Ministry of Health of Belarus Republic
Vitebsk State Medical University

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MULTIPLE CHOICE QUESTIONS BOOK ON MEDICAL BIOLOGY

for foreign students of higher educational establishments on a medical speciality

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The multiple choice questions book corresponds with typical educational plan and program, proved by Ministry of Health of Belarus Republic. It is designed for students of higher medical educational establishments on a medical speciality.

The multiple choice questions book contains the all topic of an educational plan without summing-up classes. The multiple choice questions have through numeration. Each topic consist of 25 - 40 multiple choice questions.

The correct answers under each test are given at the end of the book. The multiple choice questions book is intended for the control of student's knowledge on practical classes and before examination.

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Contents

MOLECULAR-GENETIC LEVEL OF ORGANIZATION OF LIVING SYSTEMS

Multiple choice questions for the topic №1 «Essence of life. Molecular-genetic level of living systems organization»

1. Properties of living things:

a) discretion and integrity, structural organization; b) growth and development, irritability and locomotion, heredity and variability; c) homeostasis.

2. Elementary structucal unit and the elementary phenomenon of a molecular-genetic level of living matter organization:

a) elementary unit – a gene, the elementary phenomenon – an expression and repression of a gene; b) elementary unit – a code of genetic information, the elementary phenomenon – procreation of codes and codons; c) elementary unit – a genetic code, the elementary phenomenon – a biosynthesis of protein.

3. Elementary structural unit and the elementary phenomenon of a cellular level of living beings organization:

a) elementary unit – a cell, the elementary phenomenon – its life cycle; b) elementary unit – a cell, the elementary phenomenon – a cell multiplication; c) elementary unit – a cell, the elementary phenomenon – tissues formation.

4. Elementary structural unit and the elementary phenomenon of an ontogenetic level of living matter organization:

a) elementary unite – tissue, elementary phenomenon – formation of organs; b) elementary unit – an organism, elementary phenomenon – a reproduction of an organisms; c) elementary unit – an organism, the elementary phenomenon – an ontogenesis.

5. Elementary structural unit and the elementary phenomenon of a population level of living things organization:

a) elementary unit – a population, the elementary phenomenon – change in a gene pool of a population; b) elementary unit – a population, the elementary phenomenon – a speciation; c) elementary unit – a population, the elementary phenomenon – drift of genes.

6. Elementary structural unit and the elementary phenomenon of a biospheral level of living matter organization:

a) elementary unit – biosphere, the elementary phenomenon – formation of biogeocenoses; b) elementary unit – a biogeocenose, the elementary phenomenon – transition of biogeocenose from one dynamically nonresistant state to another; c) elementary unit – a biogeocenose, the elementary phenomenon – changes in biosphere.

7. Location of DNA in a cell:

a) nucleus; b) mitochondria, plastids; c) centriols.

8. Location of m-RNA in a cell:

a) ribosomes; b) nucleolus; c) cytoplasm matrix.

9. Location of t-RNA in a cell:

a) nucleus; b) nucleolus; c) cytoplasmic reticulum; d) cytoplasmic matrix.

10. Location of r-RNA in a cell:

a) nucleolus; b) ribosomes, c) cytoplasmic reticulum; d) cytoplasmic matrix.

11. Role of DNA in life activity of a cell:

a) the keeper of nuclear and cytoplasmic heredity; b) participation in reactions of matrix synthesis; c) participation in transcription.

12. Role of m-RNA in life activity of a cell:

a) participation in a transcription in a biosynthesis of protein; b) participation in translation in a biosynthesis of protein; c) transport of amino acids; d) formation of protein structure.

13. Role of t-RNA in life activity of a cell:

a) participation in transcription in a biosynthesis of proteins; b) participation in translation in a biosynthesis of proteins; c) transport of amino acids to ribosomes; d) participation in assembly of ribosomes.

14. Role of r-RNA in life activity of a cell:

a) participation in a transcription in a biosynthesis of proteins; b) participation in translation in a biosynthesis of proteins; c) participation in construction of a nucleolus; d) participation in construction of ribosomes.

15. Kinds of DNA replication:

a) conservative; b) semiconservative; c) dispersive; d) postreplicative.

16. What is the genetic code, codon, anticodon?

a) genetic code – triplet of DNA, codon – triplet of m-RNA, anticodon – triplet of t-RNA; b) genetic code – triplet of DNA, codon – triplet of r-RNA, anticodon – triplet of t-RNA; c) genetic code – triplet of m-RNA, codon – triplet of DNA, anticodon – triplet of t-RNA.

17. In what shows abundance of a genetic code?

a) one codon codes some amino acids; b) one amino acid is coded with some codons; c) nucleotide sequence is read out only in one direction.

18. Starting codon:

a) AUG; b) UAG; c) AGG; d) UAA.

19. Terminating codons:

a) AUG; b) UAG; c) UAA; d) UGA.

20. Structural components of a nucleosome:

a) non-histon proteins; b) histons H_{2a}, H_{2b}, H_3, H_4; c) histon H_1; d) molecule of DNA.

21. Value of histons in an eucariotic chromosomes:

a) stabilize frame of chromosome; b) activate genes; c) are responsible for DNA replication.

22. Value of non-histon proteins of a eucariotic chromosome:

a) stabilize frame of a chromosome; b) activate genes; c) are responsible for DNA replication and repare; d) are responsible for a transcription.

23. Value of metals ions in a eukaryotic chromosome:

a) stabilize frame of a chromosome; b) activate genes; c) are responsible for DNA replication; d) control density of nucleosomes location in a chromatin fibrils.

24. Levels of DNA packaging in a chromosome:

a) fibril; b) chromonem; c) chromatid; d) nucleosome.

25. The characteristics of a heterochromatin:

a) non-informative and non-transcribed region of chromosome; b) rough decondensed region of chromosome; c) it happens facultative and constitutive.

CELLULAR LEVEL OF ORGANIZATION OF LIVING SYSTEMS

Multiple choice questions for the topic №2 «A cell as elementary unit of living things. Methods of cell study»

26. Representatives of prokaryote:

a) viruses; b) bacteriophages; c) bacteria; d) blue-green algas.

27. Representatives of eukaryote:

a) bacteria, blue-green algas; b) plant; c) animal; d) funguses.

28. Construction of a prokaryote chromosome:

a) annular strand DNA; b) strand RNA; c) a nucleoprotein.

29. Construction of a eukaryote chromosome:

a) ring strand DNA; b) desoxyribonucleicprotein with ions of metals; c) DNA and RNA.

30. Quantity of the genes keeping in plasmids of a bacterial cell:

a) 1 - 2; b) 3 - 4; c) 8 - 10.

31. Why the cell is elementary biological unit?

a) a cell – the least structural unit which properties alive are characteristic; b) all living organisms will consist of cells; c) cells of metaphytes specialized on functions form tissues.

32. What the properties of alive testify what the cell is elementary structural unit?

a) body height and development; b) irritability and movement; c) structural organization; d) step-type behaviour and integrity.

33. What the properties of alive testify what the cell is elementary functional unit?

a) heredity and variation; b) body height and development, reproduction; c) irritability and locomotion; d) metabolism and energies; e) homeostasis.

34. That evidence what the cell is elementary genetical unit?

a) metabolism and energies; b) body height and development; c) heredity and variation; d) the cell contains the heredity information which is transferred from generation to generation at devision of cells.

35. The basic methods of studying of cells:

a) histological; b) histochemical; c) microscopical.

36. Opportunities of a histological method:

a) allows to determine the contents of inorganic matters in cells; b) allows to study a survey picture of tissue; c) allows to study structural ingredients of a cell in details.

37. Opportunities of a histochemical method:

a) allows to define the maintenance organic and inorganic matters in cells; b) allows to study structural ingredients of a cell in details; c) to carry out a microsurgery.

38. What microscopy is applied to inheritance of chemical compound of cells?

a) light; b) electron; c) luminescent.

39. What microscopy is used for detailed studying structural ingredients of cells?

a) electron microscopy; b) phase-contrast microscopy; c) luminescent microscopy.

40. What is part of mechanical part of a light microscope?

a) condenser; b) column and support of support; c) radiographic cone, the subject stage with screws and plugs, macro-and micrometer screws; d) the screw of a condenser and a revolver.

41. What is part of a light part of a light microscope?

a) plano-concave mirror, colour-filter; b) the screw of the condenser; c) the condenser; d) iris - diaphragm.

42. That is going in composition of optical part of a light microscope:

a) diaphragm; b) oculars; c) lenses; d) colour-filter.

43. By means of that the diffraction of light in a light microscope is eliminated?

a) irise - diaphragm; b) condenser; c) colour-filter.

44. By means of that it is possible to change illuminating intensity of field of vision in light microscope?

a) plano-concave mirror; b) condenser; c) irise - diaphragm.

45. What is the resolving power of a light microscope?

a) the minimal distance between two points of object which are visible separately; b) product of augmentations of an ocular and lens; c) the numerical aperture of lens.

46. The formula of definition of resolving power of a light microscope:

a) $d = 0{,}61\frac{\lambda}{n \times \cos\alpha}$; b) $d = 0{,}8\frac{\lambda}{n \times \sin\alpha}$; c) $d = 0{,}61\frac{\lambda}{n \times \sin\alpha}$.

47. What the limit of resolving power of a microscope depends on?

a) forces of increase; b) wavelengths of light source; c) the numerical aperture of lens.

48. A limit of resolving power of a light microscope:

a) 1500 nm; b) 1000 nm; c) 555 nm.

49. A focal length of lens of a small magnification:
a) 0,5 cm; b) about 1 cm; c) 0,2 cm.

50. A focal length of a lens of a big magnification:
a) 2 - 3 mm; b) 1 mm; c) 5 mm.

Multiple choice questions for the topic №3 «Cell biology»

51. Structural components of a cell:
a) cell wall, cytoplasmic matrix, nucleus; b) cell membrane, cytoplasm, nucleus; c) cell wall, cytoplasm, nucleus.

52. Cell organelles of a general purpose:
a) endoplasmic reticulum, ribosomes, Goldi complex; b) microfilaments, tonofibrils; c) centrioles, mitochondria, lysosomes; d) plastids.

53. Cell organelles of a special purpose:
a) myofibrils, neurofibrils; b) cilia, flagella; c) plastids.

54. The organelles of a cell which having membrane structure:
a) centrioles; b) endoplasmic reticulum; c) Golgi complex, lysosomes; d) mitochondria.

55. The organellas of a cell which having non-membrane structure:
a) centrioles; b) ribosome; c) microtubules, microfilaments; d) Golgi complex, lysosomes.

56. Role of endoplasmic reticulum in a cell:
a) synthesis of proteins; b) synthesis of lipids and carbohydrates; c) function of a compartmentalization; d) transport function.

57. Role of lysosomes in a cell:
a) synthesis of lipids; b) hydrolisis of nucleic acids, proteins, lipids, carbohydrates; c) intra-cellular digestion of destroyed components of cytoplasm; d) autolysis of a cell.

58. Role of mitochondria in a cell:
a) keepers of cytoplasmic heredity; b) power stations of a cell; c) takes part in formation of inclusions; d) proteolytic function.

59. Role of Golgi complex in a cell:
a) participates in uniform movement of chromosomes to cell poles; b) formation of lysosomes; c) formation of inclusions; d) excretory and secretory functions.

60. Role of centrioles in a cell:
a) formation of the mitotic spindle; b) formation of lysosomes; c) uniform distribution of chromosomes in a mitosis and a meiosis; d) excretory function.

61. Structural components of a nucleus:
a) cell membrane; b) karyolemm; c) karyoplasm; d) chromatin; e) nucleolus.

62. Types of chromosomes:

a) metacentric; b) submetacentric; c) acrocentric; d) telocentric; e) circular.

63. Rules of chromosomes:

a) rule of chromosome number constancy; b) rule of chromosome pairs; c) rule of chromosome continuity; d) rule of chromosome individuality.

64. Essence of chromosomes continuity rule:

a) triplets of DNA molecule are not overlapped; b) one amino acid is coded with some triplets; c) each chromosome is formed from maternal chromosome in result of cell division.

65. Essence of chromosomes individualitiy rule:

a) each species has specific set of chromosomes; b) each chromosome has the morphological features; c) each chromosome has characteristic gene set.

66. Role of telomeres in chromosomes:

a) participate in division of a cell; b) provide satiation of chromosomes; c) preserve a chromosome as discrete unit; d) interfere with bond of chromosomes or their fragments among themselves.

67. What group of a human karyotype is compounded with the largest metacentric chromosomes (specify numbers of chromosomes)?

a) B (II) – 4-5; b) C (III) – 6-12, X; c) A (I) – 1-3; d) D (IV) – 13-15.

68. What group of a human karyotype is compounded with large submetacentric chromosomes (specify numbers of chromosomes)?

a) B (II) – 4-5; b) C (III) – 6-12, X; c) A (I) – 1-3; d) D (IV) – 13-15.

69. What group of a human karyotype is compounded by middle metacentric and submetacentric chromosomes (specify numbers of chromosomes)?

a) B (II) – 4-5; b) D (IV) – 13-15; c) C (III) – 6-12; d) E (V) – 16-18.

70. What group of a human karyotype is compounded with middle acrocentric chromosomes (specify numbers of chromosomes)?

a) C (III) – 6-12, X; b) D (IV) – 13-15; c) E (V) – 16-18; d) F (VI) – 19-20.

71. What group of a human karyotype is compounded with small submetacentric chromosomes (specify numbers of chromosomes)?

a) B (II) – 4-5; b) E (V) – 16-18; c) F (VI) – 19-20; d) G (VII) – 21-22, Y.

72. What group of a human karyotype is compounded with small metacentric chromosomes (specify numbers of chromosomes)?

a) E (V) – 16-18; b) D (IV) – 13-15; c) F (VI) – 19-20; d) G (VII) – 21-22, Y.

73. What group of a human karyotype is compounded with small acrocentric chromosomes (specify numbers of chromosomes)?

a) D (IV) – 13-15; b) E (V) – 16-18; c) F (VI) – 19-20; d) G (VII) – 21-22, Y.

74. Features of Denver classification of human chromosomes:

a) groups of chromosomes are denoted by the Roman digits; b) groups of chromosomes are denoted by capital letters of the Latin alphabet; c) groups of chromosomes are denoted by the Arabian digits.

Multiple choice questions for the topic №4 «Cell like opened self-regulated system»

75. Kinds of systems in dependence of metabolism and energy:
a) open, closed, isolated, adiabatic; b) open, isolated, adiabatic; c) open and closed.
76. Features of open systems:
a) there is a metabolism and energy exchange; b) there is an exchange of the information, there is no exchange of energy; c) there are metabolism and energy exchange, except thermal are present.
77. Features of adiabatic systems:
a) there is no substance exchange but there is energy one in any form; b) there is no exchange of substance, there is an exchange of energy, except for thermal; c) any exchange is possible.
78. Features of isolated systems:
a) there is neither metabolism and no energy; b) there are metabolism and energy exchange; c) there is no exchange of substance, there is an exchange of energy, except for thermal.
79. Features of closed systems:
a) there is no substance exchange but there is energy one in any form; b) there is no exchange of substance, there is an exchange of energy, except for thermal; c) any exchange is possible.
80. Kinds of active transport of substance through a cell membrane:
a) pino and phagocytosis; b) by proteins-vectors according to gradient of concentration; c) by proteins-vectors against a gradient of concentration; d) like proton and ionic pumps.
81. Kinds of passive transport of substanced across a cell membrane:
a) diffusion; b) by proteins-vectors according to on a gradient of concentration; c) by proteins-vectors against a gradient of concentration; d) across membrane pores.
82. Action of an isotonic solution on erythrocytes of a human blood:
a) changes in erythrocytes does not occur; b) erythrocytes swell; c) erythrocytes shrink.
83. Action of a hypertonic salt solution on erythrocytes of a human blood:
a) changes in erythrocytes does not occur; b) erythrocytes swell; c) erythrocytes shrink.
84. Action of an ideal hypotonic salt solution on erythrocytes of a human blood:
a) changes in erythrocytes does not occur; b) erythrocytes swell; c) erythrocytes shrink.
85. Phases of a phagocytosis:

a) positive chemotaxis macromolecules to a cell membrane; b) adsorption of a macromolecule on a cell membrane; c) entering of macromolecule in a cell, its digestion and undigested particles removing.

86. Kinds of the endocellular mechanism of energy flow of organisms:

a) sun energy; b) photosynthesis, chemosynthesis; c) fermentation, respiration.

87. Features of power supply at fermentation:

a) products of a dissimilation are destroyed not completely; b) the dissimilation leads to organic substances with high-energy; c) output of energy is small.

88. Features of power supply at respiration:

a) low-molecular products of a dissimilation are destroyed to final products; b) the big output of energy; c) products of a dissimilation are destroyed incompletely.

89. Features of external information flow for a cell:

a) it is carried out by means of a brain cortex of a hindbrain and endocrine; b) it is accepted from intersticial fluid by means of cytolemma glands receptors; c) nuclear and cytoplasm DNA takes part.

90. Features of an intracellular information flow:

a) it is coded in nuclear and cytoplasm DNA; b) enzymes, activated amino acids m-RNA, t-RNA takes part; c) proteins-vectors take part; d) the continuity of species characters from generation to generation is provided.

91. Kinds of a plasassimilation describing a flow of a substance:

a) glycolysis; b) photosynthesis; c) chemosynthesis; d) biosynthesis of proteins, fats and carbohydrates.

92. Measure of flow substance:

a) period semirenovation; b) amount of ATP; c) bites; d) time for which a half of certain substance is replaced with new molecules.

93. The processes in light part of photosynthesis:

a) synthesis of organic substance from inorganic; b) photolysis of water; c) producting of free oxygen; d) substances energy accumulation in ATP and NADP-H_2.

94. The processes in dark part of photosynthesis:

a) photolysis of water; b) use of ATP and NADP-H_2 energy; c) synthesis of organic substances from inorganic.

Multiple choice questions for the topic №5 «Cell physiology»

95. Life cycle of a cell:

a) period since the end of division of initial cell till the end of formed cell division; b) period between cell formation by mother cell division till the end of its own division or death; c) time between cell divisions.

96. Periods of an interphase:

a) presynthetic, synthetic, postsynthetic; b) postmitotic, premitotic; c) synthetic, postsynthetic.

97. The cytogenetic characteristics of a nucleus in G_1 - period of an interphase:
a) 2n: 2chr: 4c DNA; b) 2n: 1chr: 2c DNA; c) n: 1chr: 2c DNA.

98. The cytogenetic characteristic of a nucleus in S - period of an interphase:
a) 2n: 2 chr: 4c DNA; b) 2n: 1 chr: 2c DNA; c) n: 2 chr: 2c DNA.

99. The cytogenetic characteristic of a nucleus in G_2 - period of an interphase:
a) 2n: 2chr: 4c DNA; b) 2n: 1chr: 2c DNA; c) n: 2chr: 2c DNA.

100. The basic types of a cell division:
a) amitosis; b) mitosis; c) meiosis.

101. Kinds of mitosis:
a) mitosis, meiosis; b) endomitosis, polyteny; c) amitosis.

102. Types of amitosis by shape:
a) generative, degenerative, reactive; b) equal, non-equal, multiple, c) without cytotomy.

103. Kinds of amitosis by type:
a) generative, degenerative, reactive; b) equal, non- equal, multiple, without cytotomy; c) endomitosis, polyteny.

104. What is transported to cell poles in an anaphase of a mitosis?
a) chromosomes; b) chromatids.

105. The cytogenetic characteristics of a cell nucleus in a telophase of a mitosis:
a) 2n: 2chr: 4c DNA; b) 2n: 1chr: 2c DNA; c) n: 2chr: 2c DNA.

106. Biological value of a mitosis:
a) equal distribution of a genetical stuff; b) daughter cells are completely same; c) haploid cells are formed from somatic diploid cells.

107. Stages of a meiosis:
a) meiosis I – interkinesis – meiosis II; b) meiosis I – interphase – meiosis II – death or insemination; c) interphase – meiosis I – interkinesis – meiosis II – death or insemination.

108. Stages of meiosis I prophase:
a) leptonemm, zygonemm, diplonemm, diakinesis, pahynemm; b) zygonemm, pahynemm, leptonemm, diplonemm, diakinesis; c) leptonemm, zygonemm, pahynemm, diplonemm, diakinesis.

109. The basic processes descending to chromosomes in a prophase of meiosis I:
a) spiralization; b) conjugation and a crossingover; c) despiralization.

110. The cytogenetic characteristics of a nucleus of the cell which have entered meiosis I:
a) 2n: 1chr: 2c DNA; b) 2n: 2chr: 4c DNA; c) n: 2chr: 2c DNA.

111. What is moved to cell poles in an anaphase of meiosis I?
a) chromosomes; b) chromatids.

112. The cytogenetic characteristics of a nucleus of the cell which have entered meiosis II:

a) 2n: 1chr: 2c DNA; b) 2n: 2chr: 4c DNA; c) n: 2chr: 2c DNA.

113. What is moved to cell poles in an anaphase of a meiosis II?
a) chromosomes; b) chromatids.

114. The cytogenetic characteristics of the cells formed after a meiosis II:
a) n: 2chr: 2c DNA; b) n: 1chr: 1c DNA; c) 2n: 1chr: 2c DNA.

115. Types of tissues on ability to a proliferation:
a) labile; b) stable; c) static.

116. Examples of labile tissues:
a) cells of liver, pancreas; b) blood cells, epidermis of a skin; c) uterus endometrium cells, mucous epithelium of gastrointestinal canal.

117. Examples of stable tissues:
a) cells of salivary glands, a liver; b) cells of a pancreas, kidneys; c) blood cells precursors.

118. Examples of static tissues:
a) cells of bony and cartilaginous tissues; b) cells of a nervous tissue, a myocardium; c) cells of a uterus endometrium.

ONTOGENETIC LEVEL OF ORGANIZATION OF LIVING SYSTEMS

Multiple choice questions for the topic №6 «Organisms reproduction»

119. Modes of an asexual reproduction:
a) parthenogenesis; b) vegetative; c) sporiparity.

120. Modes of a vegetative reproduction:
a) longitudinal, transversal, multiple division; b) fragmentation, budding; c) polyembryony; d) by means of vegetative organs in plants.

121. Forms of a sexual reproduction:
a) schizogony; b) conjugation; c) copulation; d) parthenogenesis, gynogenesis, androgenesis.

122. Irregular types of a sexual reproduction:
a) oogamy; b) parthenogenesis; c) gynogenesis; d) androgenesis.

123. Types of copulation:
a) isogamy; b) anisogamy; c) oogamy; d) schizogony.

124. Features of an asexual reproduction:
a) one parent individual takes part; b) development begins from a zygote; c) development begins from somatic cells; d) the new generation does not differ from parental one.

