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

2. What does "pharmacokinetics" include?
a) Pharmacological effects of drugs
b) Unwanted effects of drugs
c) Chemical structure of a medicinal agent
d) Distribution of drugs in the organism

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

4. What is implied by «active transport»?
a) Transport of drugs trough 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 concentration gradient

5. The reasons determing bioavailability are:
a) Rheological parameters of blood
b) Amount of a substance obtained orally and quantity of intakes
c) Extent of absorption and hepatic first-pass effect
d) Glomerular filtration rate

6. Pick out the parenteral route of medicinal agent administration:
a) Rectal
b) Oral
c) Sublingual
d) Inhalation

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

8. 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

9. The term "biotransformation" includes the following:
a) Accumulation of substances in a fat tissue
b) Binding of substances with plasma proteins
c) Accumulation of substances in a tissue
d) Process of physicochemical and biochemical alteration of a drug in the body

10. Tick the drug type for which microsomal oxidation is the most prominent:
a) Lipid soluble
b) Water soluble
c) Low molecular weight
d) High molecular weight

11. 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

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

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

14. Half life (t □) doesn't depend on:
a) Biotransformation
b) Time of drug absorption
c) Concentration of a drug in plasma
d) Rate of drug elimination

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

16. Systemic clearance (CL_s) is related with:
a) Only the concentration of substances in plasma
b) Only the elimination rate constant
c) Volume of distribution, half life and elimination rate constant
d) Bioavailability and half life

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

18. Pharmacodynamics involves the following?
a) Information about main mechanisms of drug absorption
b) Information about unwanted effects
c) Information about biological barriers
d) Information about excretion of a drug from the organism

19. 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

20. 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 effect
d) Interacts with plasma proteins and doesn't produce any effect

21. If an agonist can produce submaximal effects and has moderate efficacy it's called:
a) Partial agonist

b) Antagonist
c) Agonist-antagonist
d) Full agonist

22. 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

23. 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

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

25. The increase of second messengers' (cAMP, cGMP, Ca^{2+} 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

26. 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, refers to the different doses of two drugs that are needed to produce the same effect
d) The ED_{50} is a measure of drug's efficacy

27. Pick out the correct definition of a toxic dose:
a) The amount of substance to produce the minimal biological effect
b) The amount of substance to produce effects hazardous for an 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 an organism

28. What term 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

29. 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

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

31. Tolerance develops because of:

a) Diminished absorption
b) Rapid excretion of a drug
c) Both of the above
d) None of the above

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

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

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

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

36. 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

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

38.Acetylcholine is not used in clinical practice because:
a) It is very toxic
b) The doses required are very high
c) It is very rapidly hydrolyzed
d) It is very costly

39. Parasympathomimetic drugs cause:
a) Bronchodilation
b) Mydriasis
c) Bradycardia
d) Constipation

40. The symptoms of excessive stimulation of muscarinic receptors include all of the following EXCEPT:
a) Abdominal cramps, diarrhea
b) Increased salivation, excessive bronchial secretion

c) Miosis, bradycardia
d) Weakness of all skeletal muscles

41. The effect of the drug on parasympathetic function declines rapidly in all organs EXCEPT:

a) Eye
b) Heart
c) Smooth muscle organs
d) Gland

42. 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) All of the above

43. Indirect action includes all of the following properties EXCEPT:

a) Displacement of stored catecholamines from the adrenergic nerve ending
b) Inhibition of reuptake of catecholamines already released
c) Interaction with adrenoreceptors
d) Inhibition of the release of endogenous catecholamines from peripheral adrenergic neurons

44. Catecholamine includes following EXCEPT:

a) Ephedrine
b) Epinephrine
c) Isoprenaline
d) Norepinephrine

45. Direct effects on the heart are determined largely by:

a) $Alfa_1$receptor
b) $Alfa_2$ receptor
c) $Beta1_1$ receptor
d) $Beta2_2$ receptor

46. 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

47. In which of the following tissues both alfa and $beta_1$ adrenergic stimulation produces the same effect?

a) Blood vessels
b) Intestine
c) Uterus
d) Bronchial muscles

48.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) All of the above

49. Which of the following statement is not correct?

a) lfa agonists cause miosis
b) lfa agonists cause mydriasis
c) Beta antagonists decrease the production of aqueous humor
d) lfa agonists increase the outflow of aqueous humor from the eye

50.A bronchial smooth muscle contains:

a) □lfa$_1$receptor
b) □lfa$_2$ receptor
c) Beta $_1$ receptor
d) Beta $_2$ receptor

51. Beta$_1$ receptor stimulation includes all of the following effects EXCEPT:
a) Increase in contractility
b) Bronchodilation
c) Tachycardia
d) Increase in conduction velocity in the atrioventricular node

52. Beta$_2$ receptor stimulation includes all of the following effects EXCEPT:
a) Stimulation of renin secretion
b) Fall of potassium concentration in plasma
c) Relaxation of bladder, uterus
d) Tachycardia

53. Hyperglycemia induced by epinephrine is due to:
a) Gluconeogenesis (beta$_2$)
b) Inhibition of insulin secretion (alfa)
c) Stimulation of glycogenolysis (beta$_2$)
d) All of the above

