Ministry of Health of Ukraine
Kharkiv National Medical University
Medical Biology Department

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LICENSING EXAM «KROK 1»
MEDICAL BIOLOGY
TEST BANK

MANUAL FOR INDEPENDENT LEARNING
OF STUDENTS OF VI FACULTY FOR INTERNATIONAL STUDENTS

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Contents

Unit 1
Molecular-cellular level of organizations in the living world

1. The organisms to be identified have a nucleus surrounded by a nuclear membrane. Genetic material is concentrated predominantly in the chromosomes which consist of DNA strands and protein molecules. These cells divide mitotically. Identify these organisms:
   A. *Eukaryotes
   B. Bacteriophages
   C. Prokaryotes
   D. Viruses
   E. Bacteria

2. A group of researchers set an experiment and obtained anucleatemutant cells. In the first place they will have disturbed synthesis of the following compounds:
   A. *Ribosomal RNA
   B. Transfer RNA
   C. Lipids
   D. Monosaccharides
   E. Polysaccharides

3. Oval and round organelles with double wall are seen at the electron micrograph. The outer membrane is smooth, the inner membrane folded into cristae contain enzymeATPase synthetase. These are:
   A. *Mitochondria
   B. Golgi complex
   C. Lysosomes
   D. Centrioles
   E. Ribosomes

4. Microscopic analysis of human heart cells revealed some oval oganellas, their tunic being formed by two membranes: the external one is smooth, and the internal one forms crista. Biochemical analysis determined the presence of ATPsynthetase enzyme. What organellas were analysed?
   A. *Mitochondrions
   B. Lysosomes
   C. Ribosomes
   D. Endoplasmic reticulum
   E. Centrosomes

5. A cell has been treated with a substance that blocks nucleotide phosphorilation in the mitochondrions. What process of cell activity will be disturbed in the first place?
   A. *ATP resynthesis
   B. Synthesis of mitochondrial proteins
   C. Oxidative phosphorilation
   D. Integration of functional protein molecules
   E. Fragmentation of big mitochondrions into lesser ones

6. Examination of a 28-year-old patient with hepatocerebral degeneration revealed an impairment of ceruloplasmin synthesis. This defect is associated with the following organelles:
   A. *Granular endoplasmic reticulum
   B. Smooth endoplasmic reticulum

C. Mitochondria
D. Lysosomes
E. Golgi complex

7. In cells of healthy liver, glycogen and proteins are actively synthesized. What organelles are the most developed in these cells?
A. *Granular (rough) and agranular (smooth) endoplasmic reticulum
B. Mitochondria
C. Peroxisomes
D. Lysosomes
E. Centrosome

8. Golgi complex exports substances from a cell due to the fusion of the membrane saccule with the cell membrane. The saccule contents flows out. What process is it?
A. *Exocytosis
B. Endocytosis
C. Active transport
D. Facilitated diffusion
E. All answers are false

9. In course of practical training students studied a stained blood smear of a mouse with bacteria phagocyted by leukocytes. What cell organelle completes digestion of these bacteria?
A. *Lisosomes
B. Mytochondrions
C. Granular endoplasmic reticulum
D. Golgi apparatus
E. Ribosomes

10. Electron microscopic study of a cell revealed roundish bubbles confined by a membrane and containing a lot of various hydrolytic enzymes. It is known that these organelles provide intracellular digestion and protective functions. These elements are:
A. *Lysosomes
B. Centrosomes
C. Endoplasmic reticulum
D. Ribosomes
E. Mitochondria

11. Cytochemical investigation has revealed high content of hydrolytic enzymes in cytoplasm. This phenomenon indicates high activity of the following organelles:
A. *Lysosomes
B. Centrosomes
C. Polysomes
D. Mitochondria
E. Endoplasmic reticulum

12. A cell with vitamin E deficit had been affected by ionizing radiation. This induced an intensified release of hydrolytic enzymes into the cytoplasm and thus a complete destruction of intracellular structures - autolysis. What organelles caused this phenomenon?
A. *Lysosomes
B. Endoplasmic reticulum

C. Golgi complex
D. Microbodies
E. Mitochondrions

13. A tissue sample of benign tumor was studied under the electron microscope. A lot of small (15-20 nm) spherical bodies, consisting of 2 unequal subunits were detected. These are:
A. *Ribosomes
B. Golgi complex
C. Smooth endoplasmic reticulum
D. Microtubules
E. Mitochondria

14. A 50-years-old woman had her tooth extracted. The tissue regenerated. Which of the following organelle are the most active during tissue regeneration?
A. *Ribosomes
B. Centrosomes
C. Postlysosomes
D. Agranular endoplasmic reticulum
E. Lysosomes

15. A 36-year-old patient underwent tooth extraction at a dental clinic. After two weeks the stratified squamous epithelium regenerated at this site. What organelles were involved in the restoration of the mucous membrane?
A. *Ribosomes
B. Centrosomes
C. Postlysosomes
D. Smooth EPR
E. Mitochondria

16. Formation of ribosome subunits in a cell was disturbed in course of an experiment (by means of activated mutagenic factors). This will have an effect on the following metabolic process:
A. *Protein biosynthesis
B. Carbohydrate biosynthesis
C. ATP synthesis
D. Photosynthesis
E. Biological oxidation

17. At the laboratory experiment the leukocyte culture was mixed with staphylococci. Neutrophile leukocytes engulfed and digested bacterial cells. This processes are termed:
A. *Phagocytosis
B. Pinocytosis
C. Diffusion
D. Facilitated diffusion
E. Osmosis

18. A patient is being operated under inhalation narcosis with nitrous oxide. It is known that it has evident lipophilic properties. What mechanism is responsible for transporting this preparation through biological membranes?
A. *Passive diffusion
B. Active transport

C. Facilitated diffusion
D. Filtration
E. Pinocytosis

19. A patient was prescribed a drug with apparent lipophilic properties. What is the main mechanism of its absorption?

A. *Passive diffusion
B. Filtration
C. Active transporting
D. Pinocytosis
E. Binding with transport proteins

20. Testosterone and its analogs increase the mass of skeletal muscles that allows to use them for treatment of dystrophy. Due to interaction of the hormone with what cell substrate is this action caused?

A. *Nuclear receptors
B. Membrane receptors
C. Ribosomes
D. Chromatin
E. Proteins-activators of transcription

21. Nucleoli of nuclei have been damaged due to tissue culture nuclear irradiation. Regeneration of the following organelles becomes hampered in cytoplasm?

A. *Ribosomes
B. Lysosomes
C. Golgi apparatus
D. Endoplasmic reticulum
E. Microtubules

22. Low level of albumins and fibrinogen was detected in the patient's blood. Decreased activity of what organelle of the liver hepatocytes can most probably cause it?

A. *Granular endoplasmatic reticulum
B. Agranular endoplasmatic reticulum
C. Mitochondrions
D. Golgi complex
E. Lysosomes

23. Analysis of an electron diffraction pattern of a cell revealed mitochondrion destruction. This might result in abnormal course of the following cell process:

A. *Oxidation of organic substances
B. Nuclear division
C. Crossingover
D. Cleavage
E. –

24. To what total ATP quantity is the full glucose oxidation and its linking with phosphorylation equivalent?

A. *38
B. 8
C. 12

D. 52
E. 58

25. On an electron micrograph a scientist has identified a structure formed by eight histone proteins and a part of DNA molecule which makes about 1,75 revolutions around the molecules. Which structure has been identified?

A. *Nucleosoma
B. Elemetary fibril
C. Half-chromatid
D. Chromatid
E. Chromosome

26. Chromosomal complement of a woman contains a chromosome with arms p and q of equal length. What morphological type does this chromosome belong to?

A. *Metacentric
B. Telocentric
C. Acrocentric
D. Submetacentric
E. Subacrocentric

27. Nucleolus organizers of human chromosomes 13-15, 21, 22 include about 200 gene clusters that synthesize RNA. These chromosomal regions contain the information on the following type of RNA:

A. *rRNA
B. tRNA
C. mRNA
D. snRNA
E. tRNA + rRNA

28. Life cycle of a cell includes the process of DNA autoreduplication. As a result of it monochromatid chromosomes turn into bichromatid ones. What period of cell cycle does this phenomenon fall into?

A. *S
B. G_0
C. G_1
D. G_2
E. -

29. Normal, actively dividing cells of human red bone marrow are analyzed. What number of cells' chromosomes is typical for G_1 period?

A. *46
B. 48
C. 47
D. 45
E. 23

30. An electronic micrograph presents a cell that has no nucleole and nuclear membrane. Chromosomes has free position, centrioles migrate to the poles. What phase of cell cycle is it typical for?

A. *Prophase

B. Anaphase
C. Metaphase
D. Telophase
E. Interphase

31. An electronic microphotography represents a cell without nucleoli and nuclear membrane. Chromosomes are loosely scattered, centrioles migrate to the poles. What phase of cell cycle is it?
A. *Prophase
B. Anaphase
C. Metaphase
D. Telophase
E. Interphase

32. During the examination of a two month boy a pediatrician noticed that the child's cry sounds like cat's mewing; he revealed also microcephalia and valvular defect. By means of cytogenetic method he determined the child's karyotype — 46 XY, 5p-. At what stage of mitosis was the patient's karyotype analyzed?
A. *Metaphase
B. Prometaphase
C. Prophase
D. Anaphase
E. Telophase

33. A specimen of an onion rootlet includes a cell in which the fully condensed chromosomes are located in the equatorial plane making the monaster. What phase of the mitotic cycle is the cell in?
A. *Metaphase
B. Early telophase
C. Prophase
D. Interphase
E. Late telophase

34. Studying the mitotic cycle phases of an onion root the researchers revealed a cell with chromosomes lying in equatorial plane in form of a star. What phase of mitosis is it?
A. *Metaphase
B. Prophase
C. Anaphase
D. Telophase
E. Interphase

35. While studying maximally spiralized chromosomes of human karyotype the process of cell division was stopped in the following phase:
A. *Metaphase
B. Prophase
C. Interphase
D. Anaphase
E. Telophase

36. Moving of the daughter chromatids to the poles of the cell is observed in the mitotically dividing cell. On what stage of the mitotic cycle is this cell?
A. *Anaphase

B. Metaphase
C. Telophase
D. Prophase
E. Interfase

37. At a certain stage of cell cycle, daughter chromosomes have reached cellular poles, undergo decondensation; nuclear membranes reform around them; nucleolus reappears. What stage of mitosis is it?
A. *Telophase
B. Metaphase
C. Anaphase
D. Prometaphase
E. Prophase

38. According to the law of constant chromosome number, each species of most animals has a definite and constant number of chromosomes. The mechanismus providing this constancy in sexual reproduction of the organisms is called:
A. *Meiosis
B. Shizogony
C. Amitosis
D. Regeneration
E. Gemmation

39. During the postsynthetic period of mitotic cycle the synthesis of tubulin proteins was disturbed. These proteins take part in construction of division spindle. It can lead to the disturbance of:
A. *Chromosome disjunction
B. Spiralization of chromosomes
C. Cytokinesis
D. Despiralization of chromosomes
E. Mitosis duration

40. Students study the stages of gametogenesis. They analyze a cell having a haploid number of chromosomes, and each chromosome consists of two chromatids. The chromosomes are located in the equatorial plane of the cell. Such situation is typical for the following stage of meiosis:
A. *Metaphase of the second division
B. Metaphase of the first division
C. Anaphase of the first division
D. Anaphase of the second division
E. Prophase of the first division

41. During the electronical microscopic analysis of salivary gland the cell fragments were revealed which are surrounded by a membrane and contain condensed particles of nuclear substance and solitary organelles; the inflammatory reaction around these cells is absent. What process is meant?
A. *Apoptosis
B. Karyorhexis
C. Coagulation necrosis
D. Karyopicnosis
E. Karyolysis

42. During embryogenesis the epithelial band also known as vestibular plate gives rise to development of vestibule of mouth. What biological mechanism of the programmed death of cells provides growth of buccolabial sulcus from epithelial plate?