125. Features of a sexual reproduction:

a) two parent individuals take part in it; b) sex cells participate; c) the genetic material is renewed; d) development begins from somatic cells.

126. Advantages of a sexual reproduction over an asexual one:

a) the offspring is completely similar to parents; b) the reproduction coefficient is higher; c) there is renewing of a genetical stuff that results in variety of traits; d) adaptive opportunities of an organisms are increased.

127 What parameters of sex cells are similar at an isogamy?

a) size; b) shape; c) mobility; d) frame.

128. The periods of a spermatogenesis:

a) reproduction, growth, formation; b) reproduction, formation, maturation; c) growth, maturation, formation; d) reproduction, growth, maturation, formation.

129. The periods of an ovogenesis:

a) reproduction, growth, maturation; b) reproduction, formation, maturation; c) growth, maturation, formation; d) reproduction, growth, formation, maturation.

130. The cytogenetic characteristics of ovogonia and spermatogonia:

a) 2n: 1chr: 2c DNA; b) 2n: 2chr: 4c DNA; c) n: 2chr: 2c DNA.

131. The cytogenetic characteristics of primory ovocytes and primory spermatocytes:

a) 2n: 1chr: 2c DNA; b) 2n: 2chr: 4c DNA; c) n: 2chr: 2c DNA.

132. The cytogenetic characteristics of ovocytes II and spermatocytes II:

a) 2n: 2chr: 4c DNA; b) n: 1chr: 1c DNA; c) n: 2chr: 2c DNA.

133. The cytogenetic characteristics of spermatids, sperm and ootids:

a) n: 1chr: 1c DNA; b) n: 2chr: 1c DNA; c) n: 2chr: 2c DNA.

134. The characteristics of isolecithal eggs:

a) contain few amount of yolke; b) contain moderate amount of a yolke; c) the yolke is placed in the center of eggs; d) the yolke is uniformly distributed in cytoplasm.

135. The characteristics of telolecithal eggs:

a) contain few amount of an yolke amount; b) contain moderate of a yolke; c) contain excessive amount of an yolke; d) yolke is concentrated on a vegetative pole of ovum.

136. The characteristics of centrolecithal eggs:

a) contain moderate amount of a yolke; b) contain excessive amount of a yolke; c) yolke is located at the center of eggs; d) yolke is uniformly distributed in cytoplasm of eggs.

137. Duration of a reproduction period at an ovogenesis at mammalians:

a) goes till the moment of a puberty; b) it is over to the moment of a birth; c) proceeds all life.

138. Role of gynogamon I at an insemination:

a) enzymatically solves the shell of egg; b) inhibits mobility of sperm; c) stimulates mobility of sperm; d) raises probability of contact of a sperm and an ovum.

139. Role of gynogamon II at an insemination:

a) supresses mobility of sperm; b) stimulates mobility of sperm; c) facilitates fixation of sperm on ovum shell; d) it has hyaluronidase activity.

140. Role of androgamon I at an insemination:

a) stimulates mobility of sperm; b) enzymatically solves the shells of ovum; c) supresses mobility of sperm; d) protects sperm from loss of energy.

141. Role of androgamon II at an insemination:

a) participation in enzymatic dissolving of egg shells; b) provides contact of a sperm with an ootid; c) stimulates mobility of sperm: d) inhibits mobility of sperm.

142. Paths of penetration by a sperm to an ovum:

a) through micropyle; b) through accepting hillet; c) by enzymatic way; d) by means of phagocytosis.

Multiple choice questions for the topic №7 «Particularities of human reproduction»

143. Kinds of sex dimorphism at human:

a) chromosomal, gonadal, hormonal; b) genetical, gonadal, gametic; c) hormonal, morphological; d) civil, behavioural.

144. Value of gene Tfm (testicular feminization) of X-chromosome:

a) synthesis of proteins, which differentiate an ovary; b) synthesis of a protein-receptor for testosterone; c) synthesis of H-Y antigen; d) control of fermentative processes.

145. Value of gene H-Y of the Y-chromosome at human:

a) synthesis of a protein-receptor for testosterone; b) synthesis of H-Y antigen monitoring production of testosterone; c) synthesis of H-Y antigen stimulating a differentiation of gonads in spermaries.

146. Term and differentiation of an embryonic gonad at an embryo with genotype X^{tfm} X^{tfm}:

a) 6 weeks of pregnancy, a medulla of embryonic gonads; b) 6 weeks of pregnancy, a bast layer of embryonic gonads; c) 8-9 weeks of pregnancy, a bast layer of embryonic gonads.

147. Term and differentiation of an embryonic gonads at an embryo with a genotype $X^{tfm}Y^{H\text{-}Y}$:

a) 6 weeks of pregnancy, a medulla of embryonic gonads; b) 7-8 weeks of pregnancy, a medulla of embryonic gonads; c) 8-9 weeks of pregnancy, a bast layer of embryonic gonads.

148. The cells of testis producing a testosterone:

a) Leidig cells; b) Sertoli cells; c) spermatocytes I and II of the order; d) spermatozoon.

149. The cells of ovaries producing female sexual hormones:

a) cells of primary follicles; b) teka-cells; c) cells of a yellow body; d) oocytes I and II order.

150. Action of gonadotrophic hormones (FSH and LH) on function of testicals:

a) FSH – on body height and development sperms; b) FSH – production of testosterone; c) LH – on body height and development of sperms; d) LH – production of testosterone.

151. Action of gonadotrophic hormones (FSH and LH) on function of ovaries:

a) FSH – on body height of follicles and an ovulation; b) FSH – on body height of follicles; c) LH – a maturing of follicles and their ovulation; d) LH – production of estrogens and progesterone.

152. Stages of an ovogenesis in an ovary at a new born girl:

a) 200-400 thousand ovogoniums, oocytes I and II of the order; b) 100-200 thousand ovogoniums, oocytes I and II of the order, ootids; c) 200-400 thousand ovogoniums, oocytes I of the order in a region of growth and a prophase of meiosis I of region of a maturing.

153. The canal of a pronephrous which generative organs of a female fetus are shaped, terms of a differentiation (week of pregnancy):

a) Volfs canal, 10-12 weeks of pregnancy – intrinsic generative organs, 12-20 weeks – outside generative organs; b) Muller canal, 10-12 weeks of pregnancy – intrinsic generative organs, 12-20 weeks – outside generative organs.

154. The canal of a pronephrous which generative organs at a man's fetus, terms of a differentiation are shaped (week of pregnancy):

a) Volfs canal, 9-18 weeks of pregnancy; b) Volfs canal, 10-12 weeks of pregnancy – intrinsic generative organs, 12-20 weeks – outside generative organs.

155. In what cell the spermatozoa gets at human fertilization:

a) ovum; b) ootid; c) ovocyte I; d) ovocyte II.

156. Ways of penetration of a spermatozoon to a female gamete at human:

a) fermentative; b) through micropele; c) through accepting hillock; d) phagocytal.

157. In what flow of time of a gamete of human preserve ability to fertilization?

a) ootid – 24 hours; b) ootid – 48 hours; c) spermatozoon – till 4 day; d) spermatozoon – 24-48 hours.

158. Minimum quantity of spermatozoons in an ejaculate at which the fertilization is possible:

a) 50 million; b) 100 million; c) 150 million; d) 200 million.

159. Indications to artificial insemination of the woman:

a) azospermia of a husband; b) the small maintenance of spermatozoons in an ejaculate of a semen; c) hereditary disease by the husband; d) an amenorrhea.

160. Indications to an implantation in a uterus of the woman of the embryo cultivated in the tube:

a) high risk of a hereditary pathology; b) obstruction of uterine tubes of the woman; c) desynchronization of a maturing of ovum and ovulation; d) aging of an ovum.

161. Indications to use of substitutive motherhood:

a) hysterectomy of a woman; b) azospermia of a husband; c) underdevelopment of a uterus at the woman; d) desynchronization of a maturing of ovum and ovulation.

162. Ethical aspects of interference in a reproduction of the person:

a) ban of trade by gametes and embryos; b) use of a minimum quantity of ovums at artificial fertilization; c) ban of cultivation of embryos for the scientific purposes; d) commercialization of a substitutive motherhood.

Multiple choice questions for the topic №9 «Genetics as a science about inheritance and variation principles. Gene level of hereditary material organization in pro- and eucaryotes»

163. Features of a constitution of prokaryotes gene:

a) has a mosaic construction; b) has no mosaic construction; c) the operon contains some structural genes.

164. Features of prokaryote gene expression:

a) group repression of genome genes is possible; b) group repression of chromosome genes, genome and regulation of expression by steroid hormones are not possible; c) the genes monitoring one biochemical reaction locate in one place.

165. Features of eukaryote gene construction:

a) has no mosaic constitution; b) operon consists some structural genes; c) has a mosaic constitution, operon includes one structural gene.

166. Features of eukaryotes gene expression:

a) group repression of genes of chromosome and genome are possible; b) expression is regulated by steroid hormones; c) gene monitoring of one biochemical reaction is locate in different parts of genome.

167. Classification of genes:

a) structural; b) synthesis of RNA; c) regulator; d) modifiers.

168. Function of structural genes:

a) contain the information on synthesis t-RNA and r-RNA; b) increase or decrease the speed of biochemical reactions; c) contain the information on structure of protein-repressor; d) contains the information of polypeptide structure.

169. Regulatory genes are:

a) gene-operator; b) modifier; c) regulator gene; d) gene of synthesis RNA.

170. Function of a gene-regulator:

a) increase or decrease the speed of biochemical reactions; b) contains the information on synthesis t-RNA, r-RNA; c) contains the information of enzyme structure; d) contains the information on frame of protein-repressor.

171. Function of modifiers genes:

a) find necessary m-RNA-polymerase; b) passes or quenches transit of the RNA - polymerase to structural genes; c) increase or decrease the speed of biochemical reactions; d) suppress transcription.

172. Function of the gene-operator:

a) contains the information on structure of protein-repressor; b) passes or quenches transit m-RNA-polymerase to structural genes; c) finds necessary m-RNA-polymerase; d) cap-proteins binding.

173. Polypeptide chains and genic locuses of haemoglobin A:

a) chains 2α, 2σ, locuses α^A, σ^{2A}; b) chains 2α, 2γ, locuses α^A, γ^F; c) chains 2α, 2β, locuses α^A, β^A.

174. Polypeptide chains and genic locuses of haemoglobin A_2:

a) chains 2α, 2β, locuses α^A, β^A; b) chains 2α, 2σ, locuses α^A, σ^{2A}; c) chains 2α, 2γ, locuses α^A, γ^F.

175. Polypeptide chains and genic locuses of haemoglobin F:

a) chains 2α, 2γ, locuses α^A , γ^F; b) chains 2α , 2β , locuses α^A, β^A ; c) chains 2α, 2σ, locuses α^A, σ^{2A} .

176. Induction and repression of the genc locuses coding synthesis of haemoglobin after birth of the child:

a) repression of locus γ^F, expression β^A ; b) repression of locus γ^F , expression σ^{A2}; c) repression of locus β^A, expression γ^F .

177. The basic methods of getting of genetic materials used in gene engineering:

a) synthesis of genes in vitro; b) getting of genes from cells and genic frames and their rearrangement or breeding; c) transmission of new genes to genome of other organism; d) construction of cellular chimaera.

178. Stages of designing used in gene engineering:

a) transformation and transduction; b) reception of genetic material; c) introducing of genetically material; d) including of new genes in the cell genetically apparatus and fastening in him.

179. Methods of reception of genetically material:

a) use of a genome of donor cells; b) use a vector; c) artificial synthesis of genes.

180. Methods of inserting of genetic material:

a) transformation, transduction, conjugation; b) hybridization of somatic cells; c) use of cell - donors genome.

181. Methods of incorporation of new genes in the genetically apparatus of a cell:

a) transformation, transduction; b) use of a vector; c) use of cells-donors.

182. Ethical aspects at carrying out of researches on human DNA:

a) researches on recombination DNA of human should be known a commission of experts on gene engineering; b) researches on cloning DNA of human, getting of chimaers and hybrids from a genetically material of human and animals are forbidden; c) transplantation of genes with the therapeutic purpose is allowable only with somatic cells; d) germ cells are used only after proofs of advantage and safety of

manipulations with somatic cells; e) are preserved and the genetically data of any human are not disclosed.

Multiple choice questions for the topic №10 «Chromosome and genome levels of hereditary material organization in prokaryotes and eukaryotes»

183. Chromosomal sex determination when female is homogametic:
a) P: XX x XY; b) P: ZW x ZZ; c) P: XX x XO.
184. Chromosomal sex determination when female is heterogametic:
a) P: XX x XO; b) P: ZW x ZZ; c) P: ZO x ZZ.
185. Influence on human sex formation of change of autosomes and sex chromosome ratio at caryotype XO : 44A (Terner syndrome):
a) underdevelopment of uterus, uterine tubes, ovaries; b) disorders of secondary sexual attributes formation; c) disorders of ovogenesis and menstrual cycle, sterility; d) gynecomastia.
186. Influence on human sex formation of change of autosomes and sex chromosome ratio at caryotype XXX: 44A (additional X-chromosome in woman):
a) underdevelopment of uterus, ovaries; b) disorders of a menstrual cycle; c) disorders of secondary sexual attributes formation.
187. Influence on human sex formation of change of autosomes and sex chromosome ratio at caryotype XXY: 44A (Kleinefelter syndrome):
a) disorders of secondary sex attributes formation; b) underdevelopment of generative organs; c) sclerotic disorders in semeniferous tubules.
188. What is the sex-linked inheritance?
a) the gene which is responsible for an attribute is located in X-chromosome; b) the gene which is responsible for an attribute is located in autosome; c) the gene which is responsible for an attribute is located in Y-chromosome.
189. What is the complete sex-linked inheritance?
a) the gene which is responsible for attribute is located in heterologous locus of a X-chromosome; b) the gene which is responsible for an attribute, is located in heterologous locus of an Y-chromosome; c) the gene which is responsible for attribute, is located in homologous loci of both sex chromosome.
190. What is the partial sex-linked inheritance?
a) the gene which is responsible for attribute is located in nonhomologous locus of X-chromosome; b) the gene which is responsible for attribute is located in homologous loci of X and Y-chromosomes; c) the gene which is responsible for an attribute is located in heterologous locus of an Y-chromosome.
191. What is holandric attributes?
a) the gene which is responsible for attribute, is located in heterologous locus of an Y-chromosome; b) the gene which is responsible for attribute is located in

heterologous locus of X-chromosome; c) the genes which are responsible for an attribute are located in homologous loci X and Y-chromosomes.

192. The illnesses with completely sex-linked inheritance:

a) hemophilia C; b) hemophilia A and B; c) daltonism, Dushene muscular dystrophia; d) hemorrhagic diathesis.

193. The illnesses with partially sex-linked illnesses inheritance:

a) Duschene muscular dystrophy; b) pigment retinitis, pigmentosum xeroderma; c) hemorrhage diathesis, total color-blindness; d) syndactylia.

194. Holandric attributes of a human:

a) syndactylia; b) hypertrichosis of ear; c) total color-blindness; d) the exessive keratinization of a skin (ichtiosis).

195. Complete linkage of genes:

a) genes are located in different chromosomes and are free combined with each other; b) genes are located in same chromosome and are inherited together; c) genes are located in same chromosome; the part of them is inherited together, and the part is combined by a crossing-over.

196. Incomplete linkage of genes:

a) genes are located in same chromosome; the part of them is inherited together, and the part is combined by a crossing-over; b) genes are located in one chromosome and are inherited together; c) genes are located in different chromosomes and are free combined with each other.

197. Statements of T. Morgan's rule:

a) the genes posed in same chromosome are inherited together; b) genes in a chromosome occupy a specific locus; c) between homologous chromosomes the exchange of allelic genes is possible; d) linkage degree between genes depends on distance between them.

198. What kind of genes linkage is characteristic in a human?

a) for men – complete linkage, for women – incomplete one; b) for women – complete linkage, for men – incomplete one; c) both for men and women – complete linkage; d) both for men and women – incomplete linkage.

199. Groups of genes linkage in human autosomes:

a) genes of ABO blood groups and of nails and patella defects; b) genes of a Lutheran blood group and genes which are responsible for A and B antigens secretion with saliva: c) genes of polydactylia and eye cataract; d) loci A, B, C, D/Dr of HLA system; e) genes of a daltonism and of Dushene muscular dystrophia.

200. X-linked groups of genes in a human:

a) daltonism and hemophilia; b) hemophilia and Dushene muscular dystrophia; c) Dushene muscular dystrophia and daltonism; d) daltonism and syndactylia.

201. Concept about the cytologic map of chromosomes:

a) the map shows a relative position of genes on a conditional line; b) the map shows a true position of genes in a real chromosome; c) the map shows a true position of genes on a conditional line.

202. Concept about the gene map of chromosomes:

a) the map shows a relative position of genes on a conditional line; b) the map shows a true position of genes in a real chromosome; c) the map shows a relative position of genes in a real chromosome.

203. Kinds of cytoplasmic inheritance:

a) cytoplasmic inheritance itself; b) mitochondrial; c) cytoplasm predetermination; d) pseudo-cytoplasmic inheritance.

204. Kinds of cytoplasmic inheritance itself:

a) cytoplasm predetermination; b) plastid; c) mitochondrial; d) cytoplasmic male sterility.

205. Features of a prokariotic genome:

a) chromosome is circular molecule of DNA; b) there is a complex monitoring system of activity of genes regulation in an ontogenesis; c) practically all genes are structural, the majority of genes is unique, except for genes of r-RNA and of t-RNA; d) there is a excessivity of a genome.

206. Features of a eukariotic genome:

a) it is complex of deoxyribo-nucleoproteid with metals ions; b) contains numerous of genes and the complex monitoring system of their activity regulation in an ontogenesis; c) takes place the expressed redundancy of a genome; d) practically all genes are structural.

Multiple choice questions for the topic №11 «Principles of monogenic and polygenic inheritance. Phenotype formation as result of genetic and environmental factors interaction»

207. Types of inheritance:

a) autosomal; b) sex-linked; c) monogenic; d) polygenic.

208. Kinds of monogenic inheritance:

a) independent; b) autosomal; c) sex-linked; d) linked.

209. Kinds of autosomal inheritance:

a) independent; b) sex-linked; c) linked; d) Y- linked.

210. Kinds of independent inheritance:

a) dominant; b) recessive; c) complete; d) incomplete.

211. Kinds of linked inheritance:

a) dominant; b) recessive; c) complete; d) incomplete.

212. Kinds of sex-linked inheritance:

a) X-linked dominant and recessive; b) Y- linked; c) complete; d) incomplete.

213. Essence of hybridologic analysis:

a) necessary to cross the individuals that distinguished from each other on one, to two or several pairs of alternative attributes; b) necessary to carry out analyzing cross; c) necessary to conduct the exact quantitative count of investigated attributes in a

lineage; d) necessary to conduct individual qualitative analysis of inheritance of characters in a lineage.

214. Cause and effect of a hypothesis of "cleanliness of gametes":

a) the cause – meiosis I, consequence – genes in gametes of hybrid individuals not hybrid, and are clean; b) the cause – allelic genes are in identical homologous loci, but different chromosomes, consequence – owing to meiosis I they get in different gametes; c) the cause – in meiosis I homologous chromosomes miss in different gametes, consequence – not blending of gametes.

215. In what events analyzing cross is carried out?

a) for definition of genotype of an individual with dominant character; b) for definition of a genotype of an individual with a recessive character; c) for definition of gametes types at an individual with dominant an attribute.

216. Phenotypical radical for digeterozygote crosses:

a) $(3:1)^n$; b) 9 AB: 3aB: 3Ав: 1ав; c) 9A_B_: 3aaB_: 3A_вв: 1aавв.

217. Conditions of exhibiting of G.Mendel laws:

a) similar formation of gametes of all kinds by hybrids and similar combinations at a fertilization; b) similar vitality of zygotes of all genotypes; c) complete exhibiting of sign irrespective of conditions of organism development; d) presence of account genes in homologous chromosomes at di- and polyhybrid cross.

218. The genetic factors influencing formation of phenotype:

a) dose and field of gene action; b) expressivity and penetrance of gene; c) interaction gene from one and different alleles, multiple alleles; d) pleiotropic gene action.

219. Kinds of a gene interaction from one allele:

a) complete dominance, incomplete dominance, superdominance; b) dominant epistasis; c) complementarity; d) recession; e) codominance.

220. Kinds of a gene interaction from different alleles:

a) codominance; b) dominant and recessive epistasis; c) hypostasis; d) recession; e) complementarity.

221. Essence of incomplete dominance:

a) recessive gene suppresses the action of dominant gene; b) the dominant gene not completely suppresses the action of recessive gene and shows a mediate sign; c) two genes from one allele determine a new sign.

222. Essence of superdominance:

a) recessive and dominant genes determine a new sign; b) the sing of dominant gene in heterozygous is more strongly, than in homozygous; c) one dominant gene suppresses action of other dominant gene.

223. Essence of codominance:

a) two dominant genes from one allele define a signs; b) two dominant genes from different alleles define a new sign; c) the recessive gene from one allele decrease the action of dominant gene from other allele.

224. Essence of a dominant epistasis:

a) dominant gene suppresses action of recessive gene; b) dominant gene from one allele suppresses action of dominant gene from other allele; c) dominant gene from one allele suppresses action of a recessive gene in homozygous from other allele.

225. Essence of a recessive epistasis:

a) recessive gene from one allele suppresses a recessive gene from other allele; b) recessive gene from one allele suppresses a dominant gene from other allele; c) recessive gene from one allele suppresses action of a dominant gene from other allele.

226. Essence of complementarity:

a) two dominant genes from one allele determine a new sign; b) the recessive gene from one allele is suppressed by dominant gene from other allele; c) genes from different alleles determine a new attribute.

227. Examples of a multiple allelism of a human:

a) blood groups on system ABO; b) Rh-factor; c) sublocuses A, B, C, D/Dr of systems histocompatibility HLA.

228. Agglutinogens and agglutinine of the I blood group on system ABO, character of gene interaction:

a) an agglutinogen – A, agglutinine – β, a gene interaction – dominance; b) agglutinogen – B, agglutinine – β, a gene interaction – dominance; c) there are no agglutinogens, agglutinine – α and β, a gene interaction – recession.

