a drug, taking weeks to develop?

a) Refractoriness
b) Cumulative effect
c) Tolerance
d) Tachyphylaxis
e) Desensitization

❑ Q15

Which of the following drug equations exemplifies the concepts of synergism?

A. Drug AB > Drug A + Drug B
B. Drug AB = Drug A = Drug B
C. Drug AB < Drug A < Drug B
D. Drug AB = Drug B > Drug A
E. Drug AB = Drug B + Drug A

❑ Q1

One of the following could NOT increase drug absorption :

A. Increased blood flow to the site of administration
B. Increased surface area dedicated to absorption
C. Increased bioavailability
D. Increased lipid solubility
E. Increased pH when the drug is a weak acid

❑ Q2

The rate of urinary excretion of acidic drugs such as aspirin is increased by.

A. Administration of sodium bicarbonate.
B. Administration of ammonium chloride.
C. Administration of ascorbic acid.
D. Keeping the urine at neutral pH.

❑ Q3

Ionized and/or lipid-insoluble drugs:

A. May pass through the small aqueous channels, or pores, of cells of many tissues.
B. Generally gain entry to brain cells.
C. Cross biologic lipid membranes
D. Cannot cross the cell membrane

❑ Q4

One of the following statements is <u>Not</u> true for pKa of drugs:

a. Ionized drugs are poorly absorbed while unionized drugs are more absorbed.

b. Ionization of most drugs depends on the pH of the medium around them.

c. Acidic drugs become more absorpable in alkaline pH.

d. Basic drugs become more reabsorbable in alkaline urine**.**

❑ Q5

Distribution of drugs to specific tissues:

a. Is independent of blood flow to the organ.

b. Is independent of the solubility of the drug in that tissue.

c. Depends on the unbound drug concentration gradient between blood and tissue.

d. Is increased for drugs that are strongly bound to plasma proteins.

e. Has no effect on the half-life of the drug.

❑ Q6

10) Drug A is metabolized by liver microsomal enzymes. Coadministration of drug B will increase the rate of metabolism of drug A, if drug B:

a. Displaces drug A from plasma binding sites.
b. Induces enzymes responsible for metabolism of drug A.
c. Causes decreased renal blood flow.
d. Competes with Drug A for the same metabolizing enzymes.

❑ Q7

MATCH the lettered expression from the list below with its most appropriate definition in the items below. Answers may be used once, more than once, or not at all.

A. Apparent volume of distribution
B. Half-life
C. First pass effect

1) This parameter is an expression of the time required for a drug concentration to be reduced to 50% of an initial value
2) This parameter is expressed in liter (L)
3) This parameter does not happen when the drug used by sublingual route

❑ Q8

A.Phase I reactions
B.Phase II reactions
C.Both
D.Neither

1. Occur in the liver
2. Increase renal elimination of lipophilic drugs
3. Accomplished by mixed function oxidase system
4. Involve conjugation of glucuronides to drug

❑ Q9

A pro-drug is:

a. The prototype member of a class of drugs.

b. The oldest member of a class of drugs

c. An inactive drug that is transformed in the body to an active metabolite.

d. A drug that is stored in the body tissues and is then gradually released in the circulation.

❑ Q10

Which of the following statements best describes the "first pass effect"?

a. Orally administered drugs that are rapidly inactivated by hepatic enzymes or rapidly excreted in the bile lose much of their effectiveness on their first pass through the liver.

b. Drugs actively secreted into the urine are almost completely cleared on their first pass through the kidneys.

c. The first drug to pass into the circulation from intestine is the first to produce effect.

d. A high initial concentration of drug passes through the circulation when intravenous bolus injection is used.

e. Upon administration, drugs pass into well-perfused tissues before being redistributed to tissues that are less well perfused.

❑ Q11

18) When the same dose of a drug is repeated at half life intervals, the steady-state (plateau) plasma drug concentration is reached after:

a. 2-3 half-lives.
b. 4-5 half-lives.
c. 6-7 half-lives.
d. 8-10 half-lives.