A. *Apoptosis
B. Necrosis
C. Meiosis
D. Paranecrosis
E. Amitosis

43. Blood of a child and putative father was referred to forensic medical examination for affiliation. What chemical components should be identified in the blood under study?

A. *DNA
B. Transfer RNA
C. Ribosomal RNA
D. Messenger RNA
E. SnRNA

44. Ability to divide is characteristic of prokaryotic and eukaryotic cells. Prokaryotic cell division is different from that of eukaryotic, but there is one molecular process that is the basis of both types of division. Name this process.

A. *DNA replication
B. Reparation
C. Gene amplification
D. Translation
E. Transcription

45. Epithelium regeneration of mucous membrane of oral cavity (cell reproduction) was accompanied by semiconservative DNA replication (selfreproduction). Nucleotides of a new DNA chain are complementary to:

A. *Maternal chain
B. Sense codons
C. DNA-polymerase enzyme
D. Introns
E. RNA-polymerase enzyme

46. Under the influence of physical factors, defects in DNA molecule can occur. Ultraviolet irradiation, for instance, can cause formation of dimers. Dimmers are two adjacent pyrimidine bases joined together. Name these bases:

A. *Thymine and cytosine
B. Adenine and guanine
C. Guanine and thymine
D. Guanine and cytosine
E. Adenine and thymine

47. An experiment proved that UVirradiated skin cells of patients with xeroderma pigmentosum restore the native structure of DNA slower than the cells of healthy people due to the defect in repair enzyme. What enzyme takes part in this process?

A. *Endonuclease
B. RNA ligase
C. Primase

D. DNA polymerase
E. DNA gyrase

48. Patient with pigmentary xeroderma are characterized by anamalously high sensivity to ultraviolet rays that causes skin cancer as a result of enzyme systems incapability to restore damages of hereditary apparatus of cells. What process abnormality is this pathology connected with?

A. *DNA reparation
B. Genetic conversion
C. DNA recombination
D. Genetic complementation
E. DNA reduplication

49. Patients with xeroderma pigmentosum have anomalously high sensitivity to ultraviolet rays. It causes skin cancer as a result of incapability of enzyme systems to restore the damages of hereditary apparatus of cells. Which process is this pathology related to?

A. *DNA repair
B. Genetic conversion
C. DNA recombination
D. Genetic complementation
E. DNA replication

50. Skin of patients with pigment xeroderma is very sensitive to the sun radiation, there is a risk of skin cancer development. The reason for this is hereditary deficiency of UFendonuclease. As a result of this defect the following process is disturbed:

A. *DNA reparation
B. Transcription
C. DNA replication
D. Translation
E. Initiation

51. Patient suffering from xeroderma pigmentosum have extremely photosensitive skin due to disrupted excision repair. Specify the process that is affected in such patients:

A. *Repair of DNA molecule
B. Intron exatraction and exon connection
C. Maturation of iRNA
D. Synthesis of protein primary structure
E. Synthesis of iRNA

52. In the course of evolution there appeared molecular mechanisms for correction of damaged DNA molecules. This process is called:

A. *Reparation
B. Transcription
C. Translation
D. Replication
E. Processing

53. In evolution, molecular mechanism for correction of damaged DNA molecules developed. This process is called:

A. *Repair

B. Transcription
C. Translation
D. Replication
E. Processing

54. In cells of a person who has worked in Chornobyl Exclusion Zone, DNA underwent mutation. However, over the course of time, the original DNA structure has been restored with specific enzymes. What occurred in this case?

A. *Repair
B. Transcription
C. Translation
D. Replication
E. Reverse transcription

55. According to the model of double DNA helix that was suggested by Watson and Creek, it was established that one of chains would not be lost during replication and the second chain would be synthesized complementary to the first one. What way of replication is it?

A. *Semiconservative
B. Analogous
C. Identical
D. Dispersed
E. Conservative

56. During cell division, DNA replication occurs by a signal from the cytoplasm, and a certain portion of the DNA helix unwinds and splits into two individual strains. What enzyme facilitates this process?

A. *Helicase
B. RNA polymerase
C. Ligase
D. Restrictase
E. DNA polymerase

57. DNA replication occurs during the cell division when a signal is received from the cytoplasm, and a certain portion of the DNA helix is unwound and divided into two chains. The helix is unwound by the following enzyme:

A. *Helicase
B. RNA polymerase
C. Ligase
D. Restrictase
E. DNA polymerase

58. RNA that contains AIDS virus penetrated into a leukocyte and by means of reverse transcriptase forced a cell to synthetize a viral DNA. This process is based upon:

A. *Reverse transcription
B. Operon repression
C. Reverse translation
D. Operon depression
E. Convariant replication

59. During reproduction of some RNA-containing viruses that cause tumors in animals, genetic information can be transmitted in the opposite direction from the RNA to the DNA via a specific enzyme. The enzyme of reverse transcription is called:

A. *Reverse transcriptase
B. DNA polymerase
C. Ligase
D. Primase
E. Topoisomerase

60. It was revealed that T-lymphocytes were affected by HIV. Virus enzyme - reverse transcriptase (RNA-dependent DNA-polymerase) - catalyzes the synthesis of:

A. *DNA on the matrix of virus mRNA
B. Virus informational RNA on the matrix of DNA
C. DNA on virus ribosomal RNA
D. Viral DNA on DNA matrix
E. mRNA on the matrix of virus protein

61. RNA-polymerase B(II) is blocked due to amanitine poisoning (poison of deathcup). It disturbs:

A. *Synthesis of m-RNA
B. Synthesis of t-RNA
C. Reverse transcription
D. Primers synthesis
E. Maturation of m-RNA

62. It was found out that some compounds, for instance fungi toxins and some antibiotics can inhibit activity of RNA-polymerase. What process will be disturbed in a cell in case of inhibition of this enzyme?

A. *Transcription
B. Processing
C. Replication
D. Translation
E. Reparation

63. Genetic information is stored in DNA but does not participate directly in protein synthesis within DNA cells. What process ensures transfer of genetic information into polypeptide chain?

A. *Translation
B. DNA replication
C. Formation of tRNA
D. Formation of iRNA
E. Formation of rRNA

64. Examination of a patient revealed reduced contents of magnesium ions that are necessary for attachment of ribosomes to the granular endoplasmatic reticulum. It is known that it causes disturbance of protein biosynthesis. What stage of protein biosynthesis will be disturbed?

A. *Translation
B. Transcription
C. Replication
D. Aminoacid activation
E. Termination

65. Infectious diseases are treated with antibiotics (streptomycin, erythromycin, chloramphenicol). They inhibit the following stage of protein synthesis:

A. *Translation
B. Transcription
C. Replication
D. Processing
E. Splicing

66. Labelled amino acids alanine and tryptophane were injected to a mouse in order to study localization of protein synthesis in its cells. The labelled amino acids will be accumulated near the following organellas:

A. *Ribosomes
B. Smooth endoplasmic reticulum
C. Cell centre
D. Lysosomes
E. Golgi apparatus

67. A patient has low rate of magnesium ions that are necessary for affixion of ribosomes to the endoplasmic reticulum. It is known that it causes disturbance of protein biosynthesis. At what stage is protein biosynthesis impaired?

A. *Translation
B. Transcription
C. Replication
D. Amino acid activation
E. Termination

68. One of the protein synthesis stages is recognition. The first iRNA triplet starts with UAU triplet. What complementary triplet is found in tRNA?

A. *AUG
B. AAA
C. GUG
D. UGU
E. CUC

69. It was proved that a molecule of immature mRNA (precursor mRNA) contained more triplets than amino acids found in the synthesized protein. The reason for that is that translation is normally preceded by:

A. *Processing
B. Initiation
C. Reparation
D. Mutation
E. Replication

70. Inside a human cell the informational RNA containing both exons and introns was delivered to the granular endoplasmic reticulum to the ribosomes. What process does NOT take place?

A. *Processing
B. Replication
C. Transcription
D. Translation
E. Prolongation

71. At the stage of translation in the rough endoplasmic reticulum, the ribosome moves along the mRNA. Amino acids are joined together by peptide bonds in a specific sequence, and thus polypeptide synthesis takes place. The sequence of amino acids in a polypeptide corresponds to the sequence of:

A. *mRNA codons
B. tRNA nucleotides
C. tRNA anticodons
D. rRNA nucleotides
E. rRNA anticodons

72. A cell of granular endoplasmatic reticulum is at the stage of translation, when mRNA advances to the ribosomes. Amino acids get bound by peptide bonds in a certain sequence thus causing polypeptide biosynthesis. The sequence of amino acids in a polypeptide corresponds with the sequence of:

A. *mRNA codons
B. tRNA nucleotides
C. tRNA anticodons
D. rRNA nucleotides
E. rRNA anticodons

73. The students studied pecularities of genetic code and found out that there are amino acids corresponded by 6 codons, 5 amino acids — 4 different codons. Other amino acids are codified by three or two codons and only two amino acids are codified by one codon. What pecularity of genetic code did the students find out?

A. *Redundancy
B. Versatility
C. Collinearity
D. Unidirectionality
E. Triplety

74. It is known that information about amino acid sequence in a protein molecule is stored as a sequence of four nucleotide types in a DNA molecule, and different amino acids are encoded by different quantity of triplets ranging from one to six. Name this property of genetic code:

A. *Degeneracy
B. Universality
C. Disjointness
D. Triplety
E. Specificity

75. Treatment of a patient with hereditary form of immunodeficiency involved gene therapy: the enzyme gene was introduced into the cells of the patient by means of a retrovirus. What property of the genetic code allows to use retroviruses as vectors of functional genes?

A. *Universality
B. Specificity
C. Collinearity
D. Continuity
E. Redundancy

76. Substitution of the glutamic acid on valine was revealed while examining initial molecular structure. For what inherited pathology is this symptom typical?

A. *Sickle-cell anemia
B. Thalassemia
C. Minkowsky-Shauffard disease
D. Favism
E. Hemoglobinosis

77. In some areas of South Africa many people have sickle cell disease characterized by red blood cells that assume an abnormal sickle shape due to the substitution of glutamic acid for valine in the hemoglobin molecule. What is the cause of this disease?

A. *Gene mutation
B. Disturbances of the mechanisms of genetic information transmission
C. Crossing-over
D. Genomic mutation
E. Transduction

78. As a result of treatment of viral RNA with nitrous acid, UCA triplet mutated to UGA triplet. What kind of mutation occurred?

A. *Transition
B. Missense
C. Nucleotide deletion
D. Nucleotide insertion
E. Inversion

79. You are studying functioning of a bacteria operon. The operator gene has been released from the repressor gene. Immediately after this the following process will start in the cell:

A. *Transcription
B. Translation
C. Replication
D. Processing
E. Repression

Unit 2
Organism level of organization in the living world. Essentials of human genetics

80. An underage patient has signs of achondroplasia (dwarfism). It is known that this is a monogenic disease and the gene that is responsible for the development of such abnormalities is a dominant one. The development of that child's brother is normal. Specify the genotype of the healthy child:

A. *aa
B. AA
C. Aa
D. AaBb
E. AABB

81. In the mountains some clinically healthy people present with anaemia symptoms. Blood test can reveal sickle cells. What is the genotype of such people?