229. Agglutinogens and agglutinine of the II blood group on system ABO, character of a gene interaction:

a) agglutinogen – B, agglutinine – α, a gene interaction – dominance: b) agglutinogens are not present, agglutinine – α and β, a gene interaction – recession; c) agglutinogen – A, a agglutinine – β, gene interaction – dominance.

230. Agglutinogens and agglutinine of the III blood groups on system ABO, character of a gene interaction

a) agglutinogen – B, agglutinine – α, a gene interaction – dominance; b) agglutinogens are not present, agglutinine – α and β, a gene interaction – recession; c) agglutinogen – A, agglutinine – β, a gene interaction – dominance.

231. Agglutinogens and agglutinine of the IV blood groups on system ABO, character of a gene interaction:

a) agglutinogens are not present, agglutinine – α and, a gene interaction – recession; b) agglutinogens – A and B, agglutinine are not present, a gene interaction – codominance; c) an agglutinogen – A, agglutinine – β, a gene interaction – dominance.

232. Essence of primary pleiotropia:

a) gene shows the plural action simultaneously; b) some genes code exhibiting one attribute; c) initial phenotypical exhibiting of a gene causes secondary attributes.

233. Essence of secondary pleiotropia:

a) recessive gene from one allele decrease the action of a dominant gene from other allele; b) the gene cause the plural action simultaneously; c) initial phenotypical exhibiting of a gene causes secondary attributes.

234. Examples of primary pleiotropia:

a) sickle cell anemia in hetorozigous; b) syndrome of blue sclera and Marphan; c) Hartnep's disease; d) homozygosis on a brachidactilia genes.

235. Examples of secondary pleiotropia:

a) syndrome of blue sclera and Marphan; b) thalassemia; c) sickle cell anemia in hetorozigous; d) set of Abver symptoms.

236. Essence of genocopies:

a) similar phenotypical exhibiting of different genes; b) different phenotypical exhibiting of one gene; c) mutations similar to paravariations.

237. Essence of phenocopies:

a) similar phenotypical exhibiting of different genes; b) modifications phenotypical similar with mutations; c) similar modifications appearance by different environment factors.

238. Quality characteristic of gene:

a) expressivity; b) penetrance; c) area of gene action.

239. Quantity characteristic of gene:

a) gene doze; b) penetrance; c) expressivity.

Multiple choice questions for the topic №12 «Phenotypic variation: ontogenetic and modificational»

240. Types of variation:

a) combinative; b) phenotypic; c) genotypic.

241. Kinds of phenotypic variation:

a) modificational; b) mutational; c) ontogenetic.

242. Kinds of genotypic variation:

a) ontogenetic; b) combinative; c) mutational.

243. The basic mechanisms of originating of ontogenetic variation:

a) different activity of genes in the different age periods; b) different activity of endocrine glands in the different age periods; c) different ratio of growth and differentiation periods in the different age periods.

244. Role of ontogenetic variation:

a) it provides adaptively of organisms; b) it plays role in hereditary illnesses manifestation; c) it has no definitive pattern.

245. Examples of hereditary illnesses and the malformations originating in embryogenesis:

a) polydactylia, syndactylia; b) cerebellar ataxia; c) diabetes mellitus; d) cranial - clavicular dysostosis.

246. Examples of the hereditary illnesses manifesting in childhood:
a) syndactylia; b) Friedreich's family ataxia; c) gout; d) alcaptonuria.
247. Examples of the hereditary illnesses that manifest thenselve only in adult people:
a) cerebellar ataxia; b) alcaptonyria; c) gout; d) galactosemia.
248. The characteristics of modifications:
a) they are not inherited; b) they are specific and adaptive characters; c) the degree of manifestation depends on force and duration of an external factor action, after modifications disappearance they can disappear; d) they are not definitive and they are useful to organism.
249. Phenotypic manifestation of vitamin A deficiency:
a) dry dermatitis; b) sight disorders; c) scurvy; d) growth under development.
250. Phenotypical manifestations of B_1 vitamin deficiency:
a) conjunctivities; b) blood clotting disorders; c) beri-beri; d) rachitis.
251. Phenotypical manifestation of vitamin D deficiency:
a) rachitis; b) anemia; c) sight disorders.
252. Phenotypical expression of a vitamin C deficiency:
a) beri-beri; b) retardation in body growth; c) scurvy; d) anemia.
253. Examples of a narrow reaction norm:
a) blood groups of ABO and Luteran system; b) blood groups of Daffi, MN, and Rh systems; c) intelligence.
254. Examples of a wide reaction norm:
a) blood groups of ABO system; b) body height and mass; c) a pigmentation of integuments.
255. The formula of average counting:
a) $\bar{x} = \frac{xn}{n-1}$; b) $\bar{x} = \frac{\sum(x_i n_i)}{n}$; c) $\bar{x} = \frac{\sum(x_i n_i)}{x}$.
256. The formula of standard deviation counting:
a) $S = \sqrt{\frac{\sum n_i (x_i - \bar{x})^2}{n-1}}$; b) $\bar{x} = \frac{\sum(x_i n_i)}{n}$; c) $S = \sqrt{\frac{\sum n_i (x_i - \bar{x})^2}{n}}$.
257. The formula of standard error average counting:
a) $S\bar{x} = \sqrt{\frac{\sum n_i (x_i - \bar{x})^2}{n}}$; b) $S\bar{x} = \frac{S}{\sqrt{n}}$; c) $S\bar{x} = \sqrt{\frac{\sum n_i (x_i - \bar{x})^2}{n(n-1)}}$.
258. What does average mean and what does ideal average variation curve mean?
a) norm of an investigated attribute reaction; b) reaction norm; c) a limit of an investigated attribute; d) mean quantities index of certain trait in variation series.
259. What does a variation curve show?
a) norm of an investigated attribute; b) reaction norm; c) standard deviation.

Multiple choice questions for the topic №13 «Genotypic variation: combinative and mutational. Mutagenesis»

260. Mechanisms of originating combinative variation:

a) combination of genes at crossingover and fertilization; b) independent movement of chromosomes in meiosis I at gametogenesis; c) independent movement of chromatids in a meiosis II at a gametogenesis.

261. Biological value of combinative variation:

a) increases of reproduction coefficient; b) genetically material is updated; c) adaptive opportunities of a organism is increase; d) provided the variety of forms of one species.

262. Definition of inbreeding:

a) marriage between relatives; b) marriage between brother and sister; c) marriage between unrelated humans.

263. Closest inbreeding is a marriage:

a) between uncle and niece, between aunt and nephew; b) between unrelated people; c) between parents and kids, between brother and sister.

264. Consequences of inbreeding:

a) separation of a population into separate pure lines; b) translocation of pathological recessive genes in a homozygous state; c) exhibiting of inheritable disease, decrease of vitality, death of individuals.

265. Definition of an outbreeding is a marriage:

a) between relatives; b) between brother and sister; c) between unrelated people which during 4-6 generations do not have common relatives.

266. Consequences of outbreeding:

a) preserves a heterozygosis at offsprings; b) offsprings has regenerating of a genetic material that increases adaptive opportunities of an organism; c) separation of a population into separate pure lines; d) provides variety of forms.

267. The characteristic of mutations:

a) has indefinite character, has no adaptive value with rare exception; b) have specific and adaptive character; c) the degree of expressed not depend on force and duration of action of the factor, do not disappear after the cessation of its action; d) are inherited.

268. Positions of mutation theory G. de Frieze:

a) mutations has indefinite character; b) mutations appear suddenly; new forms are stable; c) the same mutations may appear repeatedly; d) mutations are qualitative changes, but not quantitative, can be useful and harmful.

269. Kinds of mutations on mutating cells:

a) spontaneous; b) somatic; c) genome; d) generative.

270. The characteristic of somatic mutations:

a) descend in somatic cells; b) are transferred generation during sexual reproduction; c) are transferred generation during asexual reproduction; d) the early mutates in embryogenic cells causes the phenotypic mutation on the most part of the body.

271. Examples of somatic mutations of a human:

a) alkaptonuria, phenylketonuria; b) Konovalov-Wilson disease; c) vitiligo; d) malignant tumours.

272. The characteristic of generative mutations:

a) descend in somatic cells; b) descend in sex cells; c) to generation at a sexual reproduction are transferred; d) consequences of a mutation are more serious, if it passes at early stages of a gametogenesis.

273. Examples of generative mutations at the human:

a) diabetes, galactosemia, fructosuria; b) hemochromatoses; c) malignant tumours; d) adrenogenital set of symptoms; e) hemophilia.

274. Kinds of mutations according change in hereditary material:

a) gene, chromosome, interchromosome, genome; b) generative; c) cytoplasmic; d) spontaneous.

275. Types of local changes in gene mutations:

a) changing, translocation of nucleotides pair; b) insert or deletion of nucleotides pair; c) deficiency, deletions.

276. Classes of gene mutations:

a) heteroploidy; b) missence mutations; c) nonsense mutations; d) frameshift mutations.

277. The local changes in DNA at the missence mutation:

a) insertion of one bases pair; b) deletion of one bases pair; c) changing of one bases pair; d) translocation of one bases pair.

278. Consequences of a missence mutation:

a) in a polypeptide one amino acid will be replaced; b) one amino acid corresponds to several codons of mRNA, changes in a polypeptide can not be; c) are synthesized parts an protein molecule.

279. Examples of missence mutation at the human:

a) haemoglobins C, S; b) haemoglobin A_2; c) haemoglobin F.

280. The local changes in DNA at the nonsense mutation:

a) changing of one bases pair; b) translocation by places of one bases pair; c) deletion of one bases pair; d) insert of one bases pair.

281. Consequences of a nonsense mutation:

a) new protein is synthesized; b) parts of polypeptide are synthesized; c) there is a changing of several amino acids in a polypeptide.

282. The characteristic of local changes in DNA at frameshift mutations:

a) deletion of nucleotide pair; b) insertion of nucleotide pair; c) translocation of nucleotides pair; d) nucleotide pair exchange.

283. Results of frameshift mutations:

a) parts of polypeptide are synthesized; b) the new polypeptide is synthesized; c) changes in a polypeptide can not be.

284. Kinds of chromosome mutations:

a) deletions, deficiency; b) duplications; c) inversions; d) translocations.

285. Mechanisms of appearance of chromosome translocations:

a) destruction of telomere on the ends of chromosomes; b) breaking of process of a crossingover; c) breaking of divergence of chromosomes at mitosis and meiosis.

286. Mechanisms of appearance of chromosome aberrations:

a) destruction of telomere on the ends of chromosomes; b) breaking of process of a crossingover; c) breaking of divergence of chromosomes at mitosis and meiosis.

287. Kinds of genome mutations:

a) translocations; b) deficiency; c) polyploidy; d) heteroploidy.

288. Mechanisms of polyploidy appear:

a) breaking movement of chromosomes at a meiosis and a mitosis; b) the chromosomes not movement at a meiosis; c) endomitosis.

289. The mechanism of appearance of a heteroploidy:

a) breaking process of a crossingover; b) breaking a movement of chromosomes at meiosis and mitosis; c) endomitosis.

290. Mechanisms of appearance cytoplasmic mutations:

a) change a structure of DNA plastids; b) change a structure of DNA mitochondria; c) change a structure of mitochondria RNA.

291. Examples of cytoplasmic mutations at the human:

a) Spina bifida; b) Olbrait osteitis; c) anencephalia; d) some kinds of myopathies; e) muscular dystrophia Duchenne

292. Kinds of mutations on adaptive value for an organism:

a) spontaneous; b) useful, neutral, harmful; c) induced; d) generative.

293. Examples of useful mutations of human:

a) hemoglobinopathies; b) hemeralopia; c) is not present; d) polydactylia.

294. Examples of neutral mutations of human:

a) polydactylia; b) hypertrichosis an part of auricle; c) inborn ichtiosis; d) hemophilia; e) hemeralopia.

295. Examples of semilethal mutations of human:

a) daltonism; b) Dawn syndrome; c) trisomy on X-chromosome; d) hemophilia; e) muscular dystrophia Duchenne.

296. Examples of lethal mutations of human:

a) brachydactyly in a homozygous state; b) set of symptoms YO; c) Edwards - Smith's set of symptoms; d) set of symptoms Pattaw's; e) Konovalov-Wilson disease.

297. Kinds of mutations owing to their caused:

a) generative; b) spontaneous; c) induced; d) somatic.

298. What mutations are spontaneous?

a) mutations in sex cells; b) mutations appear in natural conditions; c) mutations appears under action of damage factors; d) the cause of mutations is not found.

299. The causes producing induced mutations:

a) physical mutagens; b) chemical mutagens; c) biological mutagens; d) natural radiation background.

300. Mechanisms of action of an ionizing radiation:

a) breaking of DNA replication; b) breaking of a crossingover and destruction telomere of chromosomes; c) radiolysis of water; d) destruction of the mitotic device of a cell.

301. Kinds of mutations caused by an ionizing radiation:

a) gene mutations; b) genome mutations; c) chromosomal and chromosome mutations; d) formation of thymine dimers.

302. The mechanism of action of ultra-violet rays:

a) breaking a crossingover; b) destruction telomere of chromosomes; c) supression of synthesis of the nitrogenous bases; d) activization of a pyrimidines nitrogenous bases.

303. Kinds of mutations caused by ultra-violet rays:

a) chromosome mutations; b) genome mutations; c) formation of thymine dimers; d) interchromosome mutations.

304. The mechanism of action of inhibitors of precursors of nucleic acids:

a) activization of pyrimidine nitrogenous bases; b) supression of the nitrogenous bases synthesis; c) breaking of the mitotic device of a cell; d) are included in DNA instead of the nitrogenous bases.

305. Kinds of mutations caused by action of inhibitors of nucleic acids predecessor:

a) gene mutations; b) genome mutations; c) chromosome mutations; d) interchromosome mutations.

306. Mechanism of action of analogues of the nitrogenous bases:

a) suppression synthesis of the nitrogenous bases; b) enter reaction of an alkylation; c) are included in DNA instead of the nitrogenous bases; d) activate the purine nitrogenous bases.

307. Kinds of mutations caused by action of analogues of the nitrogenous bases:

a) inversions; b) deletions; c) duplications; d) gene mutations.

308. Mechanism of action of alcyling substances:

a) the radiolysis of water adducting in ionization of molecules of organic matters; b) reaction of alkylation of DNA, RNA, proteins; c) a breakage of molecules of DNA, RNA, protein; d) a desamination of the nitrogenous bases.

309. Kinds of mutations caused by action alcyling substances:

a) missence mutations; b) nonsense mutations; c) mutations of alteration of a framework of reading; d) formation of thymine dimers.

310. The mechanism of action of acridine stains:

a) desamination of the nitrogenous bases; b) breaking of complementary in DNA; c) radiolysis of water; d) enter in reaction of an alkylation.

311. Kinds of mutations caused by action acridine stains:

a) missence mutations; b) nonsense mutations; c) mutations of alteration of a framework of reading; d) formation of thymine dimers.

312. The mechanism of action of viruses as biological mutagenes:

a) breaking of DNA synthesis and chromosome proteins; b) transduction of virus DNA in DNA of human; c) breaking of crossingover processes and movement of chromosomes in mitosis and meiosis; d) destruction of chromosomes telomere.

313. Kinds of mutations caused by action of viruses:

a) gene mutations; b) chromosomal translocations; c) anueploidy; d) translocations.

314. The mechanism of action of bacteria as biological mutagens:

a) transduction of a alien DNA fragment; b) breaking of a crossingover; c) breaking of integrity of chromatids; d) activation endonuclease of pyrimidines bases.

315. Kinds of mutations caused by action of bacteria:

a) chromosome and chromatid breaks; b) translocations; c) heteroploidies; d) formation of thymine dimers.

316. The mechanism of action of helminthes metabolism products as biological mutagens:

a) breaking synthesis of DNA, proteins of chromosome; b) destruction telomere of chromosome; c) breaking a crossingover process; d) breaking of divergence of chromosomes in mitosis and meiosis.

317. Kinds of mutations caused by helminthes metabolites:

a) translocations; b) gene mutations; c) chromosome breaks; d) heteroploidies.

318. Kinds of genetic material reparation:

a) biological; b) physical; c) light and dark; d) postreplicative.

319. The enzymes participating in a photoreactivation:

a) exonuclease; b) polymerase; c) photoreactivate enzyme; d) ligase.

320. The enzymes participating in dark reparation:

a) endonuclease and exonuclease; b) polymerase; c) ligase; d) photoreactivation enzyme.

321. Diseases linked to breaking of reparation of human:

a) Konovalova-Wilson disease; b) set of symptoms Blume; c) set of symptoms Marphane; d) pigmentary xeroderma.

Multiple choice questions for the topic №14 «Methods of anthropogenetics (1-st class): genealogical, twin's, statistical and dermatogliphical»

322. The difficulties connected to studying of human genetics:

a) impossibility to carry out test cross; b) the large set of chromosomes and the big number of genes; c) slow replacement of generations, small number of offspring; d) late maturation and long pregnancy; e) different social conditions of the people.

323. Potency of a genealogical method of anthropogenetics:

a) determination of disease character; b) determination of type and variant of inheritance; c) revealing of a heterozygous carriage of a pathological gene; d) in some cases determination of probability of a birth of the child with an hereditary pathology.

324. The characteristics of an autosomal - dominant mode of inheritance:

a) the attribute is traced across; b) the attribute is traced across and verticals; c) men and women to the same extent are sick; d) that the child is sick, one of parents should be sick; e) the gene expresses in homo- and heterozygous states.

325. The characteristics of an autosomal - recessive mode of inheritance:

a) the attribute is traced across; b) the gene expresses in a homozygous state, the probability of a birth of sick children raises at an inbreeding; c) men are sick, women are carriers of a pathological gene; d) men and women to the same extent are sick; e) the probability of a birth of sick children in healthy heterozygous parents is 25 %.

326. The characteristics of recessive X-linked inheritance:

a) the attribute is traced across; b) men are sick, women are carriers of a pathological gene; c) the pathological gene is inherited from mother to the son, from father to the daughter; d) men and women to the same extent are sick; e) in case if father is healthy and mother is carrier of pathological gene, a half of sons will be sick and a half of daughters - carriers of a pathological gene.

327. The characteristics of dominant X-linked mode of inheritance:

a) the attribute is traced across and verticals; b) men and women to the same extent are sick; c) men are sick and women are heterozygous carriers of a pathological gene; d) the gene expresses in hemizygous state; e) that the child is sick, one of parents should be sick.

328. Potency of a twin's method of anthropogenetics:

a) specification of the list of hereditary diseases; b) determination of a role of hereditary factors and environment in illness exhibiting; c) carrying out of well-timed prophylaxis of illness of one of twins at disease manifestation in the second of ones.

329. Potency of a population-statistical method of anthropogenetics:

a) determination of heterozygotes number in a population; b) the decision of a question of medical, medicamental and diagnostic maintenance in the population; c) revealing of drift of genes in a population.

330. Potency of dermatoglific method of anthropogenetics:

a) studying of individual variability; b) diagnosis of the chromosomal diseases; c) revealing of a heterozygous carriage of a pathological gene.

331. Date of a papillary lines formation:

a) 6-7 week – an expression of genes; b) 8-10 week – accumulation of inducers for an expression of genes determining lines; c) 10-24 week – formation of papillary lines; d) 24-40 week – formation of a skin as tactile organ.

332. How does papillary set is counted?

a) by account of number of papillary lines crossed a straight line from the center of a digital pattern up to triangle; b) by account of triangles number; c) by account of digital delta index.

333. On what fingers in norm there are no radial loops?

a) II and III; б) IV and V; в) III and IV.

334. The main palmar lines:

a) metacarpophalangeal; b) slanting, transversal; c) big dactyl; d) tenor, hypotenor.

335. How intensity of papillary lines is determined?

a) by of papillary lines account; b) magnitude of angle αtd; c) by account of triangle number.

336. Magnitude of an angle αtd in norm:

a) 57°; b) 80° - 81°; c) 100° - 105°.

337. Dermatoglific parameters in Smith's syndrome:

a) four-digital sulcus; b) predominance of arches over small pillows; c) angle αtd = 100° - 105°; d) angle αtd = 106° - 108°; e) lowered papillary lines set.

338. Dermatoglific parameters in Patau syndrome:

a) radial loops on 4^{th} and 5^{th} fingers; b) predominance of arches; c) four-digital sulcus; d) angle atd = 106° - 108°.

339. Dermatoglific parameters in Down desease:

a) predominance of ulnar loops; b) an angle αtd = 80° - 81°; c) four-digital sulcus; d) predominance of arches; e) angle αtd = 100° - 105°.

340. Dermatoglific parameters in Turner syndrome:

a) four-digital sulcus; b) increase of frequency of lines on hypotenor; c) increase of number of whorls and papillary lines set; d) radial loops on 4^{th} and 5^{th} fingers; e) angle αtd = 60° - 61°.

341. Dermatogliphical parameters of Klinefelter's syndrome:

a) low papillary lines set, big distance between lines; b) predominance of ulnar loops; c) predominance of arches; d) a four-digital sulcus; e) angle αtd = 40° - 42°.

Multiple choice questions for the topic №15 «Methods of anthropogenetics (2-nd class): cytogenetic, ontogenetic, immunological, biochemical, molecular-genetic, somatic cells hybridization»

342. Opportunities of a cytogenetic method:

a) allows to establish hereditary diseases linked to change of chromosomes number and structure, a translocation; b) to define phylum and variant of inheritance; c) to define hereditary diseases of a metabolism.

343. What cytological and genetic methods lie in the basic of cytogenetic method?

a) cytological – a differential staining, genetic – a karyotyping; b) cytological – histochemical, genetic – cloning; c) cytological – a method of tissues culture, genetic – a karyotyping.

344. Syndrome, caused by a trisomy on 13-th chromosome:

a) syndrome; b) Edward's syndrome; c) Down syndrome; d) Pattaw's syndrome; e) Kleinefelter's syndrome.

345. Syndrome, caused by a trisomy on 18-th chromosome:

a) Kleinefelter's syndrome; b) Down syndrome; c) Edward's syndrome; d) Turner's syndrome; e) Pattaw's syndrome.

346. Syndrome caused by a monosomy on X-chromosome:

a) Pattaw's syndrome; b) Kleinefelter's syndrome; c) Turner's syndrome; d) Edward's syndrome; e) Down syndrome.

347. Syndrome of additional X-chromosome:

a) Kleinefelter's syndrome; b) Pattaw's syndrome; c) Edward's syndrome; d) Turner's syndrome; e) Down syndrome.

348. Opportunities of the express-method for sex chromatin definition:

a) finding hereditary diseases linked to change of structure of sex chromosomes; b) finding hereditary diseases linked to change of sex chromosomes number; c) sex determination at a hermaphroditism and transsexualism; e) sex determination at judicial examination.

