REPUBLIC OF MOLDOVA
MINISTERY OF HEALTH AND SOCIAL PROTECTION
STATE UNIVERSITY OF MEDICINE AND PHARMACY
NICOLAE TESTEMIŢANU

Tests on Pharmacology

for III-year students

(*faculty of medicine)*

CHISINAU
2014

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PHARMACOLOGY AND CLINICAL PHARMACOLOGY
DEPARTAMENT

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Under the editorship of Victor GHICAVÎI – Corresponding Member of Academy of Science of Republic of Moldova

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Authors:

Ina Pogonea – Associate professor
Lucia Ţurcan – Associate professor
Ianoș Coreţchi – lecturer
Ina Guţu – lecturer

Technical editor - *Irina Taragan*

The tests on Pharmacology were made up according to the Syllabus on Pharmacology.

The tests allow the assessment of the level of learning in a great number of students, and the keys provided at the end of each chapter make the self-assessment possible.

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1. General principles of Pharmacology

1.1. Pharmacokinetics

Single-choice tests:

1. Pharmacokinetics is:
    a) The study of biological and therapeutic effects of drugs
    b) The study of absorption, distribution, metabolism and excretion of drugs
    c) The study of mechanisms of drug action
    d) The study of methods of new drug development
    e) The study of pharmacological effects of drugs

2. What does “pharmacokinetics” mean?
    a) Complications of drug therapy
    b) Drug biotransformation in the organism
    c) Influence of drugs on metabolic processes
    d) Influence of drugs on genes
    e) Unwanted effects of drugs

3. What does “pharmacokinetics” mean?
    a) Localization of drug action
    b) Mechanisms of drug action
    c) Excretion of substances
    d) Interaction of substances
    e) Side effects of drugs

4. The main mechanism of most drugs absorption in the GI tract is:
    a) Active transport (carrier-mediated diffusion)
    b) Filtration (aqueous diffusion)
    c) Endocytosis
    d) Passive diffusion (lipid diffusion)
    e) Exocytosis

5. What kind of substances cannot permeate membranes by passive diffusion?
    a) Lipid-soluble
    b) Nonionized substances
    c) Hydrophobic substances
    d) Hydrophilic substances

6. A hydrophilic medicinal agent has the following property:
    a) Low ability to penetrate through the cell membrane lipids
    b) Penetrate through membranes by means of endocytosis
    c) Easy permeation through the blood-brain barrier
    d) High reabsorption in renal tubules
    e) Penetrates BBB (Blood-Brain Barrier)

7. What does «active transport» imply?
    a) Transport of drugs through a membrane by means of diffusion
    b) Transport without energy consumption
    c) Engulf of drug by a cell membrane with a new vesicle formation
    d) Transport against gradient of concentration
    e) Filtration through the membrane pores

8. What does the term “bioavailability” mean?
    a) Plasma protein binding degree of substance
    b) Permeability through the brain-blood barrier
    c) Fraction of an uncharged drug reaching the systemic circulation following any route of administration
    d) Amount of substance in urine relative to the initial doze
    e) The free drug concentration

9. Which route of drug administration is most likely to lead to the first-pass effect?
    a) Sublingual
    b) Oral
    c) Intravenous
    d) Intramuscular
    e) Transdermal

10. What is characteristic of the oral route?
    a) Fast onset of effect
    b) Absorption depends on the GI tract secretion and motor function
    c) A drug gets into the blood bypassing the liver
    d) The sterilization of medicinal forms is obligatory
    e) Bypassing the hepatic barrier in the first-pass

11. Tick the feature of the sublingual route:
    a) Pretty fast absorption
    b) A drug is exposed to gastric secretion
    c) A drug is exposed to more prominent liver metabolism

d) A drug can be administrated in a variety of doses
e) Absorption depends on the GI tract secretion

12. Tick out the parenteral route of medicinal agent administration:
    a) Rectal
    b) Oral
    c) Sublingual
    d) Inhalation
    e) Transdermal

13. Parenteral administration:
    a) Cannot be used in unconsciousness patients
    b) Generally results in a less accurate dosage than oral administration
    c) Usually produces a more rapid response than oral administration
    d) Is to slow in case of emergency

14. What is characteristic of the intramuscular route of drug administration?
    a) Only water solutions can be injected
    b) Oily solutions can be injected
    c) Possibility of hypertonic solution injections
    d) The action develops slower, than in oral administration

15. Intravenous injections are more suitable for oily solutions:
    a) True
    b) False

16. Correct statements listing the characteristics of a particular route of drug administration include all of the following, EXCEPT:
    a) Intravenous administration provides a rapid response
    b) Intramuscular administration requires a sterile equipment
    c) Inhalation provides slow access to the general circulation
    d) Subcutaneous administration may cause local irritation

17. Most of drugs are distributed homogeneously.
    a) True
    b) False

18. Biological barriers include all, EXCEPT:
    a) Renal tubules
    b) Cell membranes

c) Capillary walls
d) Placenta
e) BBB (blood-brain barrier)

19. What is the reason of complicated penetration of some drugs through brain-blood barrier?
    a) High lipid solubility of a drug
    b) Meningitis
    c) Absence of pores in the brain capillary endothelium
    d) High endocytosis degree in a brain capillary

20. The volume of distribution (Vd) relates to:
    a) Single-day dose of an administrated drug
    b) An administrated dose to 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

21. To calculate the volume of distribution (Vd) one must take into account:
    a) Concentration of substance in plasma
    b) Concentration of substance in urine
    c) Width of therapeutic spectrum of a drug
    d) A daily dose of drug

22. A small amount of the volume of distribution is common for lipophylic substances easy penetrating through barriers and widely distributing in plasma, interstitial and cell fluids:
    a) True
    b) False

23. The term “biotransformation” includes the following:
    a) Accumulation of substances fatty tissue
    b) Binding of substances to plasma proteins
    c) Accumulation of substances in a tissue
    d) Process of physicochemical and biochemical alteration of a drug in the body

24. Biotransformation of drugs is to make them:
    a) Less ionized
    b) More pharmacologically active
    c) More lipid soluble
    d) Less lipid soluble

25. Tick the drug type for which microsomal oxidation is the most prominent:
    a) Lipid soluble drug
    b) Water soluble drug
    c) Drugs with low molecular weight
    d) Drugs with high molecular weight

26. Tick out the right statement:
    a) Microsomal oxidation always results in inactivation of a compound
    b) Microsomal oxidation results in a decrease of compound toxicity
    c) Microsomal oxidation results in an increase of ionization and water solubility of a drug
    d) Microsomal oxidation results in an increase of lipid solubility of a drug thus its excretion from the organism is facilitated

27. 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 unwanted reaction of a drug

28. Metabolic transformation (phase 1) is:
    a) Acetylation and methylation of substances
    b) Transformation of substances due to oxidation, reduction or hydrolysis
    c) Glucuronide formation
    d) Binding to plasma proteins

29. Biotransformation of a medicinal substance results in:
    a) Faster urinary excretion
    b) Slower urinary excretion
    c) Easier distribution in the organism
    d) Higher binding to membranes

30. Conjugation is:
    a) The process of drug reduction by special enzymes
    b) The process of drug oxidation by special oxidases
    c) Coupling of a drug with an endogenous substrate
    d) Solubilization in lipids

31. Which of the following processes proceeds in the second phase of biotransformation?
    a) Acetylation
    b) Reduction
    c) Oxidation
    d) Hydrolysis

32. Conjugation of a drug includes the following, EXCEPT:
    a) Glucoronidation
    b) Sulfate formation
    c) Hydrolysis
    d) Methylation

33. Metabolic transformation and conjugation usually results in an increase of a substance biological activity:
    a) True
    b) False

34. In case of liver disorders accompanied by a decline in microsomal enzyme activity the duration of action of some drugs is:
    a) Decreased
    b) Prolonged
    c) Unchanged
    d) Changed insignificantly

35. 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

36. Half life (t ½) does not depend on:
    a) Biotransformation
    b) Time of drug absorption
    c) Concentration of a drug in plasma
    d) Rate of drug elimination

37. Elimination is expressed as follows:
    a) Rate of renal tubular reabsorption

b) Clearance speed of some volume of blood from substance
c) Time required to decrease the amount of drug in plasma by one-half
d) Clearance of the organism from a xenobiotic

38. Elimination rate of Kelim constant is defined by the following parameter:
    a) Rate of absorption
    b) Maximal concentration of substance in plasma
    c) Highest single dose
    d) Half life (t ½)

39. The most rapid eliminated drugs are those with high glomerular filtration rate and actively secreted but are not passively reabsorbed:
    a) True
    b) False

40. Systemic clearance (CLs) is related with:
    a) The concentration of substances in plasma only
    b) The elimination rate constant only
    c) Volume of distribution, half life and elimination rate constant
    d) Bioavailability and half life

Pharmacokinetics

Task: one correct answer

1) B	15) B	29) A
2) B	16) C	30) C
3) C	17) B	31) A
4) D	18) A	32) C
5) D	19) C	33) B
6) A	20) D	34) B
7) D	21) A	35) A
8) C	22) B	36) B
9) B	23) D	37) D
10) B	24) D	38) D
11) A	25) A	39) A
12) D	26) C	40) C
13) C	27) A	
14) B	28) B	

1.2. Pharmacodynamics

Single-choice tests:

1. Pharmacodynamics involves the study of the following, EXCEPT:
    a) Biological and therapeutic effects of drugs
    b) Absorption and distribution of drugs
    c) Mechanisms of drug action
    d) Drug interactions
    e) Adverse reactions

2. Which of the following is studied by pharmacodynamics?
    a) Mechanisms of drug action
    b) Biotransformation of drugs in the organism
    c) Distribution of drugs in the organism
    d) Excretion of drugs from the organism
    e) Protein binding

3. Does pharmacodynamics involve the following?
    a) Information about the main mechanisms of drug absorption
    b) Information about unwanted effects
    c) Information about biological barriers
    d) Information about excretion of drugs from the organism

4. Tick the answer which is the most appropriate to the term “receptor”:
    a) All types of ion channels modulated by a drug
    b) Enzymes of oxidizing-reducing reactions activated by a drug
    c) Active macromolecular components of a cell or an organism which a drug molecule has to combine with in order to elicit its specific effect
    d) Carriers activated by a drug

5. 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

6. Target proteins which a drug molecule binds are:
    a) Receptors only
    b) Ion channels only
    c) Carriers only
    d) All of the above

7. An agonist is a substance that:
    a) Interacts with the receptor without producing any effect
    b) Interacts with the receptor and initiates changes in cell function, producing various effects
    c) Increases concentration of another substance to produce an effect
    d) Interacts with plasma proteins and does not produce any effect

8. If an agonist can produce maximal effects and has high efficacy it is called:
    a) Partial agonist
    b) Antagonist
    c) Agonist-antagonist
    d) Full agonist

9. If an agonist can produce submaximal effects and has moderate efficacy it is called:
    a) Partial agonist
    b) Antagonist
    c) Agonist-antagonist
    d) Full agonist

10. An antagonist is a substance that:
    a) Binds to receptors and initiates changes in cell function, producing maximal effect
    b) Binds to receptors and initiates changes in cell function, producing submaximal effect
    c) Interacts with plasma proteins and does not produce any effect
    d) Binds to the receptors not altering directly their functions

11. 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

12. The substance binding to one receptor subtype as an agonist and to another as an antagonist is called:
    a) Competitive antagonist

b) Irreversible antagonist
c) Agonist-antagonist
d) Partial agonist

13. Irreversible interaction of an antagonist with a receptor is due to:
    a) Ionic bonds
    b) Hydrogen bonds
    c) Covalent bonds
    d) All of the above

14. Mechanisms of transmembrane signaling are the following, EXCEPT:
    a) Transmembrane receptors that bind and stimulate a protein tyrosine kinase
    b) Gene replacement by the introduction of a therapeutic gene to correct a genetic effect
    c) Ligand-gated ion channels that can be induced to open or close by binding a ligand
    d) Transmembrane receptor protein that stimulates a GTP-binding signal transducer protein (G-protein) which in turn generates an intracellular second messenger

15. Tick the second messenger of G-protein-coupled (metabotropic) receptor:
    a) Adenylyl cyclase
    b) Sodium ions
    c) Phospholipase C
    d) cAMP

16. Tick the substance which changes the activity of an effector element but does not belong to second messengers:
    a) cAMP
    b) cGMP
    c) G–protein
    d) Calcium ions

17. The increase of second messengers' (cAMP, cGMP, Ca2+ etc.) concentration leads to:
    a) Inhibition of intracellular protein kinases and protein phosphorylation
    b) Proteinkinases activation and protein phosphorylation
    c) Blocking of interaction between a receptor and an effector

d) Antagonism with endogenous ligands

18. Tick the substances whose mechanisms are based on interaction with ion channels:
    a) Sodium channel blockers
    b) Calcium channel blockers
    c) Potassium channels activators
    d) All of the above

19. 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) Potency is a comparative measure, referring to different doses of two drugs that have to produce the same effect
    d) The ED 50 is a measure of drug efficacy

20. Tick the definition of therapeutical dose:
    a) The amount of substance to produce the minimal biological effect
    b) The amount of substance to produce effects hazardous for the organism
    c) The amount of substance to produce the required effect in most patients
    d) The amount of substance to accelerate an increase of concentration of medicine in an organism

21. Tick out the correct definition of toxic dose:
    a) The amount of substance to produce the minimal biological effect
    b) The amount of substance to produce effects hazardous for the organism
    c) The amount of substance to produce the necessary effect in most of patients
    d) The amount of substance to fast creation of high concentration of medicine in the organism

22. Which effect may lead to toxic reactions when a drug is taken continuously or repeatedly?
    a) Refractoriness

b) Cummulative effect
c) Tolerance
d) Tachyphylaxis

23. Which of the following terms is used to describe a more gradual decrease in responsiveness to a drug, taking days or weeks to develop?
    a) Refractoriness
    b) Cumulative effect
    c) Tolerance
    d) Tachyphylaxis

24. 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

25. Tachyphylaxis is:
    a) A drug interaction between two similar types of drugs
    b) Very rapidly developing tolerance
    c) A decrease in responsiveness to a drug, taking days or weeks to develop
    d) None of the above

26. Drug resistance is the term used to describe the loss of effectiveness of antimicrobial or antitumour drugs. This consideration is:
    a) True
    b) False

27. Tolerance and drug resistance can be the consequence of:
    a) Drug dependence
    b) Increased metabolic degradation
    c) Depressed renal drug excretion
    d) Activation of a drug after hepatic first-pass

28. Tolerance and drug resistance can be the 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

29. Tolerance develops because of:
    a) Diminished absorption
    b) Rapid excretion of a drug
    c) Both of the above
    d) None of the above

30. Dependence is often associated with tolerance to a drug, physical abstinence syndrome, and psychological dependence (craving). This statement is:
    a) True
    b) False

31. The situation when the failure to continue administration of the drug results in serious psychological and somatic disturbances is called:
    a) Tachyphylaxis
    b) Sensibilization
    c) Abstinence syndrome
    d) Idiosyncrasy

32. Which type of drug-to-drug interaction is connected with processes of absorption, biotransformation, distribution and excretion?
    a) Pharmacodynamic interaction
    b) Physical and chemical interaction
    c) Pharmaceutical interaction
    d) Pharmacokinetic interaction

33. Which is the type of drug-to-drug interaction is the result of interaction at the receptor, cell, enzyme or organ level?
    a) Pharmacodynamic interaction
    b) Physical and chemical interaction
    c) Pharmaceutical interaction
    d) Pharmacokinetic interaction

34. What phenomenon can occur in case of using a combination of drugs?
    a) Tolerance
    b) Tachyphylaxis
    c) Accumulation
    d) Synergism

35. If two drugs with the same effect are taken together and produce an effect that is equal in magnitude to the sum of the effects of the drugs given separately, it is called:
    a) Antagonism
    b) Potentiation
    c) Additive effect
    d) None of the above

36. What does the term “potentiation” mean?
    a) Cumulative property of a drug
    b) Hypersensitivity to a drug
    c) Tachyphylaxis
    d) Intensive increase of drug effects due to their combination
    e) Tolerance

37. The types of antagonism are:
    a) Summarized
    b) Potentiated
    c) Additive
    d) Competitive
    e) Tolerance

38. The term “chemical antagonism” means that:
    a) Two drugs combined to form an inactive compound
    b) Two drugs combined to form a more active compound
    c) Two drugs combined to form a more water soluble compound
    d) Two drugs combined to form a more fat-soluble compound

39. A teratogenic action is:
    a) Toxic action on the liver
    b) Negative action on the fetus causing fetal malformation
    c) Toxic action on the blood system
    d) Toxic action on the kidneys

40. Characteristic unwanted reaction which is not related to a dose or to a pharmacodynamic property of a drug is called:
    a) Idiosyncrasy
    b) Hypersensitivity
    c) Tolerance
    d) Teratogenic action

41. Idiosyncratic reaction of a drug is:
    a) A type of hypersensitivity reaction
    b) A type of drug antagonism
    c) Unpredictable, inherent, qualitatively abnormal reaction to a drug
    d) Quantitatively exaggerated response

42. Therapeutic index (TI) is:
    a) A ratio used to evaluate the safety and usefulness of a drug for indication
    b) A ratio used to evaluate the efficacy of a drug
    c) A ratio used to evaluate the bioavailability of a drug
    d) A ratio used to evaluate the elimination of a drug

43. Which affirmation in experimental conditions define therapeutic indications?
    a) Express raport DL 25/DE 25
    b) Express raport DL 50/DE 25
    c) Express raport DL 50/DE 50
    d) Express raport DT 50/DE 100
    e) Express raport DT 10/DE 100

Multiple-choice tests:

44. Tick the proper internal route of administration when the passage of drugs through the liver is minimized:
    a) Oral
    b) Transdermal
    c) Rectal
    d) Intraduodenal
    e) Sublingual

45. The following statements are true with regard to drug metabolism:
    a) Lipid-soluble beta-antagonists cause bad dreams more often than water-soluble beta-antagonists
    b) A highly plasma protein bound drugs have a very large volume of distribution
    c) Hepatic drug metabolism often involves conversion of a water-soluble drug into a more lipid-soluble one
    d) Gastrointestinal absorption of lipid soluble drugs occurs more readily than in water soluble drugs

e) Renal failure significantly increases the plasma protein-binding of drugs

46. Which of the following are true about drug efficacy:
    a) Drug A which is effective in a dose of 10 micrograms has a high efficacy than drug B which is effective in a dose of 10 milligrams
    b) It can be demonstrated in a double-blind trial comparing the drug with a placebo
    c) It is a measure of the amount of drug necessary to produce a given effect
    d) It is a measure of drug bioavailability
    e) It describes the capacity of a drug to produce its therapeutic effect

47. Which of the following statements are true:
    a) Bioavailability means the amount of drug which is abosrbed after taking
    b) The volume of distribution is inversely proportional to the-clearance of a drug
    c) Clearance is calculated by dividing the administered dose by the area under the time concentration curve
    d) In most drugs the amount eliminated from the plasma is directly proportional to the remaining amount.
    e) In first order kinetics, the elimination half-life of a drug is in didependent of the dose

48. P450:
    a) Is found in the endoplasmic reticulum of hepatocytes
    b) Is involved in phase I metabolism
    c) Is induced by phenytoin
    d) Is induced by cimetidine
    e) Induction of P450 reduces the effect of warfarin

49. Which of the following are true for drugs with a high first-pass effect:
    a) They have low bioavailability
    b) They are excreted unchanged by the kidneys
    c) Their levels in the serum are increased in the presence of hepatic failure

d) They are poorly absorbed
e) They have a high extraction ration

50. The blood- brain barrier is readily permeable to:
a) Strong acids
b) Weak bases
c) Highly water-soluble drugs
d) Lipophilic drugs
e) Adrenaline

51. The bioavailability of orally administered drugs depends on:
a) First pass metabolism
b) Water solubility
c) Lipid solubility
d) Dose of the drug
e) Presence of other drugs in the alimentary system

Pharmacodynamics

Task: one correct answer

1) B	16) C	31) C
2) A	17) B	32) D
3) B	18) D	33) A
4) C	19) D	34) D
5) B	20) C	35) C
6) D	21) B	36) D
7) B	22) B	37) D
8) D	23) C	38) A
9) A	24) D	39) B
10) D	25) B	40) B
11) B	26) A	41) C
12) C	27) B	42) A
13) C	28) A	43) C
14) B	29) D	
15) D	30) A	

Task: two or more correct answers

44) C, E	47) C, D, E	50) B, D
45) A, D	48) A, B, C, E	51) A, B, C, E
46) B, E	49) A, C, E	

2. Drugs controlling the functions of the central nervous system

2.1. Hypnotic drugs

Single-choice tests:

1. Hypnotic drugs are used to treat:
    a) Psychosis
    b) Sleep disorders
    c) Narcolepsy
    d) Parkinsonian disorders
    e) Acute mania

2. Hypnotic drugs should:
    a) Reduce anxiety and exert a calming effect
    b) Induce absence of sensation
    c) Produce drowsiness, encourage the onset and maintenance of sleep
    d) Prevent mood swings in patients with bipolar affective disorders

3. Which of the following chemical agents are used in the treatment of insomnia?
    a) Benzodiazepines
    b) Imidazopyridines
    c) Barbiturates
    d) Antihistaminics
    e) All of the above

4. Tick the hypnotic drug which is a benzodiazepine derivative:
    a) Zolpidem
    b) Flurazepam
    c) Secobarbital
    d) Phenobarbitone
    e) Diphenhydramine

5. Tick a hypnotic agent that is barbituric acid derivative:
    a) Flurazepam
    b) Zaleplon
    c) Thyopental
    d) Triazolam
    e) Zolpidem

6. Thich the hypnotic drug, which is an imidazopyridine derivative:
    a) Pentobarbital
    b) Temazepam
    c) Zolpidem
    d) Chloral hydrate

7. Which of the following hypnotic agents is absorbed slowly?
    a) Phenobarbital
    b) Flurazepam
    c) Triazolam
    d) Temazepam

8. Which of the following barbiturates is an ultra-short-acting drug?
    a) Secobarbital
    b) Amobarbital
    c) Thiopental
    d) Phenobarbital

9. Tick the barbituric acid derivative which has a 4-5 day elimination half-life:
    a) Secobarbital
    b) Thiopental
    c) Phenobarbital
    d) Amobarbital
    e) Diazepam

10. Tick the hypnotic benzodiazepine which has the shortest elimination half-life:
    a) Temazepam
    b) Triazolam
    c) Flurazepam
    d) Diazepam
    e) Nitrazepam

11. Which of the following hypnotic drugs is more likely to cause cumulative and residual effects?
    a) Zolpidem
    b) Temazepam
    c) Phenobarbital
    d) Triazolam
    e) Secobarbital

12. Which of the following hypnotic drugs increases the activity of hepatic drug-metabolizing enzyme systems?
    a) Phenobarbital
    b) Zolpidem
    c) Flurazepam
    d) Zaleplon

13. Hepatic microsomal drug-metabolizing enzyme induction leads to:
    a) Barbiturate tolerance
    b) Cumulative effects
    c) Development of physical dependence
    d) "Hangover" effects
    e) Development of psychological dependence

14. Hypnotic benzodiazepines are more powerful enzyme inducers than barbiturates.
    a) True
    b) False

15. Tick the hypnotic drug, which does not change hepatic drug-metabolizing enzyme activity?
    a) Flurazepam
    b) Zaleplon
    c) Triazolam
    d) Alprazolam
    e) All of the above

16. Barbiturates increase the metabolic rate of:
    a) Anticoagulants
    b) Digitalis compounds
    c) Glucocorticoids
    d) All of the above

17. Which of the following agents inhibits hepatic metabolism of hypnotics?
    a) Flumasenil
    b) Cimetidin
    c) Phenytoin
    d) Theophylline
    e) Naltrexon

18. Which of the following factors can influence the biodisposition of hypnotic agents?
    a) Alterations in the hepatic function resulting from a disease
    b) Old age
    c) Drug-induced increase or decrease in microsomal enzyme activity
    d) All of the above

19. Which of the following hypnotics is preferred for elderly patients?
    a) Phenobarbital
    b) Flurozepam
    c) Temazepam
    d) Secobarbital

20. Which of the following hypnotics is preferred in patients with limited hepatic function?
    a) Zolpidem
    b) Amobarbital
    c) Flurozepam
    d) Pentobarbital
    e) Difenhydramine

21. Indicate the mechanism of barbiturate action (at hypnotic doses):
    a) Increase of the duration of the GABA-gated Cl-channel opening
    b) Direct activatin of the chloride channels
    c) Increase of the frequency of Cl- channel opening events
    d) All of the above

22. Imidazopyridines are:
    a) Partial agonists of the 5-TH1A brain receptors
    b) Selective agonists of the BZ1 (omega1) subtype of BZ receptors
    c) Competitive antagonists of BZ receptors
    d) Nonselective agonists of both BZ1 and BZ2 receptor subtypes

23. Which of the following hypnotic agents is the positive allosteric modulator of GABA A receptor function?
    a) Zaleplon
    b) Flurazepam
    c) Zolpidem
    d) Diazepam
    e) All of the above

24. Tick the hypnotic drug that is a selective agonist of the BZ1 receptor subtype:
    a) Flurazepam
    b) Zolpidem
    c) Triazolam
    d) Flumazenil
    e) Alprazolam

25. Which of the following hypnotic agents is able to interact with both BZ1 and BZ2 receptor subtypes?
    a) Zaleplon
    b) Phenobarbital
    c) Flurazepam
    d) Zolpidem
    e) Diphenhydramine

26. Tick the competitive antagonist of BZ receptors:
    a) Flumazenil
    b) Picrotoxin
    c) Zolpidem
    d) Temazepam
    e) Phenobarbital

27. Flumazenil blocks the actions of:
    a) Phenobarbital
    b) Morphine
    c) Diazepam
    d) Ethanol
    e) Amitriptiline

28. Which of the following agents is preferred in the treatment of insomnia?
    a) Barbiturates
    b) Hypnotic benzodiazepines
    c) Ethanol
    d) Phenothiazide
    e) Antihistaminic drugs

29. Barbiturates are replaced by hypnotic benzodiazepines because of:
    a) Low therapeutic index
    b) Suppression in REM sleep

c) High potential of physical dependence and abuse
d) All of the above

30. Tick the main requirement for an ideal hypnotic agent:
    a) Rapid onset and sufficient duration of action
    b) Minor effects on sleep patterns
    c) Minimal "hangover" effects
    d) All of the above

31. Which stage of sleep is responsible for the incidence of dreams?
    a) REM sleep
    b) Slow wave sleep
    c) Stage 2NREM sleep
    d) All of the above

32. During slow wave sleep (stage 3 and 4 NREM sleep):
    a) Dreams occur
    b) The secretion of adrenal steroids is at its highest level
    c) Somnambulism and nightmares occur
    d) The secretion of somatotropin is at its lowest level

33. All hypnotic drugs induce:
    a) Increase of the duration of REM sleep
    b) Decrease of the duration of REM sleep
    c) No change in the duration of REM sleep
    d) Increase of the duration of slow wave sleep

34. Which of the following hypnotic drugs causes the least suppression of REM sleep?
    a) Flumazenil
    b) Phenobarbital
    c) Flurazepam
    d) Secobarbital

35. Although benzodiazepines continue to be the agents of choice for insomnia, they have:
    a) Capacity of psychological and physiological dependence
    b) Synergistic depression of CNS with other drugs (especially alcohol)
    c) Residual drowsiness and daytime sedation
    d) All of the above

36. Hypnotic benzodiazepines can cause:
    a) A dose-dependent increase in both REM and slow wave sleep
    b) Do not change sleep patterns
    c) A dose-dependent decrease in both REM and slow wave sleep
    d) A dose-dependent increase in REM sleep and decrease in slow wave sleep

37. Which of the following hypnotic benzodiazepines is more likely to cause “hangover” effects such as drowsiness, dysphoria, and mental or motor depression the next day?
    a) Temazepam
    b) Triazolam
    c) Flurazepam
    d) Lorazepam
    e) None of the above

38. Tick the hypnotic drug, which binds selectively to the BZ1 receptor subtype, facilitating GABAergic inhibition:
    a) Thiopental
    b) Zolpidem
    c) Flurazepam
    d) Phenobarbital

39. Which of the following statements is correct for zolpidem?
    a) It causes minor effects on sleep patterns
    b) The risk of development of tolerance and dependence is less than with the use of hypnotic benzodiazepines
    c) It has minimal muscle relaxing and anticonvulsant effects
    d) All of the above

40. Which agent manifests hypnotic activity with minimal muscle relaxing and anticonvulsant effects?
    a) Flurazepam
    b) Triazolam
    c) Zaleplon
    d) None of the above

41. Zolpidem and zaleplon have the efficacy similar to that of hypnotic benzodiazepines in the management of sleep disorders.
    a) True
    b) False

42. Which of the following hypnotic drugs is used intravenously for anesthesia?
    a) Thiopental
    b) Phenobarbital
    c) Flurazepam
    d) Zolpidem
    e) Zaleplon

43. Tick the usual cause of death due to overdose of hypnotics:
    a) Depression of the medullar respiratory center
    b) Hypothermia
    c) Cerebral edema
    d) Status epilepticus

44. Toxic doses of hypnotics may cause a circulatory collapse as a result of:
    a) Blocking of alfa adrenergic receptors
    b) Increase of vagal tone
    c) Action on the medullar vasomotor center
    d) All of the above

Hypnotic drugs

Task: one correct answer

1) B	16) D	31) A
2) C	17) B	32) C
3) D	18) D	33) B
4) B	19) C	34) C
5) C	20) A	35) D
6) C	21) A	36) C
7) D	22) B	37) C
8) C	23) E	38) B
9) C	24) B	39) D
10) B	25) C	40) C
11) C	26) A	41) A
12) A	27) C	42) A
13) A	28) B	43) A
14) B	29) D	44) C
15) E	30) D	

2.2. Antiseizure drugs

Single-choice tests:

1. The mechanism of action of antiseizure drugs is:
    a) Enhancement of GABAergic (inhibitory) transmission
    b) Diminution of excitatory (usually glutamatergic) transmission
    c) Modification of ionic conductance
    d) All of the above mechanisms

2. Which of the following antiseizure drugs produces enhancement of GABA-mediated inhibition?
    a) Ethosuximide
    b) Carbamazepine
    c) Phenobarbital
    d) Lamotrigine

3. Tick the antiseizure drug, which has a slight effect on the T-type calcium channels in thalamic neurons?
    a) Carbamazepin
    b) Lamotrigine
    c) Ethosuximide
    d) Phenytoin

4. Which of the following antiseizure drugs produces a voltage-dependent inactivation of sodium channels?
    a) Lamotrigine
    b) Carbamazepin
    c) Phenytoin
    d) All of the above

5. Tick the antiseizure drug, inhibiting central effects of excitatory amino acids:
    a) Ethosuximide
    b) Lamotrigine
    c) Diazepam
    d) Tiagabine

6. The drug for partial and generalized tonic-clonic seizures is:
    a) Carbamazepine
    b) Valproate
    c) Phenytoin
    d) All of the above

7. Tick the anti-absence drug:
    a) Valproate
    b) Phenobarbital
    c) Carbamazepin
    d) Phenytoin

8. The drug for myoclonic seizures is:
    a) Primidone
    b) Carbamazepine
    c) Clonazepam
    d) Phenytoin

9. The most effective drug to stop generalized tonic-clonic status epilepticus in adults is:
    a) Lamotrigine
    b) Ethosuximide
    c) Diazepam
    d) Zonisamide

10. Tick the correct statement for phenytoin:
    a) It blocks sodium channels
    b) It binds to an allosteric regulatory site on the GABA-BZ receptor and prolongs the opening of Cl-channels
    c) It acts on Ca2+ currents, reducing the low-threshold (T-type) current
    d) It inhibits GABA-transaminase, which catalyzes the breakdown of GABA

11. Phenytoin is used in the treatment of:
    a) Petit mal epilepsy
    b) Grand mal epilepsy
    c) Myoclonic seizures
    d) All of the above

12. A dose-related adverse effect caused by phenytoin is:
    a) Physical and psychological dependence
    b) Exacerbated grand mal epilepsy
    c) Gingival hyperplasia
    d) Extrapyramidal symptoms
    e) Tolerance

13. Granulocytopenia, gastrointestinal irritation, gingival hyperplasia, and facial hirsutism are possible adverse effects of:
    a) Phenobarbital
    b) Carbamazepin
    c) Valproate
    d) Phenytoin
    e) Lamotrigine

14. The antiseizure drug, which induces hepatic microsomal enzymes, is:
    a) Lamotrigine
    b) Phenytoin
    c) Valproate
    d) None of the above

15. The drug of choice for partial seizures is:
    a) Carbamazepin
    b) Ethosuximide
    c) Diazepam
    d) Lamotrigine

16. The mechanism of action of carbamazepine appears to be similar to that of:
    a) Benzodiazepines
    b) Valproate
    c) Phenytoin
    d) Ethosuximide

17. Which of the following antiseizure drugs is also effective in treating trigeminal neuralgia?
    a) Primidone
    b) Topiramat
    c) Carbamazepine
    d) Lamotrigine

18. The most common dose-related adverse effects of carbamazepine are:
    a) Diplopia, ataxia, and nausea
    b) Gingival hyperplasia, hirsutism
    c) Sedation, physical and psychological dependence
    d) Hemeralopia, myasthenic syndrome

19. Tick the drug of choice for status epilepticus in infants and children:
    a) Phenobarbital sodium
    b) Clonazepam

c) Ethosuximide
d) Phenytoin

20. Barbiturates are used in the emergency treatment of status epilepticus in infants and children because:
    a) They significantly decrease oxygen utilization by the brain, protecting cerebral edema and ischemia
    b) They have short onset and duration of action
    c) They do not have any effect on sleep structure
    d) All of the above

21. Which of the following antiseizure drugs binds to an allosteric regulatory site on the GABA-BZ receptor, increases the duration of the Cl-channels openning:
    a) Diazepam
    b) Valproate
    c) Phenobarbital
    d) Topiramate