A. *Aa
B. aa
C. AA
D. X^cX^c
E. X^CX^c

82. Examination of newborns in one of the Ukrainian cities revealed a baby with phenylketonuria. The baby's parents don't suffer from this disease and have two other healthy children. Specify the most likely parents' genotype with phenylketonuria gene.

A. *Aa x Aa
B. AA x aa
C. aa x aa
D. Aa x aa
E. Aa x AA

83. One of the parents is suspected of having phenylketonuria recessive gene. What is the risk of giving birth to a child with inborn phenylketonuria?

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

84. Phenylketonuria is a disease caused by a recessive gene that is localized in the autosome. The parents are heterozygous for this gene. They already have two sons with phenylketonuria and one healthy daughter. What is the probability that their fourth child will have the disease too?

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

85. Premolar teeth absence is inherited as an autosomal dominant factor. Parents with normal dental system gave birh to a child with lacking premolar teeth. What is the probability of giving birth to children without this pathology (%) in this family?

A. *75%
B. 50%
C. 25%
D. 12,5%
E. 0%

86. A wide cleft between incisors of both mother and father is the dominant feature. They are both homozygous. What genetic regularity will their children have?
A. *Uniformity of first generation hybrids
B. Hybrid segregation by phenotype
C. Independent inheritance of feature
D. Non-linked inheritance
E. Linked inheritance

87. Hurtnup's disease is caused by point mutation of only one gene. This results in abnormal absorption of tryptophane in the intestine as well as its abnormal reabsorption in renal tubules. This causes synchronous disorders in digestive and urinary excretion systems. What genetic phenomenon is observed in this case?
A. *Pleiotropy
B. Complementary interaction
C. Polymery
D. Codominance
E. Semidominance

88. An 18-year-old male has been diagnosed with Marfan syndrome. Examination revealed a developmental disorder of connective tissue and eye lens structure, abnormalities of the cardiovascular system, arachnodactylia. What genetic phenomenon has caused the development of this disease?
A. *Pleiotropy
B. Complementarity
C. Codominance
D. Multiple allelism
E. Incomplete dominance

89. Cystinuria in humans shows itself in form of cystine stones in kidneys (homozygotes) or else an increased rate of cystine in urine (heterozygotes). Cystinuria is a monogenic disease. Specify the type of interaction between cystinuria genes and normal rate of cystine in urine:
A. *Semidominance
B. Epistasis
C. Complete dominance
D. Complementarity
E. Codomination

90. A family of students who came from Africa got a child with anemia signs. The child died soon. Examination revealed that the child's erythrocytes have abnormal semilunar shape. Specify genotypes of the child's parents:
A. *Aa x Aa
B. Aa x aa
C. AA x AA
D. aa x aa
E. Aa x AA

91. A woman with III (B), Rh− blood group born a child with II (A) blood group. The child is diagnosed with hemolytic disease of newborn as a result of rhesus incompatibility. What blood group is the child's father likely to have?

A. *II (A), Rh+
B. I (0), Rh+
C. III (B), Rh+
D. I (0), Rh−
E. II (A), Rh−

92. A female with Rh-negative blood of A (II) type has a child with AB (IV) type who has been diagnosed with hemolytic disease resulting from Rh-conflict. What blood type may the baby's father have?

A. *III (B), Rh-positive
B. I (0), Rh-positive
C. II (A), Rh-positive
D. IV (AB), Rh-negative
E. III (B), Rh-negative

93. A boy has I (I^0I^0) blood group and his sister has IV(I^AI^B) blood group. What blood groups do their parents have?

A. *II (I^AI^0) and III (I^BI^0)
B. II (I^AI^A) and III (I^BI^0)
C. I (I^0I^0) and IV (I^AI^B)
D. III (I^BI^0) and IV (I^AI^B)
E. I (I^0I^0) and III (I^BI^0)

94. Heterozygous parents with A(II) and B(III) blood group according to the AB0 system have got a child. What is the probability that the child has 0(I) blood group?

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

95. Human X chromosome contains a dominant gene that is reponsible for normal blood clotting. An autosomal dominant gene plays a similar role. Lack of any of these genes leads to the coagulation disorder. The form of interaction between these genes is called:

A. *Complementarity
B. Epistasis
C. Polymerism
D. Codominance
E. Pleiotropy

96. A woman with 0 (I) bllod group has born a child with AB blood group. This woman's husband has A blood group. What genetic interaction explains this phenomenon?

A. *Recessive epistasis
B. Codominance
C. Polymery
D. Incomplete dominance
E. Complementation

97. Pigmentation intensity of human skin is controlled by a few independent dominant genes. It is known that pigmentation is the more intensive, the bigger quantity of these genes. What is the type of interaction between these genes?

A. *Polymery
B. Pleiotropy
C. Epistasis
D. Codominancy
E. Complementarity

98. A married couple consulted a specialist at the genetic consultation about probability of having children with hemophilia. Both spouses are healthy, but the wife's father has hemophilia. In this family hemophilia may be passed to:

A. *Half of sons
B. Both sons and daughters
C. Daughters only
D. Half of daughters
E. All the children

99. A couple applied to a genetic consultation with a question about probability of living birth to children with X-linked rachitis (dominant character). Father is healthy, mother is heterozygous and suffers from this disease. Vitaminresistant rachitis can be inherited by:

A. *A half of all daughters and sons
B. Daughters only
C. Sons only
D. All children
E. All children will be healthy

100. Enamel hypoplasia is caused by a dominant gene localized in the X chromosome. Mother has a normal enamel, and father has enamel hypoplasia. Which of children will have this anomaly?

A. *Only the daughters
B. All the children
C. Only the sons
D. Half of the daughters
E. Half of the sons

101. Excessive hairiness of auricles (hypertrichosis) is determined by a gene which is localized in Y-chromosome. Father has this feature. What is the probability of the fact that the boy will be born with such anomaly?

A. *100%
B. 0%
C. 25%
D. 35%
E. 75%

102. Very big teeth is an Y-linked sign. Mother's teeth are of normal size, and her son's teeth are very big. Probability of father's having very large teeth is:

A. *100%
B. 75%
C. 50%
D. 25%
E. 12,5%

103. It is known that the gene responsible for the development of the MN blood groups has two allelic states. If the gene M is considered as the initial gene, the allelic gene N appeared due to:

A. *Mutations
B. Gene combinations
C. DNA repair
D. DNA replication
E. Crossing over

104. Continuous taking of some drugs foregoing the pregnancy increase the risk of giving birth to a child with genetic defects. What is this effect called?

A. *Mutagenic effect
B. Embryotoxic effect
C. Teratogenic effect
D. Fetotoxical effect
E. Blastomogenic effect

105. A woman who was sick with rubella during the pregnancy gave birth to a deaf child with hare lip and cleft palate. This congenital defect is an example of:

A. *Phenocopy
B. Edward's syndrome
C. Genocopy
D. Patau's syndrome
E. Down's syndrome

106. A woman got infected with rubella during pregnancy. The child was born with malformations, namely cleft lip and palate. The child's genotype is normal. These malformations are a manifestation of:

A. *Modification variability
B. Polyploidies
C. Combinatory variability
D. Chromosomal mutations
E. Aneuploidies

107. A mother had taken synthetic hormones during pregnancy. Her daughter was born with hirsutismformally resembling of adrenal syndrome. Such manifestation of variability is called:

A. *Phenocopy
B. Mutation
C. Recombination
D. Heterosis
E. Replication

108. A woman had taken synthetic hormones during her pregnancy. Her newborn girl presents with excessive hairiness which has formal resemblance to adrenogenital syndrome. This sign of variability is called:

A. *Phenocopy
B. Mutation
C. Recombination
D. Heterosis
E. Replication

109. A female suffered rubella during pregnancy. The child was born with developmental abnormalities, namely cleft lip and palate. The child's genotype is normal. These malformations are a manifestation of:

A. *Modification variability
B. Polyploidy
C. Combinative variability
D. Chromosomal mutation
E. Aneuploidy

110. As a result of iodine deficiency in foodstuffs Transcarpathian people often have endemic goiter. This disease is caused by the following type of variability:

A. *Modification
B. Mutational
C. Combinatorial
D. Ontogenetic
E. Correlative

111. Tetracycline taking in the first half of pregnancy causes abnormalities of fetus organs and systems, including toothhypoplasia and alteration of their colour. What type of variability is the child's disease related to?

A. *Modification
B. Combinative
C. Mutational
D. Hereditary
E. Recombinant

112. As a result of treatment of viral RNA with nitrous acid, UCA triplet mutated to UGA triplet. What kind of mutation occurred?

A. *Transition
B. Nucleotide deletion
C. Missense
D. Nucleotide insertion
E. Inversion

113. Part of the DNA chain turned about 180 degrees due to gamma radiation. What type of mutation took place in the DNA chain?

A. *Inversion
B. Deletion
C. Doubling
D. Translocation
E. Replication

114. In a cell the mutation of the first exon of structural gene took place. The number of nucleotide pairs has decreased – 250 pairs instead of 290. Determine the type of mutation:

A. *Deletion
B. Inversion
C. Duplication
D. Translocation
E. Nonsense-mutation

115. 46 chromosomes were revealed on karyotype examination of the 5 year old girl. One of the 15th pair of chromosomes is longer than usual due to connected chromosome from the 21 pair. What type of mutation does this girl have?

A. *Translocation
B. Deletion
C. Inversion
D. Insufficiency
E. Duplication

116. In a genetical laboratory in course of work with DNA molecules of white rats of Wistar's line a nucleotide was substituted for another one. At that only one amino acid was substituted in the peptide. This result is caused by the following mutation:

A. *Transversion
B. Deletion
C. Duplication
D. Displacement of reading frame
E. Translocation

117. A cell at the stage of mitosis anaphase was stimulated by colchicine that inhibits chromosome separation to the poles. What type of mutation will be caused?

A. *Polyploidy
B. Inversion
C. Deletion
D. Duplication
E. Translocation

118. It is known that the gene responsible for development of blood groups according to AB0 system has three allele variants. If a man has IV blood group, it can be explained by the following variability form:

A. *Combinative
B. Mutational
C. Phenotypic
D. Genocopy
E. Phenocopy

119. A child with a normal karyotype is diagnosed with cleft lip and hard palate, defects of the cardiovascular system, microcephaly. The child's mother suffered rubella during pregnancy. This pathology in the child may be an example of:

A. *Genocopy
B. Trisomy
C. Phenocopy
D. Monosomy
E. -

120. Analysis of the family history of children with Van der Woude syndrome revealed that in their families one of the parents had the typical for this syndrome defects (cleft lip and palate, lip pits regardless of gender). What is the type of inheritance of this syndrome?

A. *Autosomal dominant
B. X-linked recessive
C. X-linked dominant

D. Autosomal recessive
E. Multifactorial

121. Examination of a 12-year-old boy with developmental lag revealed achondroplasia: disproportional constitution with evident shortening of upper and lower limbs as a result of growth disorder of epiphyseal cartilages of long tubal bones. This disease is:
A. *Inherited, dominant
B. Inherited, recessive
C. Inherited, sex-linked
D. Congenital
E. Acquired

122. A couple has a son with haemophilia. The parents are healthy but the maternal grandfather also has haemophilia. Specify the type of inheritance:
A. *Recessive sex-linked
B. Recessive autosomal
C. Dominant sex-linked
D. Semidominance
E. Autosomal dominant

123. A healthy woman has three sons affected by color blindness who were born after her two marriages. Children both of her husbands are healthy. What is the most possible pattern of inheritance of this disease?
A. *X-linked recessive
B. Y-linked
C. Autosomal recessive
D. Autosomal dominant
E. X-linked dominant

124. The study of the genealogy of a family with hypertrichosis (helix excessive pilosis) has demonstrated that this symptom is manifested in all generations only in men and is inherited by son from his father. What is the type of hypertrichosis inheritance?
A. *Y-linked chromosome
B. Autosome-recessive
C. Autosome-dominant
D. X-linked recessive chromosome
E. X-linked dominant chromosome

125. Hypertrichosis of auricles is caused by a gene that is localized in Y-chromosome. Father has this feature. What is the probability to give birth to a boy with such anomaly?
A. *100%
B. 0%
C. 25%
D. 35%
E. 75%

126. A genetics specialist analyzed the genealogy of a family and found that both males and females may have the illness, not across all the generations, and that healthy parents may have ill children. What is the type of illness inheritance?
A. *Autosomal recessive

B. Autosomal dominant
C. X-linked dominant
D. X-linked recessive
E. Y-linked

127. During a prophylactic medical examination a 7-year-old boy was diagnosed with daltonism. His parents are healthy and have normal colour vision, but his grandfather on his mother's side has the same abnormality. What is the type of the abnormality inheritance?