349. Quantity of X-chromatin - positive nucleus in buccal epithelium in norm:

a) at female – 50-60 %, at male – 0 %; b) at female – 60-70 %, at male – 1-2 %; c) at female – 20-40 %, at male – 1-3 %.

350. X-chromatin with high frequency meets:

a) at person of a male; b) at person of a female; c) at Edward's syndrome; d) at Kleinefelter's syndrome; e) at Pattaw's syndrome.

351. The X-chromatin is absent:

a) at person of a female; b) at person of a male; c) at Pattaw's syndrome; d) at Turner's syndrome; e) at Kleinefelter's syndrome.

352. For definition of a X-chromatin research used:

a) epidermis of a skin; b) buccal epithelium; c) level of sexual hormones; d) erythrocytes; e) leucocytes.

353. Opportunities of a biochemical method:

a) finding hereditary diseases of a metabolism; b) finding chromosomal hereditary diseases; c) allows to define phylum and variant of inheritance.

354. At what levels of exhibiting of gene action and how hereditary diseases of a metabolism are diagnostic?

a) on molecular – structure and quantity of initial materia; b) on cellular – defective enzymes; c) on ontogenetic – intermediate products of metabolism; d) on histological – antigens.

355. Method of diagnostics of fermentopathy:

a) cytogenetic; b) ontogenetic; c) immunological; d) biochemical; e) genetics of somatic cells.

356. Diagnostics of phenylketonuria at newborn:

a) indicator paper moistened of 3 % solution $FeCl_3$; b) Gatri test; c) addition of 5 % solution Acidic hydrochloric in urine; d) definition of methionine maintenance.

357. Opportunities of an immunological method:

a) finding hereditary diseases of a metabolism; b) studying an antigenic compound of cells and fluids of an organism; c) finding of the sex-linked diseases .

358. Consequences of the rhesus-conflict at newborn:

a) icterus; b) edema; c) anemia; d) hydrocephalus.

359. Opportunities of an ontogenetic method:

a) studies appearance an attribute in an ontogenesis; b) early diagnostics of hereditary diseases; c) well-timed treatment and prophylactics of hereditary diseases; d) studies change of genes activity in a heterozygous state.

360. Methods of definition of a heterozygous of a pathological gene:

a) studying microsigns; b) loading tests; c) microscopic investigation of cells and tissues; d) definition of activity of an enzyme.

361. Indications to prenatal diagnostics:

a) presence of inheritable disease in family; b) a heterozygosis of both parents at autosomal-recessive diseases; c) a heterozygous state at mother at X-linked inheritance; d) the age of mother is more than 35 years.

362. Optimal time of carrying out chorionopexia at prenatal diagnostics:

a) 6-7 week of pregnancy; b) 12-13 week of pregnancy; c) 13-14 week of pregnancy; d) 14-16 week of pregnancy.

363. Optimal time of carrying out amniocentesis at prenatal diagnostics:

a) 6-7 week of pregnancy; b) 12-13 week of pregnancy; c) 14-16 week of pregnancy; d) 18-20 week of pregnancy.

364. Opportunities of a molecular-genetic method:

a) finding hereditary diseases of a metabolism; b) definition of changes of structure and function of nucleic acids; c) abjection of genes and injection them in a cell.

365. Opportunities of genetics method of somatic cells:

a) get genes in a pure state; b) getting cells-hybrids; c) carrying out analysis of coupling and localizations genes; d) studying mechanisms of gene interaction and a regulation of gene activity; e) studying of gene mutations.

366. Method used for mapping of chromosomes of a human:

a) cytogenetic; b) ontogenetic; c) immunological; d) biochemical; e) hybridizations of somatic cells.

Multiple choice questions for the topic №16 «Human hereditary diseases»

367. Mechanisms of development of gene diseases of a metabolism:

a) mutation of a gene; b) breaking of synthesis or change of enzyme activity; c) action of collecting intermediate products of metabolism.

368. Examples of hereditary diseases of aminoacidic breaking exchange:

a) galactosemia; b) resistant of vitamin D rachitis; c) phenylketonuria; d) alkaptonuria; e) albinism.

369. Causes of phenylketonuria development:

a) deficiency of an enzyme oxidase a homogentistic acid; b) deficiency of an phenylalanindehydrxylase enzyme; c) accumulation in a blood phenylpirovinici acids.

370. Biochemical diagnostics phenylketonuria at neonatal:

a) indicator paper moistened of 3 % solution $FeCl_3$; b) Gatri test.

371. The causes of development alkaptonuria:

a) deficiency or absence of an enzyme oxydase a homogentistic acid; b) absence of an enzyme of a tyrosinase; c) absence of metabolism a homogentistic acid up to end products of disintegration.

372. Examples of hereditary diseases of carbohydrate metabolism:

a) insulindepend diabetes; b) insulinindepend diabetes; c) gout; d) galactosemia, glycogenoses; e) pentosuria.

373. Signs of an adrenogenital syndrom at girls:

a) premature puberty; b) pseudohermaphroditism; c) nanism.

374. Symptoms of adrenogenital syndrome at boy:

a) pseudohermaphroditism; b) premature virilization; c) breaking water and electrolitic exchanges; d) hypertonia; e) nanism.

375. Examples of hereditary disease of breaking of purine and pyrimidine exchanges:

a) disease of Nyman-Pick; b) gout; c) achondroplasia; d) Duchenne muscular dystrophia.

376. Examples of hereditary disease of an exchange of metals:

a) hepatolenticulatis involution; b) Konovalov-Wilson disease; c) hemochromatoses; d) angiohemophilia.

377. Characteristics of Konovalov-Wilson disease:

a) selective accumulation of copper in cells of a liver, nephroses, a nervous tissue, a cornea of an eye; b) increased abjection of copper with urine; c) drop of the contents of copper in a blood; d) breaking of kill in nephroses of amino acids, glucoses, phosphates.

378. Characteristics of hemochromatosis:

a) selective accumulation Ferri lactas in cells of a liver, hemadens, a cardiac muscle; b) the increased contents Ferri lactas in a blood; c) drop of Ferri lactas contents in a blood; d) development of a cirrhosis of the liver, increased xanthopathy.

379. Examples of the hereditary diseases linked to breaking of blood coagulation:

a) talasemia; b) Willebrand disease; c) hemophilia A and B; d) sphingolipidoses; e) hemoglobinopathy S.

380. The basic etiological factor of hemophilia A:

a) defect of the factor IX; b) defect of the factor VIII (antihemophilic globulin); c) defect of the factor of integrity of blood vessels walls.

381. The basic etiological factor of hemophilia B:

a) defect of the factor VIII (antihemophilic globulin); b) defect of the factor VII (proconvertin); c) defect of the factor IX (Kristmas factor).

382. The basic etiological factor of Willebrand disease:

a) defect of the factor VIII (antihemophilic globulin); b) defect of the factor VII; c) defect of the factor IX (Kristmas factor).

383. Examples of hereditary diseases of a lipid exchange:

a) Gosha disease; b) Nyman-Pick disease; c) hyperlipidemia; d) glycogenoses; e) Tay-Sach disease.

384. Examples of inheritable hemoglobinopathies:

a) haemoglobin S anemia; b) talasemia; c) fructosuria; d) hemoglobinopathy D; e) Kyli disease.

385. The mechanism of development of the hereditary diseases caused by change of chromosome number:

a) destruction telomere on the ends of chromosomes; b) breaking of a crossingover in a gametogenesis; c) breaking of apostatis of chromosomes in a meiosis at a gametogenesis.

386. Examples of autosomal heteroploid diseases of a human:

a) Blume's syndrome; b) Edward's syndrome; c) Pattaw's syndrome; d) Marphan's syndrome; e) Down syndrome.

387. Examples of inheritable diseases of the person linked to change of number of sex chromosomes:

a) Turner's syndrome; b) additional X- chromosome in women; c) Kleinefelter's syndrome; d) additional Y- chromosome at men; e) absence of X chromosome in men.

388. Examples most frequently the meeting chromosomal diseases linked to change of autosomes structure:

a) syndrome of "the cat's cry"; b) syndrome of "blue sclera"; c) Chirshchorne syndrome; d) Orbeli syndrome; e) Gosha disease.

389. Examples most frequently the meeting inheritable diseases linked to a translocation:

a) translocation 21-st pair on 13-15 a pair; b) translocation 21-st pair on 22 pair; c) translocation 13-15 pair on 22 pair.

390. Cytoplasmic hereditary diseases of a human:

a) Spina bifida, Olbrait osteit; b) anencephalia; c) muscular dystrophia Duchene; d) some kinds of myonatias.

Multiple choice questions for the topic №19 «Embryonic development, mechanism of its regulation»

391. Types and kinds of an ontogenesis:

a) indirect (with a complete and incomplete metamorphosis); b) nonlarval (with a complete metamorphosis); c) direct (nonlarval and intrauterine); d) larval (without metamorphosis).

392. Characteristics of indirect development:

a) low rate of yolk; b) after exit from egg covers specie passes through some stages of development and has some provisional organs; c) high rate of yolk.

393. Characteristics of direct development:

a) character for telo- and isolecithal eggs; b) after exit from egg covers specie do not passes through some stages of development and has no provisional organs; c) after exit from egg covers specie differ from parents and has smaller sizes and undevelopment organs systems.

394. Types and kinds of cleavage:

a) holoblastic (symmetrical and asymmetrical); b) meroblastic (asymmetrical and discoidal); c) holoblastic (superficial and discoidal); d) meroblastic (superficial and discoidal).

395. Type and kind of cleavage which is characteristic to isolecithal ova:

a) holoblastic asymmetrical; b) meroblastic superficial; c) holoblastic symmetrical; d) meroblastic discoidal.

396. The type and kind of cleavage which are characteristic to telolecithal eggs with a moderate amount of yolk:

a) holoblastic asymmetrica; b) meroblastic discoidal; c) holoblastic superficial.

397. The type and kind of cleavage which are characteristic to telolecithal eggs with an excessive amount of yolk:

a) meroblastic superficial; b) meroblastic discoidal; c) holoblastic asymmetrical.

398. Type and kind of cleavage which is characteristic to centrolecithal eggs:

a) complete superficial; b) incomplete discoidal; c) incomplete superficial.

399. Type and kind of human zygote cleavage:

a) holoblastic symmetrical; b) holoblastic asymmetrical; c) meroblastic superficial.

400. Types of a gastrulation:

a) invagination, delamination; b) discoidal; c) immigration, epibolia; d) immigration of an ectoderm cells.

401. Constituents of mesoderm:

a) teloblasts; b) mesenchyma; c) mesoblast; d) blastopore.

402. Modes of mesenchyma formation:

a) immigration of cells of an entoderm; b) immigration of cells of an ectoderm; c) delamination; d) epibolia.

403. Paths of the mesoblast formation:

a) immigration of entodermal and ectodermal cells; b) delamination; c) teloblastic mode; d) enterocoelic mode.

404. Ectoderm derivatives:

a) nervous system, sensitive organs receptors, epidermis and its derivatives, dermal glands; b) the reproductive and urinary systems; c) an epithelium of a foregut and hindgut; d) connective tissue.

405. Mesoderm derivatives:

a) the musculoskeletal system, all kinds of a connective tissue; b) circulatory and lymphatic systems; c) sensitive organs; d) the reproductive and urinary systems.

406. Entoderm derivatives:

a) epithelium of a foregut and hindgut; b) epithelium of an middle gut; c) epithelium of the respiratory system; d) digestive glands.

407. Role of yolk sac in a human embryo development:

a) there is practically no value; b) it is reduced and included in umbilical cord; c) it carryes out tpophic function; d) it carries out hemopoietic function while late stages of embriogenesis.

408. Role of allantois in a human embryo development:

a) role of accumulation kidney; b) it is component of umbilical cord; c) it contains umbilical vessels; d) it carries out hemopoietic function.

409. Role of chorion in a human embryo development:

a) specific barrier to microorganisms and number of harmful substances; b) it derivates a chorion-allantois fulfilling the respiratory function; c) it enters into structure of placenta; d) it enters into structure of umbilical cord.

410. Role of amnion and amniotic fluid in a human embryo development:

a) it provides embryogenesis in the water environment; b) it protects a fetus from mechanical damage; c) it takes part in placenta formation; d) it provides mobility of a fetus.

411. Changes in nucleus and cytoplasm of ovocyte I and II in prozygote period:

a) ampliphication of genes and synthesis on them r-RNA; b) synthesis of r-RNA on despiralisited locus of chromosome; c) ooplasmic segregation.

412. Changes in nucleus and cytoplasm of ovum in prozygote period:

a) synthesis of r-RNA on despiralisited locus of chromosome; b) ooplasmic segregation; c) action of polypeptides as inductors.

413. Changes in cells on spermatogenesis stages;

a) accumulation of all types of RNA; b) ooplasmic segregation; c) repression of genes.

414. Gene processes on 2-4 blastomers stage:

a) ovum genome is repressed; b) sperm genome is repressed; c) process of cleavage are going as a result of accumulation of all types of RNA in prozygote period.

415. On what stage of embryonic development a genome of ovum begins to work?

a) on 2-4 blastomers stage; b) on 64 blastomers stage; c) on blastula stage.

416. On what stage of embryonic development a genome of sperm begins to work?

a) on 2-4 blastomers stage; b) on blastula stage; c) on gastrula stage.

417. Stages of basic ontogenetic processes which are character for all multicellular organisms:

a) genome correlations; b) expression of genes; c) information for expression of genes from genes and polypeptides.

418. Correlations in ontogenesis:

a) genome; b) chromosome; c) morphogenetics; d) ergontics.

419. Critical periods of human development (according to P.G. Svetlov):

a) prozygote; b) implantation; c) placentation; d) born.

420. Causes of level increase of newborn children with hereditary diseases:

a) smoking, drinking, drugging of parents; b) mother age younger 18 years or older than 35 years; c) influence of mutagens; d) endocrine diseases of parents.

Multiple choice questions for the topic №20 «Postembryonic development. Aging and death of organism»

421. Stages of postnatal ontogenesis:

a) prozygote, zygote, cleavage, gastrulation, histogeny, organogenesis; b) prereproductive, reproductive, postreproductive; c) juvenile, reproductive, aging.

422. Hypothesis of acceleration:

a) enough noutrishment; b) influence of earth magnetic field; c) high action of electromagnet rays by TV and radio; d) appearance of heterosis.

423. Central endocrine glands of a human:

a) thyroid gland; b) adrenal; c) pancreas; d) pituitary.

424. Peripheral endocrine glands of a human:

a) sex glands; b) pituitary; c) thyroid and parathyroid; d) adrenal, pancreas.

425. Trope hormones of anterior part of pituitary which regulate functions of other glands:

a) somatotropin; b) thyroid-stimulating hormone; c) adrenocorticotropic hormone; d) follicle-stimulating hormone and luteinizing hormone.

426. Usual hormones of anterior part of pituitary:

a) thyroid-stimulating hormone; b) somatotropin; c) vasopressin; d) parathormone.

427. Hormones of intermediate part of pituitary:

a) melanotropin; b) luteinizing hormone; c) mineralocorticoid; d) glucagon.

428. Hormones of posterior part of pituitary:

a) follicle-stimulating hormone; b) vasopressin; c) oxytocin; d) melanotropin.

429. Hormones of thyroid gland:

a) thyroxin; b) threiodthyronin; c) thyroid-stimulating hormone; d) aldosterone.

430. Hormones of parathyroid gland:

a) oxytocin; b) melanotropin; c) parathormone; d) glucagon.

431. Hormones of adrenal cortex:

a) adrenaline; b) aldosterone; c) corticosteroid; d) glucocorticoids.

432. Hormones produced by Langerhans islets:

a) corticosterone; b) glucagone; c) insulin; d) aldosterone.

433. Hormones of sex glands:

a) testosterone; b) estrogenes; c) progesterone; d) gonadotropin.

434. The basic action of somatotropin:

a) stimulation of growth; b) regulation of metabolism; c) regulation of blood pressure; d) regulation of pancreas function.

435. Pathologic condition of organism when synthesis of somatotropin is breaks:

a) nanism and gigantism; b) acromegalia; c) Icenko-Kushingo disease; d) early secondary sexual signs formation.

436. Basic actions of vasopressin:

a) regulation of diuresis; b) decrease of vessel size, regulation of blood pressure; c) regulation of adrenal cortex function; d) stimulation of contractions of uteri mussels.

437. Pathological condition of organism when production of vasopressin breaks:

a) insulin independ diabet; b) mixedema; c) low of diyresis to anuria; d) tetania.

438. Basic action of oxytocine:

a) regulation of diuresis; b) stimulation of uteri mussels contractions; c) regulate oxidative-restoration processes; d) stimulation of follicles growths.

439. Pathological condition of organism when production of oxytocine breaks:

a) decrease or increase time of birth; b) anuria; c) sterility; d) eunuchoidism.

440. Basic action of thyroid gland hormones:

a) regulation of substances metabolism; b) influence on organism growth and tissue differentiation; c) decrease of vessel size; d) regulates exchange of natrium and kalium.

441. Patological stays of organism at thyroid gland disfunction:

a) tetania; b) cretinism, mixedema, endemic zob; c) Icenko-Kushingo disease; d) bazedova disease.

442. The basic action of parathyroid glands hormones

a) regulates calcium and phosphate exchange and its secretion; b) regulation of diuresis; c) regulation of natrium and kalium exchange; d) utilization of glucose.

443. Patological stays of organism at parathyroid gland disfunction:

a) diabetes mellitus; b) bazedova disease; c) tetania; d) hypercalciemic hyperparathyriosis.

444. The basic action of adrenalin:

a) regulation of blood; b) regulation of substances metabolism; c) regulation of blood pressure; d) influence on tissue differentiation .

445. Pathologic stay of organism when production of adrenalin breaks:

a) hypotonic or hypertonic disease; b) steroid diabetes mellitus; c) hypergonadism; d) mixedema.

446. Basic action of corticosteroids:

a) influence on sex formation; b) regulation of carbohydrate exchange; c) regulation of natrium and kalium exchange; d) regulation of blood vessels sensitive to adrenalin.

447. Pathological stay of organism when corticosteroid production breaks:

a) disfunction of diuresis and arterial pressure; b) Addison disease; c) Icenko-Kushinga disease; d) adrenogenital syndrome; e) steroid diabetes mellitus.

448. Basic actions of insulin and glucagon:

a) regulation of carbohydrate exchange; b) insulin helps to utilize of glucose, glucagone – to mobilize of glucose; c) helps to transform proteins to carbohydrate способствуют превращению белков в углеводы.

449. Pathological stay of organism by α- and β- cells of Largengance islands disfunction:

a) insulin dependent diabetes mellitus; b) hypoglycemia, hypoglycemic coma; c) low level of insulin; d) steroid diabetes mellitus.

450. Basic actions of sex hormones:

a) regulation of sex development process; b) regulation of gametogenesis, ovulation, menstrual cycle; c) forming of secondary sex signs.

451. Lipidsoluble vitamins:

a) vitamins A, D, E; b) vitamin K; c) vitamins of B group; d) vitamins C, P, PP.

452. Watersoluble vitamins:

a) vitamin K; b) vitamins A, D; c) vitamins of B group; vitamins C, P, PP; d) folic and pantotenic acids.

453. Appearance of hypovitaminosis A:

a) retard of growth; b) gemerolopia, eye conjuctivite; c) dry dermatitis; d) vessels breaking.

454. Appearance of hypovitaminosis D:

a) bloodstroke; b) sterility; c) destroy of calcium and phosphate exchange which is going to rachitis and bone destruction; d) gemerolopia.

455. Appearance of hypovitaminosis K:

a) blood clotting breach; b) bloodstroke; c) hemolytic anemia; d) pellagra.

456. Appearance of hypovitaminosis E:

a) dry dermatitis; b) fall of resistance; c) sterility; d) hemolytic anemia.

457. Appearance of hypovitaminosis C:

a) vessels breaking, gingivitis; b) delay of growth; c) low resistance on infections; d) eye conjuctivite.

458. Appearance of hypovitaminosis B_1:

a) anemia; b) beri-beri disease; c) pellagra; d) sterility.

459. Appearance of hypovitaminosis B_2:

a) vessels breaking; b) polyneuritis; c) eye conjuctivite; d) gemerolopia.

460. Appearance of hypovitaminosis B_6:

a) polyneuritis; b) instability of nervous system; c) instability of psyche; d) anemia.

461. Appearance of hypovitaminosis B_{12}:

a) deficit anemia; b) dermatitis; c) beri-beri disease; d) instability of psyche.

462. Appearance of hypovitaminosis PP:

a) anemia; b) cynga; c) pellagra; d) beri-beri disease.

463. Classification of human constitution by Bynak V.V.:

a) thorax, muscular, abdominal; b) ectomorphic, mesomorphic, endomorphic; c) leptosomic, athletic, picnic; d) astenic, normostenic, hyperstenic.

464. Classification of human constitution by Chernoruckiy M.V.:

a) thorax, muscular, abdominal; b) ectomorphic, mesomorphic, endomorphic; c) leptosomic, athletic, picnic; d) astenic, normostenic, hyperstenic.

465. What diseases does astenic observes:

a) hypertonia, chronic tonsillitis; b) uncer of gaster and duodenum tuberculosis; c) nervousness vegetative distones, hypotonia.

466. What diseases does normostenic observes:

a) sclerosis of coronary vessels; b) nervousness, schizophrenia; c) vegetative distones, hypotonia; d) diseases of metabolism .

467. What diseases does hyperstenic observes:

a) hypertonia, aterosclerosis; b) chronic tonsillitis, abscess; c) disease of metabolism; d) epilepsy.

468. Essence of gene-regulatory theory of Frolcisa V.V. aging:

a) instability of gene-regulation; b) change of some polypeptides syntheses; c) syntheses of aliens proteins; d) activation of gene-mutators.

469. Characteristics of clinical death:

a) failure of heart beating; b) absence of breathing; c) absence of reflex reactions; d) cells of all organs are alive; e) process of cells metabolism is not disordered.

470. Characteristics of biological death:

a) cells of all organs are alive; b) brain cortex cells start to die; c) process of cells metabolism is not disordered.

471. Active euthanasia:

a) biological death; b) voluntarily leaving from life at sleep with doctor help; c) death in result of medical help stop to patient.

472. Passive euthanasia:

a) clinical death; b) biological death; c) death in result of medical help stop to patient.

