1. Woman applied to the medico-genetic consulting centre for information about the risk of haemophilia in her son. Her husband has been suffering from this disease since birth. Woman and her parents are healthy (dont have haemophilia). Is the boy likely to have the disease in this family?

a. 50% of the boys will be ill
b. All boys will be ill
c. All boys will be healthy
d. 25% of the boys will be ill
e. 75% of the boys will be ill

2. 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. Autosomal recessive
b. Y-linked
c. Recessive, X-linked
d. Dominant, X-linked
e. Asutosomal dominant

3. Electrocardiogram of a 45-year-old man showed absence of P-wave in all the leads. What part of the conducting system is blocked?

a. Purkinje
b. Sinu-atrial node
c. Common branch of the bundle of His
d. Atrioventricular node
e. Branches of the bundle of His

4. When a patient with traumatic impairment of the brain was examined, it was discovered that he had stopped to distinguish displacement of an object on the skin. What part of the brain was damaged?

a. Occipital zone of the cortex
b. Frontal central gurus
c. Frontal zone
d. Posterior central gurus
e. Parietal zone of the cortex

5. Different functional groups can be presented in the structure of L-amino acid:

a. -CH3
b. -NH2
c. -SH
d. -CONH2
e. -OH

6. The conjugated protein necessarily contains special component as a non-protein part. Choose the substance that cant carry out this function:

a. AMP
b. Glucose
c. PP
d. Thiamine pyrophosphate
e. HNO3

7. 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. Metaphase
b. Prophase
c. Interfase
d. Anaphase
e. Telophase

8. The patient with diabetes mellitus has been delivered in hospital in the state of unconsciousness. Arterial pressure is low. The patient has acidosis. Point substances, which accumulation in the blood results in these manifestations:

a. Amino acids
b. High fatty acids
c. Cholesterol esters
d. Ketone bodies
e. Monosaccharides

9. A 58-year-old female has undergone surgery for necrotic bowel. Despite having been treated with antibiotics, on postoperative day 5, she develops symptoms (fever, hypotension, tachycardia, declining urine output, and confusion) consistent with septic shock. What hemodynamic support would be helpful?

a. Fluids and Dobutamine infusion
b. Antibiotic administration
c. Atropine administration
d. Fluid administration
e. Dobutamine infusion

10. 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. Replication
b. Processing
c. Reparation
d. Initiation
e. Mutation

11. 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. Replication
b. Transcription
c. Translation
d. Aminoacid activation
e. Termination

12. Patient 54 year-old, 5th day after surgical operation. Blood count: Erythrocytes 3,61012/l, Hemoglobin 95 g/l, Erythrocyte

a. Chronic posthemorragic anemia
b. Acute posthemorragic anemia
c. Anemia from iron deficiency
d. Acquired hemolytic anemia
e. Hypoplastic anemia

13. The patient with pneumonia was treated with antibiotics for a long period. After treatment patient complains of frequent and watery stool, abdomenal pain. What is the reason of intestine function disorder?

a. Antibiotics toxic influence on the GIT
b. Bacteria toxins influence
c. Hereditary enzyme defect
d. Intestinal disbacteriosis development
e. Autoimmune reaction development

14. A 16 year-old patient got numerous traumas in automobile accident. Now the patient is haning a shock. AP - 80/60 mm Hg. daily urine volume 60-80 ml. What pathogenic mechanism leads to kidneys function violation?

a. Trauma of the urinary bladder

b. Decreased hydrostatic pressure in glomerular capillaries
c. Increased pressure in Bowman
d. Increased osmotic pressure in glomerular capillaries
e. Increased vasopressin blood concentration

15. A 46 year-old patient has complained of headache, fatigue, thirst, pains in the spine and joints for the last 2 years. Clinically observed disproportional enlargement of hands, feet, nose, superciliary arches. He notes that he needed to buy bigger shoes three times. What is the main reason of such disproportional enlargement of different parts of the body?
a. Joints chronic inflammation development
b. Cartilaginous tissue proliferation under growth hormone influence
c. Joints dystrophy development
d. Increased sensitivity of the tissues to growth hormone
e. Increased sensitivity of the tissues to insulin

16. A 55-year-old patient with continuing ventricular arrhythmias was admitted to the hospital. The patient is taking timolol drops for glaucoma, daily insulin injections for diabetes mellitus, and an ACE inhibitor for hypertension. You have decided to use phenytoin instead of procainamide. What is the reason?
a. The local anesthetic effect of procainamide would potentiate diabetes
b. The local anesthetic effect of procainamide would aggravate the hypertension
c. The cholinergic effects of procainamide would aggravate the diabetes
d. The anticholinergic effect of procainamide would aggravate glaucoma
e. The hypertensive effects of procainamide would aggravate the hypertension