A. *Recessive, sex-linked
B. Dominant, sex-linked
C. Incomplete domination
D. Autosomal-recessive
E. Autosomal-dominant

128. Prophylactic medical examination of a 7 year old boy revealed that the boy had Lesch-Nyhan syndrome (only boys can be affected). His parents are healthy but his grandfather by his mother's side has the same diagnosis. What is the type of disease inheritance?

A. *Recessive, sex-linked
B. Dominant, sex-linked
C. Autosomally recessive
D. Autosomally dominant
E. Semidominance

129. A man suffering from a hereditary disease married a healthy woman. They got 5 children, three girls and two boys. All the girls inherited their father's disease. What is the type of the disease inheritance?

A. *Dominant, X-linked
B. Autosomal recessive
C. Asutosomal dominant
D. Y -linked
E. Recessive, X-linked

130. A 16 y.o. girl consulted a dentist about dark colour of tooth enamel. Analysis of her pedigree revealed that this pathology was inherited by all girls from father and by 50% of boys from mother. What mode of inheritance are these pecularities typical for?

A. *Dominant, X-chromosome-linked
B. Recessive, X-chromosome-linked
C. Recessive, Y-chromosome-linked
D. Autosomal-dominant
E. Autosomal-recessive

131. Genealogical study of a family with hereditary enamel hypoplasia has revealed that the disease occurs in every generation. In women, the anomaly occurs more frequently than in men. Male patients only pass this trait to their daughters. What type of inheritance takes place in this case?

A. *X-linked dominant
B. Autosomal dominant
C. Autosomal recessive
D. Y-linked
E. X-linked recessive

132. A couple has a son with haemophilia. The parents are healthy but the maternal grandfather also has haemophilia. Specify the type of inheritance:

A. *Recessive sex-linked
B. Recessive autosomal
C. Dominant sex-linked
D. Semidominance
E. Autosomal dominant

133. A woman with A (II), Rh-negative blood had a child with B (III), Rh-positive blood. The child was diagnosed with congenital anaemia of newborns. What is the most likely cause of its development?

A. *Rhesus incompatibility
B. Hereditary chromosomal pathology
C. AB0-incompatibility
D. Intrauterine intoxication
E. Intrauterine infection

134. If a trait is determined mostly by genetic factors, the percentage of concordance between the twins is much higher in monozygotic twins than in dizygotic ones. What is the percentage of blood group concordance in monozygotic twins?

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

135. Galactosemia has been revealed in a child. Concentration of glucose in the blood has not considerably changed. What enzyme deficiency caused this illness?

A. *Galactose-1-phosphate uridyltransferase
B. Amylo-1,6-glucosidase
C. Phosphoglucomutase
D. Galactokinase
E. Hexokinase

136. A child's blood presents high content of galactose, glucose concentration is low. There are such presentations as cataract, mental deficiency, adipose degeneration of liver. What disease is it?

A. *Galactosemia
B. Diabetes mellitus
C. Lactosemia
D. Steroid diabetes
E. Fructosemia

137. Examination of cell culture got from a patient with lysosomal pathology revealed accumulation of great quantity of lipids in the lysosomes. What of the following diseases is this disturbance typical for?

A. *Tay-Sachs disease
B. Gout
C. Phenylketonuria
D. D.Wilson disease
E. Galactosemia

138. A 6 year old child was delivered to a hospital. Examination revealed that the child couldn't fix his eyes, didn't keep his eyes on toys, eye ground had the cherry-red spot sign. Laboratory analyses showed that brain, liver and spleen had high rate of ganglioside glycometide. What congenital disease is the child ill with?

A. *Tay-Sachs disease
B. B.Wilson's syndrome
C. Turner's syndrome
D. Niemann-Pick disease
E. MacArdle disease

139. A couple came for medical genetic counseling. The man has hemophilia, the woman is healthy and there were no cases of hemophilia in her family. What is the risk of having a sick child in this family?

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

140. Mother had noticed her 5-year-old child's urine to become dark in colour. Bile pigments in urine were not detected. The diagnosis of alkaptonouria was made. What pigment is deficient?

A. *Homogentisic acid oxidase
B. Phenylpyruvate decarboxylase
C. Phenylalanine hydroxylase
D. Tyrosinase
E. Oxyphenylpyruvate oxidase

141. Healthy parents have got a fairhaired, blue-eyed girl. Irritability, anxiety, sleep and feeding disturbance developed in the first months of the infant's life. Neurological examination revealed developmental lag. What method of genetic investigation should be used for the exact diagnosis?

A. *Biochemical
B. Cytological
C. Gemellary
D. Genealogical
E. Population-statistical

142. Albinos can't stand sun impact – they don't aquire sun-tan but get sunburns. Disturbed metabolism of what aminoacid underlies this phenomenon?

A. *Phenilalanine
B. Methionine
C. Tryptophan
D. Glutamic acid
E. Histidine

143. A 1,5 year old child was taken to the hospital. The examination revealed dementia, disorder of motor functions regulation, hypopigmentation of skin, high rate of phenylalanine in blood. What is the most probable diagnosis?

A. *Phenylketonuria
B. Galactosemia
C. Tyrosinosis

D. Down's syndrome
E. Mucoviscidosis

144. A 2 year old child with mental and physical retardation has been delivered to a hospital. He presents with frequent vomiting after having meals. There is phenylpyruvic acid in urine. Which metabolism abnormality is the reason for this pathology?

A. *Amino-acid metabolism
B. Lipidic metabolism
C. Carbohydrate metabolism
D. D.Water-salt metabolism
E. Phosphoric calcium metabolism

145. To prevent long-term effects of 4-day malaria a 42-year-old patient was prescribed primaquine. On the 3-rd day from the begin of treatment there appeared stomach and heart pains, dyspepsia, general cyanosis, hemoglobinuria. What caused side effects of the preparation?

A. *Genetic insufficiency of glucose 6-phosphate dehydrogenase
B. Cumulation of the preparation
C. Decreased activity of microsomal liver enzymes
D. Delayed urinary excretion of the preparation
E. Drug potentiation by other preparations

146. A 3 year old child with fever was given aspirin. It resulted in intensified erythrocyte haemolysis. Hemolytic anemia might have been caused by congenital insufficiency of the following enzyme:

A. *Glucose 6-phosphate dehydrogenase
B. Glucose 6-phosphatase
C. Glycogen phosphorylase
D. Glycerol phosphate dehydrogenase
E. γ-glutamiltransferase

147. Nappies of a newborn have dark spots that witness of formation of homogentisic acid. Metabolic imbalance of which substance is it connected with?

A. *Thyrosine
B. Galactose
C. Methionine
D. Cholesterine
E. Tryptophane

148. In case of alkaptonuria, homogentisic acid is excreted in urine in large amounts. The development of this disease is associated with a disorder of metabolism of the following amino acid:

A. *Tyrosine
B. Phenylalanine
C. Alanine
D. Methionine
E. Asparagine

149. A patient has been diagnosed with alkaptonuria. This pathology is caused by deficiency of the following enzyme:

A. *Oxidase of homogentisic acid

B. Phenylalanine hydroxylase
C. Glutamate dehydrogenase
D. Pyruvate dehydrogenase
E. DOPA decarboxylase

150. A patient has been diagnosed with alkaptonuria. Choose an enzyme whose deficiency can be the reason for this pathology:
A. *Homogentisic acid oxidase
B. Phenylalanine hydroxylase
C. Glutamate dehydrogenase
D. Pyruvate dehydrogenase
E. Dioxyphenylalanine decarboxylase

151. A 1,5-year-old child presents with both mental and physical lag, decolorizing of skin and hair, decrease in catecholamine concentration in blood. When a few drops of 5% solution of trichloroacetic iron had been added to the child's urine it turned olive green. Such alteration are typical for the following pathology of the amino acid metabolism:
A. *Phenylketonuria
B. Alkaptonuria
C. Tyrosinosis
D. Albinism
E. Xanthinuria

152. Examination of a 6 days old infant revealed phenylpyruvate and phenyl acetate excess in his urine. What aminoacid metabolism is disturbed in the child's organism?
A. *Phenylalanine
B. Tryptophan
C. Methionine
D. Histidine
E. Arginine

153. Analysis of a newborn's urine revealed phenylpyruvic acid. Its presence in urine is associated with the following pathology:
A. *Phenylketonuria
B. Alkaptonuria
C. Albinism
D. Tyrosinosis
E. Gout

154. A 13-year-old patient complains of general weakness, dizziness, fatiguability. Mental retardation is also observed. Examination revealed high concentration of valine, isoleucine and leucine in blood and urine. The patient's urine has a specific smell. What is the likely cause of such condition?
A. *Maple syrup urine disease
B. Addison's disease
C. Tyrosinosi
D. Histidinemia
E. Basedow's disease

155. A stillborn child was found to have thickened skin resembling of the tortoise shell, underdeveloped auricles. Histological examination of skin revealed hyperkeratosis, atrophy of the granular epidermis layer; inflammatory changes were not present. What is the most likely diagnosis?