22. The adverse effect caused by phenobarbital is:
    a) Physical and phychological dependence
    b) Exacerbated petit mal epilepsy
    c) Sedation
    d) All of the above

23. Tick the antiseizure drug, which is a phenyltriazine derivative:
    a) Phenobarbital
    b) Clonazepam
    c) Lamotrigine
    d) Carbamazepin
    e) Valproate

24. Lamotrigine can be used in the treatment of:
    a) Partial seizures
    b) Absence
    c) Myoclonic seizures
    d) All of the above

25. The mechanism of vigabatrin action is:
    a) Direct action on the GABA receptor-chloride channel complex
    b) Inhibition of GABA aminotransferase

c) NMDA receptor blockade via the glycine binding site
d) Inhibition of GABA neuronal reuptake from synapses

26. Tick the irreversible inhibitor of GABA aminotransferase (GABA-T):
    a) Diazepam
    b) Phenobarbital
    c) Vigabatrin
    d) Felbamate

27. Tiagabine:
    a) Blocks neuronal and glial reuptake of GABA from synapses
    b) Inhibits GABA-T, which catalyzes the breakdown of GABA
    c) Blocks the T-type Ca2+ channels
    d) Inhibits glutamate transmission at AMPA/kainate receptors

28. The mechanism of both topiramate and felbamate action is:
    a) Reduction of excitatory glutamatergic neurotransmission
    b) Inhibition of voltage sensitive Na+ channels
    c) Potentiation of GABAergic neuronal transmission
    d) All of the above

29. The drug of choice in the treatment of petit mal (absence seizures) is:
    a) Phenytoin
    b) Ethosuximide
    c) Phenobarbital
    d) Carbamazepin

30. A dose-related adverse effect of ethosuximide is:
    a) Gastrointestinal reactions, such as anorexia, pain, nausea and vomiting
    b) Exacerbated grand mal epilepsy
    c) Transient lethargy or fatigue
    d) All of the above

31. Valproate is very effective against:
    a) Absence seizures
    b) Myoclonic seizures
    c) Generalized tonic-clonic seizures
    d) All of the above

32. The drug of choice in the treatment of myoclonic seizures is:
    a) Valproate
    b) Phenobarbital

c) Phenytoin
d) Felbamate

33. The reason to prefer ethosuximide to valproate for uncomplicated absence seizures is:
    a) More effective
    b) Valproate idiosyncratic hepatotoxicity
    c) Greater CNS depressant activity
    d) All of the above

34. The mechanism of valproate action is:
    a) Facilitation of glutamic acid decarboxylase, the enzyme responsible for GABA synthesis and inhibition of GABAaminotransferase, the enzyme responsible for the breakdown of GABA (enhance GABA accumulation)
    b) Inhibition of voltage sensitive Na+ channels
    c) Inhibition of low threshold (T-type) Ca2+ channels
    d) All of the above

35. Tick the antiseizure drug–a benzodiazepine receptor agonist:
    a) Phenobarbital
    b) Phenytoin
    c) Carbamazepine
    d) Lorazepam
    e) Valproate

36. Which of the following antiseizure drugs acts directly on the GABA receptor-chloride channel complex?
    a) Vigabatrin
    b) Diazepam
    c) Gabapentin
    d) Valproate
    e) Phenytoin

37. Benzodiazepine uselfulness is limited by:
    a) Tolerance
    b) Atropine-like symptoms
    c) Psychotic episodes
    d) Myasthenic syndrome

38. A long-acting drug for both absence and myoclonic seizures is:
    a) Primidone
    b) Carbamazepine
    c) Clonazepam
    d) Phenytoin
    e) Valproate

39. Which of the following antiseizure drugs may produce teraogenicity?
    a) Phenytoin
    b) Valproate
    c) Topiramate
    d) All of the above

40. The most dangerous effect of antiseizure drugs after significant overdoses is:
    a) Respiratory depression
    b) Gastrointestinal irritation
    c) Alopecia
    d) Sedation

Antiseizure drugs

Task: one correct answer

1) D
2) C
3) C
4) D
5) B
6) D
7) A
8) C
9) C
10) A
11) B
12) C
13) D
14) B
15) A
16) C
17) C
18) A
19) A
20) A
21) C
22) D
23) C
24) D
25) B
26) C
27) A
28) D
29) B
30) D
31) D
32) A
33) B
34) D
35) D
36) B
37) A
38) C
39) D
40) A

2.3. Antiparkinson drugs

Single-choice tests:

1. Which neurons are involved in parkinsonism?
    a) Cholinergic neurons
    b) GABAergic neurons
    c) Dopaminergic neurons
    d) All of the above

2. The pathophysiologic basis for antiparkinsonism therapy is:
    a) A selective loss of dopaminergic neurons
    b) The loss of some cholinergic neurons
    c) The loss of the GABAergic cells
    d) The loss of glutamatergic neurons

3. Which of the following neurotransmitters is involved in Parkinson′s disease?
    a) Acetylcholine
    b) Glutamate
    c) Dopamine
    d) All of the above

4. The concentration of dopamine in the basal ganglia of the brain is reduced in parkinsonism.
    a) True
    b) False

5. The principal aim for treatment of Parkinsonian disorders is:
    a) To restore the normal balance of cholinergic and dopaminergic influences on the basal ganglia with antimuscarinic drugs
    b) To restore dopaminergic activity with levodopa and dopamine agonists
    c) To decrease glutamatergic activity with glutamate antagonists
    d) All of the above

6. Tick the drug that induces parkinsonian syndromes:
    a) Chlorpromazine
    b) Diazepam
    c) Triazolam
    d) Carbamazepine

7. Which of the following drugs is used in the treatment of Parkinsonian disorders?
    a) Phenytoin
    b) Selegiline
    c) Haloperidol
    d) Fluoxetine

8. Tick the agent which is preferred in the treatment of a drug-induced form of parkinsonism:
    a) Levodopa
    b) Bromocriptine
    c) Benztropine
    d) Dopamine

9. Which of the following agents is the precursor of dopamine?
    a) Bromocriptine
    b) Levodopa
    c) Selegiline
    d) Amantadine

10. The main reason for giving levodopa, the precursor of dopamine, instead of dopamine is:
    a) Dopamine does not cross the blood-brain barrier
    b) Dopamine may induce acute psychotic reactions
    c) Dopamine is intensively metabolized in humans
    d) All of the above

11. Tick the peripheral dopa decarboxylase inhibitor:
    a) Tolcapone
    b) Clozapine
    c) Carbidopa
    d) Selegiline
    e) Bromocreptine

12. The mechanism of carbidopa action is:
    a) Stimulation of the synthesis, release, or reuptake of dopamine
    b) Inhibition of dopa decarboxilase
    c) Stimulation of dopamine receptors
    d) Selective inhibition of catecol-O-methyltransferase

13. Carbidopa is unable to penetrate the blood-brain barrier, it acts to reduce the peripheral conversion of levodopa to dopamine.
    a) True
    b) False

14. When carbidopa and levodopa are given concomitantly:
    a) Levodopa blood levels are increased, and drug half-life is prolonged
    b) The dose of levodopa can be significantly reduced (by 75%), decreasing also toxic side effects
    c) A shorter latency period precedes the occurrence of beneficial effects
    d) All of the above

15. Which of the following preparations combines carbidopa and levodopa in a fixed proportion?
    a) Selegiline
    b) Sinemet
    c) Tolkapone
    d) Biperiden
    e) Bromocreptine

16. Which of the following statements is correct for levodopa?
    a) Tolerance to both beneficial and adverse effects develops gradually
    b) Levodopa is most effective in the first 2-5 years of treatment
    c) After 5 years of therapy, patients have dose-related dyskinesias, inadequate response or toxicity
    d) All of the above

17. Gastrointestinal irritation, cardiovascular effects, including tachycardia, arrhythmias, and orthostatic hypotension, mental disturbances, and withdrawal are possible adverse effects of:
    a) Amantadine
    b) Benztropine
    c) Levodopa
    d) Selegiline

18. Which of the following agents is the most helpful in counteracting the behavioral complications of levodopa?
    a) Tolkapone
    b) Clozapine

c) Carbidopa
d) Pergolide
e) Bromocreptine

19. Which of the following vitamins reduces the beneficial effects of levodopa by enhancing its extracerebral metabolism?
    a) Pyridoxine
    b) Thiamine
    c) Tocopherol
    d) Riboflavin

20. Which of the following drugs antagonizes the effects of levodopa because it leads to a junctional blockade of dopamine action?
    a) Reserpine
    b) Haloperidol
    c) Chlorpromazine
    d) All of the above

21. Levodopa should not be administered to patients taking:
    a) Bromocriptine
    b) Monoamine oxydase A inhibitors
    c) Carbidopa
    d) Nonselective beta-adrenergic antagonists

22. Indicate D2 receptor agonist with antiparkinsonian activity:
    a) Sinemet
    b) Levodopa
    c) Bromocriptine
    d) Selegiline
    e) Trihexiphenidile

23. Which of the following antiparkinsonian drugs is also used to treat hyperprolactinemia?
    a) Benztropine
    b) Bromocriptine
    c) Amantadine
    d) Levodopa
    e) Amantadine

24. Tick the selective inhibitor of monoamine oxidase B:
    a) Levodopa
    b) Amantadine

c) Tolcapone
d) Selegiline

25. Which of the following statements is correct?
    a) MAO-A metabolizes dopamine; MAO-B metabolizes serotonin
    b) MAO-A metabolizes norepinephrine and dopamine; MAO-B metabolizes serotonin
    c) MAO-A metabolizes norepinephrine and serotonin; MAO-B metabolizes dopamine
    d) MAO-A metabolizes dopamine; MAO-B metabolizes norepinephrine and serotonin

26. Treatment with selegilin postpones the need for levodopa for 3-9 months and may retard the progression of Parkinson′sdisease.
    a) True
    b) False

27. The main reason for avoiding the combined administration of levodopa and a nonselective monoamine oxidase inhibitor is:
    a) Respiratory depression
    b) Hypertensive emergency
    c) Acute psychotic reactions
    d) Cardiovascular collapse and CNS depression

28. Tick the selective catechol-O-methyltransferase inhibitor, which prolongs the action of levodopa by diminishing its peripheral metabolism:
    a) Carbidopa
    b) Clozapine
    c) Tolcapone
    d) Rasagiline

29. Which of the following antiparkinsonian drugs is an antiviral agent used in the prophylaxis of influenza A2?
    a) Selegiline
    b) Sinemet
    c) Pergolide
    d) Amantadine

30. The mechanism of amantadine action is:
    a) Stimulation of the glutamatergic neurotransmission
    b) Blocking of the excitatory cholinergic system

c) Inhibition of dopa decarboxilase
d) Selective inhibition of catechol-O-methyltransferase

31. Which of the following antiparkinsonian drugs is an anticholinergic agent?
    a) Amantadine
    b) Selegilin
    c) Trihexyphenidyl
    d) Bromocriptine
    e) Sinemet

32. Mental confusion and hallucinations, peripheral atropine-like toxicity (e.g.Cycloplegia, tachycardia, urinary retention, and constipation) are possible adverse effects of:
    a) Sinemet
    b) Benztropine
    c) Tolkapone
    d) Bromocriptine
    e) Amantadine

33. Tick the antiparkinsonian drug which should be avoided in patients with glaucoma:
    a) Selegilin
    b) Levodopa
    c) Bromocriptine
    d) Trihexyphenidyl

Antiparkinson drugs

Task: one correct answer

1) D	12) B	23) B
2) A	13) A	24) D
3) D	14) D	25) C
4) A	15) B	26) A
5) D	16) D	27) B
6) A	17) C	28) C
7) B	18) B	29) D
8) C	19) A	30) A
9) B	20) D	31) C
10) A	21) B	32) B
11) C	22) C	33) D

2.4. Ethyl alcohol

Single-choice tests:

1. Alcohol may cause:
    a) CNS depression
    b) Vasodilatation
    c) Hypoglycemia
    d) Dependence
    e) All of the above

2. Alcohol:
    a) Increases the body temperature
    b) Decreases the body heat loss
    c) Increases the body heat loss
    d) Does not affect body temperature

3. It is undesirable to take alcohol before going outdoors when it is extremely cold, but it may be harmless to take some after coming into a warm place from the cold.
    a) True
    b) False

4. The most common medical complication of alcohol abuse is:
    a) Liver failure including liver cirrhosis
    b) Tolerance and physical dependence
    c) Generalized symmetric peripheral nerve injury, ataxia and dementia
    d) All of the above

5. The effect of moderate consumption of alcohol on plasma lipoproteins is:
    a) Increase of serum levels of high-density lipoproteins
    b) Increase of serum concentration of low-density lipoproteins
    c) Decrease of the concentration of high-density lipoproteins
    d) Increase of serum levels of very low-density lipoproteins

6. Which of the following metabolic alterations may be associated with chronic alcohol abuse?
    a) Hyperglycemia
    b) Increased serum concentration of phosphate
    c) Severe loss of potassium and magnesium
    d) Decreased serum concentration of sodium

7. Alcohol potentiates:
    a) SNS depressants
    b) Vasodilatators
    c) Hypoglycemic agents
    d) All of the above

8. Which of the following drugs is most commonly used to cause a noxious reaction to alcohol by blocking its metabolism?
    a) Naltrexone
    b) Disulfiram
    c) Diazepam
    d) Morphine
    e) Flumazenil

9. Which of the following agents is an inhibitor of aldehyde dehydrogenase?
    a) Fomepizole
    b) Ethanol
    c) Disulfiram
    d) Naltrexone
    e) Flumazenil

10. Tick the drug, which alters the brain responses to alcohol:
    a) Naltrexone
    b) Disulfiram
    c) Amphetamine
    d) Chlorpromazine

11. Which of the following agents is an opioid antagonist?
    a) Amphetamine
    b) Naltrexone
    c) Morphine
    d) Disulfiram
    e) Flumazenil

12. Management of alcohol withdrawal syndrome contains:
    a) Restoration of potassium, magnesium and phosphate balance
    b) Thiamine therapy
    c) Substitution of a long-acting sedative-hypnotic drug for alcohol
    d) All of the above

13. Tick the drug, which decreases the craving for alcohol or blunts pleasurable "high" that comes with renewed drinking:
    a) Disulfiram
    b) Amphetamine
    c) Naltrexone
    d) Diazepam

14. The symptoms resulting from the combination of disulfiram and alcohol are:
    a) Hypertensive crisis leading to cerebral ischemia and edema
    b) Nausea, vomiting
    c) Respiratory depression and seizures
    d) Acute psychotic reactions

15. The combination of disulfiram and ethanol leads to accumulation of:
    a) Formaldehyde
    b) Acetate
    c) Formic acid
    d) Acetaldehyde

16. The combination of naltrexone and disulfiram should be avoided since both drugs are potential hepatotoxins.
    a) True
    b) False

17. Tick the "specific" modality of treatment for severe methanol poisoning:
    a) Dialysis to enhance removal of methanol
    b) Alkalinization to counteract metabolic acidosis
    c) Suppression of metabolism by alcohol dehydrogenase to toxic products
    d) All of the above

18. Which of the following agents may be used as an antidote for ethylene glycol and methanol poisoning?
    a) Disulfiram
    b) Fomepizol
    c) Naltrexone
    d) Amphetamine

19. The principal mechanism of fomepizol action is associated with inhibition of:
    a) Aldehyde dehydrogenase
    b) Acethylholinesterase
    c) Alcohol dehydrogenase
    d) Monoamine oxidase

Ethyl alcohol

Task: one correct answer

1) E	8) B	15) D
2) C	9) C	16) A
3) A	10) A	17) D
4) D	11) B	18) B
5) A	12) D	19) C
6) C	13) C	
7) D	14) B	

2.5. Narcotic analgesics

Single-choice tests:

1. Narcotic analgesics should:
    a) Relieve severe pain
    b) Induce loss of sensation
    c) Reduce anxiety and exert a calming effect
    d) Induce stupor or somnolent state

2. Chemical mediators in the nociceptive pathway are all of the following, EXCEPT:
    a) Enkephalins
    b) Kinins
    c) Prostaglandins
    d) Substance P
    e) Prostacyclins

3. Tick the chemical mediator in the antinociceptive descending pathways:
    a) BETA-endorphin
    b) Met-and leu-enkephalin
    c) Dynorphin
    d) All of the above

4. Which of the following mediators is found mainly in long descending pathways from the midbrain to the dorsal horn?
    a) Prostaglandin E
    b) Dynorphin
    c) Enkephalin
    d) Glutamate

5. Tick the brain and spinal cord regions, which are involved in the transmission of pain?
    a) The limbic system, including the amygdaloidal nucleus and thypothalamus
    b) The ventral and medial parts of the thalamus
    c) The substantia gelatinosa
    d) All of the above

6. Mu (μ) receptors are associated with:
    a) Analgesia, euphoria, respiratory depression, physical dependence
    b) Spinal analgesia, mydriasis, sedation, physical dependence

c) Dysphoria, hallucinations, respiratory and vasomotor stimulation
d) Analgesia, euphoria, respiratory stimulation, physical dependence

7. Which of the following opioid receptor types is responsible for euphoria and respiratory depression?
    a) Kappa-receptors
    b) Delta-receptors
    c) Mu-receptors
    d) All of the above

8. Tick the opioid receptor type, which is responsible for dysphoria and vasomotor stimulation:
    a) Kappa-receptors
    b) Delta-receptors
    c) Mu-receptors
    d) alpha-receptors
    e) All of the above

9. Kappa and delta agonists:
    a) Inhibit postsynaptic neurons by opening K+ channels
    b) Close voltage-gated Ca2+ channels on the presynaptic nerve terminals
    c) Both a and b
    d) Inhibit arachidonate cyclooxygenase in the CNS

10. Which of the following supraspinal structures is involved in pain-modulating descending pathways?
    a) The midbrain periaqueductal gray substance
    b) The hypothalamus
    c) The aria postrema
    d) The limbic cortex

11. Tick the neurons located in the locus ceruleus or the lateral tegmental area of the reticular formation:
    a) Dopaminergic
    b) Serotoninergic
    c) Nonadrenergic
    d) Gabaergic
    e) Cholinergic

12. Which of the following analgesics is a phenanthrene derivative?
    a) Fentanyl
    b) Morphine
    c) Methadone
    d) Pentazocine
    e) Tramadol

13. Tick the narcotic analgesic, which is a phenylpiperidine derivative:
    a) Codeine
    b) Dezocine
    c) Fentanyl
    d) Buprenorphine
    e) Naltrexon

14. Which of the following opioid analgesics is a strong mu receptor agonist?
    a) Naloxone
    b) Morphine
    c) Pentazocine
    d) Buprenorphine
    e) Naltrexon

15. Tick the narcotic analgesic, which is a natural agonist:
    a) Meperidine
    b) Fentanyl
    c) Morphine
    d) Naloxone

16. Choose the narcotic analgesic, which is an antagonist or partial mu receptor agonist:
    a) Fentanyl
    b) Pentazocine
    c) Codeine
    d) Methadone

17. Which of the following agents is a full antagonist of opioid receptors?
    a) Meperidine
    b) Buprenorphine
    c) Naloxone
    d) Butorphanol

18. The principal central nervous system effect of the opioid analgesics with affinity for a mu receptor is:
    a) Analgesia
    b) Respiratory depression
    c) Euphoria
    d) All of the above

19. Which of the following opioid analgesics can produce dysphoria, anxiety and hallucinations?
    a) Morphine
    b) Fentanyl
    c) Pentazocine
    d) Methadone

20. Tick the opioid analgesic, which has 80 times analgesic potency and respiratory depressant properties of morphine, and is more effective than morphine in maintaining hemodynamic stability?
    a) Fentanyl
    b) Pentazocine
    c) Meperidine
    d) Nalmefene

21. Which of the following opioid analgesics is used in combination with droperidol in neuroleptanalgesia?
    a) Morphine
    b) Buprenorphine
    c) Fentanyl
    d) Morphine

22. Fentanyl can produce significant respiratory depression by:
    a) Inhibiting the brain stem respiratory mechanisms
    b) Suppression of the cough reflex leading to airway obstruction
    c) Development of truncal rigidity
    d) Both a and c

23. The most strong mu receptor agonists cause:
    a) Hypertension
    b) Increase of pulmonary arterial pressure and myocardial work
    c) Cerebral vasodilatation, producing an increase in intracranial pressure
    d) All of the above

24. Which of the following opioid analgesics can produce an increase in pulmonary arterial pressure and myocardial work?
    a) Morphine
    b) Pentazocine
    c) Meperidine
    d) Methadone

25. Morphine causes the following effects, EXCEPT:
    a) Constipation
    b) Dilatation of the biliary duct
    c) Urinary retention
    d) Bronchiolar constriction

26. Therapeutic doses of opioid analgesics:
    a) Decrease the body temperature
    b) Increase the body temperature
    c) Decrease the body heat loss
    d) Do not affect the body temperature

27. Which of the following opioid analgesics is used in obstetric labor?
    a) Fentanyl
    b) Pentazocine
    c) Meperidine
    d) Buprenorphine

28. Tick the opioid analgesic used for relieving acute, severe pain of renal colic:
    a) Morphine
    b) Naloxone
    c) Methadone
    d) Meperidine

29. Which of the following opioid analgesics is used in the treatment of acute pulmonary edema?
    a) Morphine
    b) Codeine
    c) Fentanyl
    d) Loperamide

30. The relief of dyspnea produced by intravenous morphine in pulmonary edema is associated with reduced:
    a) Perception of shortness of breath
    b) Patient anxiety

c) Cardiac preload (reduced venous tone) and afterload (decreased peripheral resistance)
d) All of the above

31. Rhinorrhea, lacrimation, chills, gooseflesh, hyperventilation, hyperthermia, mydriasis, muscular aches, vomiting, diarrhea, anxiety, and hostility are effects of:
    a) Tolerance
    b) Opioid overdosage
    c) Drug interactions between opioid analgesics and sedative-hypnotics
    d) Abstinence syndrome

32. The diagnostic triad of opioid overdosage is:
    a) Mydriasis, coma and hyperventilation
    b) Coma, depressed respiration and miosis
    c) Mydriasis, chills and abdominal cramps
    d) Miosis, tremor and vomiting

33. Which of the following opioid agents is used in the treatment of acute opioid overdose?
    a) Pentazocine
    b) Methadone
    c) Naloxone
    d) Remifentanyl

34. Tick the pure opioid antagonist, which has a half-life of 10 hours:
    a) Naloxone
    b) Naltrexone
    c) Tramadol
    d) Pentazocine

35. In contrast to morphine, methadone:
    a) Causes tolerance and physical dependence more slowly
    b) Is more effective orally
    c) Withdrawal is less severe, although more prolonged
    d) All of the above

36. Which of the following opioid analgesics is a partial mu receptor agonist?
    a) Morphine
    b) Methadone

c) Buprenorphine
d) Sufentanyl

37. Tick the partial mu receptor agonist, which has 20-60 times analgesic potency of morphine, and a longer duration of action:
    a) Pentazocine
    b) Buprenorphine
    c) Nalbuphine
    d) Naltrexone

38. Which of the following opioid analgesics is a strong kappa receptor agonist and a mu receptor antagonist?
    a) Naltrexone
    b) Methadone
    c) Nalbuphine
    d) Buprenorphine

39. Which of the following drugs has weak mu agonist effects and inhibitory action on norepinephrine and serotonin reuptake in the CNS?
    a) Loperamide
    b) Tramadol
    c) Fluoxetine
    d) Butorphanol
    e) Nalbuphine

Narcotic analgesics

Task: one correct answer

1) A	14) B	27) C
2) A	15) C	28) D
3) D	16) B	29) A
4) C	17) C	30) D
5) D	18) D	31) D
6) A	19) C	32) B
7) C	20) A	33) C
8) A	21) C	34) B
9) B	22) D	35) D
10) A	23) C	36) C
11) C	24) B	37) B
12) B	25) B	38) C
13) C	26) A	39) B

2.6. Non-narcotic analgesics

Single-choice tests:

1. Non-narcotic analgesics are mainly effective against pain associated with:
    a) Inflammation or tissue damage
    b) Trauma
    c) Myocardial infarction
    d) Surgery

2. Non-narcotic agents cause:
    a) Respiratory depression
    b) Antipyretic effect
    c) Euphoria
    d) Physical dependence
    e) Psychological dependence

3. Non-narcotic analgesics are all of the following drugs, EXCEPT:
    a) Paracetamol
    b) Acetylsalicylic acid
    c) Butorphanol
    d) Ketorolac
    e) Metamizol

4. Tick the non-narcotic drug, which is a paraaminophenol derivative:
    a) Metamizol
    b) Acetylsalicylic acid
    c) Baclophen
    d) Paracetamol
    e) Ketorolac

5. Which of the following non-narcotic agents is a salicylic acid derivative?
    a) Phenylbutazone
    b) Ketamine
    c) Acetylsalicylic acid
    d) Tramadol
    e) Paracetamol

6. Tick the pirazolone derivative:
    a) Methylsalicylate
    b) Metamizol

c) Paracetamol
d) Ketoralac

7. Which one of the following non-narcotic agents inhibits mainly cyclooxygenase (COX) in the CNS?
    a) Paracetamol
    b) Ketorolac
    c) Acetylsalicylic acid
    d) Ibuprofen
    e) Tramadol

8. Most of non-narcotic analgetics have:
    a) Anti-inflammatory effect
    b) Analgesic effect
    c) Antipyretic effect
    d) All of the above

9. Tick the non-narcotic analgesic, which lacks an anti-inflammatory effect:
    a) Naloxone
    b) Paracetamol
    c) Metamizole
    d) Aspirin
    e) Ibuprofen

10. Correct statements concerning Acetylsalicylic acid include all of the following EXCEPT:
    a) It inhibits mainly peripheral COX
    b) It does not have an anti-inflammatory effect
    c) It inhibits platelet aggregation
    d) It stimulates respiration by a direct action on the respiratory center

11. For which of the following conditions could aspirin be used prophylactically?
    a) Noncardiogenic pulmonary edema
    b) Peptic ulcers
    c) Thromboembolism
    d) Metabolic acidosis

12. All of the following are undesirable effects of aspirin, EXCEPT:
    a) Gastritis with focal erosions
    b) Tolerance and physical addiction
    c) Bleeding due to a decrease of platelet aggregation
    d) Reversible renal insufficiency

13. Characteristic signs of salicylism include:
    a) Headache, mental confusion and drowsiness
    b) Tinnitus and difficulty in hearing
    c) Hyperthermia, sweating, thirst, hyperventilation, vomiting and diarrhea
    d) All of the above

14. Metamizol usefulness is limited by:
    a) Agranulocytosis
    b) Erosions and gastric bleeding
    c) Methemoglobinemia
    d) Hearing impairment
    e) Tinnitus and difficulty in hearing

15. Methemoglobinemia is a possible adverse effect of:
    a) Acetylsalicylic acid
    b) Paracetamol
    c) Metamiyol
    d) Ketorolac
    e) Tramadol

16. The correct statements concerning ketorolac include all of the following, EXCEPT:
    a) It inhibits COX
    b) It is as effective as morphine for a short-term relief from moderate to severe pain
    c) It has a high potential for physical dependence and abuse
    d) It does not produce respiratory depression

17. Tick the nonopioid agent of central effect with analgesic activity:
    a) Reserpine
    b) Propranolol
    c) Clopheline
    d) Prazosin

18. Choose the antiseizure drug with an analgesic component of effect:
    a) Carbamazepine
    b) Ethosuximide
    c) Phenytoin
    d) Clonazepam
    e) Valproate

19. Which of the following nonopioid agents is an antidepressant with analgesic activity?
    a) Fluoxetine
    b) Moclobemide
    c) Tranylcypramine
    d) Amitriptyline
    e) Paracetamol

20. Tick the mixed (opioid/non-opioid) agent:
    a) Paracetamol
    b) Tramadol
    c) Sodium valproate
    d) Butorphanol
    e) Metamizol

Non-narcotic analgesics

Task: one correct answer

1) A	8) D	15) B
2) B	9) B	16) C
3) C	10) B	17) C
4) D	11) C	18) A
5) C	12) B	19) D
6) B	13) D	20) B
7) A	14) A	

2.7. Antipsychotic drugs

Single-choice tests:

1. Neuroleptics are used to treat:
    a) Neurosis
    b) Psychosis
    c) Narcolepsy
    d) Parkinsonian disorders

2. Most antipsychotic drugs:
    a) Block significantly the postsynaptic d2receptor
    b) Stimulate postsynaptic D2 receptor
    c) Block NMDA receptor
    d) Stimulate 5-HT2 receptor

3. Which of the following dopaminergic systems is most closely related to behavior?
    a) The hypothalamic-pituitary system
    b) The extrapyramidal system
    c) The mesolimbic and mesofrontal systems
    d) The chemoreceptor trigger zone of the medulla

4. Hyperprolactinemia is caused by blockade of dopamine in:
    a) The chemoreceptor trigger zone of the medulla
    b) The pituitary
    c) The extrapiramidal system
    d) The mesolimbic and mesofrontal systems

5. Parkinsonian symptoms and tarditive dyskinesia are caused by blockade of dopamine in:
    a) The nigrostriatal system
    b) The mesolimbic and mesofrontal systems
    c) The chemoreceptor trigger zone of the medulla
    d) The tuberoinfundibular system

6. Extrapyramidal reactions can be treated by:
    a) Levodopa
    b) Benztropine mesylate
    c) Bromocriptine
    d) Dopamine

7. Which of the following statements is true?
    a) D1 postsynaptic receptors are located in the striatum
    b) D2 pre- and postsynaptic receptors are located in the striatum and limbic areas
    c) D4 postsynaptic receptors are located in the frontal cortex, mesolimbic system
    d) All of the above

8. Which of the following antipsychotic drugs is typical?
    a) Clozapine
    b) Quetiapine
    c) Haloperidol
    d) Olanzapine

9. Tick the atypical antipsychotic drug:
    a) Haloperidol
    b) Clozapine
    c) Thioridazine
    d) Thiothixene

10. Atypical antipsychotic agents (such as clozapine) differ from typical ones:
    a) In reduced risks of extrapyramidal system dysfunction and tardive dyscinesia
    b) In having low affinity for D1 and D2 dopamine receptors
    c) In having high affinity for D4 dopamine receptors
    d) All of the above

11. Tardive dyskinesia is the result of:
    a) Degeneration of dopaminergic and cholinergic fibers
    b) Hyperactive dopaminergic state in the presence of dopamine blockers
    c) Degeneration of histaminergic fibers
    d) Supersensitivity of cholinergic receptors in the caudate putamen

12. Which of the following antipsychotic drugs has high affinity for D4 and 5-HT2 receptors?
    a) Clozapine
    b) Fluphenazine
    c) Thioridazine
    d) Haloperidole

13. Tick the antipsychotic drug, which is a phenothiazine aliphatic derivative:
    a) Thiothixene
    b) Risperidone
    c) Chlorpromazine
    d) Clozapine

14. Tick the antipsychotic drug, which is a butyrophenone derivative:
    a) Droperidol
    b) Thioridazine
    c) Sertindole
    d) Fluphenazine

15. Tick the antipsychotic drug, which is a thioxanthene derivative:
    a) Haloperidol
    b) Clozapine
    c) Chlorpromazine
    d) Thiothixene

16. Tick the antipsychotic agent–a dibenzodiazepine derivative:
    a) Fluphenazine
    b) Clozapine
    c) Risperidone
    d) Droperidol

17. The strong antiemetic effect of phenothiazine derivatives is due to dopamine receptor blockade:
    a) In the chemoreceptor trigger zone of the medulla
    b) In the stomach
    c) In the medullar vomiting centre
    d) All of the above

18. Phenothiazine derivatives are able to:
    a) Alter temperature-regulating mechanisms producing hypothermia
    b) Decrease levels of prolactin
    c) Increase corticotrophin release and secretion of pituitary growth hormone
    d) Decrease appetite and weight

19. Most phenothiazine derivatives have:
    a) Antihistaminic activity
    b) Anticholinergic activity
    c) Antidopaminergic activity
    d) All of the above

20. Tick the antipsychotic drug having significant peripheral alpha-adrenergic blocking activity:
    a) Haloperidol
    b) Chlorpromazine
    c) Clozapine
    d) Risperidone

21. Tick the antipsychotic drug having a muscarinic-cholinergic blocking activity:
    a) Chlorpromazine
    b) Clorprothixene
    c) Risperidone
    d) Haloperidol

22. Tick the antipsychotic drug having H1-antihistaminic activity:
    a) Clozapine
    b) Chlorpromazine
    c) Olanzapine
    d) All of the above

23. Parkinson′s syndrome, acute dystonic reactions, tardive dyskinesia, antimuscarinic actions, orthostatic hypotension, galactorrhea are possible adverse effects of:
    a) Haloperidol
    b) Clozapine
    c) Chlorpromazine
    d) Risperidone

24. Orthostatic hypotension can occur as a result of:
    a) The central action of phenothiazines
    b) Inhibition of norepinephrine uptake mechanisms
    c) Alpha adrenoreceptor blockade
    d) All of the above

25. Adverse peripheral effects, such as loss of accommodation, dry mouth, tachycardia, urinary retention, constipation are related to:
    a) Alpha adrenoreceptor blockade
    b) Muscarinic cholinoreceptor blockade
    c) Supersesitivity of dopamine receptor
    d) Dopamine receptor blockade

26. Which of the following phenothiazine derivatives is a potent local anesthetic?
    a) Fluphenazine
    b) Thioridazine
    c) Chlorpromazine
    d) None of the above

27. Which of the following phenothiazine derivatives may produce cardiac toxicity, including ventricular arrhythmias, cardiac conduction block, and sudden death?
    a) Thioridazine
    b) Chlorpromazine
    c) Perphenazine
    d) Fluphenazine

28. Which of the following antipsychotic agents is preferable in patients with coronary and cerebrovascular disease?
    a) Chlorpromazine
    b) Fluphenazine
    c) Haloperidol
    d) Perphenazine