Multiple choice questions for the topic №21 «Ontogenetic homeostasis, mechanisms of its regulation»

473. Types of relationships between incoming and outcoming variables in the law of alive system behaviour:
a) direct; b) positive feedback; c) negative feedback; d) homeostatic.
474. Examples of gene mechanisms of a homeostasis:
a) tissue regeneration; b) DNA repair; c) gene expression and repression; d) gene control of blood systems antigens synthesis.
475. System of human histocompability:
a) HLA; b) LD; c) SD.
476. LD-antigens are:
a) controls by HLA-D sublocus; b) controls by HLA-A sublocus; c) definite by mixed culture of leucocytes.
477. SD-antigens are:
a) controls by HLA-D sublocus; b) controls by HLA-A, B, C sublocuses; c) definite by complement-dependent method of lymphocytotoxic test.
478. How many antigens controls by HLA-A, HLA-B sublocuses?
a) HLA-A – 16 antigens, HLA-B – 20 antigens; b) HLA-A – 19 antigens, HLA-B – 3 antigens; c) HLA-A – 19 antigens, HLA-B – 20 antigens.
479. How many antigens controls by HLA-C, HLA-D sublocuses?
a) HLA- C – 6 antigens, HLA- D – 15 antigens; b) HLA- C – 15 antigens, HLA-D – 5 antigens; c) HLA- C – 5 antigens, HLA- D – 6 antigens;
480. Types of a transplantation which are most frequently used in a human:
a) syngenic; b) allotransplantation; c) autotransplantation; d) xenotransplantation.
481. Example of cellular mechanisms of a homeostasis:
a) DNA replication; b) keeping of cell as open self-regulating system; c) cellular and intracellular regeneration; d) chromosome aberration.
482. Types of tissues by their ability to proliferation:
a) labile; b) stable; c) static.
483. Labile tissues and organs:
a) osteal tissue; b) friable connective tissue; c) endocrine glands, kidneys, lungs; d) epithelium of a gastrointestinal path, respiratory and urinary paths; e) epidermis, endothelium of vessels, epithelium of peritoneum, hemopoietic system.
484. Type of restoring in labile tissues:
a) only intracellular; b) both intracellular and cellular; c) only cellular; d) intercellular.
485. Stable tissues and organs:
a) lungs, kidneys; b) glands, kidneys; c) muscular tissues (except myocardium); d) epithelium of a gastrointestinal path.
486. Type of regeneration in stable tissues:

a) only intracellular; b) both intracellular and cellular; c) only cellular; d) only intercellular.

487. Static tissues and organs:

a) myocardium; b) ganglion tissue of the central nervous system; c) striated muscles.

488. Type of regeneration in static tissues:

a) only intracellular; b) both intracellular and cellular; c) only cellular; d) only intercellular.

489. Forms of reparative regeneration of a human:

a) full regeneration; b) regeneration hypertrophia; c) intracellular compensatory hypertrophy; d) epimorphosis.

490. How does intracellular compensatory hypertrophia realize?

a) increase of cells number; b) increase volume of cells.

491. Ways of reparative restoring:

a) epimorphosis, endomorphosis; b) regenerative hypertrophy; c) regenerative induction; d) morpholaxis.

492. Essence of epimorphosis:

a) on a place of damage a scar is formed, the restoring is provided by hypertrophy or hyperplasia of cells; b) the restoring starts from surface of wound; c) the restoring is provided by redifferentiating of intermediate cells.

493. Essence of endomorphosis:

a) the restoring starts from surface of wound; b) regeneration is going with the help of differentiation of intermediate cells; c) on a place of damage a scar is formed, the restoring is provided by hypertrophy or hyperplasia of cells.

494. Essence of morpholaxis:

a) the restoring is activated by metabolites of necrotic tissues; b) the restoring is provided by redifferentiating of alive cells after wound; c) the restoring begins from wound surface.

495. Essence of regenerative induction:

a) regeneration starts from wound surface; b) the regeneration is provided by redifferentiating of intermediate cells; c) the regeneration is activated by metabolites of necrotic cells.

496. Systems mechanisms of homeostasis regulation:

a) by nervous system; b) by immune system; c) by endocrine system.

497. Features of a nervous regulation of a homeostasis:

a) its effect is prologated; b) reaction is fast; c) brevity of response; d) manifestation of effect in that place, whence signal comes.

498. Division of brain, to which the endocrine function is inherent:

a) pituitary gland; b) cortex of the large hemispheres; c) hypothalamus; d) medulla oblongata.

499. Features of humoral regulation of homeostasis:

a) action only on target cells; b) prolongation of effect; c) it is carried out by means of hypothalamus; d) acetylcholin, histamin, serotonin, prostoglandins, kinines take part in it.

500. Daily rhythm of a human:

a) speed of cell division assimilation and dissimilation; b) cyclists of hormones secretion, antibodies; c) frequency of respiratory, rhythm of heart beating.

501. Monthly rhythm of a human:

a) menses cycle; b) synthesis of antibodies; c) intensively of reproduction.

502. Season rhythm of a human:

a) increase of range of chronic diseases; b) increase of range of transmissive diseases; c) intensively of reproduction; d) activity of endocrine glands.

503. Features of gene mechanisms of homeostasis while aging:

a) increasing of contents of histones and decreasing of acidic proteins amount; b) stronger bindings of histones with DNA; c) lowering of activity of a DNA - polymerase and reparing enzymes; d) synthesis of abnormal proteins.

504. Features of cellular mechanisms of homeostasis while aging:

a) changes of membrane systems, osmotic properties, electrical potential of cells; b) violation of metabolic processes; c) violation of cell division; d) chromosomal aberrations.

505. Features of system mechanisms of homeostasis while aging:

a) atrophic processes in brain cortex; b) decrease of endocrine system function; c) disfunction of neuro-humoral regulation; d) chromosomal aberrations.

Multiple choice questions for the topic №22 «Comparative anatomy of vertebrates' organ systems (1-st class): integument, skeleton, digestive and respiratory systems »

506. Palingenesis is:

a) occurrence in embryo of attributes unusual for ancestors; b) attributes of embryo repeating of the remote ancestors; c) one of phylembryogenesis kind.

507. Cenogenesis is:

a) occurrence in embryo of attributes unusual for ancestors; b) attributes of embryo repeating of the remote ancestors; c) have adaptive character; d) disappear at the adult organism; e) save at the adult organism.

508. Philembryogenesis is:

a) changes of phenotype development of embryogenesis stays in adult organism; b) reproduce from generation to generation; c) morphophysiology transformation which determine new directions of philogenesis.

509. Examples of palingenesis of a human:

a) chorion, yolk sack; b) laying of chorda and nervous tube; c) allantois; d) formation of gills glottis; e) formation of prekidney and primary kidney.

510. Examples of geterochronia:

a) most early laying of nervous tube then chorda; b) most early laying of pelvis kidney than body's kidney; c) most early laying of nervous system than reproductive system.

511. Examples of heterotopia:

a) appearance of place formation of prekidney, primary and secondary kidney; b) laying of lungs, which are modification hind pair of gills; c) most early laying of nervous tube then chorda.

512. Examples of cenogenesis of a human:

a) embryonic formation of the secondary kidney; b) archallaxis; c) amnion, chorion, allantois.

513. The basic kinds of philembryogenesis:

a) anabolia; b) cenogenesis; c) deviation; d) archallaxis; e) palingenesis.

514. The basic evolutionary directions of vertebrates integument:

a) change of mucous epithelia to dry keratinized epidermis; b) predominance epithelium to corium; c) predominance corium to epithelium; d) differentiation of glands; e) appearance of skin appendage.

515. Examples of skin defect of a human:

a) hemipodia; b) ichthyosis; c) hemangioms; d) teleangiectosia; e) microgenia.

516. The basic evolutional directions of axial skeleton changing in vertebrates:

a) reduction of gill; b) change of cartilaginous skeleton to bony-cartilaginous and to bony skeleton; c) differentiation of vertebrae into segments; d) transformation of visceral skeleton arches.

517. The basic evolutional directions of cranium in vertebrates:

a) transformation of arches of visceral skeleton; b) formation of jaws apparatus; c) differentiation of teethes; d) prevalence cranium part on facial part .

518. Skull defects are:

a) extropodia, apodia; b) atlas assimilation; c) increasing or decreasing number of vertebrae; d) knitting body or processes of vertebrae; e) scoliosis.

519. Defects of rib cage shape development:

a) adentia, diastema; b) underdevelopment or additional ribs; c) cervical ribs; d) splitting of sternum; e) hemypodia.

520. Examples of skull defect development of a human:

a) cranial-clavicular disostosis, synostosis of osts; b) hemypodia, apodia; c) acrocephalia; d) arachnodactylia, polydactylia, syndactylia, flat-foot, club-foot; e) atlas assimilation.

521. Examples of cranium defect of a human:

a) cleft palate, harelip; b) craniostenosis, acrocephalia; c) microgenia, micrognatia; d) gemipodia, extropodia.

522. The basic evolutional directions of respiratory system in vertebrates:

a) changing of gill breathing to skin-lung breathing and to lung breathing; b) appearance and differentiation of respiratory ways; c) appearance of agenesia; d) increase respiratory surface.

523. Examples of human defects development of respiratory system:

a) preserving of gill's slits; b) Hirshprung disease; c) athresia of trachea, tracheal-esophagus fistula; d) absence or underdevelopment of lung or its lob.

524. The basic evolutionary directions of digestive system at vertebrates:

a) development of athresy, aplasia; b) alimentary canal differentiation separation of digestive glands; c) perfection of jaw apparatus; d) teeth differentiation; e) increase of surface absorb.

525. Examples of digestive system defect development of a human:

a) adentia, dyastema; b) micro- and macroesophagus; c) Merckells diverticulum; d) situs viscerus inversum.

Multiple choice questions for the topic №23 «Comparative anatomy of vertebrates' organ systems (2-nd class): circulatory, nervous, excretory and reproductive systems»

526. Main directions of the circulatory system evolution:

a) differentiation of heart into chambers and separation arterial and venous blood from each other; b) transposition of aorta; c) appearance of the second pulmonary circle of circulation; d) differentiation of vessels into arteries and veins; e) isolation of the lymphatic system from the circulatory one.

527. Examples of the circulatory system development defects in the man:

a) Tolochinov-Roze disease; b) Fallot's triad, tetrad and pentalogy; c) situs viscerus inversum totalis; d) failure of Botallo duct obliteration; e) right or two aortic arches, transposition of aorta and pulmonary artery.

528. Defects of developments which are included in Fallot's triad:

a) transposition of aorta and pulmonary artery; b) stenosis of a pulmonary artery; c) hypertrophy of left ventricle; d) hypertrophy of a right ventricle; e) defect of interventricular septum.

529. Defects of development which Fallot's tetrad includs:

a) defect of interventicular septum; b) stenosis of pulmonary artery; c) hypertrophy of right ventricle; d) transposition of aorta and pulmonary artery; e) dextraposition of aorta.

530. Fallot's pentalogy includes:

a) defects of interatrial and interventricular septa; b) dextraposition of aorta; c) failure of mitral vavle; d) stenosis of pulmonary artery; e) hypertrophy of right ventricle.

531. Types of vertebrates brain:

a) nervous tube widened part; b) ichtiopsydic; c) zauropsydic; d) mammalian.

532. Centre of associative activity in fishes and amphibians:

a) forebrain; b) midbrain; c) medulla; d) cerebellum.

533. Centre of associative activity in mammalians:

a) cortex of forebrain; b) bottom of forebrain; c) midbrain; d) medulla oblongata.

534. Centre of associative activity in reptiles and birds:

a) cortex of forebrain; b) bottom of forebrain; c) midbrain; d) medulla oblongata.

535. Main directions of vertebrates brain evolution:

a) transformation of widening of nervous tube anterior end into the brain; b) differentiating of the brain into divisions and development of brain ventricles; c) offset of main centre of nervous activity regulation from midbrain to the brain bottom and then to the cortex of forebrain; d) change of archicortex to neocortex; e) increase of brain size and of cortex surface, increase of cerebral nerves number.

536. Examples of the nervous system defects development in a human:

a) hydrocephaly; b) hemipodia, apodia; c) anencephaly, microcephaly;. d) spinal hernia.

537. Main directions of excretory system evolution in vertebrates:

a) turning of pelvic kidney into truncal one; b) change of pronephrous, primary and secondary kidneys functioning; c) formation of connection between excretory system and circulatory one; d) increase of nephrons number, lengthening of renal convoluted tubules.

538. Features of pronephros nephron:

a) the funnel of nephrostoma is open in secondary cavity of body; b) the urine formation is provided by filtering of blood plasma; c) excretory ductule departing from funnel passes into collecting duct; d) the urine formation occurs from celomic fluid.

539. Features of primary kidney nephron:

a) the funnel of nephrostoma is open in secondary cavity of a body; b) connection with circulatory system is provided by means of glomerular capsule; c) the urine formation occurs by means of blood plasma filtering; d) the urine formation occurs from celomic fluid; e) excretory ductule is differentiated into divisions.

540. Features of secondary kidney nephron:

a) the nephron has no funnel, that is why connection with coelome is completely lost; b) the nephron starts from glomerular capsule; c) the filtering of urine is carried out only from blood plasma; d) increase of excretory surface due to of primary and secondary nephrons formation; e) differentiation of excretory ductule into descending arm, loop of Henle, ascending arm.

541. The duct of pronephros, from which the female reproductive organs are formed, periods of them differentiating (weeks of pregnancy):

a) wolffian duct, 10-12 weeks of pregnancy – internal reproductive organs, 12-20 weeks of pregnancy – external reproductive organs; b) mullerian duct, 10-12 weeks of pregnancy – internal reproductive organs, 12-20 weeks of pregnancy –

external reproductive organs; c) wolffian duct, 10-12 weeks – external reproductive organs.

542. The duct of pronephrous, from which the male reproductive organs are formed, periods of its differentiation (weeks of pregnancy):

a) wolffian duct, 9-18 weeks of pregnancy – internal reproductive organs; b) wolffian duct, 10-12 weeks of pregnancy – internal reproductive organs, 12-20 weeks – external reproductive organs; c) mullerian duct, 10-12 weeks – botn external and internal reproductive organs.

543. Examples of excretory system development defects in a human:

a) aplasia, hypoplasia, dystopia of kidneys; b) wandering kidney, joining of kidneys, doubling of kidney; c) urethra epispadia and hypospadia; d) aplasia and doubling of urinary bladder.

544. Defects of reproductive system development in men:

a) one-horned and two-horned uterus; b) anarchism, cryptorchism; c) phimosis, hydrocele; d) testis ectopy, absence of prostate.

545. Defects of reproductive system development in woman:

a) anorchism, cryptorchism; b) phimosis, hydrocele; c) one-horned, two-horned uterus, agenesia and hypoplasia of ovaries; d) vagina atresia and colpostenosis.

POPULATION-SPECIES LEVEL OF ORGANIZATION OF LIVING SYSTEMS

Multiple choice questions for the topic №24 «Structure of human populations»

546. Ecological characteristics of human population:

a) size of population, number of individuals; b) area of living; c) age and sex structure; d) isolation.

547. Genetic characteristics of human population:

a) genetic drift; b) genetic load; c) genofond.

548. Characteristics of dems:

a) consists of less of 5000 individuals; b) consists of less than 100 individuals; c) essence during 1-2 generations isolated from other groups; d) through 1-2 generations units with other groups.

549. Characteristics of isolates:

a) consists of less than 5000 individuals; b) consists of less than 100 individuals; c) isolated from other populations; d) have very limited exchange of individuals.

550. Results of dem and isolate existence:

a) transference of pathological recessive genes in homozygous state and appearance of hereditary disease; b) decrease of viability and die out of population; c) appearance of genetic drift through some generations.

551. Opportunities of Hardy-Weinberg low using:

a) definition of concentration by some genes in population; b) definition of gene drift; c) definition of pathological gene frequent in heterozygote.

552. Elementary evolutional factors influence on human population:

a) natural selection; b) mutational process, genetic drift; c) population rays; d) isolations.

553. Example of selection action against homozygotes and favor of heterozygotes:

a) rhesus-conflict; b) sickle cell anemia; c) brachydactilia.

554. Groups of polymorphism according of character of hereditary material:

a) neutral; b) genes; c) chromosomal; d) genomic.

555. Types of polymorphism by its nature:

a) transitional; b) neutral; c) balanced; d) substitutional.

556. Examples of gene polymorphism of a human:

a) genes of rhesus-factor and oval form of erythrocytes; b) genes of blood groups on ABO system, Luteran; c) plural alleles of A, B, C, D/D genes of HLA system.

557. Examples of chromosomal polymorphism of a human:

a) «cats cry» syndrome; b) Orbeli syndrome; c) Chirschchorn syndrome; d) translocation from 21-th pair to 13, 14, 15, 22-th.

558. Examples of genomic polymorphism of the human:

a) Orbeli syndrome; b) Smith syndrome, Pattaw's syndrome; c) Kleinefelter's syndrome; d) Turner's syndrome, additional X- chromosome.

559. Essence of transitional polymorphism:

a) gene in new condition replaces initial one; b) with the help of natural selection population will be monomorphic by new allele; c) consists of two or some more alleles.

560. Essence of neutral polymorphism:

a) close to chromosomal mutations; b) spontaneous changing of gene frequencies occurs; c) in changed environment one gene changes to new one.

561. Essence of balanced polymorphism:

a) close to chromosomal aberrations; b) appears in result of gene load; c) selection acts in different directions on homozygotes and heterozygotes.

562. Genetic load is:

a) relatively decrease viability of population in comparison with normal genotype; b) includes lethal and sublethal mutations; c) high quantity of hereditary diseases in humankind populations.

563. Essence of mutational genetic load:

a) result of repeated mutations; b) result of genetic drift; c) stay by natural selection.

564. Essence of balanced load:

a) spontaneous changing of gene frequencies occurs; b) appears with the help of selection on homozygotes and heterozygotes; c) has two or more alleles.

565. Essence of substitutional genetic load:

a) normal allele in new conditions becomes negative; b) have selection against homozygotes; c) close to chromosomal aberrations.

BIOSPHERAL-BIOGEOCENOTIC LEVEL OF ORGANIZATION OF LIVING SYSTEMS

Multiple choice questions for the topic №25 «Principles of human ecology. Antropoecology»

566. Ecology studies:

a) physiology and behaviour of separate organisms in natural conditions; b) birth rate, mortality one, migration one; c) the interspecpecific relationships; d) flow of energy, turnover of substances.

567. The characteristics of a biotope:

a) it is the certain site of the environment with relatively homogeneous conditions; b) the usual community of organisms; c) territorially limited, internally homogeneous system of living organisms.

568. The characteristics of biocenosis:

a) it consists of biotic and abiotic parts connected by continuous exchange of substances and energy; b) it is historically formed isolated community of organisms; c) certain species or physical factors dominate in it.

569. The characteristics of biogeocenosis:

a) it is dynamic and steady community of plants, animals and microorganisms; b) it is community which is in interaction and in immediate contact with components of biosphere; c) it consists of biotic and abiotic parts; d) it is the open system.

570. Components of ecosystem:

a) abiotic factors; b) organic substances connecting biotic and abiotic parts of ecosystem; c) climatic mode; d) producers; e) macroconsuments, microconsuments.

571. Components of biosphere according to V.I.Vernadsky:

a) macroconsuments, microconsuments; b) living and biogenic substances; c) mineral and biomineral substances.

572. Anthropoecology studies:

a) principles of the human populations interaction with factors of environment; b) principles of the human populations development; c) possibilities to save health of the people; d) possibilities to perfect physical and mental abilities of the people.

573. Levels of ecological interactions of a human:

a) individual; b) biosphere; c) group; d) global.

574. Adaptive types of a human:

a) negroids, caucasians, asians; b) americans, australians; c) arctic, tropical, of temperate climate; d) high-mountainous, deserted.

575. Features of the arctic adaptive type of a human:

a) good development of the musculoskeletal system, enlarged size of thocacic cavity; b) reduced amount of cholesterol in the blood; c) high levels of haemoglobin, proteins and cholesterol in the blood; d) increased amount of mineral substances in the bones; e) increased ability to oxygenate lipids.

576. Features of the tropical adaptive type of a human:

a) high levels of proteins and cholesterol in the blood; b) reduced mass of the body; c) long extremities, diminished size of thoracic cavity; d) intensive rate of sweating; e) intensive rate of metabolism, hypocholesterolemia.

577. Features of the temperate climat adaptive type of a human:

a) hypercholesterolemia, hypoglobulinemia; b) the musculorskeletal system is advanced; c) reduced amount of mineral substances in the bones; d) it is intermediate type between arctic and tropical types; e) it is intermediate type between arctic and mountainous types.

578. Features of the high-mountainous adaptive type of a human:

a) increased rate of metabolism; b) increased number of erythrocytes and haemoglobin level, ease of haemoglobin oxygenation; c) enlarged size of thoracic cavity; d) reduced rate of metabolism; e) hypercholesterolemia.

579. Features of the deserted adaptive type of a human:

a) increased rate of metabolism; b) increased haemoglobin level; c) increased process of dehydration; d) reduced amount of mineral substances in the bones; e) hypoglobulinemia.

580. States of human organism vital activity:

a) physiological; b) of stress condition; c) of adapting; d) of pathology.

581. Levels of human adaptive processes:

a) individual; b) population; c) species; d) global.

582. Features to environmental adapting of a people of the "sprinter" adaptive type:

a) they fast and easily adapt to new conditions; b) dysadaptain occurs in 10-12 years; c) dysadaptation occurs in 1-2 years.

583. Features to environmental adapting of a people of the "stayer" adaptive type:

a) the adapting to new conditions of the environment occurs durably and hardly; b) dysadaptation occurs in 10 - 12 years; c) the chronical diseases develop as result.

584. Features to environmental adapting of a people of the "mixed" adaptive type:

a) the adapting to new conditions of the environment occurs durably and hardly; b) dysadaptation occurs in 10 - 12 years; c) it occupies intermediate place between "spinter" and "stayer" types.

585. Main factors of health care:

a) rational style of life; b) liquidation of harmful habits; c) physiologically balanced diet; d) active movement and fitness.

Multiple choice questions for the topic №26 «Ecological aspects of parasitism in phylum Sarcomastigophora, classes Zoomastigota and Sarcodina»

586. Examples of intercellular parasites:

a) Trichomonas vaginalis; b) Lamblia intestinalis; c) Leishmania tropica, L. donovani; d) Trypanosoma cruzi; e) Trypanosoma brucei gambience.

587. Examples of tissue parasites:

a) Trypanosoma brusei gambiense, T. crusi; b) Entamoeba histolytica; c) Trichomonas hominis; d) Trichomonas vaginalis.