A. *Ichthyosis
B. Leukoplakia
C. Xerodermia
D. Erythroplakia
E. Dermatomyositis

156. Hypertrichosis is the Y-linked character. The father has hypertrichosis, and the mother is healthy. In this family, the probability of having a child with hypertrichosis is:

A. *0,5
B. 0,25
C. 0,125
D. 0,625
E. 1

157. Children with Lesch-Nyhan syndrome have a severe form of hyperuricemia accompanied by the formation of tophi, urate calculi in the urinary tracts, as well as serious neuro-psychiatric disorders. The cause of this disease is the reduced activity of the following enzyme:

A. *Hypoxanthine-guanine phosphoribosyltransferase
B. Xanthine oxidase
C. Dihydrofolate reductase
D. Thymidylate synthase
E. Karbamoyl phosphate synthetase

158. Wilson's disease is a disorder of copper transport which leads to the accumulation of this metal in brain and liver cells. It is associated with a disturbance in the synthesis of the following protein:

A. *Ceruloplasmin
B. Haptoglobin
C. Siderophilin
D. Metallothionein
E. Transcobalamin

159. A child has a history of hepatomegaly, hypoglycemia, seizures, especially on an empty stomach and in stressful situations. The child is diagnosed with Gierke disease. This disease is caused by the genetic defect of the following enzyme:

A. *Glucose-6-phosphatase
B. Amyloid-1,6-glycosidase
C. Phosphoglucomutase
D. Glycogen phosphorylase
E. Glucokinase

160. In patients with glycogenolysis, that is von Gierke's disease, the conversion of glucose-6-phosphate into glucose is inhibited, which is accompanied by the improper breakdown of glycogen in the liver. The cause of this condition is the following enzyme deficiency:

A. *Glucose-6-phosphatase
B. Glycogen phosphorylase
C. Glucose-6-phosphate dehydrogenase

D. Phosphofructokinase
E. Phosphoglucomutase

161. A young couple has a child with encephalopathy. A doctor determined this disease to be caused by mitochondrial DNA disorder. In what way are mitochondrial pathologies inherited?
A. *From mother to all her children
B. From both parents to all their children
C. From mother to son
D. From father to son
E. From father to daughter

162. A woman with A (II), Rh-negative blood had a child with B (III), Rh-positive blood. The child was diagnosed with congenital anaemia of newborns. What is the most likely cause of its development?
A. *Rhesus incompatibility
B. Intrauterine intoxication
C. Hereditary chromosomal pathology
D. AB0-incompatibility
E. Intrauterine infection

163. An individual is characterized by rounded face, broad forehead, a Mongolian type of eyelid fold, flattened nasal bridge, permanently open mouth, projecting lower lip, protruding tongue, short neck, flat hands, and stubby fingers. What diagnosis can be put to the patient?
A. *Down's syndrome
B. Klinefelter's syndrome
C. Alkaptonuria
D. Supermales
E. Turner's syndrome

164. A 2-year-old boy is diagnosed with Down syndrome. What chromosomal changes may be the cause of this disease?
A. *Trisomy 21
B. Trisomy 13
C. Trisomy X
D. Trisomy 18
E. Monosomy X

165. A patient has mental retardation, small height, brachydactyly, mongoloid slant. Analysys of his karyotype revealed trisomy 21. What chromosomal anomaly is it?
A. *Down's disease
B. Klinefelter's syndrome
C. Turner's syndrome
D. Trisomy X
E. Specific fetopathy

166. A child presents with body shortness, mental deficiency, mongoloid palpebral tissures, epicanthal fold, enlarged grooved tongue protruding from the mouth, high palate, maldentition, diastema, cross striation of lips. What hereditary disease are these presentations typical for?
A. *Down syndrome
B. Patau's syndrome

C. Edwards' syndrome
D. Turner's syndrome
E. Klinefelter's syndrome

167. There are trisome, translocational and mosaic forms of Down's syndrome. What method of human genetics can be applied to differentiate the said forms of Down's syndrome?
A. *Cytogenetical
B. Gemellary
C. Genealogical
D. Biochemical
E. Population-statistical

168. Examination of a 7 year old child revealed the following symptoms: small height, broad roundish face, closely placed eyes with narrow palpebral fissures, half-open mouth. Valvular defect has been also diagnosed. These clinical presentations are most likely typical for Down's syndrome. Name the cause of such pathology:
A. *Trisomy of the 21 chromosome
B. Trisomy of the 13 chromosome
C. X-chromosome trisonomy
D. Partial monosomy
E. Nondisjunction of sexual chromosomes

169. An 8 month old child has non-closed palate, a number of eye defects, microcephaly, disorder of cardiovascular system. Cytogenetic analysis revealed 47 chromosomes with an additional 13th chromosome. What diagnosis can be made on the basis of clinical observations and cytogenetic examinations?
A. *Patau's syndrome
B. Cat cry syndrome
C. Edwards' syndrome
D. Down's syndrome
E. Klinefelter's syndrome

170. Healthy parents with unremarkable family history have the child with multiple developmental defects. Cytogenetic analysis revealed the trisomy 13 in the somatic cells (Patau syndrome). What phenomenon has caused the defects?
A. *Abnormal gametogenesis
B. Somatic mutation
C. Recessive mutation
D. Dominant mutation
E. Chromosomal mutation

171. Autopsy of a newborn boy revealed polydactylia, microcephalia, cheiloschisis and uranoschisis as well as hypertrophy of parenchimatous organs. These defects correspond with the description of Patau's syndrome. What is the most probable cause of this pathology?
A. *Trisomy of the 13th chromosome
B. Trisomy of the 18th chromosome
C. Trisomy of the 21st chromosome
D. Nondisjunction of sex chromosomes
E. Partial monosomy

172. Medical examination at the military registration and enlistment office revealed that a 15-year-old boy was high, with eunuchoid body proportions, gynecomastia, female pattern of pubic hair distribution. The boy had also fat deposits on the thighs, no facial hair, high voice, subnormal intelligence quotient. Which karyotype corresponds with this disease?

A. *47, XXY
B. 45, XO
C. 46, XX
D. 46, XY
E. 47, XXX

173. A 35-year-old male patient has been referred by an andrologist for the genetic counselling for the deviations of physical and mental development. Objectively: the patient is tall, has asthenic constitution, gynecomastia, mental retardation. Microscopy of the oral mucosa cells revealed sex chromatin (single Barr body) in 30% of cells. What is the most likely diagnosis?

A. *Klinefelter syndrome
B. DiGeorge syndrome
C. Down syndrome
D. Recklinghausen's disease
E. Cushing pituitary basophilism

174. A boy referred to a genetics clinic was found to have 1 drumstick in blood neutrophils. The boy is likely to have the following syndrome:

A. *Klinefelter's
B. Down's
C. Turner's
D. Edwards'
E. Trisomy X

175. An 18-year-old boy applied to a geneticist. The boy has asthenic constitution: narrow shoulders, broad pelvis, nearly hairless face. Evident mental deficiency. The provisional diagnosis was Klinefelter's syndrome. What method of clinical genetics will enable the doctor to confirm this diagnosis?

A. *Cytogenetic
B. Genealogical
C. Twin study
D. Dermatoglyphics
E. Population-and-statistical

176. X-chromatin test of somatic cells is used for quick diagnostics of hereditary diseases caused by variations of sex chromosomes number. What is the karyotype of a male, whose cells mostly contain one X-chromatin body?

A. *47, XXY
B. 48, XXXY
C. 49, XXXXY
D. 46, XY
E. 45, X0

177. Detection of X-chromatin in somatic cells is used for the quick diagnosis of hereditary diseases associated with a change in the sex chromosome number. Vast majority of a man's cells have three X-chromatin bodies. What is the man's karyotype?

A. *49, XXXXY
B. 45, X
C. 46, XY
D. 47, XXY
E. 48, XXXY

178. A 32 y.o. man is tall, he has gynecomastia, adult woman pattern of hair distribution, high voice, mental deficiency, sterility. Provisional diagnosis is Klinefelter's syndrome. In order to specify diagnosis it is necessary to analize:
A. *Caryotype
B. Leukogram
C. Spermatogenesis
D. Blood group
E. Genealogy

179. Cytogenetic examination of a patient with dysfunction of the reproductive system revealed normal karyotype 46, XY in some cells, but most cells have Klinefelter's syndrome karyotype – 47, XXY. Such phenomenon of cell inhomogeneity is called:
A. *Mosaicism
B. Inversion
C. Transposition
D. Duplication
E. Monomorphism

180. A 28-year-old female patient consulted a gynecologist about sterility. Examination revealed underdeveloped ovaries and uterus, irregular menstrual cycle. Study of sex chromatin revealed 2 Barr's bodies in most somatic cells. What chromosome disease is the most probable in this case?
A. *Triple X syndrome
B. Edwards' syndrome
C. Patau's syndrome
D. Klinefelter's syndrome
E. Turner's syndrom

181. According to the phenotypic diagnosis a female patient has been provisionally diagnosed with X-chromosome polysomia. This diagnosis can be confirmed by a cytogenetic method. What karyotype will allow to confirm the diagnosis?
A. *47(XXX)
B. 48(XXXY)
C. 48(XXYY)
D. 47(XXY)
E. 46(XX)

182. When examination a female patient a doctor observed the following: misshapen auricles, elevated palate, teeth growth disorder; mental retardation; no disruption of reproductive function. Provisional diagnosis is the "super woman" syndrome. Point out the karyotype of this disease.
A. *47, XXX
B. 47, XXY
C. 47, XYY
D. 47, YYY
E. 45, X0

183. A woman has been diagnosed with Turner's syndrome (karyotype 45, XO). How many pairs of autosomes do her somatic cells contain?

A. *45
B. 23
C. 22
D. 44
E. 24

184. Sex chromosomes of a woman didn't separate and move to the opposite poles of a cell during gametogenesis (meiosis). The ovum was impregnated with a normal spermatozoon. Which chromosomal disease can be found in her child?

A. *Turner's syndrome
B. Down's syndrome
C. Patau's syndrome
D. Edwards' syndrome
E. Cat cry syndrome

185. Abnormal chromosome disjunction during meiosis resulted in formation of: an ovum with 22 autosomes and polar body with 24 chromosomes. If such an ovum would be fertilized with a normal spermatozoon (22 + X) the child might have the following syndrome:

A. *Turner's syndrome
B. Klinefelter's syndrome
C. Trisomy X
D. Down's syndrome
E. Edwards' syndrome

186. Mother and father are healthy. Mother underwent amniocentesis for fetal karyotyping. The fetal karyotype turned out to be 45, XO. What syndrome can be expected in a newborn baby?

A. *Turner's
B. Edwards'
C. Patau's
D. Cri du chat
E. "Superwoman"

187. A girl who was provisionally diagnosed with Turner's syndrome came to a genetic consultation. The diagnosis can be specified by means of the following genetic method:

A. *Sex chromatin test
B. Genealogical
C. Hybridological
D. Biochemical
E. Dermatoglyphics

188. Examination of an 18-year-old girl revealed the following features: ovarian hypoplasia, broad shoulders, narrow hips, shortening of the lower extremities, webbed neck. Mental development is normal. The patient has been diagnosed with Turner's syndrome. What chromosomal abnormality does this patient have?

A. *Monosomy X
B. Trisomy X
C. Trisomy 13
D. Trisomy 18
E. Nullisomy X

189. A 25-year-old patient consulted a doctor about dysmenorrhea and infertility. Examination revealed that the patient was 145 cm high and had underdeveloped secondary sex characteristics, alar folds on the neck. Cytological study didn't reveal any Barr bodies in the somatic cells. What diagnosis was made?

A. *Turner's syndrome
B. Klinefelter syndrome
C. Morris syndrome
D. Trisomy X syndrome
E. –

190. A female patient saught medical genetic consultation. Physical examination revealed pterygium colli deformity (webbed neck), broad chest, underdeveloped breasts. Study of buccal epithelium cells revealed no X-chromatin in the nuclei. This indicates that the patient has the following syndrome:

A. *Turner's
B. Klinefelter's
C. Patau's
D. Down's
E. Edwards'

191. Amniocentesis revealed two sex chromatin bodies (Barr bodies) in each cell of the sample. What disease is this character typical for?

A. *Trisomy X
B. Klinefelter syndrome
C. Turner's syndrome
D. Down's syndrome
E. Patau syndrome

192. Analysis of amniotic fluid that was obtained as a result of amniocentesis (puncture of amniotic sac) revealed cells the nuclei of which contain sex chromatin (Barr's body).What can it be evidence of?