54.Which of the following effects is associated with beta$_3$-receptor stimulation?
a) Lipolysis
b) Decrease in platelet aggregation
c) Bronchodilation
d) Tachycardia

55.Beta adrenoreceptor subtypes is contained in all of the following tissues EXCEPT:
a) Bronchial muscles
b) Heart
c) Pupillary dilator muscle
d) Fat cells

56. Which of the following effects is related to direct beta$_1$-adrenoreceptor stimulation?
a) Bronchodilation
b) Vasodilatation
c) Tachycardia
d) Bradycardia

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

58. Indicate the location of M$_2$ cholinoreceptor type:
a) Heart
b) Glands
c) Smooth muscle
d) Endothelium

59. M$_3$ 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

60. Muscarinic receptors are located in:
a) Autonomic ganglia

b) Skeletal muscle neuromuscular junctions
c) Autonomic effector cells
d) Sensory carotid sinus baroreceptor zone

61. Indicate a cholinomimetic agent, which is related to direct-acting drugs:
a) Edrophonium
b) Physostigmine
c) Carbachol
d) Isoflurophate

62. Which of the following direct-acting cholinomimetics is mainly muscarinic in action?
a) Bethanechol
b) Carbachol
c) Acetylcholine
d) None of the above

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

64. Indicate a cholinesterase inhibitor, which has an additional direct nicotinic agonist effect:
a) Edrophonium
b) Carbochol
c) Neostigmine
d) Lobeline

65. Which of the following cholinomimetics is most widely used for paralytic ileus and atony of the urinary bladder?
a) Lobeline
b) Neostigmine
c) Pilocarpine
d) Echothiophate

66. Which of the following cholinomimetics is used in the treatment of atropine intoxication?
a) Neostigmine
b) Carbochol
c) Physostigmine
d) Lobeline

67. The dominant initial sights of acute cholinesterase inhibitors intoxication include all of the following except:
a) Salivation, sweating
b) Mydriasis
c) Bronchial constriction
d) Vomiting and diarrhea

68. Which of the following cholinomimetics is most widely used for treatment of glaucoma?
a) Lobeline
b) Neostigmine
c) Pilocarpine
d) Echothiophate

69. Which of the following drugs exert its principal effects by enzyme inhibition:
a) Pyridostigmine
b) Atropine
c) Salbutamol
d) Cetirizine

70. M-cholinimimetic agent is:

a) Carbachol
b) Bethanechol
c) Acetylcholine
d) Nicotine

71. Acetylcholine is a specific neurotransmitter at:
a) Only Sympathetic ganglia
b) Sympathetic postganglionic nerve endings
c) Only Parasympathetic ganglia
d) Parasympathetic postganglionic nerve ending

72. Which of the following drugs is used for acute toxic effects of organophosphate cholinesterase inhibitors?
a) Atropine
b) Pilocarpine
c) Pralidoxime
d) Edrophon

73. Which of the following drugs is both a muscarinic and nicotinic blocker?
a) Atropine
b) Benztropine
c) Hexamethonium
d) Succinylcholine

74. The mechanism of atropine action is:
a) Competitive ganglion blockade
b) Competitive muscarinic blockade
c) Competitive neuromuscular blockade
d) Noncompetitive neuromuscular blc) Competitive simpathetic blockade;

75. Atropine causes:
a) Miosis, a reduction in intraocular pressure and cyclospasm
b) Mydriasis, a rise in intraocular pressure and cycloplegia
c) Miosis, a rise in intraocular pressure and cycloplegia
d) Mydriasis, a rise in intraocular pressure and cyclospasm

53. Which of the following drugs is useful in the treatment of uterine spasms?
a) Carbachol
b) Vecuronium
c) Atropine
d) Edrophonium

76. Which of the following drugs is useful in the treatment of Parkinson□s disease?
a) Benztropine
b) Edrophonium
c) Succinylcholine
d) Hexamethonium

77. Indicate an antimuscarinic drug, which is effective in the treatment of mushroom poising:
a) Pralidoxime
b) Pilocarpine
c) Homatropine
d) Atropine

78. Contraindications to the use of antimuscarinic drugs are all of the following except:
a) Glaucoma
b) Myasthenia
c) Bronchial asthma
d) Paralytic ileus and atony of the urinary bladder

79. Which of the following effects would NOT be expected from ganglionic blocking agent
a) Vasodilation
b) Salivation
c) Mydriasis
d) Decreased cardiac output
80. For the production of short term hypotension during surgery, the preferred ganglionic blocking agent is
a) Mecamylamine
b) Pentolinium
c) Trimethaphan
d) Tetraethylammonium
81. The excessive stimulation of muscarinic receptors by pilocarpine and choline esters is blocked competitively by:
a) Edrophonium
b) Atropin
c) Pralidoxime
d) Echothiophate
82. Which one of the following drugs, when administered intravenously can decrease blood flow to the skin, increase blood flow to skeletal muscle and increase the force and rate of cardiac contraction
a) Epinephrine
b) Isoproterenol
c) Phenylephrine
d) Terbutalin
83. Which of the following drugs acts equally well on alpha and beta adrenergic receptors
a) Epinephrine
b) Norepinpehrine
c) Isoproterenol
d) Phentolamine
84. Indirect action includes all of the following properties EXCEPT:
a) Displacement of stored catecholamines from the adrenergic nerve ending
b) Inhibition of reuptake of catecholamines already released
c) Interaction with adrenoreceptors
d) Inhibition of the release of endogenous catecholamines from peripheral adrenergic neurons
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b) $Alfa_2$ receptor
c) $Beta_1$ receptor
d) $Beta_2$ receptor
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a) Blood vessels
b) Intestine
c) Uterus
d) Bronchial muscles
65. Which of the following statement is not correct?
a) □lfa agonists cause miosis
b) □lfa agonists cause mydriasis
c) Beta antagonists decrease the production of aqueous humor
d) □lfa agonists increase the outflow of aqueous humor from the eye
86. □lfa-receptor stimulation includes all of the following effects EXCEPT:
a) Relaxation of gastrointestinal smooth muscle