588. Examples of interorgans parasites:

a) Trichomonas hominis; b) Balantidium coli; c) Fasciola hepatica; d) Opistorchis felineus; e) Onchocerca volvulus.

589. Examples of cavity's parasites:

a) Lamblia intestinalis; b) Entamoeba histolytica; c) Trichomonas hominis; d) Leishmania tropica.

590. Examples of monoxenic parasites:

a) Trichomonas hominis; b) Leishmania donovani; c) Trypanosoma cruzi; d) Entamoeba histolytica; e) Lamblia intestinalis.

591. Localization of Leishmania tropica in human organism:

a) cells of liver, spleen; b) cells of skin; c) blood, lymph; d) cavum of intestine.

592. Pathogenic influence of the Leishmania tropica on the human's body:

a) destroyment of hepatocytes; b) defeat of lymphatic nodes and vessels; c) defeat of skin and ulcer appearance; d) damage of intestine walls.

593. Methods of Leischmania tropica diagnostics:

a) light microscoping of material taken from ulcers; b) part of material is streaked onto plates with NNN-agar; c) immunological reactions.

594. Localization of Leishmania donovani in human organism:

a) liver cells, spleen, lymphatic node; b) cells of red bone marrow; c) blood, spinal fluid; d) skin cells.

595. Pathological influence of Leishmania donovani on human organism:

a) breach of structure and function of red bone marrow cells, liver, spleen, lymphatic nodes; b) ulcer defeat of skin; c) inflammatory process in brain.

596. Methods of visceral Leishmania laboratory diagnostics:

a) method of native smear, flotation; b) finding amastigotes in the red brain cells, lymph nodes; c) crop on NNN – agar; d) immunological reactions.

597. To prevent visceral and cutaneus leishmaniasis need:

a) revealing and treatment of ill people, kill vectors; b) destruction of tse-tse fly of genus Glossina in their birth places; c) destruction of mosquito of genus Phlebothomus in their birth places; d) prevent mosquitos bites.

598. Localization of Trypanosoma brucei gambiense in human body:

a) cells of liver, spleen; b) blood, lymph, spinal fluid; c) tissues of spinal and head brain; d) cardiac muscle.

599. Pathogenic influence of Trypanosoma brucei gambience on human organism:

a) inflammatory and degenerate changes in brain, liver; b) changes in walls of blood vessels; c) megacolon; d) allergic reactions.

600. Methods of laboratory diagnostics of sleeping sickness:

a) flotation method; b) crop on NNN – agar; c) finding parasite in blood slide, thin drop; d) immunological reactions.

601. Localization of Trypanosoma cruzi in human organism:

a) cells of adrenal glands; b) blood, lymph, spinal fluid; c) seroze cavity; d) cardium mussels.

602. Pathogenic influence of Trypanosoma cruzi on human:

a) defeat of skin, cellular tissue, lymphatic nodes; b) defeat of heart; c) defeat of kidney and sex organs; d) allergic reactions.

603. Methods of Chagas's disease diagnostics:

a) microscoping of peripheral blood to find parasite, thin drop, take material of spinal fluid, spleen; b) xenodiagnostics with Triatoma chinches; c) immunological method reaction of complement binding, intraskin sample.

604. To prevent sleeping sickness and Chagas's disease need:

a) revealing and treatment of ill people, kill vectors; b) destruction of tse-tse fly of genus Glossina in their birth places; c) destruction of mosquito of genus Phlebothomus in their birth places; d) prevent mosquitos bites.

605. Localization of Lamblia intestinalis in human organism:

a) cells of liver, spleen; b) blood, lymph; c) duodenum; d) bile cyst.

606. Pathogenic influence of Lamblia intestinalis on human organism:

a) mechanical damage of duodenum walls; b) dyspepsia, damage of absorption, motor, secretory functions of a intestine; c) damage of liver function; d) allergic reactions.

607. Methods of lambliosis laboratory diagnostics:

a) method of native smear, flotation, cyst concentration; b) microscoping of duodenal fluid and faeces for trophosoits and cysts; c) immunological methods.

608. Prevent measures of Lambliosis:

a) finding and kill ill animals; b) treat of ill people; c) use severage and wc; don't use fresh stool for ground agriculture; d) washing vegetables, berry's; wash hands after work with soil, don't use water from natural lakes.

609. Localization of Trichomonas vaginalis in human organism:

a) vagina and cervix of the uterus; b) adrenal body; c) duodenum; d) cardium muscle.

610. Pathogenic influence of Trichomonas vaginalis on human organism:

a) affection of adrenal glands; b) affection mucous membrane of urogenital organs; c) defeat fibre of duodenum; d) appearance of myocarditis.

611. Methods of trichomoniasis laboratory diagnostics:

a) finding cysts in smear of urogenital ways; b) finding of vegetative forms in smear of urogenetal ways in male – from centrifugate of urine and sperm; c) immunological reactions; d) intraskin sample.

612. Preventive measures of Trichomonas vaginalis:

a) revealing and kill ill animals; b) revealing and treatment of ill people; c) kill flies and cockroackes; d) educational programs concening safe sex.

613. Localization of Entamoeba histolytica in human organism:

a) small intestine; b) large intestine; c) gall-bladder; d) pancreas.

614. Pathogenic influence of Entamoeba hystolytica on human organism:

a) affection mucous cover of large intestine appearance of ulcer; b) perforation of intestine and development of peritonitis; c) hematogenic dissemination of amoeba and development of extraintestinalis amoeba and abscesses.

615. Methods of amoebiasis laboratory diagnostics:

a) method of native smear; b) finding in fresh faeces, phlegm of tissue, big, small vegetative forms and cysts; c) finding tissue and big vegetative forms in scrape of ulcer; d) immunological reactions.

616. Prevent measures of amoebiasis:

a) finding and treat ill people; b) use severage and wc; don't use fresh stool for ground agriculture; c) kill flies and cockroackes; d) washing vegetables, berry's; wash hands after work with soil.

Multiple choice questions for the topic №27 «Ecological aspects of parasitism in phylum Apicomplexa, class Sporozoa and in phylum Infusoria, class Ciliata»

617. Epidemiological characteristics of malaria originators:

a) true, obligate, permanent parasites; b) monoxenous, intracellular parasites; c) heteroxenous, intratissue and luminal parasites; d) heteroxenous, intratissue and intracellular parasites.

618. Systematic classification of malaria originators:

a) ph. Sarcomastigophora, cl. Zoomastigota, sp. Plasmodium vivax, Pl. ovale, Pl. malariae; b) ph. Protozoa, cl. Sporozoa, sp. Plasmodium vivax, Pl. ovale, Pl. malariae; c) ph. Apicomplexa, cl. Sporozoa, sp. Plasmodium vivax, Pl. ovale, Pl. malariae, Pl. falciparum; d) ph. Ciliophora, cl. Sporozoa, sp. Plasmodium vivax, Pl. ovale, Pl. malariae.

619. Type of fever caused by Pl. vivax:

a) tropica; b) malaria; c) terciana.

620. Type of fever caused by Pl. ovale:

a) terciana; b) type of; c) quartana.

621. Type of fever caused by Pl. malariae:

a) malaria; b) tertiana; c) quartana.

622. Type of fever caused by Pl. falciparum:

a) tropica; b) quartana; c) tertiana.

623. Location of malarial parasites in organism of a human:

a) hepatic cells; b) blood plasma, erythrocytes; c) celebrospinal fluid; d) lymph.

624. Pathogenic action of malarial parasites:

a) destroy hepatocytes and erythrocytes; b) violate the immune status; c) damage intestine; d) cause hepatolienal syndrome.

625. Methods of laboratory diagnosis of malaria:

a) detection of parasites in thin and thick smear of blood; b) intracutaneous test with malarial antigens; c) indirect imunofluorescence, indirect hemagglutination tests.

626. Personal measures of malaria phophylaxis:

a) revealing and treatment of the patients; b) control for donor's blood; c) mosquitoes eradication; d) preventive course of treatment.

627. Systematic classification of Toxoplasma:

a) ph. Protozoa, cl. Coccidia, sp. Toxoplasma gondii; b) ph. Sporozoa, cl. Coccidia, sp. Toxoplasma gondii; c) ph. Apicomplexa, cl. Sporozoa, od. Coccidia, sp. Toxoplasma gondii; d) ph. Coccidia, cl. Sporozoa, sp. Toxoplasma gondii.

628. Epidemiological characteristics of Toxoplasma gondii:

a) facultative, heteroxenous, intracellular parasite; b) obligate, permanent, heteroxenous, intracellular parasite; c) obligate, temporary, monoxenous, intratissue parasite; d) obligate, permanent, heteroxenous, intradermal parasite.

629. Toxoplasma location in the human organism:

a) cells of small intestine epithelium; b) hepatic cells; c) red blood cells; d) myocardium, sceletal muscles, eyes.

630. Toxoplasma pathogenic action:

a) damages of large intestine epithelium ; b) may affect nervous system; c) may cause myocarditis; d) causes lymphadenopathy.

631. Methods of toxoplasmosis laboratory diagnosis:

a) culture of blood microscopy; b) complement fixation test; c) polymerized chain reaction - PCR; d) ELISA; e) indirect hemagglutination, indirect fluorescent antibody tests.

632. Social measures of toxoplasmosis prophylaxis:

a) revealing and treatment of the ill people; b) inspection of the pregnant women for toxoplasmosis; c) careful washing of the hands after contact with cats; d) avoid contamination of environment by cat faeces.

633. Systematic classification of balantidium:

a) ph. Sarcomastigophora, cl. Infusoria, sp. Balantidium coli; b) ph. Apicomplexa, cl. Ciliata, sp. Balantidium coli; c) ph. Protozoa, cl. Infusoria, sp. Balantidium coli; d) ph. Infusoria, cl. Ciliata, sp. Balantidium coli.

634. Epidemiological characteristics of Balantidium coli:

a) true, obligate, permanent, heteroxenous, intratissue and intracavitum parasite; b) true, obligate, permanent, intratissue parasite; c) true, obligate, permanent, intracellular parasite; d) true, obligate, permanent, intracutaneous parasite.

635. Balantidium location in the human organism:

a) small intestine; b) duodenum; c) large intestine; d) lymph.

636. Source of invasion in balantidiasis:

a) dog, jackal; b) pig, ill man; c) rodents; d) cattle.

637. Methods of balantidiasis laboratory diagnosis:

a) microscopy of faeces for trophozoites; b) microscopy of faeces for cysts; c) microscopy of sputum; d) microscopy of blood thick drop.

638. Social measures of balantidiasis prophylaxis:

a) revealing and treatment of the ill people and pigs; b) keeping of the meat preparation technology; c) keeping of personal hygiene rules; d) health education of a human, especially pig farmers.

639. Methods of pneumocystosis diagnosis:

a) microscopy of blood; b) microscopy of the bronchial lavage; c) ELISA; d) microscopy of sputum.

640. Location of Cryptosporidium parvum in organism of a human:

a) lungs; b) liver; c) blood; d) intestine.

Multiple choice questions for the topic №28 «Ecological aspects of parasitism in phylum Plathelminthes, class Trematoda»

641. Localization of Fasciola hepatica in human organism:

a) duodenum; b) large intestine; c) bile duct of liver; d) pancreas.

642. Pathogenic influence of Fasciola hepatica on human organism:

a) development of allergic reactions; b) mechanical and pressing action on liver parenchyma; c) obstruction of bile duct and development of icterus; d) development of hepatopancreatic syndrome.

643. Methods of fasciolesis laboratory diagnostics:

a) method of native smear; b) finding eggs in faece and duodenum fluid; c) flotation method; d) immunologic reactions.

644. Morphological characteristics of Fasciola hepatica eggs:

a) size 23-34 by 10-12 mcm asymmetric, brown with operculum on one pole; b) size 125-150 by 62-81 mcm oval, yellow, with operculum on one pole; c) size 120 by 50 mcm oval, yellow spine on the pole.

645. Measures of Fasciolosis prophylaxis:

a) revealing and treatment of the patients, kill ill animals and mollusks; b) use severage and wc; c) do not pasture cattle on field near reservoir; d) don't use water from natural lakes, don't use it to water and washing vegetables, berry's.

646. Localization of Opisthorchis felineus in human organism:

a) lungs and bronchi; b) liver and pancreas; c) bile duct, bile cyst; d) small intestine.

647. Pathogenic influence of Opistorchis felineus on human organism:

a) mechanical and pressing action on liver parenchyma and pancreas; b) development of hepatopancreatic syndrome; c) development of allergic reactions; d) development of pneumonia.

648. Methods of laboratory diagnostics of opistorchosis:

a) method of deposit; b) finding eggs in rectum mucus; c) finding eggs in faece and duodenum; d) immunologic reactions.

649. Morphological characteristics of Opisthorchis felineus eggs:

a) size 23-34 by 10-12 mcm, asymmetric, yellow, with operculum on one pole; b) size 80-118 by 48-60 mcm, oval, yellow, on flat pole an operculum; c) size 40-50 by 15-20 mcm, asymmetric, brown, with operculum on one pole.

650. Measures of opistorchosis prophylaxis:

a) revealing and treatment of the patients, kill ill animals and mollusks; b) use severage and wc; c) measures for improvement of sanitary-hygienic condition of human life; d) don't eat no fully cooking fish.

651. Localization of Paragonimus ringeri, P. westermani in a human organism:

a) bile duct, bile cyst; b) liver; c) pancreas; d) lungs and bronchi.

652. Pathogenic influence of lung fluke on human organism:

a) development of allergic reactions; b) mechanical and pressing action on lung parenchyma; c) development of icterus; d) form cysts which going to bronchopneumonia, bronchoectasis, pneumosclerosis, lung abscesses.

653. Methods of laboratory diagnostics of paragonimosis:

a) method of native smear; b) finding eggs in faece; c) finding eggs in bronchial fluid; d) immunologic reactions.

654. Measures of Paragonimosis prophylaxis:

a) revealing and treatment of the patients, kill ill animals and mollusks; b) use severage and wc; c) observe technology of dish preparation from crayfish and crab; d) do not use in food bad thermal cooked crayfish and crab.

655. Localization of Schistosoma haematobium in human organism:

a) mesenteric veins; b) portal veins of liver; c) haemorroidae veins; d) urinary veins.

656. Pathogenic influence of Schistosoma haematobium on human organism:

a) development of allergic reactions; b) mechanical damage mucous membranes of urogenetal system, walls of blood vessels; c) breach of blood stream, arteriitis, splenomegalia; d) atrophia, ulceration, fibrosis, calcinacia of mucous cover of urinary bladder.

657. Methods of laboratory diagnostics of urogenetal schistosomiasis:

a) method of native smear and deposit; b) finding eggs in urine; c) cystoscopia with biopsy the tissue of urinary bladder; d) immunologic reactions.

658. Morphological characteristics of Schistosoma haematobium eggs:

a) size 120-160 by 50-70 mcm, oblong, oval, yellow, spine on the pole; b) size 125-150 by 62-81 mcm, oval, yellow, with operculum; c) size 23-34 by 10-12 mcm, asymmetric, yellow, with operculum on one pole.

659. Measures of urogenetal schistosomiasis prophylaxis:

a) revealing and treatment of the patients, kill ill animals and mollusks; b) use severage and wc; c) measures for improvement of sanitary-hygienic condition of human life; d) don't swim in reservoir where mollusks live.

660. Localization of Schistosoma mansoni in human organism:

a) small intestine; b) mesenteric veins; c) haemorrhoidal veins; d) portal veins of liver.

661. Pathogenic influence of Schistosoma mansoni, S. japonicum on human organism:

a) mechanical damage of skin, mucous cover, intestine, walls of blood vessels; b) development of allergic reactions; c) breach of circulation, arteritis, splenomegalia; d) atrophia, ulceration, fibrosis, calcinacium mucous cover of intestine.

662. Methods of laboratory diagnostics of intestinal schistosomiasis:

a) method of native smear and deposition; b) finding eggs in faece, rectal mucous, in bioptat of rectal mucous; c) finding eggs in phlegm; d) immunological reactions.

663. Morphological characteristics of Schistosoma mansoni eggs:

a) size 70-100 by 50-65 mcm, oval, on lateral surface closer to pole small knob; b) size 80-118 by 48-60 mcm, oval, yellow, an operculum on flat pole; c) size 130-180 by 60-80 mcm, oval, asymmetric, lateral situated big sharp to pole spine.

664. Measures of Schistosoma mansoni, S. japonicum prophylaxis:

a) revealing and treatment of the patients, kill ill animals and mollusks; b) use severage and wc; c) measures for improvement of sanitary-hygienic condition of human life; d) don't swim in reservoir where mollusks live.

Multiple choice questions for the topic №29 «Ecological aspects of parasitism in phylum Plathelminthes, class Cestoidea»

665. Taeniids location in a human organism:

a) liver, pancreas; b) bile ducts; c) small and large intestine; d) larva in eye, hurt, muscles.

666. Features of T. saginatus gravid segment structure:

a) it contains only uterus with 7-12 pairs of fateral branches; b) ovary has 3 lobes;c) it contains only uterus with 17-35 pairs of lateral branches; d) ovary has 2 lobes.

667. Features of T. solium gravid segment structure:

a) it contains only uterus with 7-12 pairs of lateral branches; b) ovary has 3 lobes; c) ovary has 2 lobes; d) male reproductive organs are reduced.

668. Features of T. saginatus mature segment structure:

a) the ovary has 3 lobes; b) it contains only uterus with 17-35 pairs of lateral branches; c) the ovary has 2 lobes; d) it contains only uterus with 7-12 pairs of lateral branches.

669. Features of T. solium mature segment structure:

a) the ovary has 3 lobes; b) it contains only uterus with 17-35 pairs of lateral branches; c) the ovary has 2 lobes; d) it contains only uterus with 7-12 pairs of lateral branches.

670. Pathogenesis of taeniids:

a) damage of a intestine mucosa; b) intestinal mechanoreceptors irritation; c) allergic reactions development; d) nutrients loss.

671. Methods of taeniids diagnosis:

a) immunological methods; b) detection of gravid and mature segments in faeces; c) eggs detection in duodenal juice; d) microscopically detection of the eggs in sputum.

672. The characteristics of taeniids eggs:

a) sizes 28-44 x 28-36 microns, spherical, colorless, with thick shell; b) sizes 125-150 x 62-81 microns, oval, yellow, with operculum on one of poles; c) sizes 130-180 x 60-80 microns, lengthened, yellowish, with large spine.

673. Personal measures of taeniids prophylaxis:

a) avoid consumption of suspicious and non-inspected meat; b) consume only well-cooked meat; c) maintain personal hygiene; d) effective treatment for affected persons.

674. Location of Diphyllobothrium latum in a human organism:

a) small intestine; b) large intestine; c) skeletal muscles; d) liver, pancreas.

675. Features of fishworm gravid segment:

a) it contains only uterus with 17-35 pairs of lateral branches; b) it is wide and contains rosette-like uterus; c) it contains ovary with 3 lobes; d) it contains ovary with 2 lobes.

676. Pathogenesis of fishworm:

a) weight loss; b) gastro-intestinal disturbances; c) anemia development; d) vitamin B_{12} deficiency.

677. Methods of diphyllobotriasis diagnosis:

a) macroscopic identification of proglottides in faeces; b) microscopic demonstration of eggs in duodenal juce; c) microscopic identification of eggs in faeces; d) microscopically detection of the eggs in urine.

678. Characteristics of fishworm eggs:

a) sizes 28-44 x 28-34 microns, spherical, colourless, with thick shell; b) sizes 70-83 x 50-54 microns, oval, yellow, on one of poles operculum is located; c) sizes 125-150 x 62-81 microns, oval, yellow, with operculum.

679. Personal measures of diphyllobotriasis prophylaxis:

a) revealing and treatment of ill people and animals; b) cyclopes eradication; c) rules of personal hygiene keeping; d) the fish should be cooked thoroughly before meal.

680. Location of Echinococcus granulosus and Alveococcus multilocularis in organism of a human:

a) intestine; b) liver, lungs; c) brain; d) tubular bones.

681. Pathogenic influence of Echinococcus granulosus and Alveococcus multilocularis on a human organism:

a) damage of intestine mucosa; b) dystrophy and atrophy of inner organs parenchyma; c) allergic reactions; d) vessels obliteration.

682. Methods of laboratory diagnosis of echihococcosis:

a) microscopically detection of eggs in faeces; b) intracutaneous Casoni's test; c) hemagglutination test, IFA test; d) ELISA.

683. Characteristics of echinococcus eggs:

a) sizes 40 x 35 microns, oval, dark yellow, with thick shell; b) sizes 28-44 x 28-34 microns, spherical, colourless, with thick shell; c) sizes 23-34 x 10-19 microns, asymmetric, yellow, with operculum on one of poles.

684. Personal measures of echinococcosis prophylaxis:

a) destruction of stray dogs; b) keeping of personal hygiene rules after contact with dog; c) preventive worm treatment of pets; d) do not allow domesticated dogs to do out and eat carcasses of dead animals.

685. Localization of Hymenolepis nana in a human organism:

a) intestine; b) liver; c) brain, tubular bones; d) lungs.

686. Pathogenic influence of Hymenolepis nana on a human organism:

a) destruction of intestine mucosa, development of necrotic processes in intestine; b) development of allergic reactions; c) development of jaundice; d) development of bronchitis and pneumonitis.

687. Methods of hymenolepiasis laboratory diagnosis:

a) eggs determination in urine; b) immunological methods; c) detection of segments in faeces; d) faeces examination for the eggs.

688. Characteristics of dwarf tapeworm eggs:

a) sizes 23-34 x 10-19 microns, dissymmetric, yellow, with operculum on one of poles; b) sizes 45 x 37 microns, oval, with the thick transparent and colourless shell; c) sizes 70-100 x 50-65 microns, oval, yellow, with the transparent shell, posess spine.

689. Measures of hymenolepiasis social prophylaxis:

a) revealing and treatment of the patients; b) careful wet sweeping of children's rooms, sterilization of toys; c) regular inspections in children's collectives for detection of affected persons; d) keeping of personal hygiene rules.