A. *Development of female fetus
B. Development of male fetus
C. Genetic disorders of fetus development
D. Trisomy
E. Polyploidy

193. A physician collects the patient's history of the post-embryonic period of ontogenesis from birth to puberty. In this case we are talking about:

A. *Juvenile period
B. The first period of adulthood
C. Senium
D. The second period of adulthood
E. Advanced age

194. As a result of expression of some genome components the embryo cells acquire typical morphological, biochemical and functional properties. Name this process:

A. *Differentiation
B. Capacitation
C. Reception

D. Determination
E. Induction

195. Examination of uterine cavity revealed an embryonated ovum that wasn't attached to the endometrium. The embryo is at the following stage of development:
A. *Blastocyst
B. Zygote
C. Morula
D. Gastrula
E. Neurula

196. At a certain stage of development of a human embryo one can observe formation of a cavity in its structure, small light blastomeres on the periphery and large dark blastomeres at one of the poles. The embryo at this stage of development is called:
A. *Blastocyst
B. Morula
C. Zygote
D. Gastrula
E. Blastodisk

197. In Western Europe nearly half of all congenital malformations occur in the children conceived in the period when pesticedes were used extensively in the region. These congenital conditions result from the following influence:
A. *Teratogenic
B. Mutagenic
C. Mechanical
D. Carcinogenic
E. Malignization

198. A newborn boy has been diagnosed with hydrocephalus. Doctors consider it to be caused by teratogenic factors. What germ layers are affected by teratogen?
A. *Ectoderm
B. Endoderm
C. Endoderm and mesoderm
D. Mesoderm
E. All embryo germ layers

199. An embryo has a disturbed development of blood-vascular system caused by a teratogenic factor. This disturbance occurred in the following germ layer:
A. *Mesoderm
B. Entoderm
C. Exoderm
D. Ento- and mesoderm
E. Ento- and ectoderm

200. As a result of a development anomaly a newborn has malformation of major salivary glands. This anomaly is caused by the damage of the following embryonal structure:
A. *Ectoderm
B. Splanchnotom
C. Somites

D. Entoderm
E. Mesenchyme

201. Microspecimen analysis of child's finger skin revealed that epidermis has signs of inadequate development. What embryonal leaf was damaged in the process of development?
A. *Ectoderm
B. Mesoderm
C. Entoderm
D. Mesenchyma
E. Ectomesenchyma

202. A newborn child has microcephalia. Doctors believe that it is the result of mother's taking actinomycin D during pregnancy. What embryonal leaf was influenced by this teratogen?
A. *Ectoderma
B. All leaves
C. Entoderma
D. Mesoderma
E. Entoderma and mesoderma

203. A woman who was infected with toxoplasmosis during the pregnancy has a child with multiple congenital defects. This is a result of:
A. *Teratogenesis
B. Cancerogenesis
C. Biological mutogenesis
D. Chemical mutogenesis
E. Recombination

204. An alcoholic woman has born a girl with mental and physical developmental lag. Doctors diagnosed the girl with fetal alcohol syndrome. What effect is the cause of the girl's state?
A. *Teratogenic
B. Mutagenic
C. Malignization
D. Carcinogenic
E. Mechanic

205. A woman who had taken alcohols during her pregnancy had a child with cleft palate and upper lip. These presentations are indicative of some chromosomal anomalies. What process do they result from?
A. *Teratogenesis
B. Carcinogenesis
C. Mutagenesis
D. Phylogenesis
E. Ontogenesis

206. A woman who had taken alcohols during her pregnancy had a child with cleft lip and cleft palate. It is known that some chromosomal diseases have the same traits. What can be a cause for this abnormalities?
A. *Teratogenesis
B. Carcinogenesis
C. Mutagenesis

D. Phylogenesis
E. Ontogenesis

207. An 8-week-pregnant woman with acute respiratory disease and temperature rise up to 39,0°C has called in a doctor. The doctor insisted on her avoiding taking paracetamol, because in this period of pregnancy there is a risk of its:

A. *Teratogenicity
B. Embryotoxicity
C. Fetotoxicity
D. Hepatotoxicity
E. Allergenicity

208. On autopsy of a still-born infant abnormalities have been revealed: ventricles are not separated, a single arterial trunk originates from the right part. For what class of vertebrates is such heart construction characteristic?

A. *Amphibian
B. Fishes
C. Reptiles
D. Mammals
E. Birds

209. A patient has undergone an amputation of lower extremity. Some time later painful nodules appeared in a stump. Amputatious neuromas were found out at the microscopic examination. To what pathological processes do those formations relate?

A. *Regeneration
B. Dystrophy
C. Inflammation
D. Hyperemia
E. Metaplasia

210. A couple had a child with Down's disease. Mother is 42 years old. This disease is most probably caused by the following impairment of prenatal development:

A. *Gametopathy
B. Blastopathy
C. Embryopathy
D. Non-specific fetopathy
E. Specific fetopathy

211. For the purpose of myocardium infarction treatment a patient was injected with embryonal stem cells derived from this very patient by means of therapeutic cloning . What transplantation type is it?

A. *Autotransplantation
B. Allotransplantation
C. Xenotransplantation
D. Isotransplantation
E. Heterotransplantation

212. A patient has a skin defect as a result of an extensive burn. In order to mask this defect the surgeons transplanted a skin flap from other body part of this patient. What type of transplantation is it?

A. *Autotransplantation
B. Explantation
C. Allotransplantation
D. Xenotransplantation
E. Homotransplantation

213. A 30-year-old patient has undergone keratoplasty in the transplantation center, cornea has been taken fron a donor, who died in a road accident. What kind of transplantation was performed?
A. *Allotransplantation
B. Autotransplantation
C. Xenotransplantation
D. Explantation
E. Heterotransplantation

214. A female patient underwent liver transplantation. 1,5 month after it her condition became worse because of reaction of transplant rejection. What factor of immune system plays the leading part in this reaction?
A. *T-killers
B. Interleukin-1
C. Natural killers
D. B-lymphocytes
E. T-helpers

215. Following exposure to radiation a lot of mutant cells appeared in a patient. Some time later most of them were detected and destroyed by the following cells of the immune system:
A. *T-lymphocytes-killers
B. Plasmoblasts
C. T-lymphocytes-supressors
D. B-lymphocyte
E. Stem cells

Unit 3
Population, holocoenotic and biospheric levels of life organization

216. Patients with similar complaints applied to the doctor: weakness, pain in the intestines, disorder of GIT. Examination of the faeces revealed that one patient with four nucleus cysts should be hospitalized immidiately. For what protozoa are such cysts typical?

A. *Dysenteric amoeba
B. Intestinal amoeba
C. Balantidium
D. Trichomonas
E. Lamblia

217. When doctors of a sanitary-andepidemiologic institution examine employees of public catering establishments they often reveal asymptomatic parasitosis, that is when a healthy person is a carrier of cysts that infect other people. What causative agent cannot parasitize in such a way?

A. *Dysenteric amoeba
B. Malarial plasmodium
C. Enteral trichomonad
D. Dermatotropic leishmania
E. Viscerotropic leishmania

218. Among public catering workers examined by doctors of sanitaryand-epidemiologic station often occur asymptomatic parasite carriers. This means that a healthy person carries cysts that infect other people. Such parasitizing is impossible for the following causative agent:

A. *Dysenteric amoeba
B. Malarial plasmodium
C. Intestinal trichomonad
D. Dermatotropic leishmania
E. Viscerotropic leishmania

219. A patient with suspected liver abscess was admitted to the surgical department. The patient had been staying for a long time on business in one of african countries and fell repeatedly ill with acute gastrointestinal disorders. What protozoal disease may the patient be now ill with?

A. *Amebiasis
B. Trypanosomosis
C. Leishmaniasis
D. Malaria
E. Toxoplasmosis

220. A patient complains of frequent bowel movements and stool with blood admixtures ("raspberry jelly" stool). Microscopic examination revealed large mononuclear cells with absorbed red blood cells. What protozoon is this morphological structure typical for?

A. *_Entamoeba histolytica_*
B. _Giardia lamblia_
C. _Campylobacter jejuni_
D. _Toxoplasma gondii_
E. _Balantidium coli_

221. A 40-year-old patient presents with abdominal pain, frequent loose stools with mucus and blood. Stool analysis revealed vegetative forms of some protozoa sized 30-40 microns, with short

pseudopodia, containing large amounts of phagocytosed erythrocytes. What protozoan disease does the patient have?

A. *Amebiasis
B. Leishmaniasis
C. Trichomoniasis
D. Giardiasis
E. Toxoplasmosis

222. Microscopy of dental plaque revealed unicellular organisms. Their cytoplasm had two distinct layers, barely visible core, wide pseudopodia. The patient is most likely to have:

A. *_Entamoeba gingivalis_*
B. _Entamoeba histolytica_
C. _Entamoeba coli_
D. _Lamblia_
E. _Trichomonas tenax_

223. Carious cavities of a 29-year-old patient contain the parasitic protozoa. It is established that they relate to the Sarcodina class. Specify these singlecelled organisms:

A. *_Entamoeba gingivalis_*
B. _Entamoeba coli_
C. _Entamoeba histolutica_
D. _Amoeba proteus_
E. _Lamblia intestinalis_

224. A duodenal content smear of a patient with indigestion contains protosoa 10-18 mcm large. They have piriform bodies, 4 pairs of filaments, two symmetrically located nuclei in the broadened part of body. What kind of the lowest organisms is it?

A. *Lamblia
B. Dysenteric ameba
C. Trichomonas
D. Intestinal ameba
E. Balantidium

225. Examination of the duodenal contents revealed some pear-shaped protozoa with two nuclei and four pairs of flagella. The organisms had also two axostyles between the nuclei and a ventral adhesive disc. What protozoan representative was found in the patient?

A. *Lamblia
B. Toxoplasma
C. Leishmania
D. Intestinal trichomonad
E. Trypanosome

226. Parents with an ill child consulted an infectionist. They had been working in one of Asian countries for a long time. The child has sallow skin, loss of appetite, laxity, enlarged liver, spleen, peripheral lymph nodes. What protozoal illness can be suspected?

A. *Visceral leishmaniasis
B. Balantidiasis
C. Amebiasis
D. Toxoplasmosis
E. Lambliasis

227. A patient has roundish ulcers on his face, inflammation and enlargement of lymph nodes. These symptoms turned up as a result of mosquito bites. Laboratory examination of discharge from the ulcers revealed unicellular aflagellar organisms. What is the most probable diagnosis?

A. *Dermatotropic leishmaniasis
B. Toxoplasmosis
C. Scabies
D. Trypanosomiasis
E. Myasis

228. Examples of human-specific parasites are malaria plasmodium, enterobius vermicularis and some other. The source of invasion of such parasites is always a human. Such human-specific parasites cause diseases that are called:

A. *Anthroponotic
B. Zoonotic
C. Anthropozoonotic
D. Infectious
E. Multifactorial

229. A businessman came to India from South America. On examination the physician found that the patient was suffering from sleeping-sickness. What was the way of invasion?

A. *As a result of bug's bites
B. As a result of mosquito's bites
C. C.With contaminated fruits and vegetables
D. Through dirty hands
E. After contact with a sick dogs

230. While examining a blood smear taken form a patient and stained by Romanovsky's method a doctor revealed some protozoa and diagnosed the patient with Chagas disease. What protozoan is the causative agent of this disease?

A. *_Trypanosoma cruzi_
B. _Toxoplasma gondii_
C. _Leishmania donovani_
D. _Leishmania tropica_
E. _Trypanosoma brucei_

231. A patient has symptoms of inflammation of urogenital tracts. Examination of a vaginal smear revealed big monocellular, pear-shaped organisms with the pointed spike at the posterior end of body, big nucleus and undulating membrane. What protozoa were found in the smear?

A. *_Trichomonas vaginalis_
B. _Trichomonas hominis_
C. _Trichomonas buccalis_
D. _Trypanosoma gambiense_
E. _Lamblia intestinalis_

232. Microscopical examination of discharges from the gums of a patient ill with paradontosis revealed some protozoan pear-shaped organisms 6-13 micrometer long. The parasite has one nucleus and undulating membrane, there are four flagella at the front of its body. What protozoan were found?

A. *Trichomonads
B. Leishmania

C. Amoebae
D. Balantidia
E. Lamblia

233. A gynaecologist was examining a patient and revealed symptoms of genital tract inflammation. A smear from vagina contains pyriform protozoa with a spine, flagella at their front; there is also an undulating membrane. What disease can be suspected?