17. A 25-year-old woman with red and itchy eczematoid dermatitis visits your office. She had a dental procedure one day earlier with administration of a local anesthetic. There were no other findings, although she indicated that she had a history of allergic reactions. Which of the following drugs is most likely involved?
a. Bupivacaine
b. Etidocaine
c. Cocaine
d. Lidocaine
e. Procaine

18. The CNS stimulation produced by methylxanthines, such as caffeine, is most likely due to the antagonism of one of the following receptors:
a. Glycine receptors
b. GABA receptors
c. Cholinergic muscarinic receptors
d. Adenosine receptors
e. Glutamate receptors

19. 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. Lamblia
b. Dysenteric amoeba
c. Balantidium
d. Intestinal amoeba
e. Trichomonas

20. According to the data of WHO, for about 250 mln of Earth population fall ill 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. Mansonia
b. Culiseta
c. Culex

d. Aedes
e. Anopheles

21. Labeled aminoacids alanine and tryptophane were introducted to a mouse in order to study localization of protein biosynthesis in its cells. Around what organellas will the accumulation of labeled aminoacids be observed?
a. Agranular endoplasmic reticulum
b. Lysosomes
c. Golgi apparatus
d. Ribosomes
e. Cell centre

22. Highly injured person gradually died. Please choose the indicator of biological death:
a. Autolysis and decay in the cells
b. Loss of consciousness
c. Absence of movements
d. Absence of palpitation
e. Disarray of chemical processes

23. In some regions of South Africa there is a spread sickle-shaped cell anemia, in which erythrocytes have shape of a sickle as a result of substitution of glutamin by valine in the hemoglobin molecule. What is the cause of this disease?
a. Gene mutation
b. Crossingover
c. Transduction
d. Genomic mutations
e. Disturbance of mechanisms of genetic information realization

24. 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. Echinococcosis
b. Trichiniasis
c. Ascaridiasis
d. Diphyllobothriasis
e. Teniasis

25. On autopsy of a still-born infant it is revealed heart development abnormalities: ventricles are not separated, originates from the right part single arterial trunk. For what class of vertebrate is such heart construction characteristic?
a. Reptiles
b. Fishes
c. Amphibian
d. Mammals
e. Birds

26. If strong oxidizers get into the bloodstream, a methemoglobin is formed. It is a compound, where iron (II) becomes iron (III). What has to be done to save the patient?
a. He has to be calmed down and put to bed
b. Patient has to be exposed to the fresh air
c. Interchangeable hemotransfusion has to be done
d. He has to be given pure oxygen
e. Respiratory centers have to be stimulated

27. A 10-year-old child complains of weakness, nausea, irritability. Helminthes of white color and 5-10 mm long were found on the underwear. On microscopy of the scrape from the perianal folds achromic ova of the unsymmetrical form were revealed. Indicate what helminth is parasiting on the child?

a. Trichina
b. Trichuris
c. Ascaris lumbricoides
d. Ancylostoma duodenalis
e. Enterobins vermicularis

28. Parents with ill child came to the infectionist. They worked in one of the Asian countries for a long time. Child has eathy colored skin, loss of appetite, laxity, enlarged liver, spleen, peripheral glands. What protozoan illness can this child have?
a. Balantidiasis
b. Toxoplasmosis
c. Lambliasis
d. Visceral leishmaniasis
e. Amebiasis

29. White-haired, with blue eyes girl was born in healthy parents. Irritability, anxiety, troubled sleep and feeding developed in the first months of life of the infant. What method of genetic investigation should be used for the exact diagnosis?
a. Genealogical
b. Population-statistical
c. Cytological
d. Twin
e. Biochemical

30. The calcium canals of cardiomyocytes have been blocked on an isolated rabbits heart. What changes in the hearts activity can happen as a result?
a. Heart stops in systole
b. Heart stops in diastole
c. Decreased heart beat rate
d. Decreased force of the contraction
e. Decreased rate and force of heart beat

31. After the trauma, the patients right n.vagus was damaged. Which violation of the cardiac activity is possible in this case?
a. Block of a conductivity in the atrio-ventricular node
b. Arrhythmia
c. Violation of the automatism of a atrio-ventricular node
d. Violation of a conductivity in the right auricle
e. Violation of the automatism of a Kiss-Fleck node