Multiple choice questions for the topic №30 «Ecological aspects of parasitism in phylum Nemathelminthes, class Nematoda. Geohelminthes and contact helminthes (1-st class)»

690. Localization of Ascaris lumbricoides in a human organism:
a) large intestine; b) small intestine; c) serous cavities; d) skeleton muscles.
691. Pathogenic influence of Ascaris lumbricoides on human organism:
a) atrophy and dystrophy changes in liver, lungs; b) breach of digestive function; c) avitaminosis, decrease of host nutrition; d) development of allergic and stress reactions.
692. Methods of laboratory diagnostics of ascariasis:
a) method of native smear and flotation; b) finding imaginal forms in faeces and eggs; c) finding larvae in sputum; d) immunological reactions.
693. Characteristics of Ascaris lumbricoides eggs:
a) size 125-150 by 62-81 mcm, oval, yellow, with cover; b) size 40 by 35 mcm, oval, dark-yellow, with cover; c) size 50-70 by 40-50 mcm, oval, with thick, multilayer membrane, trabecular;
694. Measures of ascariasis prophylaxis:
a) revealing and treatment of the patients; b) kill ill animals; c) use severage and wc; don't use fresh stool for ground agriculture; d) kill flies and cockroaches; e) washing vegetables, berry's; wash hands after work with soil.
695. Localization of Trichocephalus trichiurus in human organism:
a) small intestine; b) large intestine; c) the beginning part of large intestine; d) larva – in liver, lungs.
696. Pathogenic influence of Trichocephalus trichiurus on a human organism:
a) breach of digestive function; b) development of B_{12}-deficit anaemia; c) damage of mucous, development of haemorrhage, erosion, ulcer; d) development of allergic and stress reactions.
697. Methods of Trichocephalus trichiurus laboratory diagnostics:
a) finding imaginal forms in faece; b) finding eggs in faece; c) immunological reactions.
698. Characteristics of Trichocephalus eggs:
a) size 70-83 by 50-54 mcm, oval, yellow, on one pole – cover on other – bump; b) size 50-54 by 22-23 mcm, tublike form, yellow, with limpid thick membrane, with cavities on poles; c) size 45 by 35 mcm, oval, with thick and colourless membrane.
699. Measures of Trichocephalus trichiurus prophylaxis:
a) kill ill animals; b) revealing and treatment of the patients; c) use severage and wc; don't use fresh faece for ground agriculture; d) kill flies and cockroaches; e) washing vegetables, berry's; wash hands after work with soil.
700. Localization of ancylostoma in human organism:

a) the beginning part of small intestine; b) lower part of small intestine; c) the beginning part of large intestine; d) skin.

701. Pathogenic influence of ancylostoma on human organism:

a) development of dermatitis; b) mechanical damage of respiratory and digestive systems; c) development of vitamin B_{12}-deficit anaemia; d) development of allergic reactions.

702. Methods of laboratory diagnostics of ancylostomidosis:

a) methods of native smear and flotation; b) methods of larva cultivation on filter paper and coal culture in Petri scale; c) finding eggs in fresh faece; d) immunological reactions.

703. Characteristics of ancylostoma eggs:

a) size 70-83 by 50-54 mcm, oval, yellow, with a cover on one pole and bump on another; b) size 50-54 by 22-23 mcm tublike form, yellow, with colourless multilayer membrane, cavities on the poles; c) size 45-35 mcm, oval, thick colourless membrane, contain 4 blastomers.

704. Measures of ancylostomidosis prophylaxis:

a) revealing and treatment of the ill patients; b) inspection of new workers in mine, on tea plantations, citrus plants, rice field; c) use severage and wc; don't use fresh stool for ground agriculture; d) to wear shoes in endemic zones; e) washing vegetables, berry's; wash hands after work with soil.

705. Localization of Strongyloides stercotalis in human organism:

a) the beginning part of large intestine; b) proximal parts of small intestine; c) small intestine; d) lower part of large intestine.

706. Pathogenic influence of Strongyloides stercotalis on human organism:

a) development of allergic reactions; b) development of haemorrhages, erosions, ulcers in gaster, intestine; c) damages of lungs, liver, pancreas, myocardium; d) discenensia of bile cyst and its ducts.

707. Methods of laboratory diagnostics of strongyloidosis:

a) finding eggs in fresh faece; b) finding rhabditiform larvae in faece and duodenal fluid; c) Berman, Schylman methods; d) immunological reactions.

708. Characteristics of Strongyloides stercotalis eggs:

a) size 50-60 by 20-30 mcm, asymmetric with one side curved outside and the other flat; b) size 50-70 by 40-50 mcm, oval, membrane is multilayer, thick, trabecular; c) size 5,8 by 3-3,4 mcm, oval, yellow.

709. Measures of strongyloidosis prophylaxis:

a) revealing and treatment of the ill patients; b) inspection of new workers in mine, on tea plantations, citrus plants, rice field; c) use severage and wc; don't use fresh stool for ground agriculture; d) washing vegetables, berry's; wash hands after work with soil.

710. Localization of Enterobius vermicularis in a human organism:

a) the beginning part of small intestine; b) lower part of small intestine; c) the beginning part of large intestine; d) lower part of large intestine.

711. Pathogenic influence of Enterobius vermicularis on human organism:

a) development of allergic and stress reactions; b) damage of intestine mucous, catarrhal changes; c) appendicitis, development of vaginitis; d) exematic damages of skin of perianal area.

712. Methods of laboratory diagnostics of enterobiosis:

a) finding in faeces imaginal forms; b) finding eggs in perianal area; c) method of native smear and flotation; d) immunological reactions.

713. Characteristics of Enterobius vermicularis eggs:

a) size 50-60 by 20-30 mcm, asymmetric with one side curved outside and the other flat; b) size 50-70 by 40-50 mcm, oval, membrane is multilayer, thick, trabecular; c) size 50 by 30 mcm, oval, yellow.

714. Measures of Enterobius vermicularis prophylaxis:

a) revealing and treatment of the patients; b) prophylactic inspection of children in kindergartens, schools, workers of food industry; c) moisture cleaning; d) keeping the rules of personal hygiene.

Multiple choice questions for the topic №31 «Ecological aspects of parasitism in phylum Nemathelminthes, class Nematoda. Biohelminthes (2-nd class)»

715. Localization of Trichinella spiralis in a human body:

a) mature stage – in intestine; b) mature worms – in bile ducts; c) larval stage – in intestine; d) larval stage – in striated muscles.

716. Pathogenic influence of Trichinella spiralis on a human organism:

a) injury of intestinal mucosa; b) lymphangites; c) muscular dystrophy; d) development of vitamin B_{12}-deficiency anemia.

717. Methods of trichinosis laboratory diagnosis:

a) eggs detection in faeces; b) biopsy of skeletal muscles; c) immunological methods: IFA test, ELISA; d) immunological methods: hemagglutination, complement fixation tests.

718. Measures of trichinosis prophylaxis:

a) rats destruction; b) careful inspection of meat at slaughterhouse; c) proper disposal of the night-soil; d) avoidance of eating raw or imperfectly cooked pig's flesh.

719. Localization of Dracunculus medinensis in a human body:

a) intestine; b) mesenterical and hemorrhoidal veins; c) hypodermic fatty tissue; d) conjunctiva.

720. Pathogenic influence of Dracunculus medinensis on a human organism:

a) mechanical damage of tissues; b) sensitization by its antigens; c) conjunctivitis, retina damage; d) intestinal obstruction.

721. Laboratory diagnosis of dracunculiasis:

a) detection of eggs in faeces; b) method of floatation; c) immunodiagnosis; d) detection of microfilaria in the peripheral blood.

722. Prophylaxis of dracunculiasis:

a) revealing and treatment of ill people; b) destruction of mechanical vectors-flies and cockroaches; c) destruction of cyclopes; d) to drink only boiled and filtered water from random reservoirs of it.

723. Filaria's vectors and intermediate hosts:

a) mosquito; b) black fly, biting midge; c) sand-fly; d) tse-tse fly.

724. Limphatic filariasises:

a) onchocerciasis; b) brugiasis; c) wuchereriasis; d) loiasis.

725. Pathogenic influence of Wuchereria bancrofti and Brugia malayi on a human organism:

a) development of dermatitis; b) lymphangites leading to elephantiasis; c) lesions of conjunctiva and retina; d) allergic reactions.

726. Pathogenic influence of Onchocerca volvulus on a human organism:

a) erratic linear urticaria; b) dermatitis; c) conjunctivitis, retinitis, development of blindness in severe cases; d) vitamin A and B deficiency.

727. Pathogenic influence of Loa loa on a human organism:

a) vitamin B_{12} deficiency; b) dermatitis, Calabar swelling; c) conjunctivitis; d) vitamin A and B_1 deficiency.

728. Laboratory diagnosis of filariasises:

a) detection of eggs in faeces; b) methods of native smear and floatation; c) detection of microfilaria in blood; d) immunodiagnosis.

729. Prophylaxis of filariasises:

a) revealing and treatment of ill people; b) vector's destruction; c) proper disposal of night soil; d) avoiding of blood sucking insects bitings.

730. Mechanism of stress-reactions development in helminthism:

a) irritation of interoreceptors; b) excretion of parasitic endo- and exoantigens; c) activation of the pituitary-adrenal system; d) forced secretion of corticosteroids by adrenal glands.

731. Endoantigens of helminthes:

a) histolyzins; b) antienzymes; c) tilacogens; d) tissues of dead helminthes.

732. Sense of immunoglobulin - E - induced hypersensitivity of immediate type:

a) antigens and the antibodies interact with each other on the surface of erythrocytes; b) antigens and immunoglobulins - E interact with each other on the surface of the mast cells; c) excrection of heparin, serotonin, histamine by mast cells; d) cytoplasmic kinines activation.

733. Essence of complement - dependent cytological reactions:

a) antigens and antibodies interact with each other in tissues and in blood; b) antigens and antibodies interact with each other on the surface of the cells; c) hemolytic occurs; d) leukocytes infiltration of tissues takes place.

734. Essence of immune complexes reactions:

a) antigens and antibodies interact with each other in tissues or in blood; b) there is sensitization of T-lymphocytes; c) local inflammatory response, edema, eosinophilic infiltration of tissues develop; d) urticaria appears, the anaphylactic shock is possible.

735. Sense of cellular immune reactions of delayed type:

a) antigens and antibodies interact with each other on the surface of erythrocytes; b) sensitization of T-lymphocytes; c) excretion of serotonin, heparin, histamine by the mast cells; d) granulomas formation.

736. The mechanism of mutagenic action of helminth metabolism products:

a) violation of DNA and histons synthesis; b) telomeres destruction, damage of the crossing-over process; c) chromosome non-disjunction in anaphase of mitosis and meiosis; d) suppression of nitrogenous basises synthesis.

737. Sorts of mutations caused by products of helminthes metabolism:

a) interchromosomal translocations; b) gene mutations; c) thymine dimeres formation; d) heteroploidy.

Multiple choice questions for the topic №32 «Ecological aspects of parasitism in phylum Arthropoda, classes Crustacea and Arachnoidea»

738. Medical value of lower Crustaceans:

a) vectors of tularemia, encephalitis; b) intermediate hosts for Diphyllobothrium latum, Dracunculus medinensis; c) intermediate hosts for Paragonimus westermani.

739. Ways of invasion human by arachnoidea:

a) through undamaged skin; b) inoculation; c) contamination; d) transovarial.

740. Examples of vector of infectional disease like specific inoculation:

a) Ixodes ricinus – vector for West-European encephalitis virus, tularemia; b) Sarcoptes scabiei – vector of scabies; c) Glossina palpalis – Trypanosoma gambience.

741. Examples of vector of invasion diseases the specific contamination way:

a) mosquitoes of Phlebotomus genus – Leishmania tropica; b) bugs of Reduviidae family – Trypanosoma cruzi; c) Dermacentor pictus – agent of taiga encephalitis virus and tularemia.

742. Morphological features of ixodidae family:

a) have shield on the dorsal surface, eyes; b) the oral apparatus is visible from dorsal side, hooklets and suckering pillows; c) the body's sides are scalloped; d) red colour of the body.

743. Medical value of Ixodes ricinus:

a) temporal ectoparasite; b) vector of taiga encephalitis virus; c) vector of Omsks hemorrhagic fever virus, tularemia; d) vector of West-European encephalitis virus, chronic migrate erythema, tularemia.

744. Medical value of Ixodes persulcatus:

a) temporal ectoparasite; b) vector of taiga encephalitis virus; c) vector of tularemia, brycellosis.

745. Medical value of Dermacentor pictus:

a) vector of taiga encephalitis virus; b) vector of Omsks hemorrhagic fever virus, spotted Rocky Mountains fever virus; c) temporal ectoparasite.

746. Morphological features of argasidae family:

a) have dorsal shield, eyes; b) oral apparatus is visible from ventral side, no suckering pillows; c) body is oblong and oval, no dorsal shield; d) the body's sides are scalloped.

747. Medical value of Ornithodorus papillipes:

a) vector of tsutsugamushi fever, San-Lui encephalitis fever; b) vector of tularemia, brucellosis agent; c) vector of endemic typhus; d) temporal ectoparasite.

748. Localization of Sarcoptes scabiei in human organism:

a) cavities and ducts of sebaceous glands; b) hair follicles; c) border of horn and malpige layers of a skin of fingers intervals, inguinal area, bottom of a stomach.

749. Pathogenic influence of Sarcoptes scabiei on human organism:

a) obstruction of hair follicle, disturb functions of sebaceous gland; b) pus pimple; c) destroyment of skin integrity, rash appearance with itch; d) development of pyodermit.

750. Methods of scabies laboratory diagnostics:

a) finding mite in pimple contents and from pus pimple; b) finding mite in scrapes of skin from pus pimple; c) immunologic reactions.

751. Measures of scabies prophylaxis:

a) revealing and treat ill people; b) kill ill animals; c) sanitary control over hostels; d) do not use somebody's else clothes.

752. Medical value of demodecidae family:

a) agent of trombidiosis; b) agent of demodecosis; c) vector of European encephalitis, chronic migrative erythema; d) spoil of food.

753. Places of demodecidae mites parasite:

a) epidermis of skin; b) hair follicles; c) cavity and ducts of oil glands; d) sweat glands.

754. Morphological features of demodecidae family:

a) have dorsal shield, oral apparatus is visible from ventral side; b) worm-like body; c) thin short limbs with small hooks; d) edge of the body has wide rant.

755. Laboratory diagnostics of demodecosis:

a) microscoping of pus contents in drop of 50% glycerin solution; b) microscoping of muscle byoptat; c) immunologic reactions.

756. Measures of demodecosis prophylaxis:

a) revealing and treat ill people; b) kill ill animals; c) sanitary control over hostels; d) do not use somebody's else clothes.

757. Morphological features of trombiculidae family:

a) oval body without dorsal shield; b) oral apparatus is visible from ventral side; c) body is red-colored; d) hair covers the body.

758. Medical value of trombiculidae family:

a) vector of tsutsugamushi agent; b) vector of San- Lui encephalitis agents, Qu-fever virus; c) agent of demodecosis; d) agent of trombididosis.

759. Morphological features of gamasoidae family:

a) worm-like body, thick and short legs with hooklets; b) body is covered by long yellow-brown setae; c) hooklets and suckering pillows on limbs; d) have dorsal shield.

760. Medical value of gamasoidae family:

a) temporal ectoparasite; b) vectors of San-Lui encephalitis agents, Qu-fever virus; c) vectors of rat spotted fever.

761. Medical value of tyroglyphidae family:

a) spoil of food; b) vector of tularemia, brycellosis; c) the food infected by such mites can cause irritation in digestive tract and it can be allergic.

Multiple choice questions for the topic №33 «Ecological aspects of parasitism in phylum Arthropoda, class Insecta»

762. Morphological features of Pediculus humanus capitis:

a) deep clippings on edges of the body; b) the expressed pigment spots on edges of abdomen; c) size: 2-4 mm; d) size: 5-7 mm.

763. Morphological features of Pediculus humanus humanus:

a) deep clippings on edges of the body; b) flattened clippings on edges of the body; c) size: 2,1-4,8 mm; d) size: 2-4 mm.

764. Medical value of head and body lice:

a) originators of phthiriasis; b) vectors of brucelliasis and tularemia; c) originators of pediculosis; d) vectors of typhoid.

765. Morphological features of Phthirus pubis:

a) size: 4-5 mm; b) size: 1-2 mm; c) trapezoid shape of body which is supplied with long hair on abdomen edges; d) it has not proboscis.

766. Medical value of Phthirus pubis:

a) temporary ectoparasite; b) the originator of pediculosis; c) the originator of phtiriasis; d) vector for spotted fever and relapsing fever.

767. Medical value of Cimex lectularius:

a) specific vector for Trypanosoma cruzi; b) temporary ectoparasite; c) mechanical vector for typhoid, cholera; d) mechanical vector for eggs of helminthes and cysts of protozoa.

768. Medical value of kissing bugs:

a) specific vectors for Trypanosoma cruzi; b) specific vectors for Trypanosoma gambiense; c) vectors for tularemia and brucelliasis; d) temporary ectoparasites.

769. Medical value of cockroaches:

a) permanent ectoparasites; b) mechanical vectors for typhoid, cholera, dysentery; c) mechanical vectors for protozoa's cysts and helminthes eggs; d) specific vectors for typhoid infection.

770. Medical value of fleas:

a) temporary ectoparasites; b) vectors for plague, brucelliasis, murine typhus; c) vectors for cholera, abdominal typhoid; d) vectors for classic typhus, flood typhus.

771. Morphological features of Anopheles mosquitoes male:

a) it possesses pilose hair in the antennae, mandibular palps length is 1/3 - 1/4 of proboscis length; b) it possesses pilose hair in the antennae, length of palps and length of proboscis are equal; c) it possesses plumose hair in the antennae, anterior segment of palps is thicken.

772. Morphological features of the Culex mosquitoes male:

a) it possesses pilose hair in the antennae; b) it possesses plumose hair in the antennae, anterior segment of palps is thicken; c) it possesses pilose hair in the antennae, length of palps and proboscis length are equal; d) it possesses plumose hair in the antennae, palps are longer than proboscis.

773. Morphological features of the Anopheles mosquitoes female:

a) it possesses plumose hair in the antennae, mandibular palps length and proboscis length are equal; b) it possesses pilose hair in the antennae, palps length and proboscis length are equal; c) it possesses plumose hair in the antennae, anterior segment of palps is thicken.

774. Morphological features of Culex mosquitoes female:

a) it possesses pilose hair in the antennae, mandibular palps length is 1/3 - 1/4 of proboscis length; b) it possesses pilose hair in the antennae, palps length and proboscis length are equal; c) it possesses plumose hair in the antennae, palps length and proboscis length are equal.

775. Features of Culex and Aedes mosquitoes larva:

a) there is respiratory siphon in the porterior but one body's segment; b) respiratory siphon is conical; c) respiratory siphon is absent; d) it lies vertically to the surface of water.

776. Features of Anopheles mosquito's larvae:

a) respiratory siphons have cylindrical shape; b) respiratory siphons are absent; c) stigmas are located on posterior but one segment of the body; d) they lie parallelly to the surface of water.

777. Features of Anopheles mosquitoes pupae:

a) respiratory tubes are absent; b) respiratory tubes are cylindrical; c) respiratory tubes are conical; d) they have siphon on the posterior but one segment of the body.

778. Features of Culex mosquito's pupae:

a) stigmas are located on the posterior but one body's segment; b) respiratory tubes are cylindrically shaped; c) respiratory tubes are conically shaped; c) they have not respiratory tubes.

779. Medical value of Culex and Aedes mosquitoes:

a) vectors and definitive hosts for malarial parasite; b) vectors and intermediate hosts for filaria; c) vectors for yellow fever; d) vectors for West Nile encephalitis, temporary ectoparasites.

780. Medical value of Anopheles mosquitoes:

a) vectors and definitive hosts for malarial parasite; b) vectors and intermediate hosts for filaria; c) vectors for hill fever, east horse encephalitis; d) temporary ectoparasites.

781. Medical value of sandflies (Phlebotomus):

a) temporary ectorarasites; b) vectors for visceral and dermal leishmaniasis; c) vectors for Japanese encephalitis, tularemia; d) vectors for pappataci fever.

782. Medical value of biting midges (Ceratopogonidae):

a) vectors for Japanese encephalitis, choriomeningitis, tularemia; b) the intermediate hosts and vectors for Ozzard's filaria; c) the intermediate hosts and vectors for convoluted (African) filaria; d) temporary ectoparasites.

783. Medical value of black flies (Simuliidae):

a) temporary ectoparasites; b) vectors and intermediate hosts for African and Ozzard's filaria; c) vectors for yellow fever and bruceliasis; d) vectors for tularemia and anthrax.

784. Medical value of tse-tse flies:

a) vector for African trypanosomiasis; b) vector for American trypanosomiasis; c) originator of myiasis; d) temporary ectoparasite.

785. Medical value of house flies:

a) temporary ectoparasite; b) mechanical vector for protozoa's cysts and eggs of helminthes; c) mechanical vector for cholera, abdominal typhoid, paratyphoid, dysentery, tuberculosis; d) originator of myiasis.

Multiple choice questions for the topic №36 «Poisonous fungi and poisonous plants»

786. Poisons of alloman group:

a) mycotoxines; b) inductors; c) phytotoxins; d) zootoxines.

787. Main toxic substances of mycotoxines and phytotoxins:

a) alkaloids, terpenoids, saponines, flavanoids; b) heart glycosides, tannins, coumarins, anthraquinones; c) neirotoxins, cytotoxins; d) lipids, organic acids.

788. Poisons micromycetes:

a) Paxillus involutus; b) aspergilus; c) fuzarium; d) claviceps.

789. Main toxic substances of aspergilus poison:

a) muscarin; b) phalloidines; c) aflotoxines B_1, B_2, C_1, C_2; d) ergotamine, ergosin.

790. Main symptoms of a human poisoning by aspergilus:

a) loss of appetite, dysfunction of liver and gastro-intestinal system; b) slackness, disorder of movement coordination, paresis; c) oedema, dropsy, hemorrhages; d) death owing to insufficiency of heart-vessels system.

791. Main toxic substances of fuzarium poison:

a) palustrin; b) saponines, flavanoids; c) cycutotoxin; d) sexviterpens.

792. Main symptoms of a human poisoning by fuzarium:

a) vomiting, stomach pain, diarrhea, fatigue and bare walking; b) headache and dizziness; c) disorder of circulatory system; d) convulsions, psychic disorder.

793. Main toxic substances of claviceps poison:

a) sexviterpens; b) cumarin, dicumarin; c) ergotamine, ergosin; r) heart glycosides.

794. Main symptoms of a human poisoning by claviceps:

a) pain and burning sensation in limbs, dry gangrene; b) vomiting, stomach pain, diarrhea, fatigue and bare walking, convulsions; c) renal disorder.

795. Measures of prophylaxis of poisoning by micromycetes:

a) inspection of food-stuffs state; b) elimination of contaminated foodstuffs; c) not use in food afresh or incorrectly stored grain and vegetables.

796. Poisons macromycetes:

a) Paxillus involutus, Gyromitra esculenta; b) toadstool; c) death-cup.