A. *Urogenital trichomoniasis
B. Lambliasis
C. Intestinal trichomoniasis
D. Toxoplasmosis
E. Balantidiasis

234. A female patient has symptoms of inflammation of urogenital tracts. A smear from the vaginal mucous membrane contained big unicellular pyriform organisms with a sharp spike on the back end of their bodies; big nucleus and undulating membrane. What protozoa were revealed in the smear?

A. *_Trichomonas vaginalis_
B. _Trichomonas hominis_
C. _Trichomonas buccalis_
D. _Trypanosoma gambiense_
E. _Lamblia intestinalis_

235. A journalist's body temperature has sharply increased in the morning three weeks after his mission in India, it was accompanied with shivering and bad headache. A few hours later the temperature decreased. The attacks began to repeat in a day. He was diagnosed with tropical malaria. What stage of development of Plasmodium is infective for anopheles-female?

A. *Gametocytes
B. Shizontes
C. Merozoites
D. Microgamete
E. Sporozoites

236. A patient has been brought to the hospital with the complaints of headache, pain in left hypochondrium. He has been ill for 1,5 weeks. The sudden illness began with the increase of body temperature up to 39, 9°C. In 3 hours the temperature decreased and hydropoiesis began. The attacks repeat rhythmically in 48 hours. The patient had visited one an African country. The doctors have suspected malaria. What method of laboratory diagnostics is necessary to use?

A. *Blood examination
B. Immunological tests
C. Stool examination
D. Examination of vaginal and urethral discharge
E. Urine examination

237. A patient who has recently come from an endemic area presents with elevated body temperature, headache, chills, malaise, that is with the symptoms which are typical for a common cold. What laboratory tests are necessary to confirm or to refute the diagnosis of malaria?

A. *Microscopy of blood smears
B. Study of lymph node punctate
C. Urinalysis
D. Study of cerebrospinal fluid
E. Microscopy of bone marrow punctate

238. Two weeks after hemotransfusion a patient developed fever. What protozoal disease can be suspected?

A. *Malaria
B. Toxoplasmosis
C. Leishmaniasis
D. Amebiasis
E. Trypanosomiasis

239. A lymph node punctate of a patient with suspected protozoal disease was examined. Examination of the stained specimen (Romanovsky's stain) revealed some crescent bodies with pointed end, blue cytoplasm and red nucleus. What protozoan were revealed in the smears?

A. *Toxoplasms
B. Malarial plasmodiums
C. Dermotropic leishmania
D. Viscerotropic leishmania
E. Trypanosomes

240. A puncture sample has been taken from the lymph node of a patient with preliminary diagnosis of protozoan disease. The preparation was processed with Giemsa staining and the following detected were: crescent-shaped bodies with pointed tips, blue cytoplasm and red nuclei. What protozoa have been detected in the preparation?

A. *Toxoplasma
B. Trypanosome
C. Viscerotropic Leishmania
D. Plasmodium malariae
E. Dermatotropic Leishmania

241. A woman delivered a dead child with multiple developmental defects. What protozoan disease might have caused the intrauterine death?

A. *Toxoplasmosis
B. Leishmaniasis
C. Malaria
D. Amebiasis
E. Lambliasis

242. A man is ill with a protozoan disease characterized by cerebral affection and loss of sight. Blood analysis revealed halfmoonshaped unicellular organisms with pointed ends. This disease is caused by:

A. *Toxoplasma
B. Leishmania
C. Lamblia
D. Amoeba
E. Trichomonad

243. Examination of a man revealed a protozoan disease that affected brain and caused vision loss. Blood analysis revealed unicellular half-moon-shaped organisms with pointed end. The causative agent of this disease is:

A. *Toxoplasma
B. Leishmania
C. Lamblia

D. Amoeba
E. Trichmonad

244. A married couple applied to the genetic consultation in order to consult about their child with multiple abnormalities (microcephaly, idiocy etc). The woman has had an illnesses during her pregnancy but she didn't take any teratogens or mutagens. The parents' and the child's karyotype is normal. Anamnesis study revealed that the family kept a cat. What gravidic disease caused the child's abnormalities?

A. *Toxoplasmosis
B. Leishmaniasis
C. Dysentery
D. Balantidiasis
E. Trichomoniasis

245. Slime, blood and protozoa 30-200 microns of length have been revealed in a man's feces. The body is covered with cilias and has correct oval form with a little bit narrowed forward and wide round shaped back end. On the forward end a mouth is visible. In cytoplasm there are two nucleuses and two short vacuoles. For whom are the described attributes typical?

A. *Balantidium
B. Lamblia
C. Dysenteric amoeba
D. Trichomonas
E. Intestinal amoeba

246. A patient working at a pig farm complains about paroxysmal abdominal pain, liquid feces with admixtures of mucus and blood, headache, weakness, fever. Examination of large intestine revealed ulcers from 1 mm up to several cm large. Feces contained oval unicellular organisms with cilia. What disease should be suspected?

A. *Balantidiasis
B. Amebiasis
C. Toxoplasmosis
D. Lambliasis
E. Trichomoniasis

247. A male patient has fever and enanthesis. As a result of the examination involving serological tests he has been diagnosed with *Fasciola hepatica*. It was found out that the patient had been infected through raw river water. Which stage of *Fasciola* life cycle is invasive for humans?

A. *Adolescaria
B. Metacercaria
C. Ovum
D. Miracidium
E. Cysticercus

248. A patient complains of pain in the area of his liver. Duodenal intubation revealed yellowish, oval, narrowed at the poles eggs with an operculum at the end. Size of these eggs is the smallest among all helminth eggs. What is the most probable diagnosis?

A. *Opisthorchosis
B. Teniasis
C. Beef tapeworm infection
D. Echinococcosis
E. Diphyllobothriasis

249. Coprological examination of a patient's feces revealed small operculate eggs. It is known from the anamnesis that the patient often consumes fish. What fluke parasitizes in the patient's organism?

A. *Cat liver fluke
B. Blood fluke
C. Lung fluke
D. Liver fluke
E. Lancet fluke

250. A patient has been preliminarily diagnosed with paragonimiasis. This disease is caused by lung flukes. The causative agent entered into the patient's body through:

A. *Eating half-cooked lobsters and crabs
B. Eating unwashed vegetables
C. Contact with an infected cat
D. Eating half-cooked or dried fish
E. Drinking raw water from open reservoirs

251. A patient consulted an urologist about pain during urination. Analysis of his urine taken in the daytime revealed eggs with a characteristic sharp point. It is known from the anamnesis that the patient has recently returned from Australia. What is the most likely diagnosis?

A. *Urogenital schistosomiasis
B. Intestinal schistosomiasis
C. Japanese schistosomiasis
D. Opisthorchiasis
E. Dicroceliasis

252. A man visited Lebanon. Soon after return he felt pain and heaviness in the perineum and suprapubic region. On examination he was diagnosed with urogenital schistosomiasis. In what way could he become infected?

A. *By swimming in contaminated waters
B. By eating unwashed fruit and vegetables
C. By eating insufficiently salted fish
D. By eating undercooked meat of cattle
E. By eating undercooked meat of crayfish and crabs

253. A 26-year-old female consulted a doctor about having stool with white flat moving organisms resembling noodles. Laboratory analysis revealed proglottids with the following characteristics: long, narrow, with a longitudinal channel of the uterus with 17-35 lateral branches on each side. What kind of intestinal parasite was found?

A. *Taeniarhynchus saginatus*
B. *Taenia solium*
C. *Hymenolepis nana*
D. *Diphyllobothrium latum*
E. *Echinococcus granulosus*

254. Dehelmintization of a patient revealed some long fragments of a helminth with segmented structure. Mature segments were rectangular, 30x12 mm large, closed-type matrix was in form of a stem with 17-35 lateral branches. Specify this helminth:

A. *Hookless tapeworm
B. Alveococcus
C. Echinococcus

D. Dwarf tapeworm
E. Armed tapeworm

255. In case of some helminthiases, an affected person can detect helminth himself because mature segments of the causative agent are able to crawl out of
the anus. This is typical for the following disease:
A. *Beef tapeworm infection
B. Pork tapeworm infection
C. Hymenolepiasis
D. Bothriocephaliasis
E. Echinococcosis

256. Father bought some pork at the market. What disease may the members of his family catch supposed this meat didn't stand veterenary control?
A. *Teniosis
B. Beef tapeworm infection
C. Hymenolepiasis
D. Echinococcosis
E. Fasciola hepatica

257. Father bought some pork at the market.What disease may catch members of his family provided that this meat didn't pass the veterinary control?
A. *Pork tapeworm infection
B. Beef tapeworm infection
C. Hymenolepiasis
D. Echinococcosis
E. Liver fluke infection

258. As a result of dehelmintization a man helminth came out with feces. It had segmented body, small head with four suckers and hooks. Name the type of helminth:
A. *Armed tapeworm
B. Unarmed tapeworm
C. Dwarf tapeworm
D. Echinococcus
E. Broad tapeworm

259. A female patient consulted a physician about digestive disorder, extended abdominal pain. Examination revealed drastic decrease in hemoglobin concentration. It is known from the anamnesis that while living in the Far East the patient used to eat freshly-salted caviar. Some relatives living with her had the similar condition. What is the most likely diagnosis?
A. *Diphyllobothriasis
B. Echinococcosis
C. Teniasis
D. Trichiniasis
E. Ascaridiasis

260. A concerned mother addressed a pediatrician with complaints of her child's frequent stomachaches, loss of appetite, nausea, constipation. Stool analysis detected rounded eggs with double capsules and oncospheres localized in their centers. The child was diagnosed with hymenolepiasis. What route of transmission lead to progressively intense infection?

A. *Autoinvasion
B. Sexual
C. Immediate contagion
D. Alimentary
E. Contamination

261. A shepherd who has tended sheep together with dogs presents with chest pain and blood spitting. X-ray examination revealed a roundish neoplasm in his lungs. Immunological reactions confirmed the provisional diagnosis. Specify the helminth that might have caused this disease:
A. *Echinococcus
B. Dwarf tapeworm
C. Broad tapeworm
D. Common liver fluke
E. Armed tapeworm

262. A shepherd who has tended sheep together with dogs consulted a doctor about pain in his right subcostal area, nausea, vomiting. Roentgenoscopy revealed a tumour-like formation. What kind of helminthiasis might be suspected?
A. *Echinococcosis
B. Ascaridiasis
C. Enterobiasis
D. Taeniarhynchosis
E. Taeniasis

263. A scientific expedition in India was guided by a native who had never parted with his dog. What invasion diseases can be transmitted to the participants of the expedition as a result of contacts with this dog if it is known to be the source of invasion?
A. *Echinococcosis
B. Teniasis
C. Paragonimiasis
D. Dicroceliasis
E. Fascioliasis

264. During an abdominal surgery a 46-year-old patient working at a meat processing plant was found to have a very dense roundish formation 11 cm in diameter which was localized in the right lobe of the liver. The cross-section of the formation has a porous appearance due to a large number of small vesicles with layers of dense connective tissue. The surrounding tissues have visible necrotic areas and proliferation of granulation tissue including many eosinophils and foreign body giant cells. What disease can be thought of in this case?
A. *Echinococcus multilocularis
B. Malaria
C. Hepatitis
D. Hepatic rhabdomyosarcoma
E. Calculous cholecystitis

265. Microscopic examination of the sputum of a patient with pneumonia occasionally revealed some larvae. Eosinophiles were detected on blood examination. What helminthiasis can be diagnosed?
A. *Ascariasis
B. Enterobiosis