29. Which of the following antipsychotic agents is used in combination with an opioid drug fentanyl in neuroleptanalgesia?
    a) Haloperidol
    b) Droperidol
    c) Chlorpromazine
    d) Clozapine

30. The mechanism of haloperidol antipsychotic action is:
    a) Blocking D2 receptors
    b) Central alpha-adrenergic blocking
    c) Inhibition of norepinephrine uptake mechanisms
    d) All of the above

31. Which of the following statements is correct for clozapine?
    a) It has potent anticholinergic activity
    b) It has high affinity for D1 and D2 dopamine receptors
    c) It produces significant extrapyramidal toxicity
    d) It is related to typical antipsychotic agents

32. Which of the following antipsychotic drugs has the high risk of potentially fatal agranulocytosis and risk of seizures at high doses?
    a) Haloperidol
    b) Risperidone
    c) Clozapine
    d) Chlorpromazine

33. Which of the following antipsychotic drugs has high affinity for D2 and 5-HT2 receptors?
    a) Droperidol
    b) Clozapine
    c) Thiothixene
    d) Risperidone

34. Lithium carbonate is useful in the treatment of:
    a) Petit mal seizures
    b) Bipolar disorder
    c) Neurosis
    d) Trigeminal neuralgia

35. The drug of choice for manic-depressive psychosis is:
    a) Imipramine
    b) Chlordiazepoxide
    c) Isocarboxazid
    d) Lithium carbonate
    e) Clozapine

36. The mode of action of lithium is:
    a) Effect on electrolytes and ion transport
    b) Effect on neurotransmitters
    c) Effect on second messengers
    d) All of the above

37. Which of the following statements is correct for lithium?
    a) It stimulates dopamine and beta-adrenergic receptors
    b) It decreases catecholamine-related activity
    c) It stimulates the development of dopamine receptor supersensitivity
    d) It decreases cholinergic activity

38. Which of the following adverse effects is associated with lithium treatment?
    a) Cardiovascular anomalies in newborns
    b) Thyroid enlargement
    c) Nephrogenic diabetes insipidus
    d) All of the above

Antipsychotic drugs

Task: one correct answer

1) B	14) A	26) C
2) A	15) D	27) A
3) C	16) B	28) C
4) B	17) D	29) B
5) A	18) A	30) D
6) B	19) D	31) A
7) D	20) B	32) C
8) C	21) A	33) D
9) B	22) D	34) B
10) D	23) C	35) D
11) B	24) D	36) D
12) A	25) B	37) B
13) C		38) D

2.8. Antidepressant drugs

Single-choice tests:

1. The principal mechanism of action of antidepressant agents is:
    a) Stabilization of dopamine and beta-adrenergic receptors
    b) Inhibition of the storage of serotonin and epinephrine in the vesicles of presynaptic nerve endings
    c) Blocking epinephrine or serotonin reuptake pumps
    d) Stimulation of alfa2-norepinephrine receptors

2. Which of the following agents is related to tricyclic antidepressants?
    a) Nefazodon
    b) Amitriptyline
    c) Fluoxetine
    d) Isocarboxazid

3. Tick the second-generation heterocyclic drug:
    a) Maprotiline
    b) Imipramine
    c) Phenelzine
    d) Fluoxetine
    e) Amitriptyline

4. Which of the following agents is related to the third-generation heterocyclic antidepressants?
    a) Amitriptyline
    b) Maprotiline
    c) Nefazodone
    d) Tranylcypromine

5. Which of the following antidepressants is a selective serotonin reuptake inhibitor?
    a) Phenelzine
    b) Desipramine
    c) Maprotiline
    d) Fluoxetine

6. Which of the following antidepressant agents is a selective inhibitor of norepinephrine reuptake?
    a) Fluvoxamine
    b) Maprotiline
    c) Amitriptyline
    d) Tranylcypromine

7. Tick the antidepressant, which blocks the reuptake pumps for serotonin and norepinephrine:
    a) Amitriptyline
    b) Fluoxetine
    c) Maprotiline
    d) Phenelzine

8. Which of the following antidepressants is an unselective MAO blocker and produces extremely long-lasting inhibition of this enzyme?
    a) Moclobemide
    b) Tranylcypramine
    c) Selegiline
    d) Fluoxetine
    e) Maprotiline

9. Tick the irreversible MAO inhibitor, which is a hydrazide derivative:
    a) Moclobemide
    b) Selegiline
    c) Tranylcypramine
    d) Phenelzine

10. Which of the following MAO inhibitors has an amphetamine-like activity and is related to nonhydrazide derivatives:
    a) Phenelzine
    b) Moclobemide
    c) Tranylcypramine
    d) All of the above

11. Which of the following antidepressants is a selective short-acting MAO-A inhibitor?
    a) Maprotiline
    b) Amitriptyline
    c) Moclobemide
    d) Selegiline
    e) Imipramine

12. Monoamine Oxydase A:
    a) Is responsible for norepinephrine, serotonin, and tyramine metabolism
    b) Is more selective for dopamine
    c) Metabolizes norepinephrine and dopamine

d) Deaminates dopamine and serotonin
e) Is more selective for serotonin

13. Which of the following synapses are involved in depression?
    a) Dopaminergic synapses
    b) Serotoninergic synapses
    c) Cholinergic synapses
    d) Adrenergic synapses
    e) All of the above

14. Which type of Monoamine Oxydase block might be more specific for depression?
    a) MAO-A
    b) MAO-B
    c) Both MAO-A and MAO-B
    d) MAO-C

15. The principal mechanism of action of MAO inhibitor is:
    a) Blocking the amine reuptake pumps, which permits to increase the concentration of the neurotransmitter at the receptor site
    b) Blocking a major degradative pathway for amine neurotransmitters, which permits more amines to accumulate in presynaptic stores
    c) Inhibition the storage of amine neurotransmitters in the vesicles of presynaptic nerve endings
    d) Antagonism of alfa2-norepinephrine receptors

16. The irreversible MAO inhibitors have a very high risk of developing:
    a) Respiratory depression
    b) Cardiovascular collapse and CNS depression
    c) Hypertensive reactions to tyramine ingested in food
    d) Potentially fatal agranulocytosis
    e) Tolerance

17. The most dangerous pharmacodynamic interaction is between MAO inhibitors and:
    a) Selective serotonin reuptake inhibitors
    b) Tricyclics
    c) Sympathomimetics
    d) All of the above

18. Serotonin syndrome is the result of:
    a) Increased stores of monoamines
    b) Significant accumulation of amine neurotransmitters in the synapses
    c) Both a and b
    d) Depleted stores of biogenic amines

19. The therapeutic response to antidepressant drugs is usually over a period of:
    a) 2-3 days
    b) 2-3 weeks
    c) 24 hours
    d) 2-3 months
    e) 3-6 months

20. Which of the following antidepressants may have latency period as short as 48 hours?
    a) Tranylcypromine
    b) Imipramine
    c) Fluoxetine
    d) Amitrityline
    e) Maprotiline

21. Which of the following features do MAO inhibitors and tricyclic antidepressants have in common?
    a) They act postsynaptically to produce their effect
    b) They can precipitate hypotensive crises if certain foods are ingested
    c) They increase levels of biogenic amines
    d) They are useful for the manic phase of bipolar disorder

22. Tricyclic antidepressants are:
    a) Highly selective serotonin reuptake inhibitors
    b) Monoamine oxidase inhibitors
    c) Selective norepinephrine reuptake inhibitors
    d) Mixed norepinephrine and serotonin reuptake inhibitors

23. Which of the following autonomic nervous system effects is common for tricyclic antidepressants?
    a) Antimuscarinic action
    b) Antihistaminic action

c) Alfa adrenoreceptor-blocking action
d) All of the above

24. Tick the effective antidepressant with minimal autonomic toxicity:
    a) Amitrityline
    b) Fluoxetine
    c) Imipramine
    d) Doxepin

25. Fluoxetine has fewer adverse effects because of:
    a) Mixed norepinephrine and serotonin reuptake inhibition
    b) Depleted stores of amine neurotransmitters
    c) Minimal binding to cholinergic, histaminic, and alfa-adrenergic receptors
    d) All of the above

26. Which of the following tricyclic and heterocyclic antidepressants has the highest degree of sedation?
    a) Doxepin
    b) Amitriptyline
    c) Trazodone
    d) All of the above

27. Which of the following tricyclic and heterocyclic agents has the lowest degree of sedation?
    a) Protriptyline
    b) Trazodone
    c) Amitriptyline
    d) Mitrazapine

28. Tick the tricyclic or heterocyclic antidepressant having the greatest anti-muscarinic effects:
    a) Desipramine
    b) Amitriptyline
    c) Trazodone
    d) Mirtazapine

29. Tick the tricyclic or a heterocyclic antidepressant having the least anti-muscarinic effects:
    a) Trazodone
    b) Buprorion

c) Mirtazapine
d) All of the above

30. Which of the following antidepressants has significant alfa2-adrenoreceptor antagonism?
    a) Amitriptyline
    b) Nefazodone
    c) Mirtazapine
    d) Doxepin

31. Tick the main claim for an ideal antidepressant agent:
    a) Fast onset of action
    b) Less adverse sedative and autonomic effects
    c) Less toxicity when overdoses are taken
    d) All of the above

32. Sedation, peripheral atropine-like toxicity (e.g. Cycloplegia, tachycardia, urinary retention, and constipation), orthostatic hypotension, arrhythmias, weight gain and sexual disturbances are possible adverse effects of:
    a) Sertaline
    b) Amitriptyline
    c) Phenelsine
    d) Bupropion

33. Which of the following drugs is least likely to be prescribed to patients with prostatic hypertrophy, glaucoma, coronary and cerebrovascular disease?
    a) Amitriptyline
    b) Paroxetine
    c) Bupropion
    d) Fluoxetine

34. Tick the antidepressant agent, which is a phenyltolylpropylamine derivative:
    a) Paroxetine
    b) Maprotiline
    c) Fluoxetine
    d) Amitriptyline

35. The mechanism of fluoxetine action includes:
    a) Selective inhibition of serotonine uptake in the CNS
    b) Little effect on central norepinephrine or dopamine function
    c) Minimal binding to cholinergic, histaminic, and alfa-adrenergic receptors
    d) All of the above

36. Which of the following antidepressants is used for the treatment of eating disorders, especially buliemia?
    a) Amitriptyline
    b) Fluoxetine
    c) Imipramine
    d) Tranylcypromine

37. Sertaline and paroxetine are similar to fluoxetine by the mechanism of action and therapeutic use, sertaline is less likely to interact adversely with other drugs.
    a) True
    b) False

Antidepressant drugs

Task:one correct answer

1) C	14) A	27) A
2) B	15) B	28) B
3) A	16) C	29) D
4) C	17) D	30) C
5) D	18) C	31) D
6) B	19) B	32) B
7) A	20) A	33) A
8) B	21) C	34) C
9) D	22) D	35) D
10) C	23) D	36) B
11) C	24) B	37) A
12) A	25) C	
13) B	26) D	

2.9. Anxiolytic drugs

Single-choice tests:

1. Anxiolytics are used to treat:
    a) Neurosis
    b) Psychosis
    c) Narcolepsy
    d) Bipolar disorders
    e) Depression

2. Anxiolytic agents should:
    a) Relieve pain
    b) Reduce anxiety and exert a calming effect
    c) Improve mood and behavior in patient with psychotic symptoms
    d) Produce drowsiness, encourage the onset and maintenance of a state of sleep
    e) Produce antidepressant effect

3. Anxiolytics are also useful for:
    a) Treatment of epilepsy and seizures
    b) Insomnia
    c) Muscle relaxation in specific neuromuscular disorders
    d) Premedication
    e) All of the above

4. Tick the agents of choice in the treatment of most anxiety states:
    a) Barbiturates
    b) Benzodiazepines
    c) Lithium salts
    d) Phenothiazines
    e) Antidepressants

5. The choice of benzodiazepines for anxiety is based on:
    a) A relatively high therapeutic index
    b) Availability of flumazenil for the treatment of overdose
    c) A low risk of physiologic dependence
    d) A low risk of psychological dependence
    e) All of the above

6. Which of the following anxiolytics is a benzodiazepine derivative:
    a) Buspirone
    b) Clordiazepoxide

c) Meprobamate
d) Chloral hydrate
e) Alprazolam

7. Tick the benzodiazepine, whith the shortest elimination half-life:
   a) Quazepam
   b) Triazolam
   c) Diazepam
   d) Clorazepate
   e) Nitrazepam

8. Which of the following benzodiazepines has the shortest duration of action?
   a) Triazolam
   b) Clorazepate
   c) Prazepam
   d) Clordiazepoxide
   e) Diazepam

9. Which of the following benzodiazepines is less likely to cause cumulative and residual effects with multiple doses?
   a) Clorazepate
   b) Quazepam
   c) Lorazepam
   d) Prazepam

10. Anxiolytic dosage reduction is recommended:
    a) In patients taking cimetidine
    b) In patients with hepatic dysfunction
    c) In elderly patients
    d) In patients with renal dysfunction
    e) All of the above

11. Which of the following benzodiazepines is preferred for elderly patients?
    a) Clorazepate
    b) Clordiazepoxide
    c) Triazolam
    d) Prazepam
    e) Nitrazepam

12. Which of the following anxiolytics is preferred in patients with limited hepatic function?
    a) Buspirone
    b) Quazepam
    c) Diazepam
    d) Chlordiazepoxide
    e) Alprazolam

13. Tick the mechanism of hypnotic benzodiazepine action:
    a) Increase of the duration of the GABA-gated Cl- channel openings
    b) Direct activation of chloride channels
    c) Increase of the frequency of Cl-channel opening events
    d) All of the above

14. Which of the following anxiolytics is a partial agonist of brain 5-HT1A receptors?
    a) Buspirone
    b) Alprozolam
    c) Chlorazepat
    d) Lorazepam
    e) Diazepam

15. Tick the competitive antagonist of BZ receptors:
    a) Flumazenil
    b) Buspirone
    c) Picrotoxin
    d) Diazepam
    e) Alprazolam

16. Tick the agent, which interferes with GABA binding:
    a) Chlordiazepoxide
    b) Bicuculline
    c) Thiopental
    d) Picrotoxin

17. Antianxiety agents have:
    a) Sedative and hypnotic activity
    b) Muscle relaxing and anticonvulsant effects
    c) Amnesic properties
    d) All of the above

18. Which of the following disadvantages does not limit using benzodiazepines as antianxiety agents?
    a) Tendency to develop psychologic dependence
    b) A high risk of drug interactions based on liver enzyme induction
    c) Synergic CNS depression with concomitant use of other drugs
    d) Formation of active metabolites
    e) Development of physical dependence

19. Tick the anxiolitic agent, which relieves anxiety without causing marked sedative effects:
    a) Diazepam
    b) Chlordiazepoxid
    c) Buspirone
    d) Clorazepate
    e) Flumazenil

20. Which of the following anxiolytics has minimal abuse liability?
    a) Oxazepam
    b) Buspirone
    c) Flumazenil
    d) Alprazolam

21. In contrast to benzodiazepines, buspirone:
    a) Interacts directly with gabaergic system
    b) Has more marked hypnotic, anticonvulsant, or muscle relaxant properties
    c) Causes less psychomotor impairment and does not affect driving skills
    d) Has maximal abuse liability

22. Which of the following sedative-hypnotic drugs does not potentiate the CNS depressant effects of ethanol, phenothiazines, or tricyclic antidepressants?
    a) Buspirone
    b) Phenobarbital
    c) Diazepam
    d) Chloralhydrate
    e) Alprazolam

23. The limitation of buspirone is:
    a) A low therapeutic index
    b) An extremely slow onset of action
    c) A high potential of development of physical dependence
    d) Impairment of mentation or motor functions during working hours
    e) Development of psychological dependence

24. Which of the following drugs may be used as antianxiety agents?
    a) BETA-blocking drugs
    b) Clonidine - a partial agonist of alfa2 receptors
    c) Tricyclic antidepressants
    d) Barbiturates in low doses
    e) All of the above

25. Which of the following benzodiazepines is more likely to cause "hangover" effects such as drowsiness, dysphoria, and mental or motor depression the next day?
    a) Oxazepam
    b) Triazolam
    c) Clorazepat
    d) Lorazepam

26. Additive CNS depression can be predicted if benzodiazepines are used with:
    a) Ethanol
    b) Morphine
    c) Clorpromazine
    d) All of the above

27. Which dosage of benzodiazepines administered for 60-90 days may produce severe withdrawal symptoms?
    a) 50-60 mg/d
    b) Less than 400 mg/d
    c) More than 800 mg/d
    d) Less than 40 mg/d

28. Restlessness, anxiety, orthostatic hypotension, generalized seizures, severe tremor, vivid hallucination, and psychosis are possible symptoms of:
    a) Tolerance
    b) Withdrawal
    c) Drug interactions between barbiturate and diazepam
    d) None of the above

29. Flumazenil is used to:
    a) Reverse the CNS depressant effects of hypnotic benzodiazepines overdose
    b) Hasten recovery following the use of hypnotic benzodiazepines in anesthetic and diagnostic procedure
    c) Reverse benzodiazepine-induced respiratory depression
    d) All of the above

30. Flumazenil given intravenously:
    a) Has intermediate onset and duration of action for about 2 hours
    b) Acts rapidly but has a short half-life
    c) Has an effect lasting 3-5 hours
    d) Has the duration of action longer than 8 hours
    e) Has an effect lasting 5-8 hours

Anxiolytic drugs

Task: one correct answer

1) A	11) C	21) C
2) B	12) A	22) A
3) E	13) C	23) B
4) B	14) A	24) D
5) E	15) A	25) C
6) B	16) B	26) D
7) B	17) D	27) A
8) A	18) B	28) B
9) C	19) C	29) D
10) D	20) B	30) B

2.10. CNS stimulants

Single-choice tests:

1. Agents, stimulating the CNS are all of the following, EXCEPT:
    a) Fluoxetine
    b) Clozapine
    c) Piracetam
    d) Sydnocarb
    e) Meridil

2. Which of the following CNS stimulants are the agents of selective effect?
    a) Analeptics
    b) General tonics
    c) Psychostimulants
    d) Actoprotectors

3. Tick the CNS stimulating drugs, which are the agents of general action:
    a) Nootropic agents
    b) Analeptics
    c) Psychostimulants
    d) Antidepressants

4. Which of the following agents belongs to psychostimulants?
    a) Meridil
    b) Camphor
    c) Piracetam
    d) Pantocrin

5. Tick the nootropic agent:
    a) Sydnocarb
    b) Eleuterococci extract
    c) Fluoxetine
    d) Piracetam

6. Which of the following agents is a respiratory analeptic?
    a) Piracetam
    b) Sydnocarb
    c) Bemegride
    d) Pantocrin

7. Tick the CNS stimulating drug, which belongs to adaptogens:
    a) Amphetamine
    b) Eleuterococci extract
    c) Caffeine
    d) Sydnocarb

8. Actoprotectors are:
    a) Stimulators, improving physical efficiency
    b) Cognition enhancers, improving the highest integrative brain function
    c) Stimulants, increasing non specific resistance towards stresses
    d) Agents, stimulating the bulbar respiratory and vasomotor centers

9. Adaptogens cause:
    a) Improvment of efficiency using physical loads and acceleration of recovery after the load
    b) Stimulation of respiratory and vasomotor centers
    c) Temporary relief of the feeling of tiredness, facilitating the professional work and fighting somnolence
    d) Increased resistance towards stress situations and adaptation to extreme conditions

10. Tick the CNS stimulants, which mitigate conditions of weakness or lack of tone within the entire organism or in particular organs?
    a) Psychostimulants
    b) Analeptics
    c) General tonics
    d) Antidepressants

11. Which of the following agents is a general tone-increasing drug of plant origin?
    a) Meridil
    b) Eleutherococus extract
    c) Pantocrin
    d) Caffeine

12. Tick the general tonic drug, which is an agent of animal origin?
    a) Pantocrin
    b) Amphetamine
    c) Sydnocarb
    d) Camphor
    e) Bemegride

13. Amphetamine:
    a) Is a powerful stimulant of the CNS
    b) Stimulates the medullar respiratory center and has an analeptic action
    c) Increases motor and speech activity, mood and decreases the sense of fatigue
    d) All of the above

14. The mechanism of amphetamine action is related to:
    a) Direct catecholamiergic agonist action
    b) Inhibition of monoamine oxydase
    c) Increase of the release of catecholaminergic neurotransmitters
    d) All of the above

15. Tick the CNS stimulant, which is a piperidine derivative:
    a) Meridil
    b) Amphetamine
    c) Caffeine
    d) Sydnocarb

16. Which of the following CNS psychostimulants is a sydnonymine derivative?
    a) Caffeine
    b) Sydnocarb
    c) Meridil (methylphenidate hydrochloride)
    d) Amphetamine

17. Sydnocarb causes:
    a) Decreased sense of fatigue, it facilitates the professional work and fights against somnolence
    b) The feeling of prosperity, relaxation and euphoria
    c) Influx of physical and mental forces, locomotive and speech excitation
    d) Peripheral sympathomimetic action

18. Tick the psychostimulant, which is a methylxantine derivative:
    a) Caffeine
    b) Sydnocarb
    c) Amphetamine
    d) Meridil
    e) Camphor

19. Which of the following psychostimulants acts centrally mainly by blocking adenosine receptors?
    a) Meridil
    b) Caffeine
    c) Amphetamine
    d) Sydnophen

20. The principal properties of caffeine include all of the following, EXEPT:
    a) Cardiac analeptic (increases the rate and the force of the cardiac contraction)
    b) Adaptogenic (increases non specific resistance towards stresses and adapt to extraordinary challenges)
    c) Psychoanaleptic (decreases the feeling of tiredness, facilitates the professional work and fights somnolence)
    d) Respiratory analeptic (stimulates the bulbar respiratory center)

21. Caffeine can produce all of the following effects, EXCEPT:
    a) Coronary vasodialation
    b) Relaxation of bronchial and biliary tract smooth muscles
    c) Vasodialation of cerebral vessels
    d) Reinforcement of contractions and increase of the striated muscle work

22. Caffeine does not cause:
    a) Inhibition of gastric secretion
    b) Hyperglycemia
    c) Moderate diuretic action
    d) Increase in free fatty acids

23. Therapeutic indications of caffeine include all of the following, EXCEPT:
    a) Cardiovascular collapse and respiratory insufficiency
    b) Migraine
    c) Somnolence
    d) Gastric ulceration
    e) Hypotension

24. Adverse effects of caffeine include all of the following, EXCEPT:
    a) Arrhythmias
    b) Insomnia

c) Hypotension
d) Psychomotor excitation

25. Principal properties of cordiamine include all of the following, EXCEPT:
    a) Cardiac analeptic
    b) Respiratory analeptic
    c) Coronarodilatator
    d) Significant abuse potential

26. Characteristics of cordiamine include all of the following, EXCEPT:
    a) It stimulates the CNS and facilitates movement coordination
    b) It is a respiratory analeptic of mixed action (stimulates both the medullar respiratory center and chemoreceptor of carotid sinus zone)
    c) It decreases the aortic and coronary flow
    d) It counteracts the central depression produced by other drugs (barbiturates)

27. Cordiamine is useful in the treatment of:
    a) Hypotension
    b) Coronary insufficiency
    c) Respiratory insufficiency
    d) All of the above

28. Respiratory and cardiac analeptics are all of the following agents, EXCEPT:
    a) Cordiamine
    b) Bemegride
    c) Caffeine
    d) Camphor

29. Bemegride:
    a) Stimulates the medullar respiratory center (central effect)
    b) Stimulates hemoreceptors of carotid sinus zone (reflector action)
    c) Is a mixed agent (both central and reflector effects)
    d) Is a spinal analeptic

30. Which of the following CNS stimulants belongs to nootropics?
    a) Camphor
    b) Pantocrin

c) Sydnocarb
d) Piracetam
e) Bemegride

31. Characteristics of nootropics include all of the following, EXCEPT:
    a) Selective influence on the brain
    b) Improvement of the ability to communicate with peers
    c) Decline in the highest integrative brain functions
    d) Increase in energetic exchange of the brain cells

32. Which of the following statements concerning nootropics is not correct?
    a) They improve the highest integrative brain functions (memory, learning, understanding, thinking and the capacity for concentration)
    b) They stimulate the bulbar respiratory center
    c) They stimulate existing neuronal synapses to optimum performance (adaptive capacity)
    d) They stimulate existing neuronal synapses to damaging influences, such as disturbances of the energy and neurotransmitter metabolism or ischemia (protective capacity)

33. Features of piracetam include all of the following, EXCEPT:
    a) It is a GABA derivative
    b) It does not influence the neuro-vegetative function
    c) Improvement begins in the 3-rd week
    d) It has a high potential of toxicity

34. Piracetam can produce all of the following effects, EXCEPT:
    a) Antipsychotic
    b) Anticonvulsant
    c) Psychometabolic
    d) Antihypoxic
    e) Hypnotic

35. Piracetam is widely used for the treatment of:
    a) Senile dementia
    b) Asthenia
    c) Chronic alcoholism
    d) All of the above

36. Tick the CNS stimulant, which is used in pediatric medicine, as it improves the communication with the child, increases the ability to study and communication, improves school performance?
    a) Meridil
    b) Piracetam
    c) Bemegride
    d) Amphetamine
    e) Pantocrin

37. Which of the following CNS stimulants is used for the cerebral stroke treatment?
    a) Pantocrin
    b) Sydnocarb
    c) Piracetam
    d) Caffeine
    e) Amphetamine

38. Tick the drugs of choice for reversing the withdrawal syndrome:
    a) Benzodiazepines
    b) Neuroleptics
    c) Antidepressants
    d) All of the above

CNS stimulants

Task: one correct answer

1) B	14) D	27) D
2) C	15) A	28) B
3) B	16) B	29) A
4) A	17) A	30) D
5) D	18) A	31) C
6) C	19) B	32) B
7) B	20) B	33) D
8) A	21) C	34) A
9) D	22) A	35) D
10) C	23) D	36) B
11) B	24) C	37) C
12) A	25) D	38) D
13) D	26) C	

2.11. General anesthetics

Single-choice tests:

1. The state of "general anesthesia" usually includes:
    a) Analgesia
    b) Loss of consciousness, inhibition of sensory and autonomic reflexes
    c) Amnesia
    d) All of the above

2. Inhaled anesthetics and intravenous agents having general anesthetic properties:
    a) Activate directly GABAA receptors
    b) Facilitate GABA action but have no direct action on GABAA receptors
    c) Reduce the excitatory glutamatergic neurotransmission
    d) Increase the duration of opening of nicotine-activated potassium channels

3. Tick the anesthetic, which is an inhibitor of NMDA glutamate receptors:
    a) Thiopental
    b) Halothane
    c) Ketamine
    d) Sevoflurane
    e) Propofol

4. An ideal anesthetic drug should:
    a) Induce anesthesia smoothly and rapidly and secure rapid recovery
    b) Posses a wide margin of safety
    c) Be devoid of adverse effects
    d) All of the above

5. Which of the following general anesthetics belongs to inhalants?
    a) Thiopental
    b) Desfluran
    c) Ketamine
    d) Propofol

6. Tick the anesthetic, which is used intravenously:
    a) Propofol
    b) Halothane
    c) Desflurane
    d) Nitrous oxide

7. Which of the following inhalants is a gas anesthetic?
    a) Halothane
    b) Isoflurane
    c) Nitrous oxide
    d) Desflurane

8. Sevoflurane has largely replaced halothane and isoflurane as an inhalation anesthetic of choice because:
    a) Induction of anesthesia is achieved more rapidly and smoothly
    b) Recovery is more rapid
    c) It has low post anesthetic organ toxicity
    d) All of the above

9. The cause of limitation of sevoflurane is:
    a) High incidence of coughing and laryngospasm
    b) Chemically unstable
    c) Centrally mediated sympathetic activation leading to a rise of BP and HR
    d) Hepatotoxicity

10. Which of the following inhalants lacks sufficient potency to produce surgical anesthesia by itself and therefore is commonly used with another inhaled or intravenous anesthetic?
    a) Halothane
    b) Sevoflurane
    c) Nitrous oxide
    d) Desflurane

11. Which of the following inhaled anesthetics has rapid onset and recovery?
    a) Nitrous oxide
    b) Desflurane
    c) Sevoflurane
    d) All of the above

12. Tick the inhaled anesthetic, which reduces arterial pressure and heart rate:
    a) Isoflurane
    b) Halothane
    c) Desflurane
    d) Nitrous oxide

13. Which of the following inhaled anesthetics causes centrally mediated sympathetic activation leading to a rise in blood pressure and heart rate?
    a) Desflurane
    b) Sevoflurane
    c) Nitrous oxide
    d) Isofurane

14. Tick the inhaled anesthetic, which decreases the ventilatory response to hypoxia:
    a) Sevoflurane
    b) Nitrous oxide
    c) Desflurane
    d) Halothane

15. Which of the following inhaled anesthetics is an induction agent of choice in patient with airway problems?
    a) Desfurane
    b) Nitrous oxide
    c) Halothane
    d) None of the above

16. Tick the inhaled anesthetic, which causes the airway irritation:
    a) Nitrous oxide
    b) Sevoflurane
    c) Halothane
    d) Desflurane

17. Which of the following inhaled anesthetics increases cerebral blood flow least of all?
    a) Sevoflurane
    b) Nitrous oxide
    c) Isoflurane
    d) Desflurane

18. Tick the inhaled anesthetic, which should be avoided in patients with history of seizure disorders:
    a) Enflurane
    b) Nitrous oxide
    c) Sevoflurane
    d) Desflurane
19. Which of the following inhaled anesthetics can produce hepatic necrosis?
    a) Soveflurane
    b) Desflurane
    c) Halothane
    d) Nitrous oxide
20. Tick the inhaled anesthetic, which may cause nephrotoxicity:
    a) Halothane
    b) Soveflurane
    c) Nitrous oxide
    d) Diethyl ether
21. Which of the following inhaled anesthetics decreases metheonine synthase activity and causes megaloblastic anemia?
    a) Desflurane
    b) Halothane
    c) Nitrous oxide
    d) Soveflurane
    e) Propofol
22. Unlike inhaled anesthetics, intravenous agents such as thiopental, etomidate, and propofol:
    a) Have a faster onset and rate of recovery
    b) Provide the state of conscious sedation
    c) Are commonly used for induction of anesthesia
    d) All of the above
23. Tick the intravenous anesthetic, which is an ultra-short-acting barbiturate:
    a) Fentanyl
    b) Thiopental
    c) Midazolam
    d) Ketamine
    e) Phenobarbital

24. Tick the intravenous anesthetic, which is a benzodiazepine derivative:
    a) Midazolam
    b) Thiopental
    c) Ketamin
    d) Propofol
    e) Alprazolam

25. Which of the following agents is used to accelerate recovery from sedative actions of intravenous benzodiazepines?
    a) Naloxone
    b) Flumazenil
    c) Ketamine
    d) Fomepizole
    e) Naltrexon

26. Neuroleptanalgesia has all of the following properties, EXCEPT:
    a) Droperidol and fentanyl are commonly used
    b) It can be used with nitrous oxide to provide neuroleptanesthesia
    c) Hypertension is a common consequence
    d) Confusion and mental depression can occur as adverse effects

27. Which of the following intravenous anesthetics has antiemetic actions?
    a) Thiopental
    b) Propofol
    c) Ketamine
    d) Fentanyl
    e) Morphine

28. Tick the intravenous anesthetic, which causes minimal cardiovascular and respiratory depressant effects:
    a) Propofol
    b) Thiopental
    c) Etomidate
    d) Midazolam

29. Tick the intravenous anesthetic, which produces dissociative anesthesia:
    a) Midazolam
    b) Ketamine
    c) Fentanyl

d) Thiopental
e) Phenobarbital

30. Ketamine anesthesia is associated with:
a) Cardiovascular stimulation
b) Increased cerebral blood flow, oxygen consumption and intracranial pressure
c) Disorientation, sensory and perceptual illusions, and vivid dreams following anesthesia
d) All of the above

General anesthetics

Task: one correct answer

1) D	11) D	21) C
2) A	12) B	22) D
3) C	13) A	23) B
4) D	14) B	24) A
5) B	15) C	25) B
6) A	16) D	26) C
7) C	17) B	27) B
8) D	18) A	28) C
9) B	19) C	29) B
10) C	20) B	30) D

3. Drugs controlling the functions of the peripheral nervous system

3.1. Cholinomimetic drugs

Single-choice tests:

1. Which of the following is a common effect of muscarinic stimulant drugs?
    a) Decreased peristalsis
    b) Decreased secretion by salivary glands
    c) Hypertension
    d) Inhibition of sweat glands
    e) Miosis

2. Which one of the following drugs is used in ophthalmology, but causes intra-ocular hypotension?
    a) Atropine
    b) Scopolamine
    c) Pilocarpine
    d) Ephedrine
    e) Tropicamide

3. Choose the drug that is administered in intoxication with mushrooms and organophosphates:
    a) Pilocarpine
    b) Neostigmine
    c) Atropine
    d) Itopride
    e) Galantamine

4. Cholinomimetics have the following effects, EXCEPT:
    a) Bradycardia
    b) Bronchospasm
    c) Xerostomia
    d) Lacrimation
    e) Miosis

5. Which of the following direct-acting cholinomimetics has the shortest duration of action?
    a) Acetylcholine
    b) Methacholine
    c) Carbachol

d) Bethanechol
e) Atropine

6. Tick the M-cholinimimetic agent:
   a) Carbachol
   b) Pilocarpine
   c) Acetylcholine
   d) Bethanechol
   e) Atropine

7. Characteristics of pilocarpine include all of the following, EXCEPT:
   a) It is a tertiary amine alkaloid
   b) It causes miosis
   c) It causes a decrease in secretory and motor activity of the gut
   d) It is useful in the treatment of glaucoma
   e) It causes a decrease in intraocular pressure

8. Which of the following cholinomimetics is a plant derivative with lower potency than nicotine but with a similar spectrum of action?
   a) Lobeline
   b) Pilocarpine
   c) Carbachol
   d) Acetylcholine
   e) Atropine

9. Which of the following cholinomimetics is indirect-acting?
   a) Lobeline
   b) Edrophonium
   c) Pilocarpine
   d) Carbachol
   e) Atropine

10. The mechanism of action of indirect-acting cholinomimetic agents is:
    a) Binding to and activation of muscarinic or nicotinic receptors
    b) Inhibition of hydrolysis of endogenous acetylcholine
    c) Stimulation of the action of acetylcholinesterase
    d) Releasing acetylcholine from storage sites
    e) Decrease of acetylcholine release from storage sites

11. Tick the reversible cholinesterase inhibitor:
    a) Dipiroxime
    b) Carbochol

c) Physostigmine
d) Pilocarpine
e) Aceclidine

12. Which of the following cholinesterase inhibitors is irreversible?
    a) Physostigmine
    b) Edrophonium
    c) Neostigmine
    d) Armine
    e) Aceclidine

13. Acetylcholine is not a specific neurotransmitter of:
    a) Sympathetic ganglia
    b) Sympathetic postganglionic nerve endings
    c) Parasympathetic ganglia
    d) Parasympathetic postganglionic nerve endings

14. Muscarinic receptors are located in:
    a) Parasympathetic autonomic ganglia
    b) Sympathetic autonomic ganglia
    c) Skeletal muscle neuromuscular junctions
    d) Autonomic effector cells
    f) Sensory carotid sinus baroreceptor zone

15. Tick the location of M2 cholinoreceptor type:
    a) Heart
    b) Glands
    c) Smooth muscle
    d) Endothelium
    e) Eye smooth muscle

16. The symptoms of mushroom poisoning include all of the following, EXCEPT:
    a) Salivation, lacrimation, nausea, vomiting
    b) Dryness of mouth, hyperpyrexia, hallucination
    c) Headache, abdominal colic
    d) Bradycardia, hypotension and shock
    e) Nausea, vomiting, bradycardia

17. Which of the following cholinomimetics activates both muscarinic and nicotinic receptors?
    a) Lobeline
    b) Pilocarpine
    c) Nicotine
    d) Bethanechol
    e) Aceclidine

18. Tick the cholinomimetic agent, which is related to direct-acting drugs:
    a) Edrophonium
    b) Physostigmine
    c) Carbachol
    d) Dipiroxime
    e) Atropine

19. Parasympathomimetic drugs cause:
    a) Bronchodilation
    b) Mydriasis
    c) Bradycardia
    d) Constipation
    e) Xerostomia

Multiple-choice tests:

20. The following statements are true about physostigmine:
    a) It is a reversible cholinesterase
    b) It does not penetrate the blood-brain barrier
    c) It acts on the muscarinic receptors
    d) It acts on the nicotinic receptors
    e) It causes miosis

21. Physostigmine:
    a) Causes accommodative spasm
    b) Causes conjunctival vasoconstriction
    c) Increases intraocular pressure
    d) Causes smooth muscle contraction
    e) Can be used in hypotonia of the gastrointestinal system

22. Pilocarpine:
    a) Is an alkaloid derived from plant
    b) Is a direct-acting muscarinic agonist

c) Causes contraction of the ciliary muscles
d) Causes myriasis
e) Has a greater effect on patients with blue iris than on ones with brown iris

23. The treatment of intoxication with Amanita Palidum and organo-phosphates is:
    a) In the II phase - 2-4ml Atropine i/m, or i/v after 1-2 ml every 10 min.
    b) In the I phase –the attack dose - 1-2 ml Atropine s/c or i/m after, 0,5 ml s/c or i/m every 30 min.
    c) In the II phase - 4-8 ml Atropine i/v or i/m after 2-3ml every 3-8 min.
    d) In the I phase - 2-4ml Atropine i/m, or i/v after 1-2 ml every 10 min.
    e) In the III phase - 4-8 ml Atropine i/v or i/m after 2-3ml every 3-8 min.