32. While studing of the family tree with history of hypertrichosis (hyperhirsutism of the ear) this sign was founded only in the men and it was inherited from father to the son. Define the type of hypertrichosis inheritance?
a. Connected with
b. Connected with Y-chromosome
c. Autosomal-dominant
d. Autosomal- recessive
e. Connected with

33. 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 helminths had twisted ends. What is the most likely diagnosis?
a. Diphyllobothriasis
b. Ascaridiasis
c. Opisthorchiasis
d. Enterobiasis
e. Teniasis

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

a. Translocation
b. Replication
c. Deletion
d. Doubling
e. Inversion

35. 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. Duplication
b. Translocation
c. Inversion
d. Deletion
e. Insufficiency

36. A pregnant woman had been having toxicosis with severe repeated vomiting for 24 hours. In the end of the day there appeared tetanic convulsions and fluid loss. What shift of acid-base state caused these changes?

a. Excretory alkalosis
b. Gaseous acidosis
c. Excretory acidosis
d. Metabolic acidosis
e. Gaseous alkalosis

37. Genetic structure of eukaryote is exon-intron-exon. This structure-functional organization of gene caused transcription peculiarities. What will be pro-i-RNA according to the schema?

a. Exon-exon-intron
b. Intron-exon
c. Exon-intron
d. Exon-intron-exon
e. Exon-exon

38. 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. 46, XY
b. 47, XXX
c. 45, XO
d. 46, XX
e. 47, XXY

39. 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 translation
b. Operon repression
c. Reverse transcription
d. Operon depression
e. Convariant replication

40. 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. Identical
c. Conservative

d. Dispersed
e. Analogous

41. A teenager was irradiated with high radiation dose that resulted in serious damages of lymphoid system, lysis of many lymphocytes. Restoration of normal hemogram is possible due to the functioning of the following gland:

a. Thymus
b. Liver
c. Adrenal
d. Pancreas
e. Thyroid

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

a. Virus informational RNA on the matrix of DNA
b. Viral DNA on DNA matrix
c. mRNA on the matrix of virus protein
d. DNA on the matrix of virus mRNA
e. DNA on virus ribosomal RNA

43. A patient after pathological process has a thickened alveolar membrane. The direct consequence of the process will be the reduction of:

a. Oxygen capacity of blood
b. Alveolar lung ventilation
c. Reserve expiratiory capacity
d. Diffuse lung capacity
e. Minute respiratory capacity

44. 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 Pataus syndrome. What is the most probable cause of this pathology?

a. Partial monosomy
b. Trisomy of the 13th chromosome
c. Trisomy of the 21st chromosome
d. Trisomy of the 18th chromosome
e. Nondisjunction of sex chromosomes

45. 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 hominis
b. Trypanosoma gambiense
c. Lamblia intestinalis
d. Trichomonas vaginalis
e. Trichomonas buccalis

46. 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. Trichocephalosis
b. Ankylostomiasis
c. Ascariasis
d. Amebiasis
e. Enterobiasis

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

a. Malaria

b. Leishmaniasis
c. Toxoplasmosis
d. Amebiasis
e. Lambliasis

48. Tuberculosis can be treated by means of combined chemotherapy that includes substances with different mechanisms of action.What antituberculous medication inhibits transcription of RNA into DNA in mycobacteria?
a. Ethionamide
b. Para-aminosalicylic acid
c. Isoniazid
d. Streptomycin
e. Rifampicin

49. The body temperature of a patient with an infectious disease rises once in two days up to 39,5-40,5 degrees and stays so for about an hour and then drops to the initial level. What type of fever is it?
a. Continued
b. Intermitting
c. Hectic
d. Recurrent
e. Septic

50. Larvae were detected occasionally on the microscopic examination of the sputum of the patient with pneumonia. Eosinophiles were detected on the blood examination. What helminthiasis can be diagnosed?
a. Paragonimiasis
b. Opistorchis
c. Enterobiosis
d. Trichocephaliasis
e. Ascariasis

51. 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. Repression
b. Transcription
c. Replication
d. Translation
e. Processing

52. While studying maximally spiralized chromosomes of human karyotype the process of cell division was stopped in the following phase:
a. Anaphase
b. Telophase
c. Prophase
d. Interphase
e. Metaphase

53. 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. Mutational
b. Genocopy
c. Phenocopy
d. Combinative
e. Phenotypic

54. 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. Teniasis
b. Echinococcosis
c. Diphyllobothriasis
d. Opisthorchosis
e. Beef tapeworm infection