b) Contraction of bladder base, uterus and prostate
c) Stimulation of insulin secretion
d) Stimulation of platelet aggregation

87. Which of the following effects is associated with $beta_3$-receptor stimulation?
a) Lipolysis
b) Decrease in platelet aggregation
c) Bronchodilation
d) Tachycardia

88. Indicate the direct-acting sympathomimetic, which is an $alfa_1$ $alfa_2$ $beta_1$ receptor agonist:
a) Isoproterenol
b) Ephedrine
c) Dobutamine
d) Norepinephrine

89. Indicate the $beta_1$-selective agonist:
a) Isoproterenol
b) Dobutamine
c) Metaproterenol
d) Epinephrine

90. Epinephrine produces all of the following effects EXCEPT:
a) Decrease in oxygen consumption
b) Bronchodilation
c) Hyperglycemia
d) Mydriasis

91. Which of the following direct-acting drugs is a relatively pure alfa agonist, an effective mydriatic and decongestant and can be used to raise blood pressure?
a) Epinephrine
b) Norepinephrine
c) Phenylephrine
d) Ephedrine

92. Isoproterenol is:
a) Both an alfa- and beta-receptor agonist
b) $beta_1$-selective agonist
c) $beta_2$-selective agonist
d) Nonselective beta receptor agonist

93. Which of the following has antihypertensive effects associated with blockade of alpha receptors
a) Propranolol
b) Clonidine
c) Prazosin
d) Phenylephrine

94. This drug is contraindicated in patients with bronchial asthma:
a) Nadolol
b) Clonidine
c) Prazosin
d) Phentolamine

95. Find an incorrect statement about Doxazosin:
a) Is a selective reversible □1 receptor antagonist
b) Should always be prescribed with a beta blocker to prevent reflex tachycardia
c) Is associated with first-dose hypotension
d) Can cause urinary incontinence in women with pre-existing pelvic pathology

76. 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) Timolol

96. The following substances are considered to be referred to as eicosanoids:

a) Prostaglandins
b) Leukotrienes
c) Thromboxanes
d) All of the above

97. A 43 year old ship`s captain complains of seasonal allergies. Which one of the following would be indicated

a) Diphenhydramine
b) Doxylamine
c) Hydroxyzine
d) Fexofenadine

98. Which one of the following statements concerning H1 antihistamines is correct:

a) Second generation H1 antihistamines are relatively free of adverse effects
b) Because of the established long-term safety of first generation H1 antihistamines, they are the first choice for initial therapy
c) The motor coordination involved in driving an automobile is not affected by the use of first generation H1 antihistamines
d) Both first and second generation H1 antihistamines readily penetrate the blood-brain barrier

99. Which one of the following drugs could significantly impair the ability to drive an automobile

a) Diphenhydramine
b) Fexofenadine
c) Ranitidine
d) Sumatriptan

100. A 43 year old ship`s captain complains of seasonal allergies. Which one of the following would be indicated

a) Diphenhydramine
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101. Which one of the following statements concerning H1 antihistamines is correct

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d) Both first and second generation H1 antihistamines readily penetrate the blood-brain barrier

102. H1 histamine receptor subtype is distributed in:

a) Smooth muscle, endothelium and brain
b) Gastric mucosa, cardiac muscle, mast cells and brain
c) Presynaptically in brain, mesenteric plexus and other neurons
d) All of the above

103. H2 histamine receptor subtype is distributed in:

a) Smooth muscle, endothelium and brain
b) Gastric mucosa, cardiac muscle, mast cells and brain
c) Presynaptically in brain, mesenteric plexus and other neurons
d) All of the above

104. Most tissue histamine is sequestered and bound in:

a) Granules in mast cells or basophils
b) Cell bodies of histaminergic neurons
c) Enterochromaffin-like cell of the fondus of the stomach
d) All of the above

105. These categories of histamine H1 antagonists are noted for sedative effects, EXCEPT:

a) Piperidines; i.e. Loratadine, Fexofenadine
b) Ethanolamines (aminoalkyl ethers); i.e. Dimedrol, Clistin
c) Ethylenediamines; i.e. Suprastine
d) Phenothiazines; i.e. Diprazine, Promethazine