24. The effects of direct-acting cholinergic agonists include:
    a) Mydriasis
    b) Myosis
    c) Spasm of accomodation
    d) Decreases intraocular pressure
    e) Xerostomia

25. The effects of muscarinic agonists include:
    a) Reduced intraocular pressure
    b) Reduced aqueous production
    c) Accommodative myopia
    d) Increased lacrimation
    e) Contraction of the pupillary sphincter muscle

26. Acetylcholinesterase inhibitors include:
    a) Physostigmine
    b) Atropine
    c) Edrophonium
    d) Pyridostigmine
    e) Scopolamine

27. Tick the cholinomimetics used in glaucoma:
    a) Pilocarpine
    b) Atropine

c) Scopolamine
d) Aceclidine
e) Tropicamide

28. Acetylcholine is the chemical mediator released at the following sites:
    a) Parasympathetic preganglionic neurones
    b) Sympathetic preganglionic neurones
    c) Parasympathetic postganglionic neurones
    d) Sympathetic postganglionic neurones
    e) Postganglionic sympathetic neurones that innervate the sweat glands

29. The following muscarinic agonists are structurally related to acetylcholine:
    a) Pilocarpine
    b) Carbachol
    c) Methacholine
    d) Atropine
    e) Aceclidine

30. The side effects of pilocarpine include:
    a) Dry eye
    b) Increased sweating
    c) Bronchiolar spasm
    d) Increased salivation
    e) Constipation

31. The following statements are true about pilocarpine:
    a) It increases the concentration of acetylcholine in the synaptic cleft
    b) It increases trabecular meshwork outflow
    c) Patients with dark iris are more sensitive to the miotic effect of pilocarpine
    d) It increases intraocular presure
    e) It induces myopia by increasing the axial length of the lens

32. The systemic side effects of pilocarpine include:
    a) Constipation
    b) Excessive sweating
    c) Urinary urgency
    d) Bronchial spasm
    e) Dry mouth

Cholinomimetics

Task: one correct answer

1) E
2) C
3) C
4) C
5) A
6) B
7) C
8) A
9) B
10) B
11) C
12) D
13) B
14) D
15) A
16) B
17) D
18) C
19) C

Task: two or more correct answers

20) A, C, D, E
21) A, D, E
22) A, B, C
23) A, B, E
24) B, C, D
25) A, C, D, E
26) A, C, D
27) A, D
28) A, B, C, E
29) B, C
30) B, C, D
31) B, E
32) B, C, D

3.2. M-Cholinoblockers

Single-choice tests:

1. Which of the following drugs is used in ophthalmology, but causes mydriasis and cycloplegia lasting more than 24 hourrs?
    a) Tropicamide
    b) Atropine
    c) Edrophonium
    d) Ephedrine
    e) Pilocarpine

2. Choose the broncholitic mechanism of atropine:
    a) Blockage of M-cholinoreceptors of the smooth muscle of bronchi
    b) Excitement of β 2-adrenoreceptors of the smooth muscle of bronchi
    c) Stimulation of adenilatcyclase
    d) Direct action on the smooth muscle of bronchi
    e) Excitement of M cholinoreceptors of the smooth muscle of bronchi

3. Atropine causes:
    a) Miosis, reduction in intraocular pressure and cyclospasm
    b) Mydriasis, rise in intraocular pressure and cycloplegia
    c) Miosis, rise in intraocular pressure and cycloplegia
    d) Xerostomia, constipation
    e) Tachycardia

4. Patients complain of dry or "sandy" eyes when receiving large doses of:
    a) Atropine
    b) Hexamethonium
    c) Pilocarpine
    d) Carbachol
    e) Scopolamine

5. All of the following parts of the heart are very sensitive to muscarinic receptor blockade, EXCEPT:
    a) Atria
    b) Sinoatrial node
    c) Atrioventricular node
    d) Ventricle

6. Which of the following antimuscarinics can be used in motion sickness?
    a) Atropine
    b) Ipratropium
    c) Scopolamine
    d) Homatropine
    e) Oxitropium

7. The pharmacologic actions of scopolamine most closely resemble those of:
    a) Hexamethonium
    b) Atropine
    c) Succinylcholine
    d) Pilocarpine
    e) Aceclidine

8. When compared with atropine, scopolamine has all of the following properties, EXCEPT:
    a) More marked central effect
    b) Less potent in decreasing bronchial, salivary and sweat gland secretion
    c) More potent in producing mydriasis and cycloplegia
    d) Lower effects on the heart

9. Which of the following drugs is useful in the treatment of Parkinson′s disease?
    b) Pilocarpine
    c) Trihexyphenidyl
    d) Edrophonium
    e) Succinylcholine
    f) Hexamethonium

10. Tick the drug, which is rapidly and fully distributed into the CNS and has a greater effect than most other antimuscarinic agents?
    a) Pilocarpine
    b) Atropine
    c) Homatropine
    d) Ipratropium
    e) Oxitropium

11. The mechanism of atropine action is:
    a) Competitive ganglion blockade
    b) Competitive muscarinic blockade
    c) Competitive neuromuscular blockade
    d) Noncompetitive neuromuscular blockade
    e) Inhibition of cholinesterase

12. Which of the following drugs is used for acute toxic effects of mushroom poisoning?
    a) Atropine
    b) Pilocarpine
    c) Pralidoxime
    d) Aceclidine
    e) Edrophonium

13. M3 receptor subtype is located:
    a) In the myocardium
    b) In sympathetic postganglionic neurons
    c) On effector cell membranes of glandular and smooth muscle cells
    d) On the motor end plates
    e) In parasympathetic ganglia

14. The treatment of the antimuscarinic effects can be carried out with:
    a) Neostigmine
    b) Hexametonium
    c) Homatropine
    d) Scopolamine
    e) Acetylcholine

Multiple-choice tests:

15. Contraindications to the use of antimuscarinic drugs are the following:
    a) Glaucoma
    b) Myasthenia
    c) Bronchial asthma
    d) Paralytic ileus
    e) Atony of the urinary bladder

16. Antimuscarinics are used in the treatment of the following disorders, EXCEPT:
    a) Motion sickness
    b) Glaucoma
    c) Urinary retention
    d) Asthma
    e) Gastric hypersecretion

17. Atropine poisoning includes the following symptoms:
    a) Mydriasis, cycloplegia
    b) Hyperthermia, dry mouth, hot and flushed skin
    c) Agitation and delirium
    d) Bradycardia, orthostatic hypotension
    e) Miosis

18. Choose the antimuscarinic drug, which is used as a mydriatic:
    a) Pilocarpine
    b) Neostigmine
    c) Homatropine
    d) Ipratropium
    e) Tropicamide

19. Which of the following agents is used as an inhalation drug in asthma?
    a) Atropine
    b) Ipratropium
    c) Lobeline
    d) Homatropine
    e) Oxitropium

20. Choose the muscarinic receptor-blocking drug:
    a) Scopolamine
    b) Pipecuronium
    c) Trimethaphan
    d) Pilocarpine
    e) Atropine

21. Mydriasis occurs with:
    a) Atropine
    b) Tropicamide

c) Carbachol
d) Neostigmine
e) Pilocarpine

22. Atropine:
    a) Blocks nicotinic acethylcholine receptors
    b) Inhibits bronchial and salivary secretion
    c) Diminishes the risk of vagal cardiac arrest
    d) Is used to avoid unwanted side effects of neostigmine
    e) Causes loss of accommodation

23. With regard to the effect of atropine:
    a) Mydriasis is the result of paralysis of the constrictor muscle of the pupil
    b) Mydriasis occurs more rapidly than cycloplegia
    c) Cycloplegia persists longer than mydriasis
    d) It causes forward movement of the lens
    e) It causes a breakdown in the blood aqueous barrier

24. The following eye drops causes cycloplegia:
    a) Tropicamide
    b) Atropine
    c) Epinephrine
    d) Pilocarpine
    e) Aceclidine

25. Atropine causes:
    a) Bradycardia, hypotension and bronchoconstriction
    b) Tachycardia, little effect on blood pressure and bronchodilation
    c) Decrease in contractile strength, conduction velocity through the AV node
    d) Tachycardia, hypertensive crisis and bronchodilation
    e) Tachycardia and increasing of conduction velocity through the AV node

26. Atropine block:
    a) M1 receptor subtype
    b) M2 receptor subtype
    c) M3 receptor subtype

d) N receptor subtype
e) All of the above

27. Atropine is used for premedication to reduce or prevent:
    a) Bradycardia
    b) Hypersecretions
    c) AV block
    d) Hyposecretion
    e) Tachycardia

28. Which of the following antimuscarinic drugs is a selective M1 blocker?
    a) Atropine
    b) Scopolamine
    c) Pirenzepine
    d) Homatropine
    e) Telenzepine

29. Atropine causes:
    a) Spasmolytic activity
    b) Intestinal hypermotility
    c) Stimulation of contraction in the gut
    d) Stimulation of secretory activity
    e) Tachycardia

Cholinoblockers

Task: one correct answer

1) B	6) C	11) B
2) A	7) B	12) A
3) B	8) C	13) C
4) A	9) B	14) A
5) D	10) B	

Task: two or more correct answers

15) A, D, E	20) A, E	25) B, E
16) B, C	21) A, B	26) A, B, C
17) A, B, C	22) B, C, D, E	27) A, B, C
18) C, D	23) A,B	28) C, E
19) B, E	24) A,B	29) A, E

3.3. Ganglioblockers and muscle relaxants (N-cholinoblockers)

Single-choice tests:

1. Agents that produce neuromuscular blockade act by inhibiting:
   b) Interaction of acetylcholine with cholinergic receptors
   c) Release of acetylcholine from prejunctional membrane
   d) Packaging of acetylcholine into synaptic vesicles
   e) Reuptake of acetylcholine into the nerve endings
   f) Metabolism of acetylcholine

2. Which of the following kinds of action of ganglioblockers is usefull in pulmonary edema?
   a) Dehydration
   b) Diuretic action
   c) Anti-foam action
   d) Antihypertensive action
   e) Sedative action

3. The main effects of ganglion-blocking drugs are the following, EXCEPT:
   a) Vasodilatation and hypotension
   b) Hyposecretion
   c) Increase of intraocular pressure
   d) Bronchospasm
   e) Relaxation of the smooth muscles and contraction of the sphincters

4. Ganglion blocking drugs are used for the following emergencies, EXCEPT**:**
   a) Hypertensive crises
   b) Controlled hypotension
   c) Cardiovascular collapse
   d) Pulmonary edema

5. Which of the following agents is a short-acting ganglion blocker?
   a) Homatropine
   b) Trimethaphane
   c) Hexamethonium
   d) Pancuronium
   e) Atropine

6. Neuromuscular blockade by succinylcholine may be prolonged in patients with:
    a) Renal failure
    b) An abnormal variant of plasma cholinesterase
    c) Cardiac failure
    d) Acute hypotension
    e) Gastric ulcer

7. Tick the skeletal muscle relaxant, which is a depolarizing agent:
    a) Vencuronium
    b) Scopolamine
    c) Succinylcholine
    d) Hexamethonium
    e) Atropine

8. Tick the neuromuscular blocker, which causes tachycardia:
    a) Tubocurarine
    b) Atracurium
    c) Pancuronium
    d) Succinylcholine
    e) Vecuronium

9. Which neuromuscular blocking agent is contraindicated in patients with glaucoma?
    a) Tubocurarine
    b) Succinylcholine
    c) Pancuronium
    d) Vecuronium
    e) Atracurium

10. Which of the following muscular relaxants causes hypotension and bronchospasm?
    a) Vecuronium
    b) Succinylcholine
    c) Tubocurarine
    d) Rapacuronium
    e) Atracurium

11. Which of the following neuromuscular blockers causes transient muscle fasciculations?
    a) Mivacurium
    b) Pancuronium
    c) Succinylcholine
    d) Tubocurarine
    e) Atropine

12. Tick the skeletal muscle relaxant, which is a depolarizing agent:
    a) Vencuronium
    b) Scopolamine
    c) Succinylcholine
    d) Hexamethonium
    e) Atropine

13. Tick the agent, which effectively antagonizes the neuromuscular blockade caused by nondepolarizing drugs:
    a) Atropine
    b) Neostigmine
    c) Acetylcholine
    d) Pralidoxime
    e) Scopolamine

14. Which of the following neuromuscular blocking agents cause cardiac arrhythmias?
    a) Vecuronium
    b) Atracurium
    c) Tubocurarine
    d) Rapacuronium
    e) Succinylcholine

15. Which of the following diseases can augment neuromuscular blockade produced by nondepolarizing muscle relaxants?
    a) Myasthenia gravis
    b) Burns
    c) Asthma
    d) Parkinsonism
    e) Cardiac failure

16. Depolarizing agents include all of the following properties, EXCEPT:
    a) They interact with nicotinic receptor to compete with acetyl-choline without receptor activation
    b) They react with nicotinic receptor to open the channel and cause depolarisation of the end plate
    c) They cause desensitization, noncompetive block manifested by flaccid paralysis
    d) They cholinesterase inhibitors do not have the capacity to reverse the blockade

17. Which neuromuscular blocking agent has the potential to cause the greatest release of histamine?
    a) Succynilcholine
    b) Tubocurarine
    c) Pancuronium
    d) Rocuronium
    e) Vecuronium

18. Which of the following drugs has “double-acetylcholine” structure?
    a) Tubocurarine
    b) Carbachol
    c) Atropine
    d) Atracurium
    e) Succylcholine

19. They the long-acting neuromuscular blocking agent:
    a) Melictine
    b) Anatruxonium in big doses
    c) Tubocurarine
    d) Pancuronium
    e) Succylcholine

20. Which of the following agents has an extremely brief duration of action?
    a) Vecuronium
    b) Pipecuronium
    c) Anatruxonium
    d) Tubocurarine
    e) Succinylcholine

Multiple-choice tests:

21. Which of the following agents is a ganglion-blocking drug?
    a) Homatropine
    b) Hexamethonium
    c) Rapacuronium
    d) Trepirium iodide
    e) Azamethonium

22. Nicotinic receptor-blocking drugs consist of:
    a) Azamethonium
    b) Atropine
    c) Tubocurarine
    d) Neostigmine
    e) Scopolamine

23. Hexamethonium blocks the action of acethylcholine and similar agonists at:
    a) Muscarinic receptor site
    b) Neuromuscular junction
    c) Parasympathetic ganglia
    d) Axonal transmission
    e) Sympathetic ganglia

24. Ganglion-blocking drugs are used for:
    a) Pulmonary edema
    b) Hypertensive crisis
    c) Controlled hypotension during surgery
    d) Acute hypotension
    e) Xerostomia

25. The administration of ganglion blockers is discontinued due to the following reasons:
    a) Orthostatic hypotension
    b) Lack of selectivity
    c) Homeostatic reflexes block
    d) Respiratory depression
    e) Tachycardia

26. The systemic effects of hexamethonium include all of the following:
    a) Reduction of both peripheral vascular resistance and venous return
    b) Partial mydriasis and loss of accommodation
    c) Constipation
    d) Stimulation of thermoregulatory sweating
    e) urinary retention

27. Which of the following cause non-depolarising blockade of the neuromuscular junction during anaesthesia:
    a) Physostigmine
    b) Pancuronium
    c) Tubocurarine
    d) Atropine

28. Side effects of depolarizing muscle relaxants are:
    a) Bradycardia
    b) Miosis
    c) Potassium release
    d) Diarrhea
    e) Increase of intraocular pressure

29. Skeletal muscle relaxation and paralysis can occur due to interruption of functions at several sites, including the following:
    a) Nicotinic acethylcholine receptors
    b) Muscarinic acethylcholine receptors
    c) The motor end plate
    d) Nicotinic receptors in autonomic ganglia

30. The effects seen only with depolarizing blockade include all of the following:
    a) Hyperkaliemia
    b) A decrease in intraocular pressure
    c) Bronchospasm
    d) Muscle pain
    e) Cardiac arrythmias

Ganglioblockers and muscle relaxants (N-cholinoblockers)

Task: one correct answer

1) A
2) D
3) D
4) C
5) B
6) B
7) C
8) C
9) B
10) C
11) C
12) C
13) B
14) E
15) A
16) A
17) B
18) E
19) B
20) E

Task: two or more correct answers

21) B, D, E
22) A, C
23) C, E
24) A, B, C
25) A, B, C
26) A, B, C, E
27) B, C
28) A, C, E
29) A, C
30) A, D, E

3.4. Adrenomimetics

Single-choice tests:

1. Which of the following effects is associated with beta3-receptor stimulation?
    a) Lipolysis
    b) Decrease in platelet aggregation
    c) Bronchodilation
    d) Tachycardia
    e) Hyperglicemia

2. Tick the beta1-selective agonist:
    a) Isoprenaline
    b) Dobutamine
    c) Clonidine
    d) Epinephrine
    e) Ephedrine

3. In which of the following tissues both alfa and beta1-adrenergic stimulation produces the same effect?
    a) Blood vessels
    b) Intestine
    c) Uterus
    d) Bronchial muscles

4. The effects of sympathomimetics on blood pressure are associated with their effects on:
    a) The heart
    b) The peripheral resistance
    c) The venous return
    d) Juxtaglomerular apparatus
    e) All of the above

5. Beta adrenoreceptor subtype is contained in all of the following tissues, EXCEPT:
    a) Bronchial muscles
    b) Heart
    c) Pupillary dilator muscle
    d) Fat cells
    e) Juxtaglomerular apparatus

6. Choose the pharmacodynamics of clonidine
   a) Inhibition of rennin-angiotensine system
   b) Activation of β adrenoreceptors
   c) Activation of α2 presynaptic adrenoreceptors
   d) Blockage of α2 adrenoreceptors
   e) Inhibition of cholinergyc system

7. Tick the drug that acts on the bronchi selectively:
   a) Epinephrine
   b) Ephedrine
   c) Norepinephrine
   d) Salbutamol
   e) Izoprenaline

8. Phenylephrine causes:
   a) Constriction of vessels in the nasal mucosa
   b) Increased gastric secretion and motility
   c) Increased skin temperature
   d) Miosis
   e) All of the above

9. Which of the following substances can be used in acute rhinitis?
   a) Clonidine
   b) Nafasoline
   c) Salbutamol
   d) Izoprenaline
   e) Dopamine

10. Which of the following agents is an alfa1-selective agonist?
   a) Norepinephrine
   b) Fenilephrine
   c) Ritodrine
   d) Ephedrine
   e) Epinephrine

11. Tick the alfa2-selective agonist:
   a) Xylometazoline
   b) Epinephrine
   c) Salbutamol
   d) Dobutamine
   e) Clonidine

12. By means of what mechanism does clonidine lower blood pressure?
    a) Decreased heart rate by direct action on the SA node
    b) Direct action on the emetic center causing nausea and vomiting
    c) Direct action on blood vessels causing vasodilatation
    d) Stimulation of α 2 adrenoreceptors with inhibition of noradrenaline release
    e) None of the above

13. The location of β_2 adrenoreceptors includes the following places, EXEPTS:
    a) Vessels
    b) Ciliary muscle
    c) Liver
    d) Bronchi
    e) Juxtaglomerular cells

14. Sympathetic stimulation is mediated by:
    a) Release of norepinephrine from nerve terminals
    b) Activation of adrenoreceptors on postsynaptic sites
    c) Release of epinephrine from the adrenal medulla
    d) N-cholinoreceptors stimulation in ganglia
    e) All of the above

15. The characteristics of epinephrine include all of the following, EXCEPT:
    a) It is synthesized into the adrenal medulla
    b) It is synthesized into the nerve ending
    c) It is transported in the blood to target tissues
    d) It interacts directly with and activates them
    e) It is destroyed by MAO

16. Which of the following sympathomimetics acts indirectly?
    a) Epinephrine
    b) Norepinephrine
    c) Ephedrine
    d) Methoxamine
    e) Fenilephrine

17. Direct effects on the heart are determined largely by:
    a) Alfa1 receptors
    b) Alfa 2 receptors

c) Beta1 receptors
d) Beta 2 receptors
e) Beta 3 receptors

18. Catecholamine includes the following, EXCEPT:
    a) Ephedrine
    b) Epinephrine
    c) Norepinephrine
    d) Dopamine

19. Epinephrine decreases intracellular AMPc levels by acting on:
    a) Alfa 1 receptors
    b) Alfa 2 receptors
    c) Beta1 receptors
    d) Beta 2 receptors
    e) Beta 3 receptors

20. Direct effects on the heart are determined largely by:
    a) Alfa1 receptors
    b) Alfa 2 receptors
    c) Beta1 receptors
    d) Beta 2 receptors
    e) Beta 3 receptors

Multiple-choice tests:

21. Distribution of alfa adrenoreceptor subtypes is associated with all of the following tissues except those of:
    a) Heart
    b) Blood vessels
    c) Prostate
    d) Pupillary dilator muscle
    e) Juxtaglomerular apparatus

22. Epinephrine:
    a) Stimulates the α receptor more than β receptors
    b) Decreases trabecular outflow
    c) Is used in anaphylactic shock
    d) Can be used to prolong the action of local anaesthetic
    e) Can be added to the irrigation fluid during cataract surgery to maintain pupil dilatation

23. A nonselective beta receptor agonist causes the following effects:
    a) Increase of cardiac output
    b) Increase of peripheral arterial resistance
    c) Decrease peripheral arterial resistance
    d) Bronchoconstriction
    e) Bronchodilation

24. The effects of clonidine include:
    a) Sedation
    b) Bradycardia
    c) Dry mouth
    d) Tachycardia
    e) Hypotention

25. Which of the following effects is related to direct beta1-adrenoreceptor stimulation?
    a) Bronchodilation
    b) Vasodilatation
    c) Tachycardia
    d) Renine release
    e) Bradycardia

26. Distribution of alfa adrenoreceptor subtypes is associated with all of the following tissues except those of:
    a) Heart
    b) Blood vessels
    c) Prostate
    d) Pupillary dilator muscle
    e) Juxtaglomerular apparatus

27. Beta2 receptor stimulation includes all of the following effects:
    a) Stimulation of renin secretion
    b) Hypoglicemia
    c) Relaxation of bladder, uterus
    d) Tachycardia
    e) Bronchodilation

28. Hyperglycemia induced by epinephrine is due to:
    a) Gluconeogenesis (beta2)
    b) Inhibition of insulin secretion (alfa2)

c) Stimulation of glycogenolysis (beta2)
d) Inhibition of insulin synthesis
e) Increase in glucose absorbtion from the gut

29. Which of the following sympathomimetics is a beta2-selective agonist?
    a) Terbutaline
    b) Salbutamol
    c) Xylometazoline
    d) Isoprenaline
    e) Dobutamine

30. Epinephrine is used in the treatment of the following disorders:
    a) Bronchospasm
    b) Anaphylactic shock
    c) Cardiac arrhythmias
    d) Tachycardia
    e) Open-angle glaucoma

31. Which of the following topical decongestant agents is an alfa2-selective agonist?
    a) Phenylephrine
    b) Xylometazoline
    c) Ephedrine
    d) Epinephrine
    e) Nafazoline

32. Which of the following statements is not correct?
    a) Alfa agonists cause miosis
    b) Alfa agonists cause mydriasis
    c) Beta antagonists decrease the production of aqueous humor
    d) Alfa agonists increase the outflow of aqueous humor from the eye
    e) Alfa agonists increase intraocular presure

33. Alfa-receptor stimulation includes the following effects:
    a) Relaxation of gastrointestinal smooth muscle
    b) Contraction of bladder base, uterus and prostate
    c) Stimulation of insulin secretion
    d) Vasodilation
    e) Stimulation of platelet aggregation

34. Beta1 receptor stimulation includes the following effects:
    a) Increase of contractility
    b) Bronchodilation
    c) Miometrium relaxation
    d) Tachycardia
    e) Increase of conduction velocity in the atrioventricular node

35. The following agents are beta receptor agonists:
    a) Epinephrine
    b) Isoprenaline
    c) Methoxamine
    d) Dobutamine
    e) Salbutamol

36. Which of the following drugs causes bronchodilation without significant cardiac stimulation?
    a) Isoprenaline
    b) Terbutaline
    c) Xylometazoline
    d) Methoxamine
    e) Salbutamol

Adrenomimetics

Task: one correct answer

1) A	8) A	15) B
2) B	9) B	16) C
3) B	10) B	17) C
4) E	11) E	18) A
5) C	12) D	19) B
6) C	13) E	
7) D	14) E	

Task: two or more correct answers

21) A, E	27) C, E	33) A, B, E
22) A, C, D	28) A, B, C	34) A, D, E
23) A, C, E	29) A, B	35) B, E
24) A, B, C, E	30) A, B, E	36) B, E
25) C, D	31) B, E	
26) A, E	32) B, E	

3.5. Adrenoblockers and sympatholytics

Single-choice tests:

1. Tick the beta adrenoreceptor antagonist, whith partial beta–agonist activity:
    a) Propranolol
    b) Atenolol
    c) Metoprolol
    d) Pindolol
    e) Betaxolol
2. Which of the following drugs is a nonselective beta-blocker without intrinsic sympathomimetic or local anesthetic activity and used for the treatment of life-threatening ventricular arrhythmias?
    a) Propranolol
    b) Oxprenolol
    c) Nadolol
    d) Sotalol
    e) Atenolol
3. Which of the following drugs is a reversible nonselective alfa, beta antagonist?
    a) Labetalol
    b) Phentolamine
    c) Metoprolol
    d) Propranolol
    e) Prasosine
4. Propranolol is used in the treatment of the following diseases, EXCEPT**:**
    a) Chronic hypertension
    b) Angina pectoris
    c) Hyperthyroidism
    d) Migraine headache
    e) Bronchial asthma
5. Which of the following beta receptor antagonists is preferable in patients with asthma, diabetes or peripheral vascular diseases?
    a) Propranolol
    b) Metoprolol
    c) Nadolol
    d) Sotalol
    e) Timolol

6. Tick the indirect-acting adrenoreceptor blocking drug:
    a) Tolazoline
    b) Reserpine
    c) Carvedilol
    d) Prazosin
    e) Propranolol

7. Propranolol has all of the following cardiovascular effects, EXCEPT:
    a) It decreases cardiac work and oxygen demand
    b) It reduces peripheral blood flow
    c) It inhibits renin secretion
    d) It cause AV block
    e) It decreases the atrioventricular nodal refractory period

8. Tick the mechanism of action of propranolol:
    a) Stimulation of β1- adrenoreceptors
    b) Blockage of β 2-adrenoreceptors
    c) Stimulation of α1-adrenoreceptors
    d) Blockage of αβ adrenoreceptors
    e) Blockage of β1, β 2-adrenoreceptors

9. Tick the mechanism of action of metoprolol:
    a) Stimulation of β2-adrenoreceptors
    b) Blockage of β1-adrenoreceptors
    c) Blockage of αβ adrenoreceptors
    d) Blockage of β1, β 2-adrenoreceptors
    e) Stimulation of α1-adrenoreceptors

10. Which one of the following statements is not true?
    a) Propranolol decreases the adrenergic influence
    b) Metoprolol is a cardioselective adreoblocker drug
    c) Labetolol is αβ adrenoblocker drug
    d) Phentolamine causes tachycarda
    e) Prasosine is a cardioselective adrenoblocker drug

11. Which one of the following statements about α-adrenoblockers is false?
    a) Vasodilatation
    b) Bronchodilatation
    c) Facilitation of the heart irrigation

d) They cause reflex tachicardia
e) They cause reflex bradicardia

12. Subtype-selective alfa1 receptor antagonists such as tamsulosin, terazosin, alfusosin are efficacious in:
    a) Hyperthyroidism
    b) Cardiac arrhythmias
    c) Benign prostatic hyperplasia (BPH)
    d) Asthma
    e) Acute hypertension

13. Tick the reversible nonselective alfa-receptor antagonist, which is an ergot derivative:
    a) Ergotamine
    b) Prazosin
    c) Phenoxybenzamine
    d) Fenilephrine
    e) Carvedilol

14. Nonselective alfa-receptor antagonists are most useful in the treatment of:
    a) Asthma
    b) Cardiac arrhythmias
    c) Urinary retention
    d) Pheochromocytoma
    e) Chronic hypertension

15. Specify the level of action of sympatholitics:
    a) Blockage of adrenoreceptors
    b) Stimulation of adrenoreceptors
    c) Action at the presynaptic level
    d) Adrenaline disturbed
    e) Blocking of sympathetic ganglia

16. Tick the agent from sympatholitic group:
    a) Clonidine
    b) Hydralazine
    c) Diazoxide
    d) Propranolol
    e) Reserpine

17. Which of the following statements about sympatholytics is false?
    a) They affect noradrenaline synthesis
    b) They affect noradrenaline release
    c) They affect noradrenalne uptake.
    d) They bind covalently to the α-receptors and produce an irreversible effect
    e) They inhibit influx of Ca^{2+} through the presynaptic membrane and inhibit in this way mediators release

18. Indicate the adrenoreceptor antagonist drug, which is a rauwolfia alkaloid:
    a) Prazosin
    b) Propranolol
    c) Sotalol
    d) Reserpine
    e) Phentolamine

Multiple-choice tests:

19. Tick the alfa-1 adrenoreceptor antagonist, whith great selectivity for $alfa_{1a}$ subtype:
    a) Prazosin
    b) Tamsulosin
    c) Phenoxybenzamine
    d) Phentolamine
    e) Alfusosin

20. Propanolol:
    a) Can cause bronchospasm
    b) Has a high solubility
    c) Stabilizes cell membrane
    d) Has a partial agonist activity
    e) Can mask hypoglycaemia induced by insulin

21. The principal adverse effects of phentolamine are the following:
    a) Diarrhea
    b) Bradycardia
    c) Tachycardia
    d) Arrhythmias
    e) Myocardial ischemia

22. The characteristics of phentolamine include all of the following:
    a) Reduction in peripheral resistance
    b) Bradycardia
    c) Tachycardia
    d) Stimulation of muscarinic and histamine receptors
    e) Block alfa-adrenoreceptors

23. Beta-blocking induced chronic lowerering of blood pressure may be associated with theirs effects on:
    a) The heart
    b) The blood vessels
    c) The renin-angiotensin system
    d) Inhibition of norepinephrine release
    e) Inhibition of norepinephrine reuptake

24. Beta-blocking induced chronic lowering of blood pressure may be associated with theirs effects on:
    a) The heart
    b) The blood vessels
    c) The renin-angiotensin system
    d) Inhibition of norepinephrine release
    e) Inhibition of norepinephrine reuptake