55. 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. Opisthorchiasis
b. Dicroceliasis
c. Intestinal schistosomiasis
d. Japanese schistosomiasis
e. Urogenital schistosomiasis

56. A child complains of general weakness, loss of appetite, a troubled sleep, itching in the perianal area. The provisional diagnosis is enterobiasis. In order to specify this diagnosis it is necessary to perform:

a. Roentgenoscopy
b. Immune diagnostics
c. Duodenal contents analysis
d. Scraping from perianal folds
e. Biopsy of muscle tissue

57. The cell of the laboratory animal was overdosed with Roentgen rays. As a result albuminous fragments formed in the cytoplasm. What cell organoid will take part at their utilization?

a. Endoplasmic reticulum
b. Cells centre
c. Golgi complex
d. Ribosome
e. Lysosomes

58. In course of practical training students studied a stained blood smear of a mouse with bacteria phagocyted by leukocytes. What cell organella completes digestion of these bacteria?

a. Lisosomes
b. Granular endoplasmic reticulum
c. Ribosomes
d. Golgi apparatus
e. Mytochondrions

59. *a.

b.
c.
d.
e.

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

a. Hookworm
b. Trichina
c. Ascarid
d. Pinworm
e. Whipworm

61. A lymph node punctate of a patient with suspected protozoal disease was examined. Examination

of the stained specimen (Romanovskys stain) revealed some crescent bodies with pointed end, blue cytoplasm and red nucleus. What protozoan were revealed in the smears?

a. Toxoplasms
b. Dermotropic leishmania
c. Trypanosomes
d. Viscerotropic leishmania
e. Malarial plasmodiums

62. The guide of the scientific expedition in India was native who always was with his dog. What invasive diseases can be transmitted by the dog if it is the source of invasion?

a. Teniasis
b. Dicroceliasis
c. Fascioliasis
d. Echinococcosis
e. Paragonimiasis

63. 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. Myiasis
c. Phthiriasis
d. Pediculosis
e. Scabies

64. 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. Wilson disease
b. Galactosemia
c. Gout
d. Phenylketonuria
e. Tay-Sachs disease

65. A 39-year-old woman has madescence in the region of mammilla, a small ulcer with inflammatory hyperemia and cutaneous edema. Histologic examination of tissue sampling from this area revealed in the malpighian layer of thickened epidermis atypical cells with light and optically empty cytoplasm, with no intracellular bridges. Such cells were also found in the orifice of big mammal gland ducts. What is the most probable diagnosis?

a. Pagets disease
b. Basal cell carcinoma
c. Melanocarcinoma
d. Epidermoid cancer
e. Intraductal cancer

66. 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. Active transport
b. Endocytosis
c. Exocytosis
d. Facilitated diffusion
e. All answers are false

67. 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. Lambliasis
b. Trichomoniasis

c. Amebiasis
d. Toxoplasmosis
e. Balantidiasis

68. 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. Solpuga
c. Tarantula
d. Mite
e. Scorpion

69. Normal, actively dividing cells of human red bone marrow are analyzed. What number of cells chromosomes is typical for G1 period?
a. 45
b. 23
c. 48
d. 47
e. 46

70. 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. Enterobiasis
b. Trichocephaliasis
c. Diphyllobothriasis
d. Ascaridiasis
e. Filariasis

71. 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. G1
c. M
d. G2
e. Go

72. A 28-year-old female patient consulted a gynecologist about sterility. Examination revealed underdeveloped ovaries and uterus, irregular menstrual cycle. Analysis of the sex chromatin revealed 2 Barr bodies in most somatic cells. What chromosome disease is most likely?
a. Edwards syndrome
b. Klinefelters syndrome
c. Turners syndrome
d. Triple X syndrome
e. Pataus syndrome

73. 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. Duplication
b. Translocation
c. Inversion
d. Deletion
e. Polyploidy

74. A patient in a transplantation centre underwent heart transplantation. The organ was taken from a donor who died in a road accident. Foreign heart can be rejected as a result of development of

transplantation immunity. It is usually prevented by means of:

a. Immunosuppressors
b. Ultrasound
c. X-ray therapy
d. Enzymes
e. Chemotherapy

75. 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. Stem cells
b. T-lymphocytes-killers
c. T-lymphocytes-supressors
d. Plasmoblasts
e. B-lymphocyte

76. 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. Toxoplasmosis
b. Balantidiasis
c. Lambliasis
d. Intestinal trichomoniasis
e. Urogenital trichomoniasis