106. These categories of histamine H_1 antagonists are noted for the anticholinergic effect, EXCEPT:

a) Alkylamines (propylamines); i.e. Brompheniramine
b) Piperazines; i.e. Hydroxyzine, Cyclizine
c) Ethylenediamines; i.e. Suprastine
d) Phenothiazines; i.e. Diprazine, Promethazine

107. Which category of histamine H_1 antagonists is recognized for as second-generation antihistamines?

a) Alkylamines (propylamines); i.e. Brompheniramine
b) Piperidines; i.e. Loratadine, Fexofenadine
c) Ethylenediamines; i.e. Suprastine
d) Phenothiazines; i.e. Promethazine

108. These histamine H_1 antagonists are recognized for as second-generation antihistamines, EXCEPT:

a) Astemizole
b) Loratadine (Claritin)
c) Cetirizine (Zyrtec)
d) Suprastine

109. Which of the following histamine H_1 antagonists is a long-acting (up to 24-48 h) antihistamine drug?

a) Diazoline
b) Diprazine
c) Suprastine
d) Dimedrol

110. Indication for administration of histamine H_1 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) All of the above

111. Indications for administration of histamine H_1 antagonists are the following EXCEPT:

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

112**. In the treatment of migraine headache, ergotamine**

a) Has vasoconstrictive properties that account for its efficacy
b) Has adrenergic blocking properties that are responsible for its therapeutic benefits
c) Will successfully terminate a headache already in progress
d) Is easily tolerated when taken orally

113. All of the following are normally involved in the pathogenesis of heart failure EXCEPT:

a) A cardiac lesion that impairs cardiac output
b) An increase in peripheral vascular resistance

c) A decrease in preload
d) An increase in sodium and water retention

114. The non-glycoside positive inotropic drug is:
a) Digoxin
b) Strophantin K
c) Dobutamine
d) Digitoxin

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

116. The most cardiac manifestation of glycosides intoxication is:
a) Atrioventricular junctional rhythm
b) Second-degree atrioventricular blockade
c) Ventricular tachycardia
d) All the above

117. Drugs most commonly used in chronic heart failure are:
a) Cardiac glycosides
b) Diuretics
c) Angiotensin-converting enzyme inhibitors
d) All the above

118. This drug is a Class IA antiarrhythmic drug:
a) Sotalol
b) Propranolol
c) Verapamil
d) Quinidine

119. This drug is a Class III antiarrhythmic drug:
a) Flecainide
b) Sotalol
c) Lidocaine
d) Verapamil

120. This drug is associated with Torsades de pointes.
a) Flecainide
b) Sotalol
c) Lidocaine
d) Verapamil

121. Verapamil is a more potent vasodilator than nifedipine. This statement is:
a) True
b) False

122. This drug has a little or no direct effect on chronotropy and dromotropy at normal doses
a) Nifedipine
b) Diltiazem
c) Verapamil
d) All of the above

123. All of the following calcium channel blockers are useful in the treatment of cardiac arrhythmias EXCEPT:
a) Bepridil
b) Diltiazem

c) Verapamil
d) Nifedipine

124. Which of the following nitrates and nitrite drugs is a short-acting drug?
a) Nitroglycerin, 2% ointment (Nitrol)
b) Nitroglycerin, oral sustained-release (Nitrong)
c) Amyl nitrite, inhalant (Aspirols, Vaporole)
d) Sustac

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

126. Main clinical use of calcium channel blockers is:
a) Angina pectoris
b) Hypertension
c) Supraventricular tachyarrhythmias
d) All of the above

127. Which of the following antianginal agents is a potassium channel opener:
a) Dipyridamole
b) Validol
c) Atenolol
d) Minoxidil

128. This drug reduces blood pressure by acting on vasomotor centers in the CNS:
a) Labetalol
b) Clonidine
c) Enalapril
d) Nifedipine

129. A ganglioblocking drug for hypertension treatment is:
a) Hydralazine
b) Tubocurarine
c) Trimethaphan
d) Metoprolol

130. Pick out the drug – an alpha and beta adrenoreceptors blocker:
a) Labetalol
b) Verapamil
c) Nifedipine
d) Metoprolol

131. This drug is an inhibitor of renin synthesis:
a) Propranolol
b) Enalapril
c) Diazoxide
d) Losartan

132. This drug is a potassium channel activator:
a) Nifedipine
b) Saralasin
c) Diazoxide
d) Losartan

133. This drug is contraindicated in patients with bronchial asthma:
a) Propranolol
b) Clonidine
c) Enalapril

d) Nifedipine

134. Tick the diuretic agent – aldosterone antagonist:

a) Furosemide

b) Spironolactone

c) Dichlothiazide

d) Captopril

135. Choice a correct answer:

a) Thiazides (eg, hydrochlorothiazide) are after adequate for mild and moderated hypertension;

b) Loop diuretics (eg, furosemide) are usually required for mild hypertension;

c) Thiazides are useed only parenterally;

d) Furosemide is given orally in malignant hypertension (severe hypertension with rapidly progressing organ damage).

136. Choice a correct answer:

a) Thiazides (eg, hydrochlorothiazide) are after adequate for mild and moderated hypertension;

b) Loop diuretics (eg, furosemide) are usually required for mild hypertension;

c) Thiazides are useed only parenterally;

d) Furosemide is given orally in malignant hypertension (severe hypertension with rapidly progressing organ damage).