❑ Q12

20) One of the following statements is not true for Vd of drugs:

a. It can exceed the volume of water in the body.

b. Drugs with small Vd cannot be removed by dialysis.

c. Would be expected to be less than 5L if the drug is confined to the plasma.

d. Highly lipid – soluble drugs would be expected to have large Vd.

e. It can help in the calculation of the total amount of the drug in the body.

❑ Q13

Metabolism (Biotransformation) of drugs cannot lead to one of the following results:

a. Conversion of active compound into inactive metabolites.

b. Conversion of active compound into active metabolites.

c. Conversion of inactive compound into active metabolites.

d. Conversion of water – soluble compound into lipid-soluble metabolites.

Review Q.1

Which one of the following drugs is used in treatment of open angel glaucoma?

a. Carbachol
b. Atropine
c. Bethanechol
d. Ipratropium
e. Acetyl choline

Answer: a

Review Q.2

Which one of the following drugs is used in treatment of postoperative urine retention?

a. Carbachol
b. Atropine
c. Bethanechol
d. Ipratropium
e. Acetyl choline

Answer: c

Review Q.3

Which one of the following drugs is indirect parasympathomimetic and used in treatment of postoperative urine retention?

a. Carbachol
b. Atropine
c. Bethanechol
d. Neostigmine
e. Acetyl choline

Answer: d

Review Q.4

Which one of the following drugs is indirect parasympathomimetic and used in treatment of open angle glaucoma?

a. Carbachol
b. Physostigmine
c. Bethanechol
d. Neostigmine
e. Acetyl choline

Answer: b

Review Q.5

Which one of the following drugs used in treatment of myasthenia gravis?

a. Neostigmine
b. Carbachol
c. Physostigmine
d. Bethanechol
e. Pilocarpine

Answer: a

Review Q.6

Which one of the following drugs used in atropine overdose?

a. Neostigmine
b. Carbachol
c. Physostigmine
d. Bethanechol
e. Pilocarpine

Answer: c

Review Q.7

Which one of the following drugs can not be used clinically?

a. Neostigmine
b. Carbachol
c. Physostigmine
d. Bethanechol
e. Acetylcholine

Answer: e

Review Q.8

Which one of the following drugs is direct parasympathomimetic?

a. Neostigmine
b. Carbachol
c. Physostigmine
d. Parathion
e. Edrophonium

Answer: b

Review Q.9

A 30-year-old woman undergoes abdominal surgery. In spite of minimal tissue damage, complete ileus (absence of bowel motility) follows, and she complains of severe bloating. She also finds it difficult to urinate. Mild cholinomimetic stimulation with bethanechol or neostigmine is often effective in relieving these complications of surgery. Neostigmine and bethanechol in moderate doses have significantly different effects on which one of the following?

a. Gastric secretory cells
b. Vascular endothelium
c. Salivary glands
d. Sweat glands
e. Ureteral tone

Answer: b

Review Q.10

Parasympathetic nerve stimulation and a slow infusion of bethanechol will each?

a. Cause ganglion cell depolarization
b. Cause skeletal muscle end plate depolarization
c. Cause vasodilation
d. Increase bladder tone
e. Increase heart rate

Answer: d

Review Q.11

A 3-year-old child is admitted to the emergency department after taking a drug from her parents' medicine cabinet. The signs suggest that the drug is an indirect-acting cholinomimetic with little or no CNS effect and a duration of action of about 2–4 h. Which of the following is the most likely cause of these effects?

a. Acetylcholine
b. Bethanechol
c. Neostigmine
d. Physostigmine
e. Pilocarpine

Answer: c

Review Q.12

Which of the following is a side effect of atropine?

a. bronchoconstriction
b. diarrhea
c. Sweating
d. Heart block
e. Increase intraocular pressure

Answer: e

Review Q.13

Which of the following atropine substitutes used as bronchodilator?