77. A boy has I (I0I0) blood group and his sister has IV (IAIB) blood group. What blood groups do their parents have?

a. II (IAIA) and III (IBI0)
b. III (IBI0) and IV (IAIB)
c. I (I0I0) and III (IBI0)
d. II (IAI0) and III (IBI0)
e. I (I0I0) and IV (IAIB)

78. 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. Xenotransplantation
b. Allotransplantation
c. Autotransplantation
d. Isotransplantation
e. Heterotransplantation

79. 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 girls state?

a. Teratogenic
b. Malignization
c. Mechanic
d. Carcinogenic
e. Mutagenic

80. Hartnup disease is caused by point mutation of only one gene which results in disturbance of tryptophane absorption in the bowels and its resorption in the renal tubules. It is the reason for disorder of both digestive and urination systems. What genetic phenomenon is observed in this case?

a. Semidominance
b. Pleiotropy
c. Polymery
d. Complementary interaction
e. Codominance

81. Cytogenetic examination of a patient with reproductive dysfunction revealed normal karyotype 46

a. Duplication
b. Monomorphism
c. Inversion
d. Transposition
e. Mosaicism

82. Woman applied to the medico-genetic consulting centre for information about the risk of haemophilia in her son. Her husband has been suffering from this disease since birth. Woman and her parents are healthy (do not have haemophilia). Is the boy likely to have the disease in this family?
a. 50% of the boys will be ill
b. All boys will be ill
c. All boys will be healthy
d. 25% of the boys will be ill
e. 75 % of the boys will be ill

83. 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 fathers disease. What is the type of the disease inheritance?
a. Autosomal recessive
b. Y-linked
c. Recessive, X-linked
d. Dominant, X-linked
e. Asutosomal dominant

84. Electrocardiogram of a 45-year-old man showed absence of P-wave in all the leads. What part of the conducting system is blocked?
a. Sinu-atrial node
b. Common branch of the bundle of His
c. Purkinje’s fibres
d. Branches of the bundle of His
e. Atrioventricular node

85. When a patient with traumatic impairment of the brain was examined, it was discovered that he had stopped to distinguish displacement of an object on the skin. What part of the brain was damaged?
a. Posterior central gurus
b. Parietal zone of the cortex
c. Frontal zone
d. Frontal central gurus
e. Occipital zone of the cortex

86. Different functional groups can be presented in the structure of L-amino acid’s radicals. Identify the group that is able to form ester bond:
a. -CONH2
b. -SH
c. -OH
d. -CH3
e. -NH2

87. The conjugated protein necessarily contains special component as a non-protein part. Choose the substance that can’t carry out this function:
a. ATP
b. AMP
c. Glucose
d. HNO3
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88. 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?

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b. Telophase
c. Interfase
d. Prophase
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89. A 58-year-old female has undergone surgery for necrotic bowel. Despite having been treated with antibiotics, on postoperative day 5, she develops symptoms (fever, hypotension, tachycardia, declining urine output, and confusion) consistent with septic shock. What hemodynamic support would be helpful?

a. Dobutamine infusion
b. Fluid administration
c. Atropine administration
d. Fluids and Dobutamine infusion
e. Antibiotic administration

90. 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. Mutation
b. Replication
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91. 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. Transcription
b. Aminoacid activation
c. Termination
d. Translation
e. Replication

92. Patient 54 year-old, 5th day after surgical operation. Blood count: Erythrocytes 3,6×1012/l, Hemoglobin 95 g/l, Erythrocyte’s hemoglobin content (color index) 0,78; Leukocytes 16×109/l, Platelets 450×109/l Blood picture: anizocytosis, poikilocytosis, reticulocytes- 3,8%. What anemia does this patient have?

a. Acute posthemorragic anemia
b. Anemia from iron deficiency
c. Chronic posthemorragic anemia
d. Hypoplastic anemia
e. Acquired hemolytic anemia

93. The patient with pneumonia was treated with antibiotics for a long period. After treatment patient complains of frequent and watery stool, abdominal pain. What is the reason of intestine function disorder?

a. Hereditary enzyme defect
b. Intestinal disbacteriosis development
c. Autoimmune reaction development
d. Antibiotics toxic influence on the GIT
e. Bacteria toxins influence

94. A 16 year-old patient got numerous traumas in automobile accident. Now the patient is haning a shock. AP - 80/60 mm Hg. daily urine volume 60-80 ml. What pathogenic mechanism leads to kidneys function violation?

a. Increased pressure in Bowman’s capsule

b. Increased osmotic pressure in glomerular capillaries
c. Decreased hydrostatic pressure in glomerular capillaries
d. Increased vasopressin blood concentration
e. Trauma of the urinary bladder