25. The characteristics of beta-blocking agents are the following:
    a) They occupy beta receptors and competitively reduce receptor occupancy by catecholamines or other beta agonists
    b) They do not cause hypotension in individuals with normal blood pressure
    c) They induce depression and depleted stores of catecholamines
    d) They cause tachycardia
    e) They can cause blockade in the atrioventricular node

26. Beta-blocking induced chronically lowerering of blood pressure may be associated with theirs effects on:
    a) The heart
    b) The blood vessels
    c) The renin-angiotensin system
    d) Inhibition of norepinephrine release
    e) Inhibition of norepinephrine reuptake

27. Beta-receptor antagonists have all of the following cardiovascular effects, EXCEPT:
    a) Negative inotropic and chronotropic effects
    b) Acute effects of these drugs include a fall in peripheral resistance
    c) Vasoconstriction
    d) Direct vasodilation
    e) Reduction of the release of renin

28. When compared with phentolamine, prazosin has all of the following features:
    a) Irreversible blockade of alfa receptors
    b) Causes tachycardia more often
    c) Highly selective for $alfa_1$ receptors
    d) Relative absence of tachycardia
    e) Persistent block of $alfa_1$ receptors

29. The characteristics of alfa-receptor antagonists are the following:
    a) They cause a fall in peripheral resistance and blood pressure
    b) They cause epinephrine reversal (convert a pressor response to a depressor response)
    c) Bronchospasm
    d) Hypertension
    e) They may cause postural hypotension and reflex tachycardia

30. Which of the following drugs is a competitive antagonist at both alfa1 and alfa2 receptors?
    a) Prazosin
    b) Doxazosin
    c) Labetalol
    d) Phenoxybenzamine
    e) Phentolamine

31. Tick the β-adrenoblockers:
    a) Propranolol
    b) Validol
    c) Metoprolol
    d) Alopurinol
    e) Oxprenolol

32. Which of the following side-effects are characteristic for beta-antagonists:
    a) Reduced tear production
    b) Decreased corneal sensation
    c) Acute hypotension
    d) Impotence
    e) Rhinitis

33. The characteristics of reserpine are the following:
    a) It inhibits the uptake of norepinephrine into vesicles and MAO
    b) It decreases cardiac output, peripheral resistance and inhibits pressor reflexes
    c) It may cause a transient sympathomimetic effect
    d) It can be used as neuroleptic
    e) It depletes stores of catecholamines in the brain

Adrenoblockers and sympatholytics

Task: one correct answer

1) D	7) E	13) A
2) D	8) E	14) D
3) A	9) B	15) C
4) E	10) E	16) E
5) B	11) E	17) D
6) B	12) C	18) D

Task: two or more correct answers

19) B, E	24) A, B, C	29) A, B, E
20) A, B, C, E	25) A, B, E	30) D, E
21) A, D, E	26) A, B, C	31) A, C, E
22) A, C	27) A, C, E	32) A, B, D
23) B, C, D	28) C, D, E	33) A, B, D, E

4. Drugs controlling the functions of the cardiovascular system

4.1. Tonicardiac and cardiotonict drugs

Single-choice tests:

1. All of the following statements regarding cardiac glycosides are true, EXCEPT:
    a) Digoxin is a cardiac glycoside of medium duration of action
    b) Digoxin increases vagal tone
    c) Digoxin has a longer half-life than digitoxin
    d) Digoxin acts by inhibiting Na+/K+ ATPase
    e) Adoniside acts by inhibiting Na+/K+ ATPase

2. This drug inhibits the breakdown of cAMP in vascular smooth muscle:
    a) Digoxin
    b) Dobutamine
    c) Amrinone
    d) Dopamine
    e) Isoprenaline

3. This drug acts by inhibiting type III nucleotide phosphodiesterase:
    a) Amiodarone
    b) Milrinone
    c) Propanolol
    d) Enalapril
    e) Valsartan

4. This drug should probably not be administered to a patient with congestive heart failure because the drug may further reduce contractility; the drug should probably also not be prescribed to an asthmatic since the drug may increase bronchiolar smooth muscle tone.
    a) Digoxin
    b) Terbutaline
    c) Metoprolol
    d) Atropine

5. This drug reduces preload:
    a) Minoxidil
    b) Isosorbide dinitrate
    c) Hydralazine
    d) Phentolamine

6. Tick the diuretic used in CHF that is most likely to cause hypokalemia:
    a) Triamterene
    b) Amiloride
    c) Spironolactone
    d) Furosemide

7. Tick the Initial drug(s) for the management of mild to moderate heart failure:
    a) Parenteral inotropic drugs, e.g. dobutamine
    b) Hydralazine
    c) Furosemide
    d) Captopril
    e) Torasemide

8. Which of the following receptor(s) system(s) causes dopaminemediated renal vasodilation:
    a) Beta2 adrenergic receptors
    b) Beta1 adrenergic receptors
    c) Dopamine D1 and D2 postsynaptic receptors
    d) Muscarinic receptors
    e) Leukotriene receptors

9. Most important cardiac effect produced by digoxin relative to management of congestive heart failure:
    a) Increased rate
    b) Decreased AV conduction
    c) Peripheral vasodilation
    d) Shifted the force-velocity curve upward
    e) Increased diuresis

Multiple-choice tests:

10. Which of the following agents belong to cardiac glycosides?
    a) Digoxin
    b) Strophantin K
    c) Amrinone
    d) Digitoxin
    e) Adoniside

11. The non-glycoside positive inotropic drugs are:
    a) Digoxin
    b) Strophantin K

c) Dobutamine
d) Digitoxin
e) Amrinone

12. Choose the derivatives of the plant foxglove (digitalis):
    a) Digoxin
    b) Strophantin K
    c) Dobutamine
    d) Amrinone
    e) Digitoxin

13. All of the following statements regarding cardiac glycosides are true, EXCEPT:
    a) They inhibit Na^+/K^+-ATPase and thereby increase intracellular Ca^{2+} in myocardial cells
    b) They cause a decrease in vagal tone
    c) Children tolerate higher doses of digitalis than adults do
    d) The most frequent cause of digitalis intoxication is concurrent administration of diuretics that deplete K^+
    e) They increase vagal tone

14. Which of the following statements regarding cardiac glycosides are true:
    a) They inhibit the activity of the Na+/K+-ATPase
    b) They decrease intracellular concentrations of calcium in myocytes
    c) They increase vagal tone
    d) They have a very low therapeutic inde
    e) They increase the tone of SANS

15. The manifestations of glycoside intoxication are:
    a) Visual changes
    b) Ventricular tachyarrhythmias
    c) Gastrointestinal disturbances
    d) Pseudomembranous colitis
    e) Atrial tachyarrhythmias

16. The following drugs are used for treatment of digitalis-induced arrhythmias:
    a) Quinidine

b) Amiodarone
c) Lidocaine
d) Propanolol
e) Procainamide

17. Which of the following drugs are selective beta-1 agonists:
a) Digoxin
b) Dobutamine
c) Amrinone
d) Dopamine
e) Isoprenaline

Tonicardiac and cardiotonic drugs

Task: one correct answer

1) C
2) C
3) B
4) C
5) B
6) D
7) D
8) C
9) D

Task: two or more correct answers

10) A, B, D, E
11) C, E
12) A, E
13) B, C
14) A, C, D
15) A, B, C
16) B, C
17) B, E

4.2. Systemic vasodilators (antihypertensive drugs)

Single choice tests:

1. An elderly male patient has essential hypertension, congestive heart failure, and type I insulin-dependent diabetes. His congestive failure developed secondary to coronary vascular disease associated with hyperlipidemia. What antihypertensive drug(s) may be proper for this patient?
    a) Chlorothiazide
    b) Captopril
    c) Propranolol
    d) Metoprolol
    e) Hexamethonium

2. The antihypertensive drug LEAST likely to elevate serum lipids, is:
    a) Propranolol
    b) Metoprolol
    c) Hlorothiazide
    d) Diltiazem

3. Tick the mechanism of action of diltiazem:
    a) Phosphodiesterase inhibitor
    b) Blockade of calcium channels
    c) Alpha-1 receptor antagonists
    d) Beta-1 receptor antagonist

4. Antihypertensive action based on inhibition of norepinephrine release from adrenergic nerve endings is proper for:
    a) Propranolol
    b) Guanethidine
    c) Hexamethonium
    d) Phentolamine

5. Tick the mechanism of action of prazosin:
    a) Alpha-1 receptor blocker
    b) Beta receptor blocker
    c) Phosphodiesterase inhibitor
    d) Calcium channel blocker

6. Side effects of this antihypertensive agent includes tachycardia, angina, reversible lupus-like syndrome.
    a) Propranolol
    b) Hexamethonium

c) Hydralazine
d) Diazoxide

7. Vasoconstriction, aldosterone secretion, and renin release suppression occur upon activation of the renin-angiotensin-aldosterone system. How would captopril affect these responses?
    a) It blocks all three
    b) It blocks only vasoconstriction
    c) It blocks all except vasoconstriction
    d) No effect

8. Tick the antihypertensive drugs belonging to the same class:
    a) Doxazosin, prazosin, metoprolol
    b) Nifedipine, verapamil, diltiazem
    c) Clonidine, guanabenz, terazosin
    d) Lisinopril, fosinopril, guanadrel

9. Relatively common use of ganglionic blocking drugs is due to:
    a) Management of moderate hypertension
    b) Treatment of paralytic ileus
    c) Reduction of heart rate
    d) Hypertension associated with dissection of aortic aneurysm

10. Tick the principal mechanisms by which beta adrenergic receptor blockade decreases BP:
    a) Vasodilation- arteriolar
    b) Vasodilation - venular
    c) Reduced heart rate and reduced myocardial contractility
    d) Blockade of angiotensin II receptors
    e) Decreased central sympathetic outflow

Multiple-choice tests:

11. Tick the ganglionic blockers:
    a) Prazosin
    b) Hydralazine
    c) Hexamethonium
    d) Nicardipine
    e) Azamethonium

12. Which of the following block both alpha and beta receptors:
    a) Timolol
    b) Labetalol

c) Propranolol
d) Diazoxide
e) Carvedilol

13. The following drugs are used in hypertensive emergencies:
    a) Diltiazem
    b) Nitroprusside sodium
    c) Reserpine
    d) Phenylephrine
    e) Enalapril

14. Total peripheral resistance (TPR) is a determining factor for mean arterial pressure, i.e. Mean arterial pressure (MAP) = cardiac output total peripheral resistance (TPR). Tick the correct relationships between norepinephrine, minoxidil, and lisinopril and TPR.
    a) Minoxidil: TPR increases
    b) Fosinopril: TPR increases
    c) Norepinephrine: TPR increases
    d) Phenoxybenzamine: TPR increases
    e) Minoxidil: TPR decreases

15. Adverse effects associated with guanethidine are:
    a) Hypotension (symptomatic)
    b) Male sexual dysfunction
    c) Diarrhea
    d) Constipations
    e) Hypertension

16. Choose the mechanisms for reduction of blood pressure initially when thiazides are used:
    a) Reduced vascular resistance
    b) Reduction in extracellular volume
    c) Reduction in cardiac output

17. Adverse effects associated with autonomic ganglionic blockade are:
    a) Bladder dysfunction
    b) Xerostromia
    c) Blurred vision
    d) Paralytic ileus
    e) Diarrhea

18. Tick the potassium sparing diuretics:
    a) Bumetanide
    b) Chlorothiazide
    c) Amiloride
    d) Spironolactone
    e) Mannitol

19. Selective beta1-blockers are:
    a) Atenolol
    b) Propranolol
    c) Acebutolol
    d) Labetolol
    e) Timolol

Systemic vasodilators (antihypertensive drugs)

Task: one correct answer

1) B
2) D
3) B
4) B
5) A
6) C
7) A
8) B
9) D
10) C

Task: two or more correct answers

11) C, E
12) B, E
13) B, E
14) C, E
15) A, C
16) B, C
17) A, B, C, D
18) C, D
19) A, C

4.3. Vasoconstrictors and antihypotensive drugs

Simple-choice tests:

1. Choose the drug which increases cardiac output:
    a) Norepinephrine
    b) Methyldopa
    c) Phenylephrine
    d) Angiotensinamide

2. Choose the synthetic vasoconstrictor having an adrenomimic effect:
    a) Norepinephrine
    b) Epinephrine
    c) Phenylephrine
    d) Angiotensinamide

3. Tick the vasoconstrictor of endogenous origin:
    a) Ephedrine
    b) Phenylephrine
    c) Xylomethazoline
    d) Angiotensinamide

4. Which type of receptors can be activated by angiotensinamide:
    a) Adrenergic receptors
    b) Cholinergic receptors
    c) Dopaminergic receptors
    d) Angiotensin receptors

5. General unwanted effects of vasoconstrictors are:
    a) Increase of arterial pressure
    b) Increase of cardiac output
    c) Decrease of peripheral blood flow
    d) Increase of blood volume

6. To increase blood pressure in case of low cardiac output the following agents must be used:
    a) Ganglioblockers
    b) Vasoconstrictors
    c) Positive inotropic drugs
    d) Diuretics

7. Dopamine at low doses influences mainly:
    a) Alfa-adrenoreceptors (leads to peripheral vasoconstriction)
    b) Dopamine receptors (leads to vasodilation of renal and mesenterial vessels)
    c) Beta-1 adrenoreceptors (leads to enhanced cardiac output)
    d) All of the above

8. Dopamine at medium doses influences mainly:
    a) Alfa-adrenoreceptors (leads to peripheral vasoconstriction)
    b) Dopamine receptors (leads to vasodilation of renal and mesenterial vessels)
    c) Beta-1 adrenoreceptors (leads to enhanced cardiac output)
    d) All of the above

9. Dopamine in high doses influences mainly the:
    a) Alfa-adrenoreceptors (leads to peripheral vasoconstriction)
    b) Dopamine's receptors (leads to vasodilation of renal and mesenterial vessels)
    c) Beta-1 adrenoreceptors (leads to enhancing of cardiac output)
    d) All of the above

10. Choose the group of drugs for the treatment of shock with hypovolaemia (reduced circulating blood volume):
    a) Positive inotropic drugs
    b) Vasoconstrictors
    c) Plasma expanders
    d) Analeptics

11. Choose the group of drugs for the treatment of chronic hypotension:
    a) Positive inotropic drugs
    b) Vasoconstrictors
    c) Plasma expanders
    d) Analeptics and general tonisants

Multiple-choice tests:

12. Choose the positive inotropic drug of glycoside structure:
    a) Dopamine
    b) Digoxin
    c) Dobutamine
    d) Adrenalin
    e) Strophantine

13. Choose the positive inotropic drug of non glycoside structure:
    a) Digitoxin
    b) Digoxin
    c) Dobutamine
    d) Strophanthin
    e) Milrinone

Vasoconstrictors and antihypotensive drugs

Task: one correct answer

1) A
2) C
3) D
4) D
5) A
6) C
7) B
8) C
9) A
10) C
11) D

Task: two or more correct answers

12) B, E
13) C, E

4.4. Antiarrhythmic drugs

Single choice tests:

1. Corneal microdeposits, blurred vision, and photophobia are proper for:
    a) Adenosine
    b) Encainide
    c) Amiodarone
    d) Diltiazem

2. Lidocaine is used intravenously in case of:
    a) Supraventricular tachycardia
    b) Angina
    c) Congestive heart failure
    d) Ventricular arrhythmias

3. Tick the antiarrhythmic drug with antimalarial and antipyretic effects:
    a) Tocainide
    b) Procainamide
    c) Metoprolol
    d) Quinidine gluconate
    e) Lidocaine

4. Tick the pharmacokinetic characteristics of quinidine gluconate:
    a) Only slightly bound to plasma albumin
    b) Typically administered by IM injection
    c) Commonly administered by IV injection
    d) Rapid oral absorption

5. In management of atrial fibrillation the purpose of administration of digitalis before quinidine gluconate is:
    a) Digitalis improves the inotropic state of the heart
    b) Digitalis insures adequate renal excretion of quinidine
    c) Digitalis enhances vagal tone and reduces AV nodal transmission
    d) Digitalis blocks muscarinic receptors

6. Which of the following antiarrhythmic drugs administered for a long period causes a lupus-like syndrome:
    a) Quinidine gluconate
    b) Hydralazine
    c) Procainamide

d) Verapamil
e) Adenosine

7. Which of the following is not a first-line antiarrhythmic agent because of its negative inotropic effect:
    a) Procainamide
    b) Disopyramide
    c) Quinidine gluconate
    d) Lidocaine
    e) Esmolol

Multiple-choice tests:

8. Choose class I antiarrhythmic drugs:
    a) Quinidine gluconate
    b) Lidocaine
    c) Encainide
    d) Verapamil
    e) Adenosine

9. Which of the following agents may be effective in terminating paroxysmal supraventricular tachycardia (PSVT)?
    a) Adenosine
    b) Methoxamine
    c) Propranolol
    d) Atropine
    e) Lidocaine

10. Tick the side effects of procainamideside:
    a) Nausea
    b) Hypotension
    c) Drug-induced lupus
    d) Tachycardia
    e) Hypertension

11. Tick the antiarrhythmic drugs classified as sodium channel blockers:
    a) Quinidine gluconate
    b) Procainamide
    c) Lidocaine
    d) Tocainide
    e) Adenosine

12. Which of the following are proper for quinidine gluconate :
    a) Activated sodium channel blockade
    b) Depression of conduction velocity
    c) Reduced excitability
    d) Inactivated sodium channel blockade
    e) Activated calcim channel blockade

13. The major clinical use of quinidine gluconate is:
    a) Atrial fibrillation
    b) Atrial flutter
    c) Ventricular tachycardia
    d) AV block

Antiarrhythmic drugs

Task: one correct answer

1) C
2) D
3) D
4) D
5) C
6) C
7) B

Task: two or more correct answers

8) A, B, C
9) A, B, C
10) A, B, C
11) A, B, C, D
12) A, B, C
13) A, B

4.5. Drugs for improvement of myocardial circulation and metabolism (antianginal drugs)

Single-choice tests:

1. Tick the agents which may promote coronary vasodilation:
    a) Beta-blockers
    b) Calcium channel blockers
    c) Both
    d) Neither

2. Organic nitrate/nitrates following denitration to produce NO, cause the following effects on second messenger systems:
    a) Decrease cGMP
    b) Activation of guanylate cyclase
    c) Both
    d) Neither

3. The drug preferred for acute management of angina is:
    a) Nitroprusside sodium
    b) Hydralazine
    c) Sublingual nitroglycerin
    d) Propranolol
    e) Minoxidil

4. Tick the drug group useful in angina that increases myocardial oxygen delivery and does not decrease myocardial oxygen requirement:
    a) Beta-adrenoceptor-blocking drugs (Atenolol, Metoprolol)
    b) Myotropic coronary dilators (Dipyridamole)
    c) Calcium channel blockers (Nifedipine, Nimodipine)
    d) Potassium channel openers (Minoxidil)

5. Duration of nitroglycerin action (sublingual) is:
    a) 10-30 minutes
    b) 6-8 hours
    c) 3-5 minutes
    d) 1.5-2 hours

6. Which of the following antianginal agents is a myotropic coronary dilator:
    a) Dipyridamole
    b) Validol
    c) Atenolol

d) Alinidine
e) Nitroglycerine

7. Which of the following statements concerning beta-adrenoceptor-blocking drugs is true:
    a) These agents decrease transmembrane calcium current associated with a long-lasting relaxation in smooth muscles and with the reduction of contractility in the cardiac muscle
    b) These agents have a moderate reflex and vascular dilative action caused by the stimulation of sensitive nerve endings
    c) Beneficial effects of these agents are related primarily to their hemodynamic effects –decreased heart rate, blood pressure, and contractility–which decrease myocardial oxygen requirements at rest and during exercise
    d) These agents increase the permeability of K channels, probably ATP-dependent K channels, that results in stabilizing the membrane potential of excitable cells near the resting potential

8. Which of the following antianginal agents refers to reflex coronary dilators:
    a) Dipyridamole
    b) Validol
    c) Atenolol
    d) Alinidine
    e) Nitroglycerine

Multiple-choice tests:

9. Tick the side effects associated with nitrates:
    a) Bradycardia
    b) Hypotension
    c) Headache
    d) Hypertension
    e) Diarrhea

10. Pharmacological management of Prinzmetal angina (a variant of vasospastic angina) present in a 25 year old female includes:
    a) Diltiazem
    b) Verapamil
    c) Propranolol
    d) Ivabradine
    e) Labetolol

11. Tick the drugs clinically used for the management of angina:
    a) Atenolol
    b) Propranolol l
    c) Nadolol
    d) Metoprolol
    e) Cholecalcipherol

12. Which of the following drug groups, used in angina, decrease both myocardial oxygen requirement and increase of myocardial oxygen delivery:
    a) Nitroglycerin
    b) Isosorbide dinitrate)
    c) Atenolol
    d) Metoprolol
    e) Minoxidil

13. Which of the following statements concerning nitrate mechanism of action is true?
    a) Therapeutically active agents in this group are capable of releasing nitric oxide (NO) into vascular smooth muscle target tissues
    b) Nitric oxide (NO) is an effective activator of soluble guanylyl cyclase and probably acts mainly through this mechanism
    c) Nitrates useful in angina decrease myocardial oxygen requirement and increase myocardial oxygen delivery
    d) Nitrates useful in angina decrease only myocardial oxygen requirement
    e) Nitrates useful in angina increase only myocardial oxygen delivery

14. The following statements concerning mechanism of nitrate beneficial clinical effect are true, EXCEPT:
    a) Decreased myocardial oxygen requirement
    b) Relief of coronary artery spasm
    c) Improved perfusion to ischemic myocardium
    d) Increased myocardial oxygen consumption
    e) Decreased myocardial oxygen delivery

15. Side effect of nitrates and nitrite drugs are the following, EXCEPT:
    a) Orthostatic hypotension, tachycardia
    b) GI disturbance
    c) Throbbing headache
    d) Tolerance

16. The following statements concerning antianginal mechanism of calcium channel blockers action are true, EXCEPT:
    a) Therapeutically active agents in this group are capable of releasing nitric oxide (NO) in vascular smooth muscle target tissues
    b) Calcium channel blockers bind to L-type calcium channel sites
    c) Calcium channel blockers useful in angina decrease myocardial oxygen requirement and increase myocardial oxygen delivery
    d) Calcium channel blockers decrease transmembrane calcium current associated with a long-lasting relaxation in smooth muscles and with reduction in contractility in the cardiac muscle
    e) Calcium channel blockers bind to T-type calcium channel sites

17. Which of the following antianginal agents are calcium channel blockers?
    a) Nitroglycerin
    b) Dipyridamole
    c) Minoxidil
    d) Amlodipine
    e) Verapamil

18. Calcium channel blockers are used mainly in:
    a) Angina pectoris
    b) Hypertension
    c) Supraventricular tachyarrhythmias
    d) A-V block
    e) Hypotension

19. Which of the following antianginal agents is a beta-adrenoceptor-blocking drug:
    a) Dipyridamole
    b) Validol

c) Atenolol
d) Alinidine
e) Propranolol

20. The following agents are cardioselective beta1-adrenoceptor-blocking drugs labeled for the use in angina, EXCEPT:
    a) Metoprolol
    b) Talinolol
    c) Atenolol
    d) Propranolol
    e) Nadolol

21. Which of the following antianginal agents is a specific bradycardic drug:
    a) Dipyridamole
    b) Validol
    c) Atenolol
    d) Alinidine
    e) Falipamil

Drugs for improvement of myocardial circulation and metabolism (antianginal drugs)

Task: one correct answer

1) B
2) B
3) C
4) B
5) A
6) A
7) C
8) B

Task: two or more correct answers

9) B, C
10) A, B
11) A, B, C, D
12) A, B, E
13) A, B, C
14) D, E
15) A, C, D
16) A, E
17) D, E
18) A, B, C
19) C, E
20) D, E
21) D, E

4.6. Cerebral and peripheral vasodilators

Single-choice tests:

1. Choose the drug influencing the blood flow which is related to antiplatelet agents:
    a) Heparin
    b) Acetylsalicylic acid
    c) Pyracetam
    d) Tanakan

2. Which of the following drugs is related to anticoagulants and may be useful in disorders of cerebral circulation?
    a) Acetylsalicylic acid
    b) Cinnarizine
    c) Nicergoline
    d) Heparin

3. Choose the drug, a derivative of Ergot:
    a) Nicergoline
    b) Warfarin
    c) Cinnarizine
    d) Vinpocetine
    e) Pyracetam

4. What is the main action of GABA derivatives in disorders of brain circulation?
    a) Decrease of vessel permeability
    b) Stimulation of metabolic processes in neurons
    c) Brain vessel constriction
    d) Intracranial pressure increase

5. Choose the appropriate mechanism of vinpocetine action:
    a) It dilates cerebral vessels and improves blood supply
    b) It constricts cerebral vessels and decreases blood supply
    c) It stimulates GABA-receptors and thus increases cerebral metabolic processes
    d) It constricts peripheral vessels and increases blood pressure

6. Antiaggregants are used in disorders of brain circulation for:
    a) Stimulation of metabolic processes in neurons
    b) Dilation of cerebral vessels

c) Improvement of the microcirculation in cerebral tissue
d) All the answers

7. The following Ergot derivative is used for treatment of acute migraine attack:
    a) Paracetamol
    b) Sumatriptan
    c) Ergotamine
    d) Metoclopramide
    e) Methylergometrine

8. The derivative of lysergic acid for migraine attack prevention is:
    a) Metoclopramide
    b) Methysergide
    c) Sumatriptan
    d) Ergotamine
    e) Paracetamol

Multiple-choice tests:

9. Tick the groups of drugs influencing the cerebral flow:
    a) Ca^{2+}-channel blockers
    b) Derivatives of GABA
    c) Derivatives of Vinca minor plant
    d) K^{+}-channel blockers
    e) Aminoglycosides

10. Tick the drugs which are Ca^{2+}-channel blockers influencing the cerebral blood flow:
    a) Aminalon
    b) Nimodipine
    c) Cinnarizine
    d) Heparin
    e) Vinpocetine

11. Tick the drugs, GABA derivatives, influencing the blood flow in the brain:
    a) Aminalon
    b) Picamilon
    c) Nimodipine

d) Heparin
e) Vinpocetine

12. Tick the drugs, Vinca minor alcaloids:
    a) Nicergoline
    b) Warfarin
    c) Cinnarizine
    d) Vinpocetine
    e) Vincamine

13. Tick the nootropic agent useful in disorders of brain circulation:
    a) Acetylsalicylic acid
    b) Pyracetam
    c) Warfarin
    d) Aminalon
    e) Picamilon

14. Which of the following indol derivatives are used for treatment of acute migraine attack:
    a) Paracetamol
    b) Sumatriptan
    c) Ergotamine
    d) Metoclopramide
    e) Zolmitriptan

Cerebral and peripheral vasodilators

Task: one correct answer

1) B	5) A
2) D	6) C
3) A	7) C
4) B	8) B

Task: two or more correct answers

9) A, B, C	12) D, E
10)B, C	13) B, D, E
11) A, B	14) B, E

5. Drugs acting on the functions of respiratory system

Single-choice tests:

1. The mechanism of Cytiton action is:
    a) Direct activation of the respiratory center
    b) The reflex mechanism
    c) The mixed mechanism
    d) None of the answers

2. Tick the drug belonging to antitussives of narcotic-type action:
    a) Glaucine hydrochloride
    b) Aethylmorphine hydrochloride
    c) Noscapine
    d) Oxeladine
    e) Pentoxiverine

3. Indicate the expectorant with the reflex mechanism:
    a) Sodium benzoate
    b) Derivatives of Ipecacucnha and Thermopsis
    c) Trypsin
    d) Ambroxol

4. Which of the following drugs is proteolytic enzyme?
    a) Potassium iodide
    b) Desoxiribonuclease
    c) Carbocysteine
    d) Acetylcysteine

5. Choose the drug belonging to non-selective beta2-adrenomimics:
    a) Salbutamol
    b) Isoprenaline
    c) Salmeterol
    d) Terbutaline
    e) Hexoprenaline

6. Tick the side-effect characteristic of non selective beta2-adrenomimics:
    a) Depression of the breathing centre
    b) Tachycardia
    c) Peripheral vasoconstriction
    d) Dry mouth

7. Which of the following M-cholinoblocking agents is used especially as an anti-asthmatic?
    a) Atropine
    b) Ipratropium
    c) Platiphylline
    d) Metacin
    e) Pirenzepine

8. Choose the drug which is a 5-lipoxygenase inhibitor:
    a) Budesonide
    b) Sodium cromoglycate
    c) Zileuton
    d) Beclometazone
    e) Zafirlucast

Multiple-choice tests:

9. Which of the following drugs activate directly the respiratory center:
    a) Bemegride
    b) Caffeine
    c) Aethymizole
    d) Cytiton

10. Which of these groups and drugs are used for asthma treatment?
    a) Methylxanthines
    b) M-cholinoblocking agents
    c) Beta -stimulants
    d) Salbutamol
    e) Pirenzepine

11. Tick the bronchodilator drug related to xanthines:
    a) Atropine
    b) Orciprenaline
    c) Adrenaline
    d) Theophylline
    e) Aminophylline

12. The mechanisms of methylxanthines action are:
    a) Inhibition of the enzyme phosphodiesterase
    b) Beta2 -adrenoreceptor stimulation
    c) Inhibition of the production of inflammatory cytokines
    d) Inhibition of M-cholinoreceptors
    e) Inhibition of some purinergic receptors

13. Tick the side effects of theophylline:
    a) Bradycardia
    b) Increased myocardial demands for oxygen
    c) Depression of respiratory centre
    d) Elevation of arterial blood pressure
    e) Convulsions

14. Which of the following drugs are inhaled glucocorticoids:
    a) Triamcinolone
    b) Beclometazone
    c) Sodium cromoglycate
    d) Budesonide
    e) Ketotifen

15. Choose the drugs belonging to membranestabilizing agents:
    a) Zileuton
    b) Sodium cromoglycate
    c) Zafirlucast
    d) Montelucast
    e) Ketotifen

16. Tick the drusg which are leucotriene receptor antagonists:
    a) Sodium cromoglycate
    b) Zafirlucast
    c) Zileuton
    d) Triamcinolone
    e) Montelucast

Drugs acting on thefunctions of respiratory system

Task: one correct answer

1) B
2) B
3) B
4) B
5) B
6) B
7) B
8) C

Task: two or more correct answers

9) A, B, C
10) A, B, C, D
11) D, E
12) A, E
13) B, E
14) A, B, D
15) B, E
16) B, E

6. Drugs acting on the functions of gastrointestinal tract

Single-choice tests:

1. Choose the main approach to peptic ulcer treatment:
    a) Neutralization of gastric acid
    b) Eradication of Helicobacter pylori
    c) Inhibition of gastric acid secretion
    d) All the answers

2. Which of the following drugs may cause reversible gynecomastia?
    a) Omeprazole
    b) Pirenzepine
    c) Cimetidine
    d) Sucralfate
    e) Pirenzepine

3. Choose the drug forming a physical barrier to HCL and pepsin:
    a) Ranitidine
    b) Sucralfate
    c) Omeprazole
    d) Pirenzepine

4. Which of the following drugs is an analog of prostaglandin E1?
    a) Misoprostole
    b) De-nol
    c) Sucralfate
    d) Omeprazole

5. Choose the drug stimulating the protective function of the mucous barrier and stability of the mucous membrane against damaging factors:
    a) De-nol
    b) Sucralfate
    c) Misoprostol
    d) Omeprazole

6. Most of the following drugs are antacids EXCEPT:
    a) Misoprostol
    b) Maalox
    c) Mylanta
    d) Almage

7. Tick the drug that causes metabolic alkalosis:
    a) Sodium bicarbonate
    b) Cimetidine
    c) Pepto-Bismol
    d) Carbenoxolone
    e) Acetazolamide

8. Choose the emetic drug of central action:
    a) Ipecacuanha derivatives
    b) Promethazine
    c) Tropisetron
    d) Apomorphine hydrochloride
    e) Tiethylperazine

9. Tick the antiemetic agent which is related to neuroleptics:
    a) Metoclopramide
    b) Nabilone
    c) Tropisetron
    d) Prochlorperazine
    e) Apomorphine hydrochloride

10. Tick the drug which inhibits peristalsis:
    a) Castor oil
    b) Bisacodyl
    c) Loperamide
    d) Sorbitol
    e) Atropine

Multiple-choice tests:

11. Gastric acid secretion is under the control of the following agents:
    a) Histamine
    b) Acetylcholine
    c) Serotonin
    d) Gastrin
    e) Somatostatine

12. Tick the drugs belonging to proton pump inhibitors:
    a) Pirenzepine
    b) Ranitidine
    c) Omeprazole

d) Trimethaphan
e) Pantoprazole

13. Which of the following agents intensify the secretion of gastric glands:
    a) Pepsin
    b) Gastrin
    c) Histamine
    d) Somatostatin
    e) Prostaglandin E

14. Which of the following drugs are agents of substitution (replaceme-nt) therapy?
    a) Gastrin
    b) Diluted hydrochloric acid
    c) Hystamine
    d) Carbonate mineral waters
    e) Pepsidyl

15. Choose the drugs which are a H2-receptor antagonist:
    a) Omeprazole
    b) Pirenzepine
    c) Carbenoxolone
    d) Ranitidine
    e) Famotidine

16. Which of the following drugs are proton pump inhibitors:
    a) Pantoprozole
    b) Omeprazole
    c) Famotidine
    d) Rabeprazole
    e) Fluconazol

17. Tick the drugs belonging to M1-cholinoblockers:
    a) Cimetidine
    b) Ranitidine
    c) Pirenzepine
    d) Omeprazole
    e) Telenzepine

18. Choose the drugs which cause constipation:
    a) Sodium bicarbonate
    b) Aluminium hydroxide

c) Calcium carbonate
d) Magnesium oxide
e) Atropine

19. Which of the following drugs stimulate appetite:
    a) Vitamins
    b) Bitters
    c) Amfepramone
    d) Insulin
    e) Carnitine

20. Which of the following drugs intensify gastrointestinal motility:
    a) Papaverine
    b) Metoclopramide
    c) Domperidone
    d) Cisapride
    e) Neostygmine

21. Choose the mechanisms of metoclopramide antiemetic action:
    a) H1 and H2-receptor blocking effect
    b) M-cholinoreceptor stimulating effect
    c) D2-dopamine receptor blocking effect
    d) 5-HT3-serotonin receptor blocking effect
    e) M-cholinoblocking effect

22. Choose the emetic agents having a reflex action:
    a) Ipecacuanha derivatives
    b) Apomorphine hydroclorid
    c) Chlorpromazine
    d) Metoclopramide
    e) Cuprum sulphate

23. Which of the following drugs are antiemetics:
    a) Metoclopramide
    b) Ondansetron
    c) Chlorpromazine
    d) Apomorphine hydrochloride
    e) Cuprum sulphate

Drugs acting on the functins of gastrointestinal tract

Task: one correct answer

1) D
2) C
3) B
4) A
5) C
6) A
7) A
8) D
9) D
10) C

Task: two or more correct answers

11) A, B, D, E
12) C, E
13) A, B, C
14) B, E
15) D, E
16) A, B, D
17) C, E
18) B, E
19) A, B, D, E
20) B, C, D, E
21) C, D
22) A, E
23) A, B, C

7. Metabolic profile drugs

7.1. Hypothalamic, Pituitary Hormones, Thyroid and Antithyroid drugs

Single-choice tests:

1. Tick the endocrine drug which is a peptide derivative:
    a) Oxitocin
    b) Prednisolone
    c) Nandrolone
    d) Progesterone
    e) Dexamethasone

2. The indication for vasopressin is the following:
    a) Diabetes mellitus
    b) Hypertension
    c) Pituitary diabetes insipidus
    d) Incompleted abortion
    e) Acromegaly

3. Which of the following organs is a target for prolactin?
    a) Liver
    b) Adrenal cortex
    c) Thyroid
    d) Mammary gland
    e) Pancreas

4. Which of the following hormones is produced by the thyroid gland?
    a) Thyroid-stimulating hormone
    b) Thyrotropin-releasing hormone
    c) Triiodothyronine
    d) Thyroglobulin
    e) Parathormone

5. The rate of secretion of thyrotropin is controlled by:
    a) The amount of iodine in the thyroid gland
    b) The amount of thyroid hormones in the thyroid gland
    c) The concentration of thyroid hormones in blood
    d) The concentration of catecholamines in blood
    e) The concentration of cortisol in blood

6. Which of the following drugs may be used in diabetes insipidus?
    a) Ergometrine
    b) Oxytocin
    c) Vasopressin
    d) Methylergometrine
    e) Quinine

7. Hormones are:
    a) Products of endocrine gland secretion
    b) Mediators of inflammatory process
    c) By-products of tissue metabolism
    d) Products of exocrine gland secretion
    e) Products of arachydonic acid cascade

8. Vasopressin possesses the following:
    a) Antidiuretic property
    b) Vasodilatation property
    c) Release of thyroid hormone into the plasma
    d) Diuretic property
    e) Release of a adrenal hormone into the plasma

9. Which of the following hormones is produced by the thyroid gland?
    a) Thyroxine
    b) Thyroid-stimulating hormone
    c) Thyrotrophin-releasing hormone
    d) Thyroglobulin

10. Thyrotrophin stimulates the following processes:
    a) Concentration of iodine by thyroid follicles
    b) Iodination of thyroglobulin
    c) Release of thyroxine and triidothyronine
    d) Deiodination of thyroid hormones
    e) Release of calcitonin

11. Thyroid hormones produce various pharmacological effects. Tick the wrong statement.
    a) Decline of the basal metabolic rate in the body
    b) Increase in the rate and force of contraction of the heart
    c) Increase cholestrol blood level
    d) Increase in the heat production
    e) Decrease of body mass

12. Iodide preparations can be used in the following situations, EXCEPT:
    a) Thyroid disorders
    b) Granulomatous lesions e.g. Syphilis
    c) As an antiseptic
    d) Iodism
    e) Locally, in fungal diseases

Multiple-choice tests:

13. With regard to thyroxine:
    a) About 90% is protein -bound
    b) It binds predominantly to albumin
    c) It is important for skeletal growth
    d) It increases the sensitivity of receptors to catecholamines
    e) It increases oxygen consumption

14. The posterior pitutary secrets:
    a) Vasopressin
    b) Oxytocin
    c) Growth hormone
    d) Methylergometrine
    e) Insulin

15. Oxytocin produces the following effects:
    a) It causes contraction of the uterus
    b) It assists the progress of spermatozoa into the uterine cavity
    c) It brings about milk ejection from the lactating mammary gland
    d) It causes relaxation of the uterus
    e) It has no effect on milk ejection.