137. Clonidine:

a) Has minimal toxicity, but sudden cessation may cause severe rebound hypertension;

b) The toxicity includer agitation and tachycardia;

c) Usually decreases baroreflex sensitivity;

d) May cause hemolytic anemia.

138. Toxicities for guanethidine includes:

a) Urinary retention;

b) Constipation;

c) Nasal stuffines;

d) Blurred vision.

139. Drugs with some vasodilaying action include:

a) Esmolol;

b) Carvedilol;

c) Oxprendolol;

d) Pindolol;

e) Metoprolol.

140. B-blockers does not induce:

a) asthma;

b) Bradicardia;

c) atrioventricular (AV) blokade;

d) Heart failure;

e) Hyperglycaemia.

141. Mechanism of vasodilatatory action of nitroprusside:

a) Opening of potassium channels and hyperpolarization;

b) Release of nitric oxide;

c) Block of L-type calcium channels;

d) Block of T-type calcium channels.

142.Parenteral drugs for hypertensive emergencies include:

a) Nitroprusside;

b) Minoxidil;

c) Diltiazem;

d) Verapamil

143. Phosphodiesterase inhibitors:

a) Inhibit phosphodiesterase (PDE) and thereby decrease the amount of cAMP in cardiac tissue and vessels;
b) Are occasionally used parenterally in chronic heart failure;
c) Are used parenterally for acute decompensation in heart failure;
d) Amrininone and milrinone unlike theophylline and aminophylline can cause seizures.
144. The duration of action of nitro prusside is:
a) a few seconds and a constant intravenous infusion in required;
b) a few hours;
c) 6-8 hours;
d) 24 hours.
145. Angiotensin – converting enzyme (ACE) inhibitors:
a) Inhibit breakdown of bradykinin;
b) May be given 4-times daily;
c) Are useful only in severe hypertension;
d) Bradykinin receptor antagonist – icatibant increases the blood pressure – lowering effect of ACE inhibitors.
146. Digoxin:
a) Used primarily for heart failure activates Na^+K^+-ATP-ase increases intracellular sodium;
b) The decreased outside /inside sodium gradient results in less expulsion of calcium from the cell and increased calcium stores in the sarcoplasmic reticulum;
c) Digoxin half-life is 4-6 hours;
d) Digoxin is available only in intravenous preparation.
147. Vasodilators:
a) Reduce afterload (decreasing ejection fraction);
b) Reduce preload (reducing myocardial oxygen requirement);
c) Often can cause bradycardia;
d) Have not any effect on preload or afterload.
148. Group I of antiarrhytmic drugs act as:
a) Sodium channel blockers;
b) B-adrenoceptor blockers;
c) Pottassium I_K channel blockers;
d) L-type calcium channel blockers.
149. Amiodarone:
a) Prolong the ventricular action potential and increase the QT interval;
b) Acts as L-type calcium channel blockers;
c) Acts as sodium channel blockers;
d) Is selective □-adrenoceptor blocking agent.
150. Amiodarone toxicities includs the following symptoms, except:
a) Corneal and skin deposits;
b) Thyroid dysfunction;
c) Pulmonary fibrosis;
d) Convulsions
151. Quinidine toxicities includs the following symptoms, except:
a) Cinchonism;
b) Thrombocytopenia;
c) Torsade arrhythmia;
d) Lupus (reversible).
152. Adenosine (Miscellaneous) half-life is:
a) 3 seconds;
b) 6 hours;
c) 20 hours;

d) 24 hours.
153. Amiodarone half of life is:
a) 10 minutes;
b) 1-10 weeks;
c) 6-8 hours;
d) 12 hours
154. Which neurotransmitters produced excitory action in CNS?
a) Glutamic acid;
b) Dopamine;
c) Gaba;
d) Opioid peptides;
155. Choice a correct answers:
a) Benzodiazepines bind to components (BZ receptors) of the GABA A receptor-chloride ion channel macro molecular complex, increasing the inhibitory actions of GABA
b) Barbiturates block GAB A actions via binding to a separate site from the BZ receptor;
c) Barbiturates action is reversed by the BZ receptor antagonist-flumazenil;
d) Alcohols may facilitate glutamate receptors.
156. Which drug is short-acting benzodiazepines?
a) Diazepam;
b) Triazolam;
c) Nitrazepam;
d) Phenobarbital.
138. Agent induces liver drug-metabolizing enzymes and also precipitates acute porphyric attacks:
a) Di azepam;
b) Phenobarbital;
c) Midazolam;
d) Buspirone
157. The high affinity of ethanol for alcoholdehydrogenase is used competitively in poisoning with:
a) Methanol and ethylene glycol;
b) Cyanides;
c) Ferrum salts;
d) Antimony.
158. "Dissociative anesthetsia", with emergence reactions, and cardiovascular stimulation causes by:
a) Propofol;
b) Thiopental;
c) Ketamine;
d) Midazolam.
159. Propofol:
a) Causes "dissociative anesthetsia"'
b) Recovery can be facilitated by naloxone;
c) Has a rapid onset, fast recovery and antiemetic actions;
d) Recovery can be facilated by flumazenil.
160. Local anesthetics include the following agents, except of:
a) Lidocaine;
b) Bupivacaine;
c) Procaine;
d) Succinylcholine.
161.Opioids overdose may result in coma with marked respiratory depression and hypotension, necessitating the use of:
a) Codeine;
b) Naloxone;

c) Pentazocine;
d) Propoxyphene

162. Hormones are:
a) Products of endocrine gland secretion
b) Mediators of inflammatory process
c) By-products of tissue metabolism