95. A 46 year-old patient has complained of headache, fatigue, thirst, pains in the spine and joints for the last 2 years. Clinically observed disproportional enlargement of hands, feet, nose, superciliary arches. He notes that he needed to buy bigger shoes three times. What is the main reason of such disproportional enlargement of different parts of the body?
a. Cartilaginous tissue proliferation under growth hormone influence
b. Joints dystrophy development
c. Joints chronic inflammation development
d. Increased sensitivity of the tissues to insulin
e. Increased sensitivity of the tissues to growth hormone

96. A 55-year-old patient with continuing ventricular arrhythmias was admitted to the hospital. The patient is taking timolol drops for glaucoma, daily insulin injections for diabetes mellitus, and an ACE inhibitor for hypertension. You have decided to use phenytoin instead of procainamide. What is the reason?
a. The local anesthetic effect of procainamide would aggravate the hypertension
b. The cholinergic effects of procainamide would aggravate the diabetes
c. The local anesthetic effect of procainamide would potentiate diabetes
d. The hypertensive effects of procainamide would aggravate the hypertension
e. The anticholinergic effect of procainamide would aggravate glaucoma

97. A 25-year-old woman with red and itchy eczematoid dermatitis visits your office. She had a dental procedure one day earlier with administration of a local anesthetic. There were no other findings, although she indicated that she had a history of allergic reactions. Which of the following drugs is most likely involved?
a. Lidocaine
b. Cocaine
c. Procaine
d. Bupivacaine
e. Etidocaine

98. The CNS stimulation produced by methylxanthines, such as caffeine, is most likely due to the antagonism of one of the following receptors:
a. Adenosine receptors
b. Glutamate receptors
c. Cholinergic muscarinic receptors
d. GABA receptors
e. Glycine receptors

99. Labeled aminoacids alanine and tryptophane were introducted to a mouse in order to study localization of protein biosynthesis in its cells. Around what organellas will the accumulation of labeled aminoacids be observed?
a. Lysosomes
b. Golgi apparatus
c. Agranular endoplasmic reticulum
d. Cell centre
e. Ribosomes

100. Highly injured person gradually died. Please choose the indicator of biological death:
a. Disarray of chemical processes
b. Absence of palpitation
c. Absence of movements
d. Autolysis and decay in the cells
e. Loss of consciousness

101. After breathing with poisonous steams there is an increased quantity of slime in respiratory passages of a chemical production worker. What of respiratory tract epithelial cells participate in mucousa moistening?

a. Endocrine cells
b. Fibroblasts
c. Goblet cells
d. Langergans cells
e. Intercalated cells

102. A patient suffering from thyrotoxicosis symptoms of vegetoasthenic syndrome was revealed. What of the following would show the histological appearance of a thyroid gland being stimulated by thyroid-stimulating hormone (TSH)?

a. Decreased numbers of follicular cells
b. An abundance of colloid in the lumen of the follicle
c. Decreased numbers of parafollicular capillaries
d. Columnar-shaped follicular cells
e. Increased numbers of parafollicular cells

103. The reason of occurrence of some diseases of an oral cavity is connected with structural peculiarities of its mucous membrane. What morphological attributes characterize these features?

a. No muscularis mucosa, stratified squamous epithelium
b. Simple columnar ciliated epithelium
c. Transitional epithelium, no muscularis mucosa
d. Well developed muscularis, no submucosa
e. Transitional epithelium, no submucosa

104. There is the change of teeth at the 6-8-year-old children: deciduous are replaced by permanent. What embrionic tissues are the sources of formation of permanent teeth tissues?

a. Ectodermal epithelium of a tooth plate and mesenhime
b. Mesodermal epithelium and mesenhime
c. Entodermal epithelium and mesoderm
d. I, II brachial arches
e. Entodermal epithelium of a tooth plate and mesenhime

105. The B cells of endocrine portion of pancreas are selectively damaged by alloxan poisoning. How will it be reflected in blood plasma?

a. The content of globulins decreases
b. The content of albumins decreases
c. The content of fibrinogen decrease
d. The level of sugar decreases
e. The content of sugar increases

106. In some regions of South Africa there is a spread sickle-shaped cell anemia, in which erythrocytes have shape of a sickle as a result of substitution of glutamin by valine in the hemoglobin molecule. What is the cause of this disease?

a. Genomic mutations
b. Transduction
c. Disturbance of mechanisms of genetic information realization
d. Crossingover
e. Gene mutation