16. Synthesis and release of thyroid hormones are controlled by:
    a) Anterior pituitary alone
    b) Hypothalamus alone
    c) Blood levels of thyroid hormones alone
    d) Posterior pituitary alone
    e) Blood levels of cortisole level

17. Currently used antithyroid drugs include the following:
    a) Propylthiouracil
    b) Iodine at high dosage
    c) Methimazole

d) Thyrotrophin-releasing hormon
e) Thyroglobulin

18. Indications for thyroid hormones are following:
    a) Cretinism
    b) Myxoedema
    c) Hashimoto's disease
    d) Treatment of simple obesity
    e) Diabetus insipidus

19. Carbimazole:
    a) Decreases thyroid hormone synthesis
    b) Inhibits peripheral conversion of T4 in T3
    c) Causes neutropenia
    d) Should be stopped if it causes rashes
    e) Decreases TSH production

Hypothalamic, Pituitary Hormones, Thyroid and Antithyroid drugs

Task: one correct answer

1) A
2) C
3) D
4) C
5) C
6) C
7) A
8) A
9) A
10) C
11) A
12) D

Task: two or more correct answers

13) C, D, E
14) A, B
15) A, B, C
16) A, B, C
17) A, B, C
18) A, B, C
19) A, C

7.2. Pancreatic Hormones and Antidiabetic drugs

Single-choice tests:

1. Insulin is a polypeptide hence:
    a) It is resistant to destruction by gastric juice
    b) It is destroyed by gastric juice
    c) It is not a polypeptide
    d) It is metabolized immediately by cellular enzymes
    e) It is used in diabetes mellitus

2. Which of the following is true for glucagon?
    a) It stimulates gluconeogenesis in the liver
    b) It stimulates the secretion of insulin by beta cells
    c) It inhibits glucose utilization by skeletal muscles
    d) It inhibits the uptake of aminoacids by cells.
    e) It stimulates the secretion of calcitonine by beta cells

3. Alpha-glucosidase inhibitors act by:
    a) Diminishing insulin resistance by increasing glucose uptake and metabolism in muscle and adipose tissues
    b) Competitive inhibiting of intestinal alpha-ghucosidases and modulating the postprandial digestion and absorption of starch and disaccharides
    c) Reducing the absorption of carbohydrate from the gut
    d) Stimulating the beta islet cells of pancreas to produce insulin
    e) Replacement therapy

4. Insulin cannot be administered by:
    a) Oral route
    b) Intravenous route
    c) Subcutaneous route
    d) Intramuscular route.
    e) Artificial pancreas

5. Choose the pair of hormones that have agonistic effects on blood sugar levels:
    a) Calcitonin and PTH
    b) Adrenalin and Glucagon
    c) Glucagon and Glucose
    d) ADH and Aldosterone

Multiple-choice tests

6. Biguanides are used in the following conditions:
    a) As a supplement to sulphonylurea, when it is insufficient to give good results
    b) In type I diabetes mellitus
    c) To reduce insulin requirements
    d) In case of hyperglycemic shock
    e) In over weight diabetics

7. Metformin characteristics are:
    a) It is a biguanide
    b) It can cause lactic acidosis
    c) It causes anorexia and weight loss
    d) It causes hypoglycaemia in non-diabetic patients
    e) It is contraindicated in renal failure

Pancreatic Hormones and Antidiabetic drugs

Task: one correct answer

1) B
2) A
3) B
4) A
5) B

Task: two or more correct answers

6) A, C, E
7) A, B, C, E

7.3. Gonadal Hormones and their inhibitors

Single-choice tests:

1. Tick the mechanism of contraception based on preparations, which contain estrogen and gestagen:
    a) Spermatocyte action
    b) Annihilation of spermatozoic activities
    c) Inhibition of follicle development and implantation disturbances of the fertilized ovum..
    d) Cervical liquefaction
    e) Contribution to the proliferation of uterine mucosa

Multiple-choice tests

2. Tick the testosterone effects:
    a) Growth of genitals in a boy
    b) Muscular development
    c) Decrease of erythropoietin secretion
    d) Behavioral changes in men
    e) Growth of facial, pubic and axillary hairs

3. Tick the mechanism of action of oral contraceptives:
    a) Inhibition of follicular development and ovulation
    b) Thickening of cervical mucus
    c) Inhibition of implantation of blastocyst in the endometrium
    d) Indirect inhibition of spermatogenesis
    e) Activation of follicular development and ovulation

Gonadal Hormonesand their inhibitors

Task: one correct answer

1) C

Task: two or more correct answers

2) A, B, D, E

3) A, B, C

7.4. Glucocorticoids, Steroidal and Nonsteroidal Anti-Inflammatory Drugs

Single-choice tests:

1. In which of the listed below diseases, glucocorticosteroids are contra-indicated?
    a) Herpetic keratits
    b) Status asthmaticus
    c) Malignant lymphoma
    d) Rheumatoid arthritis
    e) Chronic hepatits

2. Glucocorticoids are hormonal steroids:
    a) Having an important effect on intermediary metabolism, cardi-ovascular function, growth, and immunity
    b) Having principally salt-retaining activity
    c) Having androgenic or estrogenic activity
    d) Having thyroid stimulating activity
    e) All of the above

3. Which of the following glucocorticoids is an intermediate-acting drug?
    a) Cortisone
    b) Triamcinolone
    c) Butamethasone
    d) Dexamethasone
    e) All of the above

4. Which of the following glucocorticoids is a short- to medium-acting drug?
    a) Prednisolon
    b) Dexamethasone
    c) Triamcinolone
    d) Cortisone
    e) All of the above

5. Which of the following glucocorticoids have one fluorine atom in its chemical structure?
    a) Prednisolon
    b) Fluocinolone
    c) Triamcinolone
    d) Cortisone
    e) All of the above

Which of the following NSAIDs is a selective COX-2 inhibitor?

a) Piroxicam
b) Indomethacin
c) Celecoxib
d) Diclofenac
e) Acetylsalicylic acid

6. Immunosuppressive effect of glucocorticoids is caused by:
    a) Reduction of concentration of lymphocytes (T-and B-cells) and inhibition of function of tissue macrophages and other antigen-presenting cells
    b) Suppression of cyclooxygenase II expression which results in reduction of the amount of an enzyme available to produce prostoglandins
    c) Activation of phospholipase A2 and reduction of prostaglandin and leukotriene synthesis
    d) Activation of cyclooxygenase II expression
    e) All of the above

7. Which of the following glucocorticoids is a long-acting drug?
    a) Prednisolon
    b) Dexamethasone
    c) Triamcinolone
    d) Cortisone
    e) All of the above

8. Serious side effects of glucocorticoids include the following, EXCEPT:
    a) Acute peptic ulcers
    b) Iatrogenic Cushing's syndrome (rounding, puffiness, fat deposition and plethora alter the appearance and, as a resul, the so called „moon face'' develops)
    c) Salicylism (vomiting, tinnitus, decreased hearing, and vertigo)
    d) Hypomania or acute psychosis
    e) High arterial pressure

9. Which of the following statements concerning the anti-inflammatory effect of NSAIDs are TRUE?
    a) The anti-inflammatory effect of NSAIDs results from inhibition of cyclooxygenase

b) The anti-inflammatory effect of NSAIDs results from inhibition of phospholipase A2 and reduction of prostaglandin and leukotriene synthesis
c) The anti-inflammatory effect of NSAIDs results from induction of cyclooxygenase II expression which results in reduction of the amount of the enzyme available to produce prostoglandins
d) The anti -inflammatory effect of NSAIDs results from inhibition of leucotriens
e) All of the above

10. Serious side effects of glucocorticoids include the following:
a) Adrenal suppression
b) Insomnia, behavioral changes (primarily hypomania)
c) Iatrogenic Cushing's syndrome (rounding, puffiness, fat deposition and plethora alter the appearance and, as a resul, the so called „moon face'' develops)
d) Type II diabetus mellitus
e) All of the above

11. Which of the following NSAIDs is a propionic acid derivative?
a) Ibuprofen
b) Indomethacin
c) Metamizole (Analgin)
d) Diclofenac
e) Piroxicam

12. Which of the following NSAIDs is an indol derivative?
a) Ibuprofen
b) Indomethacin
c) Meclofenamic acid
d) Diclofenac
e) Acetylsalicylic acid

13. Which of the following NSAIDs is a fenamate derivative?
a) Phenylbutazone
b) Indomethacin
c) Meclofenamic acid
d) Diclofenac
e) Piroxicam

14. Which of the following NSAIDs is a nonselective COX inhibitor?
    a) Piroxicam
    b) Rofecoxib
    c) Celecoxib
    d) None of the above
    e) All of the above

15. Which of the following drugs is a leukotreine D4 receptor (LTD4) blocker?
    a) Ibuprofen
    b) Zileuton
    c) Zafirleukast
    d) Diclofenac
    e) Celecoxib

16. Which of the following NSAIDs is an oxicam derivative?
    a) Piroxicam
    b) Indomethacin
    c) Meclofenamic acid
    d) Diclofenac
    e) Acetylsalicylic acid

17. Which of the following drugs is a thromboxane A2 receptor (TXA2) antagonist?
    a) Daltroban
    b) Zileuton
    c) Zafirleukast
    d) Diclofenac
    e) Piroxicam

18. Which of the following drugs is a 5-lipoxygenase (5-LOG) inhibitor?
    a) Ibuprofen
    b) Zileuton
    c) Metamizole
    d) Diclofenac
    e) Zafirleukast

Multiple-choice:

19. Corticosteroids inhibit:
    a) Histamine release
    b) Leukotriene C4 and D4 synthesis

c) Platelet thromboxane A2 synthesis
d) Neutrophils production
e) Lipocortin production

20. Regular administration of glucocorticoids results in:
    a) Hypertension
    b) Hyperkalaemia
    c) Nuclear sclerosis
    d) Proximal myopathy
    e) Ocular hypertension

21. The indication for glucocorticoids is:
    a) Chronic (Addison's disease) and acute adrenocortical insufficiency
    b) Organ transplants (prevention and treatment of rejection – immunosuppression)
    c) Inflammatory conditions of bones and joints (arthritis, bursitis, tenosynovitis)
    d) High blood pressure
    e) Diabetes mellitus

22. Indications for acetylsalicylic acid administration are the following:
    a) Inflammatory conditions
    b) Decrease of the incidence of transient ischemic attack, unstable angina, coronary artery thrombosis with myocardial infarction, and thrombosis after coronary artery bypass grafting
    c) Severe visceral pain, e.g. myocardial infarction, cancer pain condition, renal or biliary colic
    d) Elevated body temperature
    e) Pancreonecrosis

23. Side effects of acetylsalicylic acid include the following:
    a) Gastric upset (intolerance)
    b) Diabetes mellitus
    c) Salicylism (vomiting, tinnitus, decreased hearing, and vertigo)
    d) Gastric ulcers and upper gastrointestinal bleeding
    e) High blood pressure

24. Side effects of indometacin include the following:
    a) Abdominal pain, diarrhea, gastrointestinal hemorrhage and pancreatitis
    b) Dizziness, confusion and depression

c) Trombocytopenia
d) Diabetes mellitus
e) Increased arterial pressure

25. Which of the following statements about corticosteroids are true?
    a) They are synthesized in the adrenal medulla
    b) They are 21-carbon structures
    c) ACTH is essential for the production of corticosteroids from cholesterol
    d) 17alfa-hydroxylation is present in most of the anti-inflammatory steroids
    e) They increase renal excretion of potassium

26. The adrenal cortex produces:
    a) Aldosterone
    b) Angiotensin II
    c) Deoxycorticosterone
    d) Noradrenaline
    e) Adrenaline

27. The adrenal cortex hormones are:
    a) Aldosterone
    b) Angiotensin II
    c) Deoxycorticosterone
    d) Noradrenaline
    e) Adrenaline

Glucocorticoids, Steroidal and Nonsteroidal Anti-Inflammatory drugs

Task: one correct answer

1) A
2) A
3) B
4) A
5) C
6) C
7) A
8) B
9) C
10) A
11) E
12) A
13) B
14) C
15) A
16) C
17) A
18) A
19) B

Task: two or more correct answers

20) A, B
21) A, D, E
22) A, B, C
23) A, B, D
24) A, C, D
25) A, B, C
26) B, C, D, E
27) A, C
28) A, C

7.5. Immunotropic and Antiallergic agents

Single-choice tests:

1. Which group of histamine H1 antagonists is featured with the alpha-adrenoreceptor-blocking effect?
    a) Alkylamines
    b) Ethanolamines
    c) Ethylenediamines
    d) Phenothiazines
    e) Piperidines

2. These categories of histamine H1 antagonists are featured with the anti-cholinergic effect, EXCEPT:
    a) Alkylamines (propylamines)
    b) Piperazines
    c) Ethylenediamines
    d) Phenothiazines
    e) Imidasols

3. These categories of histamine H1 antagonists are featured with sedative effects, EXCEPT:
    a) Piperidines; i.e. Loratadine
    b) Ethanolamines (aminoalkyl ethers); i.e. Diphenhydramine
    c) Ethylenediamines; i.e. Chlorophiramine
    d) Phenothiazines; i.e. Promethazine
    e) Imidasols: i.e. Antasoline

4. Which category of histamine H1 antagonists is featured with the best antiemetic action?
    a) Alkylamines (propylamines); i.e. Brompheniramine
    b) Ethanolamines (aminoalkyl ethers); i.e. Doxylamine
    c) Piperazines; i.e. Hydroxyzine, Cyclizine
    d) Ethylenediamines; i.e. Chlorophiramine
    e) Imidasols: i.e. Antasoline

5. Which category of histamine H1 antagonists is featured with the highest local anesthetic effect?
    a) Alkylamines (propylamines); i.e. Brompheniramine
    b) Piperidines; i.e. Loratadine, Fexofenadine
    c) Ethylenediamines; i.e. Chlorophiramine
    d) Phenothiazines; i.e. Promethazine
    e) Imidasols: i.e. Antasoline

6. Side effect of first-generation histamine H1 antagonists is:
    a) Aplastic anemia
    b) Vomiting, tinnitus, decreased hearing
    c) Sedation
    d) Gastric ulcers and upper gastrointestinal bleeding
    e) Ventricular arrhtythmias

7. Which category of histamine H1 antagonists is recognized as second-generation antihistamines?
    a) Alkylamines ; i.e. Chlorphenamine
    b) Piperidines; i.e. Loratadine, Fexofenadine
    c) Ethylenediamines; i.e. Chlorophiramine
    d) Phenothiazines; i.e. Promethazine
    e) Imidasols: i.e. Antasoline

8. Which of histamine H1 antagonists is featured with the serotonin-blocking effect?
    a) Diphenhydramine
    b) Cyproheptadine
    c) Chlorophiramine
    d) Antasoline
    e) Promethasine

9. The mechanism of action of cyclosporine A is:
    a) Complement-mediated cytolysis of T-lymphocytes
    b) ADCC towards T-lymphocytes
    c) Calcineurin inhibition
    d) Compete for Fc receptors with autoantibodies
    e) Cyclooxygenase II inhibition

10. Immunosuppressive effect of glucocorticoids is caused by
    a) Reduction of concentration of lymphocytes (T-and B-cells) and inhibition of function of tissue macrophages and other antigen-presenting cells
    b) Suppression of cyclooxygenase II expression which results in reduction of the amount of an enzyme available to produce prostoglandins
    c) Activation of phospholipase A2 and reduction of prostaglandin and leukotriene synthesis
    d) Calcineurin inhibition
    e) All of the above

11. Which of the following belongs to of cyclosporine A class:
    a) Interferons
    b) Immunosuppressive agents
    c) Monoclonal antibodies
    d) Immunoglobulins
    e) H1 antihistamines

12. The side effect of interferon gamma is:
    a) Hypertension
    b) Pulmonary edema
    c) Nephrotoxicity
    d) Fatigue
    e) Hepatotoixicity

13. Which of the following is an immunomodulating agent?
    a) Sirolimus
    b) Levamisole
    c) Tacrolimus
    d) Promethasine
    e) Cyproheptadine

14. Tick the indication for interferon alpha administration:
    a) Autoimmune diseases
    b) Rheumatoid arthritis
    c) Organ transplantation
    d) Hepatitis C virus infection
    e) Gastric ulcers and upper gastrointestinal bleeding

Multiple-choice:

15. Tick the indication for administration of histamine H1 antagonists is:
    a) Prevention or treatment of the symptoms of allergic reactions (rhinitis, urticaria)
    b) Motion sickness and vestibular disturbances
    c) Nausea and vomiting in pregnancy (“morning sickness”)
    d) Gastric and duodenal ulcer
    e) Acute pancreatitis

16. Which of the following histamine H1 antagonists are recognized as second-generation antihystamins:
    a) Astemizole
    b) Loratadine

c) Cetirizine
d) Clemastine
e) Chlorophiramine

17. Tick the indications for administration of histamine H1 antagonists:
    a) Prevention or treatment of the symptoms of allergic reactions (rhinitis, urticaria)
    b) Management of seizure states
    c) Nausea and vomiting in pregnancy (“morning sickness”)
    d) Treatment of sleep disorders
    e) Acute psychosis

18. Tick the immunosuppressive agents:
    a) Corticosteroids
    b) Imunofan
    c) Cyclosporine
    d) Tacrolimus
    e) Interferon

19. Tick the indication for interferon alpha administration:
    a) Hepatitis C virus infection
    b) Treatment of sleep disorders
    c) Kaposi's sarcoma
    d) Condyloma acuminatum
    e) All of the above

20. Which of the following are cytotoxic agents?
    a) Azathioprine
    b) Cyclosporine
    c) Tacrolimus
    d) Cyclophosphamid
    e) Clemastin

Immunotropic and Antiallergic agents

Task: one correct answer

1) D
2) B
3) A
4) B
5) D
6) C
7) B
8) B
9) C
10) A
11) B
12) D
13) B
14) D

Task: two or more correct answers

15) A, B, C
16) A, B, C
17) A, C, D
18) A, C, D
19) A, C, D
20) A, D

8. Vitamins, Vitamin-like Compounds, Antivitamins, Enzymes and Antienzymes

Single choice tests:

1. Vitamins are:
    a) Inorganic nutrients needed in small quantities in the body
    b) Organic substances needed in very large quantities in the body
    c) Any of various fat-soluble or water-soluble organic substances essential in minute amounts for normal growth and activity of the body and obtained naturally from plant and animal foods
    d) Products of endocrine gland secretion

2. Antienzymes are:
    a) Agents, especially inhibitory enzymes or antibodies to enzymes, that retard, inhibit, or destroy enzymic activity
    b) Substances that prevent vitamins from exerting their typical metabolic effects
    c) Any of numerous proteins or conjugated proteins produced by living organisms and functioning as specialized atalysts for biochemical reactions
    d) Nonprotein organic substances that usually contain a vitamin or mineral and combines with a specific apoenzyme to form an active enzyme system
    e) Any of various fat-soluble or water-soluble organic substances essential in minute amounts for normal growth and activity of the body and obtained naturally from plant and animal foods

3. Choose the fat-soluble vitamin:
    a) Ascorbic acid
    b) Tocopherol
    c) Thiamine
    d) Riboflavin

4. Beri-beri is caused by the deficiency of:
    a) Riboflavin
    b) Ascorbic acid
    c) Nicotinic acid
    d) Thiamine

5. Choose the water-soluble vitamin:
    a) Vitamin A
    b) Vitamin E

c) Vitamin D
d) Vitamin B1

6. Which of the following vitamins resembles a hormone:
    a) Vitamin K
    b) Vitamin A
    c) Vitamin D
    d) Vitamin E

7. Beri-beri is:
    a) A disease caused by a deficiency of thiamine, endemic in eastern and southern Asia, and characterized by neurological symptoms, cardiovascular abnormalities, and edema. It is also called endemic neuritis
    b) An inflammation at the corners of the mouth caused by a deficiency of riboflavin, associated with a wrinkled or fissured epithelium that does not involve the mucosa
    c) A disorder of the lips often due to riboflavin deficiency and other B-complex vitamin deficiencies and characterized by fissures, especially in the corners of the mouth
    d) All of the above

8. Which of the following vitamins can be also synthesized from a dietary precursor?
    a) Vitamin C
    b) Vitamin A
    c) Vitamin B1
    d) Vitamin B6

9. Which of the following is symptom of riboflavin deficiency?
    a) Cheilitis – inflammation of the lips or of a lip, with redness and production of fissures radiating from the angles of the mouth
    b) Cheilosis – a disorder of the lips characterized by fissures, especially at the corners of the mouth
    c) Angular stomatitis, associated with wrinkled or fissured epithelium that does not involve the mucosa
    d) All of the above

10. All of the following statements concerning vitamin A functions are true, EXCEPT:
    a) Transmission of light stimuli to the brain, via combination with a specific protein, opsin, to form visual pigment rhodopsin in the retina of the eye
    b) Regulation of cell growth and differentiation in epithelium, connective tissues (including bone and cartilage) and hematopoietic tissues by retinoic acid, a highly bioactive metabolite of retinol
    c) Retinoic acid is especially important during embryogenesis
    d) It acts as a hormone involved in the regulation of calcium and phosphorus homeostasis

11. All of the following statements concerning vitamin E functions are true, EXCEPT:
    a) IT is an extremely important antioxidant, which protects cell membrane lipids from peroxidation by breaking the chain reaction of free radical formation to which polyunsaturated fatty acids are particularly vulnerable
    b) IT is antisterility and antiabortion factor
    c) IT is specifically required for the synthesis of prothrombin and several other clotting factors
    d) IT is an essential for oxidative processes regulation

12. Night blindness (hemeralopia, nyctalopia) is:
    a) Extreme dryness of the conjunctiva resulting from a disease localized in the eye or from systemic deficiency of vitamin A
    b) A condition developping usually in children with vitamin A deficiency, characterized by softening and subsequent ulceration and perforation of the cornea
    c) A condition of the eyes in which vision is normal in daylight or other strong light but is abnormally weak or completely lost at night or in dim light and that results from vitamin A deficiency
    d) All of the above

13. Which of the following is symptom of symptom of vitamin A deficiency?
    a) Night blindness – lessened ability to see in dim light
    b) Xerophthalmia and keratomalacia

c) Various epithelial tissue defects, leading to decreased resistance to infective diseases, male and female infertility
d) All of the above

14. Which of the following statements concerning vitamin B1 functions is true:
    a) It is an extremely important antioxidant, which protects cell membrane lipids from peroxidation by breaking the chain reaction of free radical formation to which polyunsaturated fatty acids are particularly vulnerable
    b) It is an An essential coenzyme for oxidative decarboxylate of alpha-keto acids, most important being conversion of pyruvate to acetyl coenzyme A
    c) It is specifically required for the synthesis of prothrombin and several other clotting factors
    d) It is essential constituent of flavoproteins, flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD)

15. All of the following statements concerning vitamin B2 functions are true, EXCEPT:
    a) Vitamin B2 is an essential constituent of flavoproteins, flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD)
    b) Vitamin B2 plays a key roles in hydrogen transfer reactions associated with glycolysis, TCA cycle and oxidative phosphorylation
    c) Vitamin B2 is an essential coenzyme for oxidative decarboxylate of alpha-keto acids, most important being conversion of pyruvate to acetyl coenzyme A
    d) Vitamin B2 deficiency symptoms are cheilitis, cheilosis and angular stomatitis

16. Which of the following statements concerning vitamin Vitamin B2 (B3, niacin) functions is true:
    a) Is the active group of the coenzymes nicotinamide-adenine dinucleotide (NAD) and nicotinamide-adenine phosphate (NADP)
    b) PP is an essential coenzyme for oxidative decarboxylate of alpha-keto acids, most important being conversion of pyruvate to acetyl coenzyme A

c) PP is specifically required for the synthesis of prothrombin and several other clotting factors
d) PP is essential constituent of flavoproteins, flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD)

17. Which of the following statements concerning pyridoxine (vitamin B6) functions is true:
    a) It is active functional form is pyridoxal phosphate, which is an essential coenzyme for transamination and decarboxylation of amino acids in more than 50 different enzyme systems
    b) Is the active group of the coenzymes nicotinamide-adenine dinucleotide (NAD) and nicotinamide-adenine phosphate (NADP)
    c) Is an essential constituent of flavoproteins, flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD)
    d) It is an extremely important antioxidant, which protects cell membrane lipids from peroxidation by breaking the chain reaction of free radical formation to which polyunsaturated fatty acids are particularly vulnerable

18. Which of the following statements concerning folic acid (folacin) functions is true:
    a) It is active functional form is pyridoxal phosphate, which is an essential coenzyme for transamination and decarboxylation of amino acids in more than 50 different enzyme systems
    b) It is an essential constituent of coenzyme A, the important coenzyme for acyl transfer in the TCA cycle and de novo fatty acid synthesis
    c) It is the carrier of one-carbon (e.g. methyl) groups that are added to, or removed from, metabolites such as histidine, serine, methionine, and purines
    d) It is an extremely important antioxidant, which protects cell membrane lipids from peroxidation by breaking the chain reaction of free radical formation to which polyunsaturated fatty acids are particularly vulnerable

19. Which of the following statements concerning biotin functions is true:
    a) It's active functional form is pyridoxal phosphate, which is an essential coenzyme for transamination and decarboxylation of amino acids in more than 50 different enzyme systems

b) Is an essential constituent of coenzyme A, the important coenzyme for acyl transfer in the TCA cycle and de novo fatty acid synthesis
c) It is an extremely important antioxidant, which protects cell membrane lipids from peroxidation by breaking the chain reaction of free radical formation to which polyunsaturated fatty acids are particularly vulnerable
d) It is the coenzyme for several reactions involving CO2 fixation into various compounds e.g. acetyl CoA to malonyl CoA (acetyl CoA carboxylase) – initial step in de novo fatty acid synthesis; propionyl CoA to methylmalonyl CoA (propionyl CoA carboxylase), pyruvate to oxaloacetate (pyruvate carboxylase)

20. Which of the following statements concerning pantothinic acid functions is true:
    a) It is active functional form is pyridoxal phosphate, which is an essential coenzyme for transamination and decarboxylation of amino acids in more than 50 different enzyme systems
    b) It is an essential constituent of coenzyme A, the important coenzyme for acyl transfer in the TCA cycle and de novo fatty acid synthesis
    c) It is an extremely important antioxidant, which protects cell membrane lipids from peroxidation by breaking the chain reaction of free radical formation to which polyunsaturated fatty acids are particularly vulnerable
    d) It is the coenzyme for several reactions involving CO2 fixation into various compounds e.g. acetyl CoA to malonyl CoA (acetyl CoA carboxylase) – initial step in de novo fatty acid synthesis; propionyl CoA to methylmalonyl CoA (propionyl CoA carboxylase), pyruvate to oxaloacetate (pyruvate carboxylase)

21. Which of the following statements concerning vitamin C functions is true:
    a) It is active functional form is pyridoxal phosphate, which is an essential coenzyme for transamination and decarboxylation of amino acids in more than 50 different enzyme systems
    b) It is an essential constituent of coenzyme A, the important coenzyme for acyl transfer in the TCA cycle and de novo fatty acid synthesis

c) It is the carrier of one-carbon (e.g. methyl) groups that are added to, or removed from, metabolites such as histidine, serine, methionine, and purines
d) It has antioxidant properties and is required for various hydroxylation reactions e.g. proline to hydroxypoline for collagen synthesis

22. Which of the following vitamins is also known as an antisterility factor?
    a) Vitamin E
    b) Vitamin B6
    c) Vitamin B1
    d) Vitamin K

23. Dermatitis, diarrhea and dementia are characteristics of:
    a) Dry beriberi
    b) Pyridoxine deficiency
    c) Scurvy
    d) Pellagra

24. Pernicious anemia is:
    a) A severe form of anemia most often affecting elderly adults. It is caused by a failure of the stomach to absorb vitamin B12 and characterized by abnormally large red blood cells, gastrointestinal disturbances, and lesions of the spinal cord
    b) A form of anemia in which the capacity of the bone marrow to generate red blood cells is defective, being caused by a bone marrow disease or exposure to toxic agents, such as radiation, chemicals, or drugs
    c) Anemia characterized by a decrease in the concentration of corpuscular hemoglobin
    d) All of the above

25. Rickets is:
    a) A deficiency disease resulting from a lack of vitamin D or calcium and from insufficient exposure to sunlight, characterized by defective bone growth and occurring chiefly in children
    b) A disease occurring primarily in adults that results from a deficiency in vitamin D or calcium and is characterized by a softening of the bones with accompanying pain and weakness

c) A disease characterized by a decrease in bone mass and density, occurring especially in postmenopausal women, resulting in a predisposition to fractures and bone deformities such as vertebral collapse
d) All of the above

26. Scurvy is:
    a) A disease caused by a deficiency of vitamin C and characterized by spongy bleeding gums,subcutaneous bleeding and weakness
    b) Extreme dryness of the conjunctiva resulting from a disease localized in the eye or from systemic deficiency of vitamin A
    c) A disease caused by deficiency of niacin in the diet and characterized by skin eruptions, digestive and nervous system disturbances, and eventual mental deterioration
    d) All of the above

27. Ingestion of polar bear liver may cause acute poisoning with:
    a) Vitamin D
    b) Vitamin E
    c) Vitamin A
    d) Vitamin C