C. Trichocephaliasis
D. Paragonimiasis
E. Opisthorchosis

266. Helminthological examination of patient's feces revealed oval brown eggs with tuberous external membrane. Name the type of helminth:
A. *Ascarid
B. Pinworm
C. Whipworm
D. Dwarf tapeworm
E. Broad tapeworm

267. A patient consulted a physician about chest pain, cough, fever. Roentgenography of lungs revealed eosinophilic infiltrates which were found to contain the larvae. What kind of helminthiasis are these presentations typical for?
A. *Ascariasis
B. Echinococcosis
C. Fascioliasis
D. Cysticercosis
E. Trichinosis

268. A 10-year-old child complains of weakness, nausea, irritability. Helminthes of white color and 5-10 mm long have been found on the underwear. On microscopy of the scrape from the perianal folds achromic ova of the unsymmetrical form have been revealed. Which helminth is in the organism of the child?
A. *Enterobins vermicularis*
B. *Ascaris lumbricoides*
C. *Ancylostoma duodenalis*
D. Trichina
E. *Trichuris*

269. During regular examination of schoolchildren it was revealed that a 10 year old girl had asymmetric oval eggs with a larva in the scrape from her perianal folds. What diagnosis should be made?
A. *Enterobiasis
B. Ascariasis
C. Amebiasis
D. Trichocephalosis
E. Ankylostomiasis

270. Microscopy of perianal folds scrape has revealed colourless eggs in the shape of asymmetrical ovals sized 50x23 micrometers. Name the kind of helminth.
A. *Pin worm (Enterobius)
B. Ascarid (Ascaris lumbricoides)
C. Whipworm (Trichuris)
D. Hookworm (Ancylostoma duodenale)
E. Dwarf tapeworm (Hymenolepis nana)

271. In the perianal folds of a 5-year-old girl her mother has found some white "worms" that caused itch and anxiety in the child. The "worms" were sent to the laboratory. During examination the

physician saw white filiform helminths 0,5-1 cm long, with pointed ends, some helminthes had twisted ends. What is the most likely diagnosis?

A. *Enterobiasis
B. Diphyllobothriasis
C. Teniasis
D. Ascaridiasis
E. Opisthorchiasis

272. In the perianal folds of a 5-year-old girl her mother has found white worms causing itch and anxiety, and took them to the laboratory. The study revealed white filament-like helminths 0,5-1 cm long, with pointed, sometimes twisted, ends. What diagnosis can be made?

A. *Enterobiasis
B. Diphyllobothriasis
C. Teniasis
D. Ascariasis
E. Opisthorchiasis

273. A mother consulted a pediatrician about small white filiform worms about 1 cm long with pointed ends that she found on her child's underwear. According to the mother, the child sleeps badly, grits his teeth, scrathes the area of anus. Specify the helminth type:

A. *Pinworm
B. Ascarid
C. Trichuris
D. Armed tapeworm
E. Hookworm

274. In the vermiform appendix there was found a white helminth, 40 mm long with thin filiform forward end. Ecscrements contained oval eggs with plugs at the poles. Determine the kind of helminth:

A. *Whipworm
B. Seatworm
C. Ascarid
D. Hookworm
E. Threadworm

275. A 15 year old girl was delivered to the hospital with inflammation of vermiform appendix. Blood analysis revealed signs of anaemia. Her feces contained lemon-shaped helminthic eggs (50x30 micrometer) with "plugs"on the poles. What type of helminth is it?

A. *Trichuris
B. Pinworm
C. Hookworm
D. Echinococcus
E. *Hymenolepis nana*

276. A miner consulted a physician about the appearance of body rash followed by a loss of appetite, bloating, duodenal pain, frequent bowel movements, dizziness. Ovoscopic probes of feces and duodenal contents revealed some eggs covered with a transparent membrane through which 4-8 germinal cells could be seen. What disease is likely to have occurred in the patient?

A. *Ancylostomiasis
B. Strongyloidiasis

C. Trichocephaliasis
D. Hymenolepiasis
E. Enterobiasis

277. Two days after consumption of smoked pork a patient got face and eyelid edemata, gastrointestinal disturbances, abrupt temperature rise, muscle pain. Blood analysis showed full-blown eosinophilia. What helminth could the patient be infected with?

A. *Trichina
B. Pinworm
C. Ascarid
D. Whipworm
E. Hookworm

278. In one of Polessye regions there was an outbreak of helminthiasis manifested by cramps and facial edmata. The developed preventive measures in particular included ban for eating infested pork even after heat processing. What helminthiasis was the case?

A. *Trichinosis
B. Taeniarhynchosis
C. Teniasis
D. Echinococcosis
E. Alveococcosis

279. A hospital in Donetsk region admitted the patients - members of the same family - with eyelid and face edemata, fever, eosinophilia, headache, muscle pain. The disease developed on the 7-10 day after eating pork sausage sent by the patients' relatives from Khmelnitsky region. What is your provisional diagnosis?

A. *Trichinosis
B. Echinococcosis
C. Teniasis
D. Cysticercosis
E. Taeniarhynchosis

280. A man has worked in an African country for 3 years. A month after his return to Ukraine he consulted an ophthalmologist and complained about eye ache, eyelid edema, lacrimation and temporary visual impairment. Underneath the eye conjunctiva the doctor revealed helminths 30-50 mm long with elongated filiform body. What diagnosis might be suspected?

A. *Filariasis
B. Diphyllobothriasis
C. Ascaridiasis
D. Enterobiasis
E. Trichocephaliasis

281. A boy found a spider with the following morphological characteristics: it is 2 cm long, has roundish black abdomen with two rows of red spots on its dorsal side; four pairs of jointed limbs are covered with small black hairs. What arthropod is it?

A. *Karakurt spider
B. Scorpion
C. Solpuga
D. Mite
E. Tarantula

282. While on holiday in the countryside a boy found a spider with the following morphological peculiarities: body length of 2 cm, round black abdomen with two rows of red dots on its dorsal surface, four pairs of segmented extremities covered with tiny black hairs. Identify this arthropod:

A. *Karakurt spider
B. Scorpion
C. Solifugae
D. Mite
E. Tarantula

283. While on holiday in the countryside a boy found a spider with the following morphological peculiarities: body length at the rate of 2 cm, round black abdomen with two rows of red dots on its dorsal surface, four pairs of segmented extremities covered with tiny black hairs. Identify this arthropod:

A. *Steppe spider (Latrodectus tredecimguttatus)
B. Scorpion
C. Solifugae
D. Mite
E. Tarantula

284. A patient complains of skin itch, especially between fingers, in the inguinal creases, on the lower abdomen. Examination of these regions revealed there some small vesicles. Laboratory diagnostics allowed to establish that this condition had been caused by a representative of Arthropoda. Specify the disease caused by this arthropod:

A. *Scabies
B. Demodicosis
C. Myiasis
D. Pediculosis
E. Dermatotropic leishmaniasis

285. A patient consulted a doctor about the intensive skin itch, especially between fingers, in axillary creases, in the inferior part of belly. During the skin examination there were found twisting whitish tracts with speckles at the end of them. What disease are these clinical presentations typical for?

A. *Scabies
B. Pediculosis
C. Dermatotropic leishmaniosis
D. Demodicosis
E. Miasis

286. A patient has acne on his face. Microspcopic examination of scrapings from the affected areas revealed living porrect vermiform arthropoda 0,2-0,5 mm large with four pairs of short extremities in the front part of their bodies. What is the laboratory diagnosis?

A. *Demodicosis
B. Scabies
C. Myiasis
D. Pediculosis
E. Phthiriasis

287. A patient presents with acne and inflammatory alterations of facial skin. Microscopial investigation of lesion foci has revealed live arthropods sized 0,2-0,5 mm. They have prolate

vermiform form and four pairs of thin short limbs located in the middle part of the body. The revealed arthropods cause:

A. *Demodicosis
B. Scabies
C. Pediculosis
D. Phthiriasis
E. Dermamyiasis

288. A young man has the following symptoms: purulent acne on the face; wrinkled, hyperemic skin; eyebrows and eyelashes are falling out. A doctor has made a diagnosis of demodicosis (demodectic mange). What preventive measures can be recommended?

A. *Maintaining personal hygiene
B. Repellents
C. Donor blood check-up
D. Protection from mite bites
E. Processing premises with insecticedes

289. A patient with suspicion on epidemic typhus was admitted to the hospital. Some arachnids and insects have been found in his flat. Which of them may be a carrier of the pathogen of epidemic typhus?

A. *Lice
B. Spiders
C. Bed-bugs
D. Cockroaches
E. Houseflies

290. A sick man with high temperature and a lot of tiny wounds on the body has been admitted to the hospital. Lice have been found in the folds of his clothing. What disease can be suspected?

A. *Epidemic typhus
B. Tularemia
C. Scabies
D. Malaria
E. Plague

291. Mother of a boy who had recently returned from a summer camp found some small whitish insects up to 3 mm long on the child's clothing. Specify the parasite:

A. *Pediculus humanus humanus*
B. *Phtirius pubis*
C. *Pulex irritans*
D. *Cimex lectularius*
E. *Blattella germanica*

292. A child complains of having an itch in occipital and temporal region of head. After examination his mother found superficial ulcers as a result of scratching and white nits in the hair. Name the pathogenic organism:

A. *Head louse
B. Body louse
C. Human flea
D. Screwworm fly
E. Pubic louse

293. After a thorough examination the patient who had returned from Central Asia to Ukraine was diagnosed with spring-summer encephalitis. Its pathogen might have entered the body through the bite of the following arthropod:

A. *Dog-louse
B. Taiga tick
C. Argasid tick (Ornithodorus papillipes)
D. Itch mite
E. Mosquito

294. Medical examination of some youths revealed in their axillary regions grey insects 1,0-1,5 mm large, with short broad body covered with hair. What insects were revealed?

A. *Pubic louse
B. Flea
C. Head louse
D. Bed bug
E. Itch mite

295. In the armpits of a patient the small (1-1.5 mm), dorsoventrally flattened, wingless, blood-sucking insects were found. Their larvae developed in the armpits too. What disease is caused by these insects?

A. *Phthiriasis
B. Sleeping sickness
C. Chagas' disease
D. Plague
E. Relapsing fever

296. According to the data of WHO, for about 250 mln of Earth population fall il with malaria. This disease is mostly spread in tropical and subtropical regions. Range of its spread falls into the areal of the following mosquitoes:

A. *_Anopheles_*
B. _Culex_
C. _Aedes_
D. _Mansonia_
E. _Culiseta_

297. A doctor revealed tissues injury on patient's scalp with localized suppurations and diagnosed his disease as myiasis. This infestation is caused by larvae of the following insect:

A. *Wohlfahrt fly
B. Kissing bug
C. Stable fly (Stomoxys calcitrans)
D. Malarial mosquito
E. Mosquito

298. A group of students has representatives of different races. One of the students has straight black hair and overhanging skin fold of superior eyelid - epicanthus. What race does this student most probably represent?

A. *Mongoloid
B. Negroid
C. Europeoid
D. Australoid
E. Ethiopian

299. Representatives of a certain human population have height variability, elongated torso, increased length of limbs, decreased size and volume of rib cage dimensions, decreased volume of muscle mass, increased perspiration, decreased indices of base metabolism and fat synthesis. What climate do these adaptive evolutionary changes correspond to?

A. *Tropical
B. Temperate
C. Arctic
D. Mountain
E. Intermediate

300. Indigenous population of Pamir has the following characteristic features: high rate of base metabolism, elongated tubular bones, wide rib cage, high blood oxygen capacity due to increased number of erythrocytes, high hemoglobin level. What type of ecological adaptation is it?

A. *Mountain
B. Subtropical
C. Arctic
D. Tropical
E. Temperate