a. Ipratropium
b. Hyoscine butylbromide
c. Pirenzepine
d. Homatropine
e. Benztropine

Answer: a

Review Q.14

Which of the following effects occur with atropine?

a. Bradycardia
b. Cycloplegia
c. Salivation
d. Bronchospasm
e. Hypotension

Answer: b

Review Q.15

Which of the following is considered indication for atropine?

a. Tachycardia
b. Glaucoma
c. Cardiac arrest
d. Renal colic
e. Hypotension

Answer: d

Review Q.16

Side effects of Antimuscarinic drugs include one of the following?

a. Miosis
b. Bradycardia
c. Dryness of mouth
d. Bronchoconstriction
e. Increase motility of the GIT

Answer: c

Review Q.17

Contraindication of Atropine include one of the following?

a. Glaucoma
b. Bradycardia
c. Xerostomia
d. Intestinal colic
e. Parkinson’s disease

Answer: a

Review Q.18

A 27-year old compulsive drug user injected a drug he thought was methamphetamine, but he has not developed any signs of methamphetamine action. He has been admitted to the emergency department and antimuscarinic drug overdose is suspected. Probable signs of atropine overdose include which one of the following?

a. Gastrointestinal smooth muscle cramping
b. Increased heart rate
c. Increased gastric secretion
d. Pupillary constriction
e. Urinary frequency

Answer: b

Review Q.19

Which of the following is the most dangerous effect of belladonna alkaloids in infants ?

a. Dehydration
b. Hallucinations
c. Hypertension
d. Hyperthermia
e. Heart block

Answer: d

Review Q.20

Which of the following is an accepted therapeutic indication for the use of antimuscarinic drugs?

a. Atrial fibrillation
b. Botulinum poisoning
c. Chronic obstructive pulmonary disease (COPD)
d. Glaucoma
e. Postoperative urinary retention

Answer: c

Review Q.1

- **Which of the following drug act by Altering nucleic acid metabolism?**

a. Trimethoprim
b. Quinolones
c. Aminoglycoside
d. Penicillin
e. Monobactam

Review Q.2

❑ **Which of the following is transferable bacterial resistance?**

a. Gene mutation
b. Production of inactivating enzymes.
c. Reduced bacterial permeability
d. Transformation
e. Modification of the receptor site

Review Q.3

- **Which of the following is characteristic for superinfection?**

a. Caused by bacterial flora
b. Common with narrow spectrum antibiotics
c. Occurs with long courses of antibiotics
d. results from antibiotics with complete absorption from the small intestines
e. Only systemic infection

Review Q.4

❑ **Use of penicillin with aminoglycosides is……:**

a. Synergistic
b. Additive
c. Antagonistic
d. Potentiation
e. Toxic

Review Q.5

- **In a patient suffering from pseudomembranous colitis due to C difficile with established hypersensitivity to metronidazole the most likely drug to be of clinical value is?**

a. Amoxicillin
b. Chloramphenicol
c. Doxycycline
d. Levofloxacin
e. Vancomycin

Review Q.6

Which one of the following represents a combination with known synergism?

a. A penicillin and an aminoglycoside.
b. A sulphonamide and tetracycline.
c. Two drugs in which the second drug will displace the first from plasma protein–binding sites.
d. Two drugs that are eliminated by different routes.
e. Two drugs that work on the same step in a metabolic pathway.

Review Q.7

The combined antibacterial effect of two drugs is greater than the sum of their individual effects:

a. mutual antagonism
b. indifference
c. synergism
d. additive
e. competition

Review Q.8

Superinfections are more common with:

a. Use of narrow spectrum antibiotics
b. Short courses of antibiotics
c. Use of antibiotics that are completely absorbed from the small intestines
d. Use of antibiotic combinations covering both gram positive and gram negative bacteria

Review Q.9

The most frequent mechanism of transferable drug resistance:

a. Transduction
b. Transformation
c. Plasmid exchange
d. Mutation and selection