28. Pellagra is:
    a) A disease caused by a deficiency of niacin in the diet and characterized by skin eruptions, digestive and nervous system disturbances, and eventual mental deterioration
    b) Simultaneous inflammation of several nerves caused by thiamin deficiency, marked by paralysis, pain, and muscle wasting. Also called multiple neuritis or polyneuritis
    c) A severe form of anemia most often affecting elderly adults, being caused by a failure of the stomach to absorb vitamin B12 and characterized by abnormally large red blood cells, gastrointestinal disturbances, and lesions of the spinal cord. Also called pernicious anemia, malignant anemia
    d) All of the above

29. Which of the following statements concerning vitamin B12 (cyanocobalamin) functions is true:
    a) Its active functional form is pyridoxal phosphate, which is an essential coenzyme for transamination and decarboxylation of amino acids in more than 50 different enzyme systems

b) It is an essential constituent of coenzyme A, the important coenzyme for acyl transfer in the TCA cycle and de novo fatty acid synthesis
c) It is the coenzyme for numerous metabolic reaction, including transformation of methylamlonyl CoA to succinyl CoA in the metabolism of propionate; DNA synthesis (acts in concert with folic acid); transmethylation e.g. methionine synthesis from homocysteine
d) It is an extremely important antioxidant, which protects cell membrane lipids from peroxidation by breaking the chain reaction of free radical formation to which polyunsaturated fatty acids are particularly vulnerable

30. Which of the following vitamins is given along with isoniazide in treatment of tuberculosis?
    a) Nicotinic acid
    b) Riboflavin
    c) Pyridoxine
    d) Ascorbic acid

31. High doses of which vitamin are some times beneficial in viral respiratory infections?
    a) Vitamin C
    b) Vitamin A
    c) Vitamin K
    d) Vitamin PP

32. Which of the following antivitamins prevent vitamin K from exerting its typical metabolic effects?
    a) Cholestiramine
    b) Coumarins
    c) Antibiotics
    d) All of the above

33. Vitamin K enhances the anticoagulant property of coumarins. This statement is:
    a) True
    b) False

34. Which of the following antivitamins prevent vitamin B6 from exerting its typical metabolic effects?
    a) Isoniazide

b) Ethanol
c) Carbamazepine
d) All of the above

35. Which of the following vitamins improves megaloblast anemia but does not protect from neurological manifestations of pernicious anemia?
    a) Vitamin B12
    b) Vitamin BC
    c) Vitamin PP
    d) Vitamin D

36. Which of the following enzymes is used in cancer therapy?
    a) Pepsin
    b) Urokinase
    c) L-asparaginase
    d) Lydaze

37. Loose teeth, gingivitis and hemorrhage occur in the deficiency of:
    a) Vitamin K
    b) Vitamin B1
    c) Vitamin B6
    d) Vitamin C

38. Which of the following antienzymes is a proteolysis inhibitor?
    a) Aprotinine
    b) Sulbactam
    c) Aminocaproic acid
    d) Disulfiram

39. Which of the following antienzymes is a beta-lactamase inhibitor?
    a) Clavulanic acid
    b) Sulbactam
    c) Tazobactam
    d) All of the above

40. Which of the following antienzymes is a carbonic anhydrase inhibitor?
    a) Physostigmine
    b) Selegiline
    c) Aminocaproic acid
    d) Acetazolamide

41. Which of the following antienzymes is a fibrinolysis inhibitor?
    a) Clavulanic acid
    b) Sulbactam
    c) Aminocaproic acid
    d) Disulfiram

42. Which of the following antienzymes is a cholinesterase inhibitor?
    a) Physostigmine
    b) Selegiline
    c) Aminocaproic acid
    d) Disulfiram

43. Which of the following enzymes improves GIT functions (replacement therapy):
    a) Pepsin
    b) Urokinase
    c) L-asparaginase
    d) Lydaze

44. Which of the following antienzymes is a monoamine oxidase (MAO) inhibitor:
    a) Physostigmine
    b) Selegiline
    c) Acetazolamide
    d) Disulfiram

45. Which of the following antienzymes is an aldehyde dehydrogenase inhibitor?
    a) Tazobactam
    b) Sulbactam
    c) Aminocaproic acid
    d) Disulfiram

46. Which of the following antienzymes is a xantine oxidase inhibitor?
    a) Physostigmine
    b) Allopurinol
    c) Aminocaproic acid
    d) Acetazolamide

47. Which of the following enzymes has fibrinolytic effect?
    a) Pepsin
    b) Urokinase

c) L-asparaginase
d) Lydaze

48. Which of the following antienzymes is an aromatase inhibitor used in cancer therapy?
a) Physostigmine
b) Allopurinol
c) Aminocaproic acid
d) Aminoglutethimide

Multiple-choice tests:

49. Which of the following statements about vitamin A are true?
a) It is fat soluble
b) It is usually ingested as retinoid acid
c) It is stored mainly in the retinal pigment of epithelium
d) Vitamin A deficiency causes dry eye due to decreased of production of the aqueous layer
e) Subclynical deficiency can be detected by electrophysiologic tests

50. Optic neuropathy occurs in deficiency of the following vitamin B:
a) Vitamin B_1
b) Vitamin B_2
c) Vitamin B_3
d) Vitamin B_6
e) Vitamin B_{12}

51. Which of the following regarding vitamin A are true?
a) It is stored mainly as retinol ester
b) It is found in the inner segment of photoreceptors and the retinal pigment epithelium
c) During bleaching, all-trans-retinaldehyde is released from opsins and is transported to the pigment epithelium in the form of all-trans-retinol
d) The pigment epithelium is the site of isomerization of all-trans- to 11-cis-retinol
e) Optic disc swelling can result from its excessive intake

52. True statements about vitamin B_1 include:
a) It is lipid soluble
b) Its defiency is responsible for beri-beri

c) Its defiency causes congestive cardiac failure
d) Its defiency causes Wernicke's encephalopathy
e) Its defiency causes nystagmus

53. The following statements about vitamin A deficiency are true:
a) Night blindness is a late sign
b) Bitot's spots are caused by conjunctiva metaplasia
c) Bitot's spots are found mainly on the nasal bulbar conjunctiva
d) Sterile corneal ulceration is a feature of vitamin A deficiency
e) The immune system is impaired by vitamin A deficiency

Vitamins, Vitamin-like compounds, Antivitamins, Enzymes and Antienzymes

Task: one correct answer

1) C	17) A	33) B
2) A	18) C	34) D
3) B	19) D	35) A
4) D	20) B	36) C
5) D	21) D	37) D
6) C	22) A	38) A
7) A	23) D	39) D
8) B	24) A	40) D
9) D	25) A	41) C
10) D	26) A	42) A
11) C	27) C	43) A
12) C	28) A	44) B
13) D	29) C	45) D
14) B	30) C	46) B
15) C	31) A	47) B
16) A	32) D	48) D

Task: two or more correct answers

49) A, E
50) A, B
51) A, C, D, E
52) B, C, D, E
53) B, D, E

9. Antihyperlipidemics and drugs used in the treatment of gout

Single choice tests:

1. Which of the following drugs is an uricosuric agent?
    a) Allopurinol
    b) Sulfinpyrazone
    c) Colchicine
    d) Indomethacin
2. In which of the following drugs used in the treatment of gout reduction of uric acid synthesis is the main effect:
    a) Allopurinol
    b) Sulfinpyrazone
    c) Colchicine
    d) Indomethacin
3. Probenecid and sulfinpyrazone are uricosuric drugs employed to decrease the body pool of urate in patients with tophaceous gout or in those with increasingly frequent gouty attacks.This consideration is:
    a) True
    b) False
4. This drug decreases blood level of high density lipoproteins (HDL):
    a) Lovastatin
    b) Nicotinic acid
    c) Gemfibrozil
    d) Probucol
5. This drug binds bile acids in the gastro-intestinal tract:
    a) Cholestyramine
    b) Nicotinic acid
    c) Gemfibrozil
    d) Probucol
6. The major side effect of cholestyramine is hepatotoxicity. This statement is:
    a) True
    b) False
7. Probucol reduces the risk of atherosclerosis by stimulating the rate of clearance of LDL by receptor-mediated pathways. This statement is:
    a) True
    b) False

8. Effects of drugs in lowering blood cholesterol levels are additive with those of diet. This statement is:
    a) True
    b) False

9. HMG-CoA reductase inhibiting drugs can cause muscle breakdown, especially when used in combination with a cyclosporine. This statement is:
    a) True
    b) False

10. The cholesterol synthesis inhibitors are better tolerated than most other lipid-lowering agents. This statement is:
    a) True
    b) False

11. All of the following statements concerning fibric acid derivatives are true, EXCEPT:
    a) Clofibrate is the drug of choice for type III hyperlipidemia therapy
    b) Gemfibrozil increases HDL cholesterol while lowering LDL cholesterol
    c) Gemfibrozil is shown to reduce mortality

12. All of the following statements concerning drugs which inhibit cholesterol synthesis are true, EXCEPT:
    a) These drugs should not be used in pregnant women or children
    b) These drugs often cause myopathy if used in combination with cyclosporine (Sandimmune)
    c) Several of these drugs tend to lengthen the sleep cycle

Antihyperlipidemics anddrugs used in the treatment of gout

Task: one correct answer

1) B	5) A	9) A
2) A	6) B	10) A
3) A	7) B	11) A
4) D	8) A	12) D

10. Agents affecting bone mineral homeostasis

Single-choice tests:

1. The parathyroid hormone increases serum calcium and decreases serum phosphate. This statement is:
    a) True
    b) False

2. Tick the action of the parathyroid hormone:
    a) Increased calcium and phosphate absorption in the intestine (by increased 1,25-dihydroxyvitamin D3 production)
    b) Decreased calcium excretion and increased phosphate excretion in kidneys
    c) In bone, in high dose, increases calcium and phosphate resorptiond. Low dose may increase bone formation
    d) All of the above

3. The following statements of the parathyroid hormone are true, EXCEPT:
    a) The parathyroid hormone (PTH) is a single-chain peptide hormone composed of 84 amino acids
    b) The parathyroid hormone increases calcium and phosphate absorption in the intestine (by increased 1,25-dihydroxyvitamin D3 production)
    c) The parathyroid hormone increases serum calcium and decreases serum phosphate
    d) The parathyroid hormone increases calcium excretion and decreases phosphate excretion in kidneys

4. Tick the side effect of calcitonin:
    a) Hypercalcemia
    b) Metastatic calcifications
    c) Tetany
    d) Gastro-intestinal toxicity

5. Which of the following statements of calcitonin is true:
    a) Calcitonin secreted by parafollicular cells of the mammalian thyroid is a single-chain peptide hormone with 32 amino acids
    b) The effects of calcitonin are to lower serum calcium and phosphate by acting on bones and kidneys.

c) Calcitonin inhibits osteoclastic bone resorption
d) All of the above

6. Indications for calcitonin administration are the following, EXCEPT:
   a) Hypercalcemia
   b) Paget's disease
   c) Hypophosphatemia
   d) Osteoporosis

7. Tick the effect of calcitonin:
   a) Pruritus
   b) Hypotension
   c) Fractures
   d) Hypocalcemia

8. Estrogens can prevent accelerated bone loss during the immediate postmenopausal period and at least transiently increase bone in postmenopausal subjects. This statement is:
   a) True
   b) False

9. The action of vitamin D3 is:
   a) Increased calcium and phosphate absorption by 1,25-dihydroxyvitamin D3
   b) Calcium and phosphate excretion may be decreased by 25-hydroxyvitamin D3 and 1,25-dihydroxyvitamin D3
   c) Increased calcium and phosphate resorption by 1,25-dihydroxyvitamin D3; bone formation may be increased by 25,24-dihydroxyvitamin D3
   d) All of the above

10. Glucocorticoid hormones alter bone mineral homeostasis:
    a) By antagonizing vitamin D-stimulated intestinal calcium transport
    b) By stimulating renal calcium excretion
    c) By increasing parathyroid hormone stimulated bone resorption
    d) By all of the above

11. Tick the mechanism of action of calcitonin:
    a) It inhibits hydroxyapatite crystal formation, aggregation, and dissolution
    b) It increases intracellular cAMP in osteoclasts

c) It activates bone resorption
d) It inhibits macrophages

12. Tick the route of administration of vitamin D3:
    a) Subcutaneous
    b) Oral
    c) Intravenous
    d) Intranasal

13. Vitamin D3 increases serum calcium and phosphate. This statement is:
    a) True
    b) False

14. Tick the Side effect of vitamin D3:
    a) Defective bone mineralization
    b) Metastatic calcifications
    c) Hepatic toxicity
    d) Nephrolithiasis

15. 25-hydroxyvitamin D3 (calcifediol) is less effective than 1, 25 dihydroxyvitamin D3 (calcitriol) in stimulating intestinal calcium transport, so that hypercalcemia is less of a problem with calcifediol. This statement is:
    a) True
    b) False

16. Tick the indication for vitamin D3:
    a) Hypercalcemia
    b) Paget's disease
    c) Hypophosphatemia
    d) Osteomalacia

17. Tick the route of administration of 25-hydroxyvitamin D3 (calcifediol):
    a) Oral
    b) Subcutaneous
    c) Intravenous
    d) Intranasal

18. Tick the Side effect of 25-hydroxyvitamin D3 (calcifediol):
    a) Hypercalcemia
    b) Pruritus
    c) GI toxicity
    d) All of the above

19. Tick the Indication for 25-hydroxyvitamin D3 (calcifediol) administration:
    a) Primary hyperparathyroidism
    b) Rickets
    c) Hypercalcemia
    d) Failure of vitamin D formation in skin

20. Tick the Route of administration of 1,25-dihydroxyvitamin D3 (calcitriol):
    a) Subcutaneous
    b) Intravenous
    c) Intranasal
    d) Oral

21. Tick the indication for 1,25-dihydroxyvitamin D3 (calcitriol) administration:
    a) Vitamin D resistance
    b) Elevated skeletal turnover
    c) Hypercalcemia of malignancy
    d) Hypophosphatemia

22. Tick the route of administration of cholecalciferol:
    a) Subcutaneous
    b) Intranasal
    c) Intravenous
    d) Oral

23. Which of the following statements refers to 1,25-dihydroxyvitamin D3 (calcitriol):
    a) The combined effect of calcitriol and all other vitamin D metabolites and analogs on both calcium and phosphate makes careful monitoring of the level of these minerals especially important to avoid ectopic calcification
    b) It does not undergo enterohepatic circulation
    c) It is toxic for osteoclasts
    d) Bioavailability increases with the administered dose

24. The indications for 1,25-dihydroxyvitamin D3 (calcitriol) administration are the following, EXCEPT:
    a) Hypocalcemia in chronic renal failure
    b) Vitamin D-dependent rickets

c) Malabsorption of vitamin D from intestine
d) Elevated skeletal turnover

25. Tick the indication for cholecalciferol administration:
    a) Hypercalcemia
    b) Parathyroid hormone deficiency
    c) Primary hyperparathyroidism
    d) Malabsorption of vitamin D from intestine

26. Tick the indication for dihydrotachysterol administration:
    a) Parathyroid hormone resistance
    b) Paget's disease
    c) Increased osteolysis
    d) Hypophosphatemia

27. Which of the following is the unwanted effect of cholecalciferol:
    a) Defective bone mineralization
    b) Lymphocytopenia
    c) CNS toxicity
    d) Metastatic calcifications

28. Which of the following is the unwanted effect of dihydrotachysterol:
    a) Tetany
    b) Anorexia
    c) CNS toxicity
    d) Lymphocytopenia

29. Tick the indication for pamidronate administration is:
    a) Failure of vitamin D formation in skin
    b) Hypoparathyroidism
    c) Elevated skeletal turnover
    d) Hypercalcemia

30. The conditions associated with hypophosphatemia include:
    a) Primary hyperparathyroidism
    b) Vitamin D deficiency
    c) Idiopathic hypercalciuria
    d) All of the above

31. The correct statements of fluoride include all of the following, EXCEPT:
    a) Fluoride is effective for the prophylaxis of dental caries

b) Fluoride is accumulated by bone and teeth, where it may stabilize the hydroxyapatite crystal
c) Subjects living in areas with naturally fluoridated water (1-2 ppm) have more dental caries and fewer vertebral compression fractures than subjects living in nonfluoridated water areas
d) Chronic exposure to very high level of fluoride dust in the inspired air results in crippling fluorosis, characterized by thickening of the cortex of long bones and bony exostoses

32. The recommended daily phosphorus allowance is:
    a) 900-1200 mg
    b) 600-900 g
    c) 25 g
    d) 1.5-4 mg

33. Tick the route of administration of pamidronate:
    a) Oral
    b) Subcutaneous
    c) Intranasal
    d) Intravenous

34. Tick the route of administration of alendronate:
    a) Intravenous
    b) Subcutaneous
    c) Oral
    d) Intranasal

35. The long-term effects of hypophosphatemia include proximal muscle weakness and abnormal bone mineralization (osteomalacia). This statement is:
    a) True
    b) False

36. The correct statements of pamidronate include all of the following, EXCEPT:
    a) Pamidronate is not available as an oral preparation because it causes gastric irritation
    b) Skeletal half-life is 24 h
    c) Fever and lymphocytopenia are reversible
    d) Can be irritable to the esophagus if the stomach is not washed promptly

37. Which of the following statements of phosphorus interaction with other drugs is true?
    a) Amiloride: decrease phosphorus renal excretion
    b) Glucocorticoids: decrease phosphorus absorption
    c) Loop diuretics: increase phosphorus renal excretion
    d) Calcitonin: increases phosphorus renal excretion

38. The correct statements of alendronate include all of the following, EXCEPT:
    a) It can be irritable to the esophagus if not washed promptly to the stomach
    b) 1st generation biphosphonate
    c) It reduces osteoclast activity without significantly affecting osteoblasts; useful in the treatment of Paget's disease
    d) It is more potent than EHDP; it has a wider therapeutic window

39. Tick the indication for etidronate administration is:
    a) Malabsorption of vitamin D from intestine
    b) Paget's disease
    c) Vitamin D deficiency in a diet
    d) Hypercalciuria

40. All of the following are the indications for etidronate administration, EXCEPT:
    a) Paget's disease
    b) Osteoporosis
    c) Hypophosphatemia
    d) Hypercalcemia

41. All of the following are the indications for alendronate are the following, EXCEPT:
    a) Hypoparathyroidism
    b) Glucocorticoid-induced osteoporosis
    c) Paget's disease
    d) Syndromes of ectopic calcification

42. Which of the following statements refers to calcium:
    a) Recommended Ca daily allowance for males: 1. 1-10 years: 800 mg 2. 11-18 years: 1200 mg 3. 19-50 years: 1000 mg 4. > 51 years: 1000 mg

b) Ca chloride is very irritating and can cause necrosis if extravasated
c) In achlorhydric patients calcium carbonate should be given with meals to increase absorption or patients switched to calcium citrate, which is somewhat better absorbed
d) All of the above

43. Which of the following statements refers to etidronate:
a) It reduces osteoclast activity not affecting significantly osteoblasts; useful in treatment of Paget's disease
b) Serum phosphorus concentrations should be monitored at least daily in case of oral administration
c) 2nd generation biphosphonate (amino-biphosphonate)
d) Its bioavailability increases with the administered dose

44. The correct statements about etidronate include all of the following, EXCEPT:
a) Skeletal half-life is hundreds of days
b) Bioavailability increases with the administered dose
c) 2nd generation biphosphonate (amino-biphosphonate)
d) 1st generation biphosphonate.

45. Tick the unwanted effect of etidronate:
a) Anorexia
b) Defective bone mineralization
c) Hypercalcemia
d) Cardiac arrhythmias

46. The major causes of hypercalcemia in adults are the following, EXCEPT:
a) Hyperparathyroidism
b) Cancer with or without bone metastases
c) Renal failure and malabsorption
d) Hypervitaminosis D

47. Tick the indication for calcium administration is:
a) Failure of formation of vitamin D in skin
b) Malabsorption of vitamin D from intestine
c) Hypercalcemia of malignancy
d) Vitamin D deficiency

48. Which of the following calcium preparations is the most preferable for IV injection
    a) Calcium gluceptate (0.9 meq calcium/mL)
    b) Calcium gluconate (0.45 meq calcium/mL)
    c) Calcium chloride (0.68-1.36 meq calcium/mL)
    d) All of the above

49. Which of the oral calcium preparations is often the preparation of choice:
    a) Calcium carbonate (40% calcium)
    b) Calcium lactate (13% calcium)
    c) Calcium phosphate (25% calcium)
    d) Calcium citrate (17% calcium)

50. Tick the major causes of hypocalcemia in adults:
    a) Hypoparathyroidism
    b) Vitamin D deficiency
    c) Renal failure and malabsorption
    d) All of the above

51. The recommended daily magnesium allowance is:
    a) 350-400 mg
    b) 6-9 g
    c) 25 g
    d) 1.5-4 mg

52. Which of the following statements of calcium drugs interaction with other drugs is true?
    a) Ethanol decreases calcium drugs absorption
    b) Loop diuretics increase calcium drugs renal excretion
    c) Glucocorticoids stimulate calcium drugs renal excretion
    d) All of the above

53. The major cause of hypomagnesaemia:
    a) Insufficient dietary intake, e.g. malnutrition
    b) Abnormal gastrointestinal loss, e.g. severe diarrhea or chronic alcoholism
    c) Abnormal renal loss, e.g. diabetes mellitus or during therapy with some kind of drugs such as amphotericin B
    d) Gentamicin, cisplatin, cardiac glycosides, distal and loop diuretics
    e) All of the above

54. The correct statements of magnesium include all of the following, EXCEPT:
    a) Magnesium is mainly an intracellular cation, and is the fourth most abundant cation in the body
    b) The recommended dietary amounts of magnesium have are at 6 mg/kg day (350-400 mg)
    c) The most common specific causes encountered in clinical practice are: diet, alcoholism (drinking), diarrhea and malabsorption, diabetes mellitus, diuretics, and drugs such as aminoglycosides and amphotericin
    d) It is a physiological calcium agonist

55. Which of the following oral magnesium preparations is often the preparation of choice:
    a) Magnesium lactate
    b) Magnesium oxide
    c) MagneB6 (Mg pidolate / Mg lactate + pyridoxine hydrochloride)
    d) All of the above

Agents affectingbone mineral homeostasis

1) A
2) D
3) D
4) C
5) D
6) C
7) B
8) A
9) D
10) D
11) B
12) B
13) A
14) D
15) A
16) C
17) A
18) D
19) D
20) D
21) D
22) D
23) A
24) D
25) D
26) D
27) C
28) C
29) D
30) D
31) C
32) A
33) D
34) C
35) A
36) B
37) D
38) B
39) B
40) C
41) A
42) D
43) D
44) C
45) B
46) C
47) D
48) B
49) A
50) D
51) A
52) D
53) E
54) D
55) C

11. Mineralocorticoid, Mineralocorticoid Antagonists, Diuretics and Plasma Expanders

Single choice tests:

1. Tick the drug that inhibits the enzyme carbonic anhydrase:
    a) Acetazolamide
    b) Furosemide
    c) Hydrochlorothiazide
    d) Spironolactone

2. The following drugs are the major mineralocorticoids, EXCEPT:
    a) Aldosterone
    b) Deoxycorticosterone
    c) Fludrocortisone
    d) Hydrocortisone

3. Which of the following synthetic steroids shows predominantly mineralocorticoid action?
    a) Hydrocortisone
    b) Spironolactone
    c) Dexamethasone
    d) Fludrocortisone

4. Which of the following statements of spironolactone is TRUE?
    a) Spironolactone reverses many of the manifestations of aldosteronism
    b) Spironolactone is also an androgen antagonist and as such is used in the treatment of hirsutism in wormen
    c) Spironolactone is useful as a diuretic
    d) All of the above

5. Mineralocorticoid effects cause:
    a) Increased catabolism
    b) Increased Na retension and K excretion
    c) Increased gluconeogenesis
    d) Deposition of fat on shoulders, face and abdomen

6. All of the following statements regarding diuretics are true, EXCEPT:
    a) Carbonic anhydrase inhibition leads to increased reabsorption of NaHCO3

b) Loop diuretics decrease Na+ reabsorption at the loop of Henle by competing for the Cl- site on the Na+/K+/2Clcotransporter
c) In general, the potency of a diuretic is determined by the place where it acts in the renal tubule
d) Hydrochlorothiazide decreases urinary calcium excretion

7. Tick the drug that acts by competitively blocking NaCl cotransporters in the distal tubule:
    a) Acetazolamide
    b) Furosemide
    c) Hydrochlorothiazide
    d) Spironolactone

8. Tick the drug that acts by competing with aldosterone for its cytosolic receptors:
    a) Acetazolamide
    b) Furosemide
    c) Hydrochlorothiazide
    d) Spironolactone

9. Which of the following is a potassium-sparing diuretic that blocks Na+ channels in the collecting tubules:
    a) Acetazolamide
    b) Amiloride
    c) Furosemide
    d) Hydrochlorothiazide

10. Sustained use of this drug results in increased plasma urate concentrations:
    a) Furosemide
    b) Acetazolamide
    c) Both of the above
    d) Neither of the above

11. Chronic use of this drug can lead to distal tubular hypertrophy, which may reduce its diuretic effect:
    a) Acetazolamide
    b) Amiloride
    c) Furosemide
    d) Hydrochlorothiazide

12. Tick the drug that acts at the proximal tubule:
    a) Acetazolamide
    b) Furosemide
    c) Hydrochlorothiazide
    d) Spironolactone

13. Tick the drug that can be used to treat glaucoma:
    a) Furosemide
    b) Acetazolamide
    c) Both of the above
    d) Neither of the above

14. Tick the drug with a steroid-like structure which is responsible for its anti-androgenic effect:
    a) Amiloride
    b) Furosemide
    c) Hydrochlorothiazide
    d) Spironolactone

15. Tick the drug that decreases calcium excretion in urine:
    a) Hydrochlorothiazide
    b) Amiloride
    c) Furosemide
    d) Acetazolamide

16. The drug that can cause ototoxicity is:
    a) Furosemide
    b) Acetazolamide
    c) Both of the above
    d) Neither of the above

17. Tick the drug that is sometimes a part of fixed-dose combinations used to treat essential hypertension:
    a) Hydrochlorothiazide
    b) Amiloride
    c) Both of the above
    d) Neither of the above

18. Tick the drug that can promote sodium loss in patients with low (e.g., 40 ml/min) glomerular filtration rates:
    a) Furosemide
    b) Acetazolamide

c) Both of the above
d) Neither of the above

19. The drug that needs aldosterone presence in order to be effective is:
    a) Hydrochlorothiazide
    b) Amiloride
    c) Both of the above
    d) Neither of the above

20. The drug that acts only on the lumenal side of renal tubules is:
    a) Furosemide
    b) Acetazolamide
    c) Both of the above
    d) Neither of the above

21. The drug that can be used to treat nephrogenic diabetes insipidus is:
    a) Hydrochlorothiazide
    b) Amiloride
    c) Both of the above
    d) Neither of the above

22. Tick the drug that should never be administered to patients taking potassium supplements:
    a) Hydrochlorothiazide
    b) Amilorid
    c) Furosemide (Lasix)
    d) Neither of the above

23. Tick the drug that acts by blocking competitively the Na+/K+/2Cl- cotransporter:
    a) Loop diuretics
    b) Thiazide diuretics
    c) Potassium-sparing diuretics
    d) Carbonic anhydrase inhibitors

24. Tick the drug that acts in the proximal tubule:
    a) Loop diuretics
    b) Thiazide diuretics
    c) Potassium-sparing diuretics
    d) Carbonic anhydrase inhibitors

25. The drug that acts in the distal convoluted tubule is:
    a) Loop diuretics
    b) Thiazide diuretics
    c) Potassium-sparing diuretics
    d) Carbonic anhydrase inhibitors

26. Tick the drug that is the most potent diuretic:
    a) Loop diuretics
    b) Thiazide diuretics
    c) Potassium-sparing diuretics
    d) Carbonic anhydrase inhibitors

27. Tick the drug that acts by blocking competitively the NaCl cotransporter:
    a) Loop diuretics
    b) Thiazide diuretics
    c) Potassium-sparing diuretics
    d) Carbonic anhydrase inhibitors

28. Tick the drug that is one of the most potent diuretics:
    a) Acetazolamide
    b) Furosemide
    c) Hydrochlorothiazide
    d) Amiloride

29. Tick the drug that inhibits sodium and chloride transport in the cortical thick ascending limb and the early distal tubule:
    a) Acetazolamide
    b) Furosemide
    c) Hydrochlorothiazide
    d) Amiloride

30. Tick the drug that acts in the collecting tubules:
    a) Loop diuretics
    b) Thiazide diuretics
    c) Potassium-sparing diuretics
    d) Carbonic anhydrase inhibitors

31. Tick the drug that blocks the sodium/potassium/chloride cotransporter in the thick ascending loop of Henle:
    a) Acetazolamide
    b) Furosemide

c) Hydrochlorothiazide
d) Amiloride

32. Tick the drug that can cause ototoxicity:
    a) Acetazolamide
    b) Furosemide
    c) Hydrochlorothiazide
    d) Amiloride

33. Tick the drug that is usually given in combination with a thiazide diuretic:
    a) Acetazolamide
    b) Furosemide
    c) Hydrochlorothiazide
    d) Amiloride

34. All of the following statements regarding diuretics are true, EXCEPT:
    a) Furosemide (Lasix) can increase the likelihood of digitalis toxicity
    b) Chlorthalidone (Hygroton) can decrease the excretion of lithium
    c) Ibuprofen can increase the antihypertensive effect of chlorthalidone
    d) Chlorthalidone has a longer duration of action than furosemide

35. Tick the agents that must be given parenterally because they are not absorbed when given orally:
    a) Osmotic diuretics
    b) Loop diuretics
    c) Thiazide diuretics
    d) Potassium-sparing diuretics

36. Tick the nephron site where spironolactone acts:
    a) Proximal convoluted tubule
    b) Ascending thick limb of the loop of Henle
    c) Distal convoluted tubule
    d) Collecting duct

37. Which of the following drugs may be used in the treatment of recurrent calcium nephrolithyasis:
    a) Osmotic diuretics
    b) Loop diuretics

c) Thiazide diuretics
d) Potassium-sparing diuretics

38. Tick the nephron site where furosemide (lasix) acts:
    a) Proximal convoluted tubule
    b) Ascending thick limb of the loop of Henle
    c) Distal convoluted tubule
    d) Collecting duct

39. Which of the following drugs is the least potent diuretic:
    a) Osmotic diuretics
    b) Loop diuretics
    c) Thiazide diuretics
    d) Potassium-sparing diuretics

40. Tick the nephron site where acetazolamide acts:
    a) Proximal convoluted tubule
    b) Ascending thick limb of the loop of Henle
    c) Distal convoluted tubule
    d) Collecting duct

41. Tick the nephron site where amiloride acts:
    a) Proximal convoluted tubule
    b) Ascending thick limb of the loop of Henle
    c) Distal convoluted tubule
    d) Collecting duct

42. Tick the drug that blocks competitively chloride channels and prevents movement of sodium, potassium, and chloride into the renal tubular cells:
    a) Furosemide
    b) Acetazolamide
    c) Triamterene
    d) Mannitol

43. The drug that acts affecting the tubular fluid composition in a non-receptor mediated mode is:
    a) Furosemide
    b) Acetazolamide
    c) Triamterene
    d) Mannitol

44. The mechanism of action of osmotic diuretics consists in:
    a) They inhibit sodium chloride transport in the early segment of the distal convoluted tubule
    b) These drugs inhibit the cotransport of sodium, potassium, and chloride
    c) They increase osmotic pressure of plasma, increase minute-volume of blood and increase also the renal circulation and filtration
    d) Inhibition of carbonic anhydrase in the brush border and intracellular carbonic anhydrase in the PCT cell
    e) They are antagonist (competitive or noncompetitive) of aldosterone in the collecting tubules

Multiple-choice tests:

45. Tick the characteristics of mannitol:
    a) It is given as a 1% solution
    b) It is contraindicated for patients with cardiac failure
    c) It is metabolized by the liver prior to excretion
    d) It decreases the vitreous volume
    e) It can be given orally to decrease intraocular pressure

46. Which of the following statements about carbonic anhydrase inhibitors are true:
    a) They inhibit carbonic type II anhydrase isoenzyme
    b) They have an additive effect when used with beta blockers
    c) Systemic side effects do not occur with topical carbonicanhydrase inhibitors.
    d) Topical dorzolamide has a better corneal penetration than topical acetazolamide
    e) Dorzolamide possesses ampholytic properties

47. Which of the following are true with regard to acetazolamide:
    a) 99% of carbonic anhydrase must be inhibited before there is an effect on intraocular pressure
    b) It increases the rate of subretinal fluid absorption between retina and retinal pigment epithelium
    c) It reduces the rate of aqueous production by up to 50%
    d) A solution of acetazolamide has an alkaline pH
    e) It is excreted unchanged by the kidneys

Mineralocorticoid,Mineralocorticoid Antagonists, Diuretics, and Plasma Expanders

Task: one correct answer

1) A
2) D
3) D
4) D
5) B
6) A
7) C
8) D
9) B
10) A
11) C
12) A
13) B
14) D
15) A
16) A
17) C
18) A
19) D
20) A
21) A
22) B
23) A
24) D
25) B
26) A
27) B
28) B
29) C
30) C
31) B
32) B
33) D
34) C
35) A
36) D
37) B
38) B
39) D
40) A
41) D
42) A
43) D
44) C

Task: two or more correct answers

45) D, E
46) A, B, E
47) B, C, D, E

12. Chemotherapeutic drugs

12.1. Antibiotics

Single-choice tests:

1. General principles of anti-infective therapy are:
    a) Clinical judgment of microbiological factors
    b) Definitive identification of bacterial infection and the micro-organism's susceptibility
    c) Optimal route of administration, dose, dosing frequency and duration of treatment
    d) All of the above

2. Rational antimicrobial combination is used to:
    a) Provide synergism when microorganisms are not effectively eradicated with a single agent alone
    b) Provide broad coverage
    c) Prevent the emergence of resistance
    d) All of the above