163. Which of the following agents is/are important hormonal antagonists of insulin in the body?
a) Glucagon
b) Adrenal steroids
c) Adrenaline
d) All of the above

164. Glucocorticoids are hormonal steroids:
a) Having an important effect on intermediary metabolism, cardiovascular function, growth, and immunity
b) Having principally salt-retaining activity
c) Having androgenic or estrogenic activity
d) All of the above

165. Which of the following glucocorticoids has no fluoride atoms in its chemical structure?
a) Prednisolon
b) Dexamethasone
c) Fluocinolone
d) Triamcinolone

166. Indication of 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) All of the above

167. Which of the following statements concerning the anti-inflammatory effect of NSAIDs are TRUE?
a) Anti-inflammatory effect of NSAIDs results from inhibition of cyclooxygenase
b) Anti-inflammatory effect of NSAIDs results from inhibition of phospholipase A_2 and reducing prostaglandin and leukotriene synthesis
c) Anti-inflammatory effect of NSAIDs results from induction of cyclooxygenase II expression which results in reducing
the amount of an enzyme available to produce prostoglandins
d) All of the above

168. Selective COX-2 inhibitors are safer than nonselective COX-1 inhibitors but without loss of efficacy. This consideration is:
a) True
b) False

169. Tick the drug belonging to antibiotics-carbapenems:
a) Aztreonam
b) Amoxacillin
c) Imipinem
d) Clarithromycin

170. Tick the drug belonging to glycopeptides:
a) Vancomycin
b) Lincomycin
c) Neomycin
d) Carbenicillin

171. Mechanism of penicillins' 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

172. All of the following antibiotics are macrolides, EXCEPT:
a) Erythromycin
b) Clarithromycin
c) Lincomycin
d) Roxythromycin

173. Tick the drug belonging to antibiotics-aminoglycosides:
a) Erythromycin
b) Gentamycin
c) Vancomycin
d) Polymyxin

174. Choose the characteristics of vancomicin:
a) It is a glycopeptide, 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, inhibits cell wall synthesis active only against Pseudomonas aeruginosa
d) It is a glycopeptide, inhibits cell wall synthesis and is active only against Gram-positive bacteria.

175. Which of the following drugs is used for dermatomycosis treatment:
a) Nystatin
b) Griseofulvin
c) Amphotericin B
d) Vancomycin

176. All of the following antifungal drugs are antibiotics, EXCEPT:
a) Amphotericin B
b) Nystatin
c) Myconazol
d) Griseofulvin

177. Azoles have an antifungal effect because of:
a) Inhibition of cell wall synthesis
b) Inhibition of fungal protein synthesis
c) Reduction of ergosterol synthesis

178. Sulfonamides are effective against:
a) Bacteria and Chlamidia
b) Actinomyces
c) Protozoa
d) All of the above

179. Mechanism of sulfonamides' antibacterial effect is:
a) Inhibition of dihydropteroate reductase
b) Inhibition of dihydropteroate synthase
c) Inhibition of cyclooxygenase
d) Activation of DNA gyrase

180. Mechanism of Trimethoprim' action is:
a) Inhibition of cyclooxygenase
b) Inhibition of dihydropteroate reductase
c) Inhibition of dihydropteroate synthase

d) Inhibition of DNA gyrase

181. Streptomycin has the following unwanted effect:
a) Cardiotoxicity
b) Hepatotoxicity
c) Retrobulbar neuritis with red-green color blindness
d) Ototoxicity, nephrotoxicity

182. Tick the antibacterial drug – a fluoroquinolone derivative:
a) Chloramphenicol
b) Nitrofurantoin
c) Nalidixic acid
d) Ciprofloxacin

183. Pick out natural corticosteroids:
a) Cortisol;
b) Fludrocortisone;
c) Dexamethasone;
d) Prednisone

187. Amoxicillin an ampicillin are effective against following microorganisms, except of:
a) Susceptible streptococci;
b) Escherichia coli;
c) Haemophilus influenza;
d) Helicobacter pylori;
e) Chlamydial species

188. First-generation cephalosporins:
a) Cefotetan;
b) Cefaclor;
c) Cefipime;
d) Cephalexin.

189. Pick out fourth-generation cephalosporins:
a) Cefipime;
b) Cefotaxime;
c) Cefaclor;
d) Cefoperazone

190. Second generation cephalosporins are active against the following microorganisms, except of:
a) Gram-negative bacilli including bacteroides;
b) Haemophilus influenza;
c) Moraxella catarrhalis;
d) Pseudomonas

191. Toxicities of cefalosporins include the following, except:
a) Allergic reactions;
b) Opporunistic infections;
c) Some of them cause hypoprothrombinemia;
d) Disulfiram like reactions with ethanol;
e) Hepatotoxicity