107. 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. Trichiniasis
b. Ascaridiasis
c. Echinococcosis

d. Teniasis
e. Diphyllobothriasis

108. On autopsy of a still-born infant it is revealed heart development abnormalities: ventricles are not separated, originates from the right part single arterial trunk. For what class of vertebrate is such heart construction characteristic?
a. Fishes
b. Mammals
c. Birds
d. Amphibian
e. Reptiles

109. A 10-year-old child complains of weakness, nausea, irritability. Helminthes of white color and 5-10 mm long were found on the underwear. On microscopy of the scrape from the perianal folds achromic ova of the unsymmetrical form were revealed. Indicate what helminth is parasiting on the child?
a. Trichina
b. Trichuris
c. Ascaris lumbricoides
d. ancylostoma duodenalis
e. Enterobins vermicularis

110. Parents with ill child came to the infectionist. They worked in one of the Asian countries for a long time. Child has eathy colored skin, loss of appetite, laxity, enlarged liver, spleen, peripheral glands. What protozoan illness can this child have?
a. Lambliasis
b. Visceral leishmaniasis
c. Amebiasis
d. Balantidiasis
e. Toxoplasmosis

111. The calcium canals of cardiomyocytes have been blocked on an isolated rabbits heart. What changes in the hearts activity can happen as a result?
a. Decreased force of the contraction
b. Decreased heart beat rate
c. Decreased rate and force of heart beat
d. Heart stops in systole
e. Heart stops in diastole

112. After the trauma, the patient’s right n.vagus was damaged. Which violation of the cardiac activity is possible in this case?
a. Block of a conductivity in the atrio-ventricular node
b. Arrhythmia
c. Violation of the automatism of a atrio-ventricular node
d. Violation of a conductivity in the right auricle
e. Violation of the automatism of a Kiss-Fleck node

113. In the ovary specimen colored with hematoxylin-eosin, follicle is determined where cubic-shaped follicle epithelium cells are placed in 1-2 layers, and scarlet covering is seen around ovocyte. Name this follicle:
a. Mature
b. Atretic
c. Primordial
d. Secondary
e. Primary

114. While studing of the family tree with history of hypertrichosis (hyperhirsutism of the ear) this sign was founded only in the men and it was inherited from father to the son. Define the type of

hypertrichosis inheritance?
a. Connected with X-chromosome recessive
b. Connected with X-chromosome dominant
c. Autosomal- recessive
d. Autosomal-dominant
e. Connected with Y-chromosome

115. 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 helminths had twisted ends. What is the most likely diagnosis?
a. Ascaridiasis
b. Opisthorchiasis
c. Diphyllobothriasis
d. Teniasis
e. Enterobiasis

116. Part of the DNA chain turned about 180 degree due to gamma radiation. What type of mutation took place in the DNA chain?
a. Doubling
b. Deletion
c. Inversion
d. Translocation
e. Replication

117. 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. Deletion
b. Insufficiency
c. Duplication
d. Translocation
e. Inversion

118. A pregnant woman had been having toxicosis with severe repeated vomiting for 24 hours. In the end of the day there appeared tetanic convulsions and fluid loss. What shift of acid-base state caused these changes?
a. Gaseous acidosis
b. Gaseous alkalosis
c. Excretory alkalosis
d. Metabolic acidosis
e. Excretory acidosis

119. Genetic structure of eukaryote is "exon-intron-exon". This structure-functional organization of gene caused transcription peculiarities. What will be pro-i-RNA according to the schema?
a. Exon-intron
b. Exon-intron-exon
c. Exon-exon
d. Exon-exon-intron
e. Intron-exon

120. 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. 45, XO
b. 46, XY
c. 47, XXX

d. 47, XXY
e. 46, XX

121. 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. Convariant replication
b. Reverse transcription
c. Reverse translation
d. Operon repression
e. Operon depression

122. 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. Analogous
b. Dispersed
c. Conservative
d. Semiconservative
e. Identical

123. A teenager was irradiated with high radiation dose that resulted in serious damages of lymphoid system, lysis of many lymphocytes. Restoration of normal hemogram is possible due to the functioning of the following gland:
a. Thyroid
b. Pancreas
c. Adrenal
d. Thymus
e. Liver

124. It was revealed that T-lymphocytes were affected by HIV. Virus enzyme - reverse transcriptase (RNA-dependent DNA polymerase) - catalyzes the synthesis of:
a. mRNA on the matrix of virus protein
b. DNA on the matrix of virus mRNA
c. DNA on virus ribosomal RNA
d. Virus informational RNA on the matrix of DNA
e. Viral DNA on DNA matrix