797. Main toxic substances of Paxillus involutus poison:

a) muscarin; b) aflotoxines; c) carcinogenic substances; d) antigens which change of blood components.

798. Main symptoms of a human poisoning by Paxillus involutus:

a) vomiting, stomach pain, diarrhea; b) oedema, dropsy; c) increase of saliva and sweat glands functions; d) anemia.

799. Main toxic substances of toadstool poison:

a) carcinogenic substances; b) amanitines, phalloidines; c) atropine, scopolamine.

800. Main symptoms of a human poisoning by toadstool:

a) indomitable vomiting, stomach pain, diarrhea, thirst, jaundice; b) convulsions, muscles pains; c) haemolise of erythrocytes; d) death owing to insufficiency of heart-vessels and renal systems.

801. Main toxic substances of death-cup poison:

a) muscarin, holine; b) benaine, bufotenin; c) terpenoids.

802. Main symptoms of a human poisoning by death-cup:

a) vomiting, stomach pain, diarrhea; b) drying of mucous; c) increase of body temperature, tachycardia; d) euphoria, hallucinations.

803. Measures of prophylaxis of poisoning by macromycetes:

a) inspection of food-stuffs state, elimination of contaminated foodstuffs; b) do not eat a unknown macromycetes; c) do not use for treatment poison macromycetes.

804. Main toxic substances of Conrallaria majalis poison:

a) colchicines; b) convallarine, heart glycosides; c) soponine; d) aspadiol.

805. Main toxic substances of Hyoscyamus niger poison:

a) ephedrine, colchicines; b) caffeine, papaverine; c) kumarin, dikumarin; d) atropine, hyoscyamine, scopolamine.

806. Main toxic substances of Solanum nigrum poison:

a) atropine, hyoscyamine, scopolamine; b) solanine; c) heart glycosides.

807. Main toxic substances of Cicuta virosa poison:

a) flavonoids; b) kumarin, dikumarin; c) cicutotoxin; d) sangvirin.

808. Main toxic substances of Papaver somniferum poison:

a) steroid glycosides; b) caffeine, codeine, papaverine, tebaine; c) soponine; d) tanins.

809. Main toxic substances of Cannabis saliva poison:

a) steroid glycosides; b) caffeine, codeine, papaverine, tebaine; c) cannabinol, cannabidinol; d) atropine, hyoscyamine, scopolamine.

810. Main toxic substances of Euphorbia waldsteinii poison:

a) euphol, euphorbol; b) caffeine, codeine, papaverine, tebaine; c) diterpenoids, flavonoids.

Multiple choice questions for the topic №37 «Poisonous animals»

811. The most dangerous component of animal poison:

a) hemorrhagin; b) hemolysin; c) cytotoxin; d) neurotoxin.

812. Components of animal poisons according to pathophysiological action of them:

a) neurotoxins, cytotoxins; b) acetylcholine, histamine; c) heparin, serotonin; d) hemolysins, hemorrhagins.

813. Dinoflagellates belong to:

a) armed actively poisonous organisms; b) non-armed actively poisonous organisms; c) passively poisonous organisms; d) secondary poisonous organisms.

814. The predominant components of dinoflagellate's poison:

a) hemolysin; b) hemorragin; c) neurotoxin; d) cytotoxin; e) dermatotoxin.

815. Poisonous jellyfishes belong to:

a) armed actively poisonous animals; b) non-armed actively poisonous animals; c) passively poisonous animals; d) secondary poisonous animals.

816. Most dangerous poisonous jellyfishes:

a) rhysostoma; b) box jelly (Chironex); c) gogronaria; d) Portuguese man -of - war (Physalia).

817. The predominant components of Portuguese man-of-war jellyfish:

a) hemolysin; b) hemorragin; c) neurotoxin; d) cytotoxin; e) dermatotoxin.

818. Poisonous mollusks belong to:

a) armed actively poisonous animals; b) non-armed actively poisonous animals; c) passively poisonous animals; d) secondary poisonous animals.

819. The predominant components of armed mollusk's (Conus) poison:

a) hemolysin; b) hemorragin; c) neurotoxin; d) cytotoxin; e) dermatotoxin.

820. Poisonous arachnids belong to:

a) armed actively poisonous animals; b) non-armed actively poisonous animals; c) passively poisonous animals; d) secondary poisonous animals.

821. The predominant components of karakurt and black widow spider's venom:

a) hemolysin; b) hemorragin; c) neurotoxin; d) cytotoxin; e) dermatotoxin.

822. The predominant components of tarantula's venom:

a) hemolysin; b) hemorragin; c) neurotoxin; d) cytotoxin; e) dermatotoxin.

823. The predominant components of scorpion's poison:

a) hemolysin; b) hemorragin; c) neurotoxin; d) cytotoxin; e) dermatotoxin.

824. Poisonous insects belong to:

a) armed actively poisonous animals; b) non-armed actively poisonous animals; c) passively poisonous animals; d) secondary poisonous animals.

825. Most dangerous venomous insects:

a) bumblebee; b) wasp; c) giant hornet; d) fire ant.

826. Poisonous fishes belong to:

a) armed actively poisonous animals; b) non-armed actively poisonous animals; c) passively poisonous animals; d) secondary poisonous animals.

827. Poisonous amphibians belong to:

a) armed actively poisonous animals; b) non-armed actively poisonous animals; c) passively poisonous animals; d) secondary poisonous animals.

828. The predominant components of fugu fish's poison:

a) hemolysin; b) hemorragin; c) neurotoxin; d) cytotoxin; e) dermatotoxin.

829. The predominant components of sea snake's venom:

a) hemolysin; b) hemorragin; c) neurotoxin; d) cytotoxin; e) dermatotoxin.

830. The predominant components of rattlesnake's vemon:

a) hemolysin; b) hemorragin; c) neurotoxin; d) cytotoxin; e) dermatotoxin.

Answers

1 - a, b, c; 2 - b; 3 - a; 4 - c; 5 - a, b; 6 - b; 7 - a, b; 8 - a, b; 9 - d; 10 - a, b; 11 - a, b, c; 12 - a, b; 13 - b, c; 14 - c, d; 15 - a, b, c; 16 - a; 17 - b; 18 - a; 19 - b, c, d; 20 - b, d; 21 - a, b; 22 - b, c, d; 23 - d; 24 - a, b, c, d; 25 - a, c; 26 - c, d; 27 - b, c, d; 28 - a; 29 - b; 30 - b; 31 - a, b; 32 - c, d; 33 - b, c, d, e; 34 - c, d; 35 - a, b, c; 36 - b; 37 - a; 38 - c; 39 - a; 40 - b, c, d; 41 - a, c, d; 42 - b, c; 43 - c; 44 - a, b, c; 45 - a; 46 - c; 47 - b; 48 - c; 49 - b; 50 - a; 51 - c; 52 - a, c, d; 53 - a, b; 54 - b, c, d; 55 - a, b, c; 56 - a, b, c, d; 57 - b, c, d; 58 - a, b; 59 - b, c, d; 60 - a, c; 61 - b, c, d, e; 62 - a, b, c, d; 63 – a, b, c, d; 64 - c; 65 - b, c; 66 - b, c, d; 67 - c; 68 - a; 69 - c; 70 - b; 71 - b; 72 - c; 73 -d; 74 - b; 75 - a; 76 - a; 77 - b; 78 - a; 79 - a; 80 - a, c, d; 81 - a, b, d; 82 - a; 83 - b; 84 - c; 85 - a, b, c; 86 - b, c; 87 - a, b, c; 88 - a, b; 89 - b; 90 - a, b, d; 91 - b, c, d; 92 - a, d; 93 - b, c, d; 94 - b, c; 95 - b; 96 - a; 97 - b; 98 - a; 99 - a; 100 - a, b; 101 - a, b; 102 - b, c; 103 - a; 104 - b; 105 - b; 106 - a, b; 107 - c; 108 - c; 109 - a, b; 110 - b; 111 - a; 112 - c; 113 - b; 114 - b; 115 - a, b, c; 116 - b, c; 117 - a, b; 118 - b; 119 - b, c; 120 - a, b, c, d; 121 - b, c, d; 122 - b, c, d; 123 - a, b, c; 124 - a, c, d; 125 - a, b, c; 126 - b, c, d; 127 - a, b, c; 128 - d; 129 - a; 130 - b; 131 - b; 132 - c; 133 - a; 134 - a, d; 135 - b, c, d; 136 - a, c; 137 - b; 138 - c, d; 139 - a, c; 140 - c, d; 141 - a; 142 - a, b, c, d; 143 - b, c, d; 144 - b; 145 - c; 146 - c; 147 - b; 148 - a; 149 - b, c; 150 - a, d; 151 - b, c; 152 - c; 153 - a; 154 - b; 155 - d; 156 - a, c; 157 - a, d; 158 - c; 159 - a, b, c; 160 - a, b, c, d; 161 - a, c; 162 - a, b, c, d; 163 - b, c; 164 - b, c; 165 - c; 166 - a, b, c; 167 - a, b, c, d; 168 - d; 169 - a, c; 170 - d; 171 - c; 172 - b; 173 - c; 174 - b; 175 - a; 176 - a, b; 177 - a, b, c, d; 178 - b, c, d; 179 - a, c; 180 - a, b; 181 - b; 182 - a, b, c, d, e; 183 - a, c; 184 - b, c; 185 - a, b, c; 186 - c; 187 - a, c; 188 – a, c; 189 - a; 190 - b; 191 - a; 192 - b, c; 193 - b, c; 194 - a, b, d; 195 - b; 196 - a; 197 - a, d; 198 - d; 199 - a, b, c, d; 200 - c, d; 201- b; 202 - a; 203 - a, c, d; 204 - b, c, d; 205 - a, c, d; 206 - a, b, c; 207 - c, d; 208 - b, c; 209 - a, c; 210 - a, b; 211 - c, d; 212 - a, b; 213 - a, c, d; 214 - b; 215 - a, c; 216 - c; 217 - a, b, c, d; 218 - a, b, c, d; 219 - a, d, e; 220 - b, c, e; 221 - b; 222 - b; 223 - a; 224 - b, c; 225 - a, c; 226 - c; 227 - a, c; 228 - c; 229 - c; 230 - a; 231 - b; 232 - a; 233 - c; 234 - b, c, d; 235 - b, c; 236 - a; 237 - b; 238 - a; 239 - b; 240 - b, c; 241 - a, c; 242 - b, c; 243 - a, b, c; 244 - b; 245 - a, d; 246 - b; 247 - a, b, c; 248 - a, b, c; 249 - a, b, d; 250 - c; 251 - a; 252 - c; 253 - a, b; 254 - b, c; 255 - b; 256 - a; 257 - b, c; 258 - a; 259 - b; 260 - a, b; 261 - b, c, d; 262 - a, b; 263 - c; 264 - a, b, c; 265 - c; 266 - a, b, d; 267 - a, c, d; 268 - b, c, d; 269 - b, d; 270 - a, c, d; 271 - c, d; 272 - b, c, d; 273 - a, b, d, e; 274 - a, c; 275 - a, b; 276 - b, c, d; 277 - c, d; 278 - a, b; 279 - a; 280 - a, b, c, d; 281 - b; 282 - a, b; 283 - b; 284 - a, b, c; 285 - b; 286 - a; 287 - c, d; 288 - b, c; 289 - b; 290 - a, b; 291 - a, b, c, d; 292 - b; 293 - c; 294 - a, b, e; 295 - b, d, e; 296 - a, b, c, d; 297 - b, c; 298 - b, d; 299 - a, b, c; 300 - a, b, c, d; 301 - a, b, c; 302 - d; 303 - c; 304 - b; 305 - a; 306 - c; 307 - d; 308 - b, c; 309 - a, b, c; 310 - d; 311 - c; 312 - a, b, c; 313 - a, b, c; 314 - b, c, d; 315 - a, b, d; 316 - b, c, d; 317 - c, d; 318 - c, d; 319 - c; 320 - a, b, c; 321 - b, d; 322 - a, b, c, d, e; 323 - a, b, c, d; 324 - b, c, d, e; 325 - a, b, c, e; 326 - a, b, c, e; 327 -

a, b, e; 328 - a, b, c; 329 - a, b, c; 330 - a, b; 331 - b, c, d; 332 - a; 333 - b; 334 - a, b, c; 335 - c; 336 - a; 337 - a, b, c, e; 338 - a, b, c, d, e; 339 - a, b, c; 340 - b, c, d, e; 341 - a, c, e; 342 - a; 343 - c; 344 - d; 345 - c; 346 - c; 347 - a; 348 - b, c, d, e; 349 - c; 350 - b, d; 351 - b, d; 352 - b, e; 353 - a; 354 - a, b, c; 355 - d; 356 - a, b; 357 - b; 358 - a, b, c; 359 - a, b, c, d; 360 - a, b, c, d; 361 - a, b, c, d; 362 - a; 363 - c; 364 - b, c; 365 - a, b, c, d, e; 366 - e; 367 - a, b, c; 368 - c, d, e; 369 - b, c; 370 - a, b; 371 - a, c; 372 - a, b, d, e; 373 - b; 374 - b, c, d, e; 375 - b; 376 - b, c; 377 - a, b, c, d; 378 - a, b, d; 379 - b, c; 380 - b; 381 - c; 382 - a, c; 383 - a, b, c, e; 384 - a, b, d, e; 385 - c; 386 - b, c, e; 387 - a, b, c, d, e; 388 - a, c, d; 389 - a, b; 390 - a, b, d; 391 - a, c; 392 - a, b; 393 - a, b, c; 394 - a, d; 395 - c; 396 - a; 397 - b; 398 - c; 399 - b; 400 - a, c; 401 - b, c; 402 - a, b; 403 - c, d; 404 - a, c; 405 - a, b, d; 406 - b, c, d; 407 - a, b; 408 - b; 409 - a, b, c; 410 - a, b, d; 411 - a, b; 412 - b; 413 - c; 414 - a, b, c; 415 - a; 416 - b; 417 - c; 418 - a, c, d; 419 - a, b, c, d; 420 - a, b, c, d; 421 - b, c; 422 - a, b, c, d; 423 - d; 424 - a, c, d; 425 - b, c, d; 426 - b; 427 - a; 428 - b, c; 429 - a, b; 430 - c; 431 - a, b, c, d; 432 - b, c; 433 - a, b, c; 434 - a, b; 435 - a, b; 436 - a, b; 437 - a, c; 438 - b; 439 - a; 440 - a, b; 441 - b, d; 442 - a; 443 - c, d; 444 - a, b; 445 - a; 446 - a, b, c, d; 447 - a, b, c, d, e; 448 - a, b; 449 - a, b, c; 450 - a, b, c; 451 - a, b; 452 - c, d; 453 - a, b, c; 454 - c; 455 - a, b; 456 - c, d; 457 - a, b, c; 458 - b; 459 - c; 460 - a, b, c; 461 - a; 462 - c; 463 - a; 464 - d; 465 - b, c; 466 - a; 467 - a, b, c; 468 - a, b, c, d; 469 - a, b, c, d, e; 470 - b; 471 - b; 472 - c; 473 - a, b, c; 474 - b, c, d; 475 - a; 476 - a, c; 477 - b, c; 478 - c; 479 - c; 480 - a, b, c; 481 - b, c; 482 - a, b, c; 483 - a, b, d, e; 484 - c; 485 - a, b, c; 486 - b; 487 - a, b; 488 - a; 489 - a, b, c; 490 - a; 491 - a, b, c, d; 492 - b; 493 - b; 494 - b; 495 - c; 496 - a, b, c; 497 - b, c, d; 498 - c; 499 - a, b, c, d; 500 - a, b, c; 501 - a; 502 - a, b, c; 503 - a, b, c, d; 504 - a, b, c; 505 - a, b, c; 506 - b; 507 - c, d; 508 - a, b c; 509 - b, d, e; 510 - a, c; 511 - a, b; 512 - c; 513 - a, c, d; 514 - a, c, d, e; 515 - b, c, d; 516 - b, c; 517 - a, b, c, d; 518 - b, c, d, e; 519 - b, c, d; 520 - a, b, d; 521 - a, b, c; 522 - a, b, d; 523 - a, c, d; 524 - b, c, d, e; 525 - b, c, d; 526 - a, c, d, e; 527 - a, b, c, d, e; 528 - b, d, e; 529- a, b, c, e; 530 - a, b, d, e; 531 - b, c, d; 532 - b; 533 - b; 534 - a; 535 - a, b, c, d, e; 536 - a, c, d; 537 - b, c, d; 538 - a, c, d; 539 - a, b, c, d, e; 540 - a, b, c, d, e; 541 - b; 542 - b; 543 - a, b, c, d, e; 544 - b, c, d; 545 - c, d; 546 - a, b, c; 547 - c; 548 - b, c, d; 549 - a, c, d; 550 - a, b, c; 551 - a, c; 552 - a, b, c, d; 553 - b, c; 554 - b, c, d; 555 - a, b, c; 556 - b, c; 557 - a, b, c, d; 558 - b, c, d; 559 - a, b; 560 - b; 561 - c; 562 - a, b, c; 563 - a, c; 564 - b; 565 - a; 566 - a, b, c, d; 567 - a; 568 - b, c; 569 - a, b, c, d; 570 - a, b, c, d, e; 571 - b, c; 572 - a, b, c, d; 573 - a, c, d; 574 - c, d; 575 - a, c, d, e; 576 - b, c, d, e; 577 - d; 578 - a, b, c; 579 - a, b, c; 580 - a, b, c, d; 581 - a, b, c; 582 - a, c; 583 - a, b, c; 584 - c; 585 - a, b, c, d; 586 - c, d; 587 - a, b, d; 588 - c, d, e; 589 - a, b, c; 590 - a, d, e; 591 - b; 592 - b, c; 593 - a, b, c; 594 - a, b; 595 - a; 596 - b, c, d; 597 - a, c, d; 598 - b, c; 599 - a, b; 600 - c, d; 601 - a, b, d; 602 - a, b, d; 603 - a, b, c; 604 - a, b, d; 605 - c; 606 - a, b, d; 607 - a, b, c; 608 - b, c, d; 609 - a; 610 - b; 611 - b, c; 612 - b, d; 613 - b; 614 - a, b, c; 615 - a, b, c, d; 616 - a, b, c, d; 617 - a, d; 618 - c; 619 - c; 620 - b; 621 - c; 622 - a; 623 - a, b; 624 - a, b, d; 625 - a, c; 626 - a, b, c, d; 627 - c; 628 - b; 629 - a, b, c, d; 630 - a, b, c, d; 631 - a, b, c, d, e; 632 - a, b, c, d; 633 - d; 634 - a; 635 - c; 636

- b; 637 - a, b; 638 - a, c, d; 639 - c; 640 - d; 641 - c; 642 - a, b, c, d; 643 - a, b, c, d; 644 - b; 645 - a, b, c, d; 646 - b, c; 647 - a, b, c; 648 - a, c, d; 649 - a; 650 - a, b, d; 651 - d; 652 - a, b, d; 653 - a, b, c, d; 654 - a, b, c, d; 655 - b, d; 656 - a, b, c, d; 657 - b, c, d; 658 - a; 659 - a, b, c, d; 660 - b, c, d; 661 - a, b, c, d; 662 - a, b, d; 663 - c; 664 - a, b, c, d; 665 - c, d; 666 - d; 667 - b; 668 - b; 669 - d; 670 - a, b, c, d; 671 - a, b; 672 - a; 673 - a, b, c, d; 674 - a, b; 675 - b; 676 - a, b, c, d; 677 - a, c; 678 - b; 679 - a, b, c, d; 680 - b, c, d; 681 - b, c, d; 682 - b, c, d; 683 - a; 684 - a, b, c, d; 685 - a; 686 - a, b; 687 - b, d; 688 - a; 689 - a, b, c, d; 690 - b; 691 - a, b, c, d; 692 - a, b, c, d; 693 - c; 694 - a, c, d, e; 695 - c; 696 - a, c, d; 697 - b, c; 698 - b; 699 - b, c, d, e; 700 - a; 701 - a, b, d; 702 - a, b, c, d; 703 - c; 704 - a, b, c, d, e; 705 - c; 706 - a, b; 707 - a, b, c, d; 708 - c; 709 - a, b, c, d; 710 - b, c; 711 - a, b, c, d; 712 - a, b, d; 713 - a; 714 - a, b, c, d; 715 - a, d; 716 - a, b, c; 717 - b, c, d; 718 - a, b, d; 719 - c; 720 - a, b; 721 - c; 722 - a, c, d; 723 - a, b; 724 - b, c; 725 - a, b, d; 726 - b, c, d; 727 - b, c; 728 - c, d; 729 - a, b, d; 730 - a, c, d; 731 - d; 732 - b, c, d; 733 - b, c; 734 - a, c; 735 - b, d; 736 - b, c; 737 - a, d; 738 - b; 739 - b, c, d; 740 - a, c; 741 - b; 742 - a, b, c; 743 - a, d; 744 - a, b; 745 - b, c; 746 - b, c; 747 - c, d; 748 - c; 749 - c, d; 750 - b; 751 - a, b, c, d; 752 - b; 753 - b, c; 754 - b, c; 755 - a; 756 - a, c, d; 757 - c, d; 758 - a, d; 759 - b, c; 760 - a, b, c; 761 - a, c; 762 - a, b, c; 763 - b, c; 764 - c, d; 765 - b, c; 766 - c; 767 - b; 768 - a, d; 769 - b, c; 770 - a, b, d; 771 - c; 772 - a; 773 - b; 774 - a; 775 - a, d; 776 - b, c, d; 777 - c; 778 - b; 779 - b, c, d; 780 - a, b, c, d; 781 - a, b, d; 782 - a, c, d; 783 - a, b, d; 784 - a, d; 785 - b, c; 786 - a, c, d; 787 - a, b, d; 788 - b, c, d; 789 - c; 790 - a, b, c; 791 - d; 792 - a, b, c; 793 - c; 794 - a, b; 795 - a, b, c; 796 - a, b, c; 797 - a, c, d; 798 - a, c, d; 799 - b; 800 - a, b, d; 801 - a, b; 802 - a, b, c, d; 803 - b, c; 804 - b, c; 805 - d; 806 - b; 807 - c; 808 - b; 809 - c; 810 - a, c; 811 - d; 812 - a, d; 813 - c; 814 - a, c; 815 - a; 816 - b, d; 817 - c, d, e; 818 - a, d; 819 - c; 820 - a; 821 - b, c; 822 - a, d; 823 - a, b; 824 - a; 825 - c; 826 - a, c, d; 827 - b; 828 - c; 829 - c; 830 - a, b, d.

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