192. Azithromycin accumulates in tissues and undergoes renal elimination with a half-life of more than:
a) 12 hours;
b) 24 hours;
c) 48 hours;
d) 3 days

193. Metronidazole is a drug of choice in the following, except of:
a) Amebiasis;
b) Giardiasis and trichomoniasis;

c) Clostridium difficile and Gardnerella vaginalis;
d) Helicobacter pylori;
e) Leprosy
194. Tetracyclines include, except of:
a) Tigecycline;
b) Demeclocycline;
c) Doxycycline;
d) Minocycline;
e) Dicloxacillin
195. Inhibitors of protein synthesis antibiotics acting at the ribosomal level are the following, except of:
a) Macrolides;
b) Clindamycin;
c) Tetracyclines;
d) Chloramphenicol;
e) Vancomycin
196. Pick out antipseudomonal penicillins:
a) Ampicillin;
b) Amoxicillin;
c) Ticarcillin;
d) Penicillin
197. Penicillinase-resistant narrow-spectrum drugs include:
a) Penicillin V;
b) Ampicillin;
c) Nafcillin;
d) Ticarcillin

198. A 75 year old man who was a smoker is diagnosed with chronic obstructive pulmonary disease and suffers from occasional bronchospasm. Which of the following would be effective in treating him?
a) Ipratropium aerosol
b) Scopolamine patches
c) Mecamylamine
d) Oxygen
199. Which one of the following drugs, when administered intravenously can decrease blood flow to the skin, increase blood flow to skeletal muscle and increase the force and rate of cardiac contraction
a) Epinephrine
b) Isoproterenol
c) Phenylephrine
d) Terbutaline
200. A 70 year old man has a history of ulcer disease. He has recently experienced swelling and pain in the joints of his hands. His physician wants to begin therapy with NSAID. Which one of the following drugs might also be prescribed along with the NSAID to reduce the risk of activating this patient's ulcer disease
a) Allopurinol
b) Colchicine
c) Misoprostol
d) Probenecid

201. An 8 year old girl has a fever and muscle aches from a presumptive viral infection. Which one of the following drugs would be most appropriate to treat her symptoms
a) Acetaminophen
b) Aspirin

c) Allopurinol
d) Indomethacin
202. Which one of the following drugs could significantly impair the ability to drive an automobile
a) Diphenhydramine
b) Fexofenadine
c) Ranitidine
d) Sumatriptan
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b) Fexofenadine
c) Ranitidine
d) Sumatriptan
207. The types of antagonism are:
a) Summarized
b) Potentiated
c) Additive
d) Irreversible
208. Which one of the following is a phase I drug metabolism reaction?
a) Acetylation
b) Glucuronidation
c) Methylation
d) Hydrolysis
209. Indicate a cholinomimetic agent, which is related to direct-acting drugs:
a) Edrophonium
b) Physostigmine
c) Pilocarpine
d) Isoflurophate
210. Which of the following cholinomimetics is indirect-acting?
a) Lobeline
b) Neostigmine
c) Pilocarpine

d) Carbachol
211. Isofluorophate increases all of the following effects except:
a) Lacrimation
b) Tachycardia
c) Muscle twitching
d) Salivation
212. The excessive stimulation of muscarinic receptors by pilocarpine and choline esters is blocked competitively by:
a) Edrophonium
b) Tropicamide
c) Pralidoxime
d) Echothiophate
213. The tissues less sensitive to atropine are:
a) The salivary, bronchial and sweat glands
b) The gastric parietal cells
c) Cilliary muscle
d) The heart
214. Which of the following drugs causes bronchodilation without significant cardiac stimulation?
a) Isoprenaline
b) Albuterol
c) Xylometazoline
d) Methoxamine
215. Indicate the beta1-selective agonist:
a) Xylometazoline
b) Epinephrine
c) Dobutamine
d) Methoxamine
216. Indicate the beta1-selective antagonist:
a) Propranolol
b) Atenolol
c) Carvedilol
d) Sotalol
217. Choose the selective blocker of beta-1 adrenoreceptors:
a) Labetalol
b) Prazosin
c) Bisoprolol
d) Propranolol
218. A mutagenic action is:
a) Toxic action on the liver
b) Negative action on the fetus causing fetal malformation
c) Toxic action on blood system
d) Toxic action on the genetic apparatus
219. A drug said to be potent when
a) It produces maximal response
b) The amount needed to produce a certain response is less
c) It produces minima/no side effect
d) It has a rapid onset of action