3. What does the term "antibiotics" mean:
    a) Non organic or synthetic substances that selectively kill or inhibit the growth of other microorganisms
    b) Substances produced by some microorganisms and their synthetic analogues that selectively kill or inhibit the growth of other 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 and helminthes

4. Tick the drug belonging to antibiotics-monobactams:
    a) Ampicillin
    b) Bicillin-5
    c) Aztreonam
    d) Imipinem

5. The following are mechanisms of bacterial resistance to anti microbial agents, EXCEPT:
    a) Active transport out of a microorganism or/and hydrolysis of an agent via enzymes produced by a microorganism
    b) Enlarged uptake of the drug by a microorganism

c) Modification of a drug's target
d) Reduced uptake by a microorganism

6. All of the following drugs are antibiotics, EXCEPT:
   a) Streptomycin
   b) Penicillin
   c) Co-trimoxazole
   d) Chloramphenicol

7. Bactericidal effect means:
   a) Inhibition of bacterial cell division
   b) Inhibition of young bacterial cell growth
   c) Destruction of bacterial cells
   d) Formation of bacterial L-form

8. Minimal duration of antibacterial treatment usually is:
   a) Not less than 1 day
   b) Not less than 5 days
   c) Not less than 10-14 days
   d) Not less than 3 weeks

9. Which of the following groups of antibiotics demonstrates the bactericidal effect?
   a) Tetracyclines
   b) Macrolides
   c) Penicillins
   d) All of the above

10. The bacteristatic effect is:
   a) Inhibition of bacterial cell division
   b) Inhibition of young bacterial cells growth
   c) Destruction of bacterial cells
   d) Formation of bacterial L-form

11. Tick the drug belonging to antibiotics-tetracyclines:
   a) Doxycycline
   b) Streptomycin
   c) Clarithromycin
   d) Amoxacillin

12. Tick the drug belonging to glycopeptides:
   a) Vancomycin
   b) Lincomycin

c) Neomycin
d) Carbenicillin

13. The statement, that some microorganisms can develop alternative metabolic pathways for rendering reactions inhibited by the drug, is:
    a) True
    b) False

14. Which of the following groups of antibiotics demonstrates the bacteristatic effect:
    a) Carbapenems
    b) Macrolides
    c) Aminoglycosides
    d) Cephalosporins

15. Tick the drug belonging to antibiotics-macrolides:
    a) Neomycin
    b) Doxycycline
    c) Erythromycin
    d) Cefotaxime

16. Tick the drug belongs to antibiotics-cephalosporins:
    a) Streptomycin
    b) Cefaclor
    c) Phenoxymethilpenicillin
    d) Erythromycin

17. Which of the following antibiotics contains a beta-lactam ring in their chemical structure:
    a) Penicillins
    b) Cephalosporins
    c) Carbapenems and monobactams
    d) All groups

18. All of the following antibiotics are aminoglycosides, EXCEPT:
    a) Gentamycin
    b) Streptomycin
    c) Clindamycin
    d) Neomycin

19. Tick the drug belonging to lincozamides:
    a) Erythromycin
    b) Lincomycin

c) Azithromycin
d) Aztreonam

20. Antibiotics inhibiting the bacterial cell wall synthesis are:
    a) Beta-lactam antibiotics
    b) Tetracyclines
    c) Aminoglycosides
    d) Macrolides

21. Tick the drug belonging to antibiotics-carbapenems:
    a) Aztreonam
    b) Amoxacillin
    c) Imipinem
    d) Clarithromycin

22. Antibiotic inhibiting bacterial RNA synthesis is:
    a) Erythromycin
    b) Rifampin
    c) Chloramphenicol
    d) Imipinem

23. All of the following drugs demonstrate a prolonged effect, EXCEPT:
    a) Penicillin G
    b) Procain penicillin
    c) Bicillin-1
    d) Bicillin-5

24. Tick the drug belonging to nitrobenzene derivative:
    a) Clindamycin
    b) Streptomycin
    c) Azithromycin
    d) Chloramphenicol

25. Tick the drug belonging to antibiotics-aminoglycosides:
    a) Erythromycin
    b) Gentamycin
    c) Vancomycin
    d) Polymyxin

26. Antibiotics altering the permeability of cell membranes are:
    a) Glycopeptides
    b) Polymyxins

c) Tetracyclines
d) Cephalosporins

27. Tick the beta-lactamase inhibitor for co-administration with penicillins:
    a) Clavulanic acid
    b) Sulbactam
    c) Tazobactam
    d) All of the above

28. All of the following antibiotics are macrolides, EXCEPT:
    a) Erythromycin
    b) Clarithromycin
    c) Lincomycin
    d) Roxythromycin

29. Which of the following drugs is penicillinase resistant:
    a) Oxacillin
    b) Amoxacillin
    c) Bicillin-5
    d) Penicillin G

30. Biosynthetic penicillins are effective against:
    a) Gram-positive and gram-negative cocci, Corynebacterium diphtheria, spirochetes, Clostridium gangrene
    b) Corynebacterium diphtheria, mycobacteries
    c) Gram-positive cocci, viruses
    d) Gram-negative cocci, Rickettsia, mycotic infections

31. The mechanism of penicillin antibacterial effect is:
    a) Inhibition of transpeptidation in the bacterial cell wall
    b) Inhibition of beta-lactamase in the bacterial cell
    c) Activation of endogenous proteases, that destroy bacterial cell wall
    d) Activation of endogenous phospholipases, which leads to alteration of cell membrane permeability

32. Which of the following drugs is a gastric acid resistant:
    a) Penicillin G
    b) Penicillin V
    c) Carbenicillin
    d) Procain penicillin

33.Cephalosporines are drugs of choice for the treatment of:

a) Gram-positive microorganism infections
b) Gram-negative microorganism infections
c) Gram-negative and gram-positive microorganism infections, if penicillins have no effect
d) Only bacteroid infections

34. All of the following antibiotics inhibit protein synthesis in bacterial cells, EXCEPT:

a) Macrolides
b) Aminoglycosides
c) Glycopeptides
d) Tetracyclines

35.Carbapenems are effective against:

a) Gram-positive microorganisms
b) Gram-negative microorganisms
c) Only bacteroid infections
d) Broad-spectum action

36.Lincozamides have the following unwanted effect:

a) Nephrotoxicity
b) Cancerogenity
c) Pseudomembranous colitis
d) Irritation of respiratory organs

37.Tetracyclins have the following unwanted effects:

a) Irritation of gastrointestinal mucosa, phototoxicity
b) Hepatotoxicity, anti-anabolic effect
c) Dental hypoplasia, bone deformities
d) All of the above

38. Aminoglycosides are effective against:

a) Gram-positive microorganisms, anaerobic microorganisms, spirochetes
b) Broad-spectum action, except Pseudomonas aeruginosa
c) Gram-negative microorganisms, anaerobic microorganisms
d) Broad-spectum action, except anaerobic microorganisms and viruses

39. Aminoglycosides have the following unwanted effects:
    a) Pancytopenia
    b) Hepatotoxicity
    c) Ototoxicity, nephrotoxicity
    d) Irritation of gastrointestinal mucosa

40. Choose the characteristics of chloramphenicol:
    a) It is of broad-spectum action and demonstrates the bactericidal effect
    b) It influences Gram-positive microorganisms and demonstrates the bactericidal effect
    c) It influences the Gram-negative microorganisms and demonstrates the bacte-ricidal effect
    d) It is of broad-spectum action and demonstrates the bacteristatic effect

41. Choose the characteristics of lincozamides:
    a) It is of broad-spectum action and demonstrates the bactericidal effect
    b) Influence mainly the anaerobic organisms, Gram- negative cocci
    c) It is of broad-spectum action and demonstrates the bacteristatic effect
    d) Influence mainly the anaerobic organisms, Gram -positive cocci

42. Choose the characteristics of vancomicin:
    a) It is a glycopeptides that inhibits cell wall synthesis active only against Gram-negative bacteria
    b) It is a glycopeptide, that alters permeability of cell membrane and is active against anaerobic bacteria
    c) It is a beta-lactam antibiotic that inhibits cell wall synthesis active only against Pseudomonas aeruginosa
    d) It is a glycopeptides that inhibits cell wall synthesis and is active only against Gram-positive bacteria

43. All of the following antifungal drugs are antibiotics, EXCEPT:
    a) Amphotericin B
    b) Nystatin
    c) Myconazol
    d) Griseofulvin

44. Vancomicin has the following unwanted effects:
    a) Pseudomembranous colitis
    b) Hepatotoxicity
    c) “Red neck” syndrome, phlebitis
    d) All of the above

45. Which of the following drugs is used for candidiasis treatment:
    a) Griseofulvin
    b) Nitrofungin
    c) Myconazol
    d) Streptomycin

46. Chloramphenicol has the following unwanted effects:
    a) Nephrotoxicity
    b) Pancytopenia
    c) Hepatotoxicity
    d) Ototoxicity

47. Thick the drug belonging to antibiotics having the polyene structure:
    a) Nystatin
    b) Ketoconazole
    c) Griseofulvin
    d) All of the above

48. Which of the following is not characteristic of polyenes:
    a) They alter the structure and functions of cell membranes
    b) Broad-spectrum action
    c) Fungicidal effect
    d) Nephrotoxicity, hepatotoxicity

49. Which of the following is the mechanism of streptomycin action:
    a) Inhibition of cell wall synthesis
    b) Inhibition of protein synthesis
    c) Inhibition of RNA and DNA synthesis
    d) Inhibition of cell membranes permeability

50. Tick the drug of choice for syphilis treatment:
    a) Gentamycin
    b) Penicillin
    c) Chloramphenicol
    d) Doxycycline

51. Streptomycin has the following unwanted effect:
    a) Cardiotoxicity
    b) Hepatotoxicity
    c) Retrobulbar neuritis with red-green color blindness
    d) Ototoxicity, nephrotoxicity

Antibiotics

Task: one correct answer

1) D	18) C	35) D
2) D	19) B	36) C
3) B	20) A	37) D
4) C	21) C	38) D
5) B	22) B	39) C
6) C	23) A	40) A
7) C	24) D	41) D
8) B	25) B	42) D
9) C	26) B	43) C
10) A	27) D	44) C
11) A	28) C	45) C
12) A	29) A	46) B
13) A	30) A	47) A
14) B	31) A	48) C
15) C	32) B	49) B
16) B	33) C	50) B
17) D	34) C	51) D

12. 2. Sulphonamides and synthetic antibacterial drugs

Single-choice tests:

1. The combination of sulfonamides with trimethoprim:
    a) Decreases the unwanted effects of sulfonamides
    b) Increases the antimicrobial activity
    c) Decreases the antimicrobial activity
    d) Increases the elimination of sulfonamides

2. Sulfonamide potency is decreased in case of co-administration with:
    a) Oral hypoglycemic agents
    b) Local anesthetics – derivatives of paraaminobenzoic acid
    c) Local anesthetics – derivatives of benzoic acid
    d) Non-narcotic analgesics

3. Which of the following measures are necessary for prevention of sulfonamide precipitation and crystaluria:
    a) Intake of drinks with acid pH
    b) Intake of drinks with alkaline pH
    c) Intake of saline drinks
    d) Restriction of drinking

4. Tick the mechanism of action of trimethoprim:
    a) Inhibition of cyclooxygenase
    b) Inhibition of dihydropteroate reductase
    c) Inhibition of dihydropteroate synthase
    d) Inhibition of DNA gyrase

5. Sulfonamides are effective against:
    a) Bacteria and Chlamidia
    b) Actinomyces
    c) Protozoa
    d) All of the above

6. Tick the antibacterial drug–a quinolone derivative:
    a) Nitrofurantoin
    b) Nalidixic acid
    c) Streptomycin
    d) Metronidazole

7. The mechanism of fluoroquinolone action is:
    a) Inhibition of phospholipase C
    b) Inhibition of DNA gyrase
    c) Inhibition of bacterial cell synthesis
    d) Alteration of cell membrane permeability

8. Tick the unwanted effects of fluoroquinolones:
    a) Hallucinations
    b) Headache, dizziness, insomnia
    c) Hypertension
    d) Immunetoxicity

9. Tick the antibacterial drug–a nitrofurane derivative:
    a) Nitrofurantoin
    b) Trimethoprim
    c) Ciprofloxacin
    d) Nystatin

10. Tick the antibacterial drug–a nitroimidazole derivative:
    a) Clavulanic acid
    b) Metronidazole
    c) Nitrofurantoin
    d) Doxycycline

11. Tick the fluoroquinolone derivative:
    a) Chloramphenicol
    b) Nitrofurantoin
    c) Nalidixic acid
    d) Ciprofloxacin

12. Fluoroquinolones are active against:
    a) Gram-negative microorganisms only
    b) Mycoplasmas and Chlamidiae only
    c) Gram-positive microorganisms only
    d) A variety of Gram-negative and positive microorganisms, including Mycoplasmas and Chlamidiae

13.Tick the indications for nitrofuranes:
    a) Infections of respiratory tract
    b) Infections of urinary and gastro-intestinal tracts
    c) Syphilis
    d) Tuberculosis

14. Tick the indications for Metronidazole:
    a) Intra-abdominal infections, vaginitis, enterocolitis
    b) Pneumonia
    c) As a disinfectant
    d) Influenza

15. Tick the unwanted effects of nitrofuranes:
    a) Nausea, vomiting
    b) Allergic reactions
    c) Hemolytic anemia
    d) All of the above

16. Tick the indications for fluoroquinolones:
    a) Infections of the urinary tract
    b) Bacterial diarrhea
    c) Infections of the urinary and respiratory tract, bacterial diarrhea
    d) Respiratory tract infections

17. Tick the unwanted effects of Metronidazole:
    a) Nausea, vomiting, diarrhea, stomatitis
    b) Hypertension
    c) Disturbances of the peripheral blood circulation
    d) All of the above

Sulphonamides andsynthetic antibacterial drugs

Task: one correct answer

1) B
2) B
3) B
4) B
5) D
6) B
7) B
8) B
9) A
10) B
11) D
12) D
13) B
14) A
15) D
16) C
17) A

12.3. Antiprotozoal, anthelmintic and antituberculous drugs

Single-choice tests:

1. Tick the drug used for toxoplasmosis treatment:
    a) Chloroquine
    b) Tetracyclin
    c) Suramin
    d) Pyrimethamine

2. Tick the drug used for amoebiasis treatment:
    a) Nitrofurantoin
    b) Iodoquinol
    c) Pyrazinamide
    d) Mefloquine

3. Tick the drug used for balantidiasis treatment:
    a) Azitromycin
    b) Tetracycline
    c) Quinine
    d) Trimethoprim

4. Tick the drug used for malaria chemoprophylaxis and treatment:
    a) Chloroquine
    b) Quinidine
    c) Quinine
    d) Sulfonamides

5. Tick the group of antibiotics with antimalarial effect:
    a) Aminoglycosides
    b) Tetracyclins
    c) Carbapenems
    d) Penicillins

6. Tick the drug used for leishmaniasis treatment:
    a) Pyrimethamine
    b) Albendazole
    c) Sodium stibogluconate
    d) Tinidazole

7. Tick the drug used for trichomoniasis treatment:
    a) Metronidazole
    b) Suramin
    c) Pyrimethamine
    d) Tetracycline

8. Tick the antimalarial drug belonging to 8-aminoquinoline derivatives:
    a) Doxycycline
    b) Quinidine
    c) Primaquine
    d) Chloroquine

9. Tick the drug for the treatment of the hepatic form of amebiasis:
    a) Diloxanide or iodoquinol
    b) Tetracycline or doxycycline
    c) Metronidazole or emetine
    d) Erythromycin or azitromycin

10. Tick the drug used for trypanosomosis treatment:
    a) Melarsoprol
    b) Metronidazole
    c) Tetracyclin
    d) Quinidine

11. Tick the antimalarial drug with gametocidal effect:
    a) Mefloquine
    b) Primaquine
    c) Doxycycline
    d) Sulfonamides

12. All of the following antimalarial drugs influence blood schizonts, EXCEPT:
    a) Mefloquine
    b) Chloroquine
    c) Primaquine
    d) Quinidine

13. Tick the antimalarial drug influencing tissue schisonts:
    a) Mefloquine
    b) Chloroquine
    c) Quinidine
    d) Primaquine

14. Tick the antimalarial drug belonging to pyrimidine derivatives:
    a) Mefloquine
    b) Pyrimethamine
    c) Quinidine
    d) Chloroquine

15. Tick the amebecide drug for the treatment of asymptomatic intestinal form of amebiasis:
    a) Chloroquine
    b) Diloxanide
    c) Emetine
    d) Doxycycline

16. Tick the mechanism of action of piperazine:
    a) Inhibition of microtubule synthesis in helminthes and ireversible impairment of glucose uptake
    b) Blocking acetylcholine transmission in the myoneural junction and paralysis of helminthes
    c) Inhibition of oxidative phosphorylation in some species of helminthes
    d) Increase of cell membrane permeability for calcium, resulting in paralysis, dislodgement and death of helminthes

17. Tick the drugs for the treatment of intestinal form of amebiasis:
    a) Metronidazole and diloxanide
    b) Diloxanide and streptomycin
    c) Diloxanide and Iodoquinol
    d) Emetine and metronidazole

18. Tick the luminal amebecide drug:
    a) Metronidazole
    b) Emetine
    c) Doxycycline
    d) Diloxanide

19. Tick the drug of choice for the treatment of extraluminal amebiasis:
    a) Iodoquinol
    b) Metronidazole
    c) Diloxanide
    d) Tetracycline

20. Tick the drug, blocking acetylcholine transmission at the myoneural junction of helminthes:
    a) Levamisole
    b) Mebendazole
    c) Piperazine
    d) Niclosamide

21. Tick the mechanism of action of niclosamide:
    a) Increase of cell membrane permeability for calcium, resulting in paralysis, dislodgement and death of helminthes
    b) Blocking acetylcholine transmission in the myoneural junction and paralysis of helminthes
    c) Inhibition of microtubule synthesis in helminthes and ireversible impairment of glucose uptake
    d) Inhibition of oxidative phosphorylation in some species of helminthes

22. All of the following antimalarial drugs are 4-quinoline derivatives, EXCEPT:
    a) Chloroquine
    b) Mefloquine
    c) Primaquine
    d) Amodiaquine

23. Tick the mechanism of action of praziquantel:
    a) Blocking acetylcholine transmission in the myoneural junction and paralysis of helminthes
    b) Inhibition of microtubule synthesis in helminthes and irreversible impairment of glucose uptake
    c) Increase of cell membrane permeability for calcium,resulting in paralysis, dislodgement and death of helminthes
    d) Inhibition of oxidative phosphorylation in some species of helminthes

24. Tick the drug, a salicylamide derivative:
    a) Praziquantel
    b) Piperazine
    c) Mebendazole
    d) Niclosamide

25. Tick the mechanism of action of mebendazole:
    a) Inhibiting oxidative phosphorylation in some species of helminthes
    b) Increasing cell membrane permeability for calcium, resulting in paralysis, dislodgement and death of helminthes
    c) Inhibiting microtubule synthesis in helminthes and irreversible impairment of glucose uptake
    d) Blocking acetylcholine transmission in the myoneural junction and paralysis of helminthes

26. Tick the drug, inhibiting oxidative phosphorylation in some species of helminthes:
    a) Niclosamide
    b) Piperazine
    c) Praziquantel
    d) Mebendazole

27. Tick the drug for neurocysticercosis treatment:
    a) Praziquantel
    b) Pyrantel
    c) Piperazine
    d) Bithionol

28. Tick the drug for nematodosis (roundworm invasion) treatment:
    a) Niclosamide
    b) Praziquantel
    c) Bithionol
    d) Pyrantel

29. Tick the drug for cestodosis (tapeworm invasion) treatment:
    a) Piperazine
    b) Praziquantel
    c) Pyrantel
    d) Ivermectin

30. Tick the drug for trematodosis (fluke invasion) treatment:
    a) Bithionol
    b) Ivermectin
    c) Pyrantel
    d) Metronidazole

31. Tick the drug, a benzimidazole derivative:
    a) Praziquantel
    b) Mebendazole
    c) Suramin
    d) Pyrantel

32. Tick the broad spectrum drug for cestodosis, trematodosis and cycticercosis treatment:
    a) Piperazine
    b) Ivermectine

c) Praziquantel
d) Pyrantel

33. Tick the drug for ascaridosis and enterobiosis treatment:
    a) Bithionol
    b) Pyrantel
    c) Praziquantel
    d) Suramin

34. Tick the drug for strongiloidosis treatment:
    a) Niclosamide
    b) Praziquantel
    c) Bithionol
    d) Ivermectin

35. Tick the drug for echinococcosis treatment:
    a) Suramin
    b) Mebendazole or Albendazole
    c) Piperazine
    d) Iodoquinol

36. Tick the mechanism of action of rifampin:
    a) Inhibition of mycolic acids synthesis
    b) Inhibition of DNA dependent RNA polymerase
    c) Inhibition of topoisomerase II
    d) Inhibition of cAMP synthesis

37. Rifampin has the following unwanted effect:
    a) Dizziness, headache
    b) Loss of hair
    c) Flu-like syndrome, tubular necrosis
    d) Hepatotoxicity

38. Tick the antimycobacterial drug belonging to first-line agents:
    a) PAS
    b) Isoniazid
    c) Kanamycin
    d) Pyrazinamide

39. Tick the antimycobacterial drug, belonging to second-line agents:
    a) Isoniazid
    b) PAS

c) Rifampin
d) Streptomycin

40. Tick the antimycobacterial drug, belonging to antibiotics:
    a) Isoniazid
    b) PAS
    c) Ethambutol
    d) Rifampin

41. Tick the antimycobacterial drug – hydrazide of isonicotinic acid:
    a) Rifampin
    b) Isoniazid
    c) Ethambutol
    d) Pyrazinamide

42. Ethambutol has the following unwanted effect:
    a) Cardiotoxicity
    b) Immunetoxicity
    c) Retrobulbar neuritis with red-green color blindness
    d) Hepatotoxicity

43. Tick the drug, which is effective against mycobacteria only:
    a) Isoniazid
    b) Streptomycin
    c) Rifampin
    d) Kanamycin

44. Tick the mechanism of action of izoniazid:
    a) Inhibition of protein synthesis
    b) Inhibition of mycolic acids synthesis
    c) Inhibition of RNA synthesis
    d) Inhibition of ADP synthesis

45. All of the following agents are the first-line antimycobacterial drugs, EXCEPT:
    a) Rifampin
    b) Pyrazinamide
    c) Isoniazid
    d) Streptomycin

46. Isoniazid has following unwanted effect:
    a) Cardiotoxicity
    b) Hepatotoxicity, peripheral neuropathy
    c) Loss of hair
    d) Immunotoxicity

47. All of the following antimycobacterial drugs have a bactericidal effect, EXCEPT:
    a) Pyrazinamide
    b) Streptomycin
    c) Rifampin
    d) Isoniazid

48. Combined chemotherapy of tuberculosis is used to:
    a) Decrease mycobacterium drug-resistance
    b) Increase mycobacterium drug-resistance
    c) Decrease the antimicrobal activity
    d) Decrease the onset of antimycobacterial drugs biotransformation

Antiprotozoal, anthelminticand antituberculous drugs

Task: one correct answer

1) D	17) A	33) B
2) B	18) D	34) D
3) B	19) B	35) B
4) A	20) C	36) B
5) B	21) D	37) C
6) C	22) C	38) B
7) A	23) C	39) B
8) C	24) D	40) D
9) C	25) C	41) B
10) A	26) A	42) C
11) B	27) A	43) A
12) C	28) D	44) B
13) D	29) B	45) B
14) B	30) A	46) B
15) B	31) B	47) A
16) B	32) C	48) A

12.4. Antiviral agents, agents for chemotherapy of cancer and antimicotic agents

Single-choice tests:

1. All of the following antiviral drugs are the analogs of nucleosides, EXCEPT:
    a) Acyclovir
    b) Zidovudine
    c) Saquinavir
    d) Didanozine

2. Tick the drug, a derivative of adamantane:
    a) Didanozine
    b) Rimantadine
    c) Gancyclovir
    d) Foscarnet

3. Tick the drug, a derivative of pyrophosphate:
    a) Foscarnet
    b) Zidovudine
    c) Vidarabine
    d) Acyclovir

4. Tick the drug, inhibiting viral DNA synthesis:
    a) Interferon
    b) Saquinavir
    c) Amantadine
    d) Acyclovir

5. Tick the drug, inhibiting uncoating of viral RNA:
    a) Vidarabine
    b) Rimantadine
    c) Acyclovir
    d) Didanozine

6. Tick the drug, inhibiting viral reverse transcriptase:
    a) Zidovudine
    b) Vidarabine
    c) Rimantadine
    d) Gancyclovir

7. Tick the drug, inhibiting viral proteases:
    a) Rimantadine
    b) Acyclovir
    c) Saquinavir
    d) Zalcitabine

8. Tick the drug of choice for the treatment of herpes and cytomegalovirus infection:
    a) Saquinavir
    b) Interferon alfa
    c) Didanozine
    d) Acyclovir

9. Tick the drug which belongs to nonnucleoside reverse transcriptase inhibitors:
    a) Zidovudine
    b) Vidarabine
    c) Nevirapine
    d) Gancyclovir

10. All of the following antiviral drugs are antiretroviral agents, EXCEPT:
    a) Acyclovir
    b) Zidovudine
    c) Zalcitabine
    d) Didanozine

11. Tick the drug used for influenza A prevention:
    a) Acyclovir
    b) Rimantadine
    c) Saquinavir
    d) Foscarnet

12. Tick the drug a derivative of nucleosides used for HIV infection treatment.
    a) Acyclovir
    b) Zidovudine
    c) Gancyclovir
    d) Trifluridine

13. Tick the antiviral drug which belongs to endogenous proteins:
    a) Amantadine
    b) Saquinavir
    c) Interferon alfa
    d) Pencyclovir

14. Tick the drug which belongs to nucleoside reverse transcriptase inhibitors:
    a) Didanosine
    b) Gancyclovir
    c) Nevirapine
    d) Vidarabine

15. All of the following antiviral drugs are anti-influenza agents, EXCEPT:
    a) Acyclovir
    b) Amantadine
    c) Interferons
    d) Rimantadine

16. Tick the unwanted effects of zidovudine:
    a) Hallucinations, dizziness
    b) Anemia, neutropenia, nausea, insomnia
    c) Hypertension, vomiting
    d) Peripheral neuropathy

17. Tick the unwanted effects of intravenous infusion of acyclovir:
    a) Renal insufficiency, tremors, delerium
    b) Rash, diarrhea, nausea
    c) Neuropathy, abdominal pain
    d) Anemia, neutropenia, nausea, insomnia

18. Tick the drug that can induce peripheral neuropathy and oral ulceration:
    a) Acyclovire
    b) Zalcitabine
    c) Zidovudine
    d) Saquinavir

19. Tick the unwanted effects of didanozine:
    a) Hallucinations, dizziness, insomnia
    b) Anemia, neutropenia, nausea

c) Hypertension, vomiting, diarrhea
d) Peripheral neuropathy, pancreatitis, diarrhea, hyperuricemia

20. Thick the unwanted effects of indinavir:
    a) Hypotension, vomiting, dizziness
    b) Nephrolithiasis, nausea, hepatotoxicity
    c) Peripheral neuropathy, pancreatitis, hyperuricemia
    d) Anemia, neutropenia, nausea

21. Tick the drug that can induce nausea, diarrhea, abdominal pain and rhinitis:
    a) Acyclovire
    b) Zalcitabine
    c) Zidovudine
    d) Saquinavir

22. All of the following effects are disadvantages of anticancer drugs, EXCEPT:
    a) Low selectivity to cancer cells
    b) Depression of bone marrow
    c) Depression of angiogenesis
    d) Depression of immune system

23. Rational combination of anticancer drugs is used to:
    a) Provide synergism resulting from the combination of anticancer drugs with different mechanisms of action
    b) Provide synergism resulting from the combination of anticancer drugs with the same mechanisms of action
    c) Provide stimulation of immune system
    d) Provide stimulation of cell proliferation

24. Tick the anticancer alkylating drug, a derivative of chloroethylamine:
    a) Methotrexate
    b) Cisplatin
    c) Cyclophosphamide
    d) Carmustine

25. Tick the anticancer alkylating drug, a derivative of ethylenimine:
    a) Mercaptopurine
    b) Thiotepa
    c) Chlorambucil
    d) Procarbazine

26. Tick the group of hormonal drugs used for cancer treatment:
    a) Mineralocorticoids and glucocorticoids
    b) Glucocorticoids and gonadal hormones
    c) Gonadal hormones and somatotropin
    d) Insulin

27. Tick the anticancer alkylating drug, a derivative of alkylsulfonate:
    a) Fluorouracil
    b) Carboplatin
    c) Vinblastine
    d) Busulfan

28. Tick the anticancer drug of plant origin:
    a) Dactinomycin
    b) Vincristine
    c) Methotrexate
    d) Procarbazine

29. The mechanism of action of alkylating agents is:
    a) Production carbonium ions altering protein structure
    b) Production carbonium ions altering DNA structure
    c) Structural antagonism against purine and pyrimidine
    d) Inhibition of DNA-dependent RNA synthesis

30. Tick the anticancer drug, a pyrimidine antagonist:
    a) Fluorouracil
    b) Mercaptopurine
    c) Thioguanine
    d) Methotrexate

31. Methotrexate is:
    a) A purine antagonist
    b) A folic acid antagonist
    c) An antibiotic
    d) An alkylating agent

32. Tick the antibiotic for cancer chemotherapy:
    a) Cytarabine
    b) Doxorubicin
    c) Gentamycin
    d) Etoposide

33. Fluorouracil belongs to:
    a) Antibiotics
    b) Antimetabolites
    c) Plant alkaloids
    d) Bone marrow growth factor

34. Tick the mechanism of action of anticancer drugs belonging to plant alkaloids:
    a) Inhibition of DNA-dependent RNA synthesis
    b) Cross-linking of DNA
    c) Mitotic arrest in metaphase
    d) Nonselective inhibition of aromatases

35. General contraindications for anticancer drugs are:
    a) Depression of bone marrow
    b) Acute infections
    c) Severe hepatic and/or renal insufficiency
    d) All of the above

36. Tick the mechanism of action of methotrexate:
    a) Inhibition of dihydrofolate reductase
    b) Activation of cell differentiation
    c) Catabolic depletion of serum asparagine
    d) All of the above

37. Tick the anticancer drug belonging to inorganic metal complexes:
    a) Dacarbazine
    b) Cisplatin
    c) Methotrexate
    d) Vincristine

38. Tick the indication for estrogens in oncological practice:
    a) Leukemia
    b) Cancer of prostate
    c) Endometrial cancer
    d) Brain tumors

39. Tick the enzyme drug used for acute leukemia treatment:
    a) Dihydrofolate reductase
    b) Asparaginase
    c) Aromatase
    d) DNA gyrase

40. All of the following drugs are derivatives of nitrosoureas, EXCEPT:
    a) Carmustine
    b) Vincristine
    c) Lomustine
    d) Semustine

41. Tick the group of drugs used as subsidiary medicines in cancer treatment:
    a) Cytoprotectors
    b) Bone marrow growth factors
    c) Antimetastatic agents
    d) All of the above

42. Tick the estrogen inhibitor:
    a) Leuprolide
    b) Tamoxifen
    c) Flutamide
    d) Anastrozole

43. Tick the antiandrogen drug:
    a) Flutamide
    b) Aminoglutethimide
    c) Tamoxifen
    d) Testosterone

44. Tick the drug belonging to aromatase inhibitors:
    a) Octreotide
    b) Anastrozole
    c) Flutamide
    d) Tamoxifen

45. Tick the drug belonging to gonadotropin-releasing hormone agonists:
    a) Leuprolide
    b) Tamoxifen
    c) Flutamide
    d) Anastrozole

46. Which of the following drugs is used for dermatomycosis treatment:
    a) Nystatin
    b) Griseofulvin
    c) Amphotericin B
    d) Vancomycin

47. All of the following are features of amfotericin B, EXCEPT:
    a) It is used for systemic mycosis treatment
    b) Poor absorption from the gastro-intestinal tract
    c) It does not demonstrate nephrotoxicity
    d) It influences the permeability of fungus cell membrane

48. Tick the mechanism of action of amphotericin B:
    a) Inhibition of cell wall synthesis
    b) Inhibition of fungal protein synthesis
    c) Inhibition of DNA synthesis
    d) Alteration of cell membrane permeability

49. Azoles have an antifungal effect because of:
    a) Inhibition of cell wall synthesis
    b) Inhibition of fungal protein synthesis
    c) Reduction of ergosterol synthesis
    d) Inhibition of DNA synthesis

50. Which of the following drugs is used for systemic and deep mycotic infections treatment:
    a) Co-trimoxazol
    b) Griseofulvin
    c) Amphotericin B
    d) Nitrofungin

51. Which of the following drugs alters the permeability of Candida cell membranes:
    a) Amphotericin B
    b) Ketoconazole
    c) Nystatin
    d) Terbinafine

52. All of the following drugs demonstrate a fungicidal effect, EXCEPT:
    b) Terbinafin
    c) Amfotericin B
    d) Ketoconazole
    e) Myconazol

53. Amfotericin B has the following unwanted effects:
    a) Psychosis
    b) Renal impairment, anemia
    c) Hypertension, cardiac arrhythmia
    d) Bone marrow toxicity

Antiviral agents, agents for chemotherapy of cancer and *antimicotic agents*

Task: one correct answer

1) C
2) B
3) A
4) D
5) B
6) A
7) C
8) D
9) C
10) A
11) B
12) B
13) C
14) A
15) A
16) B
17) A
18) B
19) D
20) B
21) D
22) C
23) A
24) C
25) B
26) B
27) D
28) B
29) B
30) A
31) B
32) B
33) B
34) C
35) D
36) A
37) B
38) B
39) A
40) B
41) D
42) B
43) A
44) B
45) A
46) B
47) C
48) D
49) C
50) C
51) C
52) C
53) B

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