220. Acetylcholine is not used in clinical practice because:
a) It is very toxic
b) The doses required are very high

c) It is very short acting agent
d) It is very costly
221. The mechanism of action of indirect-acting cholinomimetic agents is:
a) Binding to and activation of muscarinic or nicotinic receptors
b) Inhibition of cholinesterase
c) Stimulation of the action of acetylcholinesterase
d) Releasing acetylcholine from storage sites
222. holinesterase inhibitors do not produce:
a) Bradycardia, no change or modest fall in blood pressure
b) Increased strength of muscle contraction, especially in muscles weakened by myasthenia gravis
c) Miosis and reduction of intraocular pressure
d) Bronchodilation
223. The dominant initial sights of acute cholinesterase inhibitors intoxication include all of the following except:
a) Salivation, sweating
b) Respiratory stimulation
c) Bronchial constriction
d) Vomiting and diarrhea
224. Atropine causes:
a) Miosis, a reduction in intraocular pressure and cyclospasm
b) Bronchodilation
c) Miosis, a rise in intraocular pressure and cycloplegia
d) Mydriasis, a rise in intraocular pressure and cyclospasm
225. Which of the following effects is associated with beta2 -receptor stimulation?
a) Glycogenolysis
b) Increase in platelet aggregation
c) Bronchoconstriction
d) Bradycardia
226. Indicate the indirect-acting sympathomimetic agent:
a) Epinephrine
b) Phenylephrine
c) Tyramine
d) Isoproterenol
227. Indicate the indirect-acting adrenoreceptor blocking drug:
a) Phentolamine
b) Guanethidine
c) Carvedilol
d) Prazosin
228. This drug activates alpha-2 adrenergic receptors:
a) Labetalol
b) Phentolamine
c) Methyldopa
d) Pilocarpine
229. Atropine causes:
a) Tachycardia
b) Intestinal hypermotility
c) Stimulation of contraction in the gut
d) Stimulation of secretory activity
230. Indicate the drug, which is a direct-acting alfa-receptor agonist:
a) Terbutaline
b) Methoxamine

c) Isoproterenol
d) Ephedrine
231. Ephedrine causes:
a) Miosis
b) CNS stimulation
c) Hypotension
d) Bradycardia

232. Indicate an alfa receptor antagonist, which is an efficacious drug in the treatment of mild to moderate systemic hypertension:
a) Phentolamine
b) Tolazoline
c) Ergotamine
d) Doxasozin
233. This drug is contraindicated in patients with bronchial asthma:
a) Nadolol
b) Clonidine
c) Prazosin
d) Phentolamine

234. Choose the selective blocker of beta-1 adrenoreceptors:
a) Labetalol
b) Prazosin
c) Atenolol
d) Propranolol

235. Pick out the diuretic agent for hypertension treatment:
a) Losartan
b) Dichlothiazide
c) Captopril
d) Prazosin

236. This drug is converted to an active metabolite after absorption:
a) Labetalol
b) Clonidine
c) Enalapril
d) Nifedipine

237. Choose the unwanted effects of clonidine:
a) Parkinson's syndrome
b) Sedative and hypnotic effects
c) Agranulocytosis and aplastic anemia
d) Dry cough and respiratory depression

238. Hydralazine (a vasodilator) can produce:
a) Seizures, extrapyramidal disturbances
b) Tachycardia, lupus erhythromatosis
c) Acute hepatitis
d) Aplastic anemia

239. Tick the diuretic agent having a potent and rapid effect:
a) Furosemide
b) Spironolactone
c) Dichlothiazide
d) Indapamide

240. The following statements are correct:
a) Ganglion blockers are muscarinic cholinoceptor antagonists;

b) Trimethaphan is used for the induction of controlled hypotension which is useful in some types of neurosurgery;
c) Trimethaphan blocks the muscarinic cholinoceptors in autonomic ganglia;
d) Trimethaphan may cause marked hypertension, diarrhea and blurred vision.
241. Reserpine:
a) Blocks uptake of catecholamines and 5-hydroxytryptamine (5-HT) into storage vesicles, thereby depleting transmitter stores in the nerve endings;
b) Is oraly inactive;
c) Has a duration of 4-6 hours;
d) May be used in depressed patients.
242. Toxicities for reserpine includes:
a) Constipation;
b) Hemolytic anemia;
c) Sexual dysfunction;
d) Orthostatic hypotension.
243. Which drug does not enter the CNS?
a) Clonidine;
b) Guanethidine;
c) Moxonidine;
d) Methyldopa
244. Mechanism of vasodialtatory action of minoxidil:
a) Release of nitric oxide;
b) Block of L-type calcium channels;
c) Opening of potassium channels and hyperpolarization;
d) Release of acetylcholine.
245. The following drugs may induce reversible systemic lupus erythematosus:
a) Minoxidil;
b) Diazoxide;
c) Nifedipine;
d) Hydralazine
246.Parenteral drugs for hypertensive emergencies include:
a) Nitroprusside;
b) Minoxidil;
c) Diltiazem;
d) Verapamil
247. Toxicities causes by nitroprusside includs:
a) Salt and water retention;
b) Hyperglycemia;
c) Accumulation of metabolites – cyanide and thiocyanate;
d) Bradycardia
248. ACE inhibitors toxicities may cause the following symptoms, except:
a) Cough;
b) Severe renal damage in the fetus (making them absolutely contraindicated in pregnansy;
c) Hyperkalemia;
d) Wheezing and angiodema;
e) Bronchodilation.
249. Nitroglycerin, isosorbide dinitrate and other organic nitrates:
a) Are venodilators that act through the release of nitric oxide in smooth muscle of blood vessela;
b) Increase venous return;
c) Have predominently effects on peripheral vascular resistance;
d) May reduce only afterload.

250. Which Ca^{2+} channel blocking agents have a half-life- 30-50 hours?
a) Verapamil;
b) Diltiazem;
c) Amlodipin;
d) Nisoldipine;
e) Nifedipine.