125. A patient after pathological process has a thickened alveolar membrane. The direct consequence of the process will be the reduction of:
a. Diffuse lung capacity
b. Minute respiratory capacity
c. Reserve expiratiory capacity
d. Alveolar lung ventilation
e. Oxygen capacity of blood

126. 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 Pataus syndrome. What is the most probable cause of this pathology?
a. Trisomy of the 18th chromosome
b. Nondisjunction of sex chromosomes
c. Partial monosomy
d. Trisomy of the 13th chromosome
e. Trisomy of the 21st chromosome

127. An ovary specimen stained by hematoxylin-eosin presents a follicle, where cells of follicular epithelium are placed in 1-2 layers and have cubic form, there is a bright-red membrane around the ovocyte. What follicle is it?
a. Mature

b. Atretic
c. Primordial
d. Secondary
e. Primary

128. 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. Trypanosoma gambiense
b. Lamblia intestinalis
c. Trichomonas hominis
d. Trichomonas buccalis
e. Trichomonas vaginalis

129. A woman delivered a dead child with multiple developmental defects. What protozoan disease might have caused the intrauterine death?
a. Toxoplasmosis
b. Malaria
c. Lambliasis
d. Amebiasis
e. Leishmaniasis

130. Tuberculosis can be treated by means of combined chemotherapy that includes substances with different mechanisms of action.What antituberculous medication inhibits transcription of RNA into DNA in mycobacteria?
a. Para-aminosalicylic acid
b. Rifampicin
c. Streptomycin
d. Isoniazid
e. Ethionamide

131. A patient experienced a sudden temperature rise up to 39oC. After 6 hours the temperature normalized. On the 2-nd day the attack recurred: in the period of paroxysm the temperature reached 41oC, apyrexial period began after 8 hours. What type of temperature profile is it?
a. Hectic
b. Recurrent
c. Intermitting
d. Septic
e. Continued

132. Larvae were detected occasionally on the microscopic examination of the sputum of the patient with pneumonia. Eosinophiles were detected on the blood examination. What helminthiasis can be diagnosed?
a. Enterobiosis
b. Paragonimiasis
c. Opistorchis
d. Ascariasis
e. Trichocephaliasis

133. 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. Translation
b. Processing
c. Repression
d. Transcription
e. Replication

134. While studying maximally spiralized chromosomes of human karyotype the process of cell

division was stopped in the following phase:
a. Prophase
b. Anaphase
c. Telophase
d. Metaphase
e. Interphase

135. 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. Echinococcosis
b. Diphyllobothriasis
c. Teniasis
d. Beef tapeworm infection
e. Opisthorchosis

136. A child complains of general weakness, loss of appetite, a troubled sleep, itching in the perianal area. The provisional diagnosis is enterobiasis. In order to specify this diagnosis it is necessary to perform:
a. Biopsy of muscle tissue
b. Roentgenoscopy
c. Scraping from perianal folds
d. Immune diagnostics
e. Duodenal contents analysis

137. The cell of the laboratory animal was overdosed with Roentgen rays. As a result albuminous fragments formed in the cytoplasm. What cell organoid will take part at their utilization?
a. Cells centre
b. Lysosomes
c. Ribosome
d. Golgi complex
e. Endoplasmic reticulum

138. In course of practical training students studied a stained blood smear of a mouse with bacteria phagocyted by leukocytes. What cell organella completes digestion of these bacteria?
a. Ribosomes
b. Lisosomes
c. Granular endoplasmic reticulum
d. Mytochondrions
e. Golgi apparatus

139. 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 childs father likely to have?
a. II (A), Rh+
b. III (B), Rh+
c. II (A), Rh-
d. I (0), Rh-
e. I (0), Rh+

140. Two days after consumption of smoked pork a patient got face and eye-lid edemata, gastrointestinal disturbances, abrupt temperature rise, muscle pain. Blood analysis showed full-blown eosinophilia. What helminth could the patient be infected with?
a. Whipworm
b. Hookworm
c. Pinworm
d. Ascarid
e. Trichina

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

a. Dermotropic leishmania
b. Malarial plasmodiums
c. Toxoplasms
d. Viscerotropic leishmania
e. Trypanosomes

142. The guide of the scientific expedition in India was native who always was with his dog. What invasive diseases can be transmitted by the dog if it is the source of invasion?

a. Dicroceliasis
b. Fascioliasis
c. Teniasis
d. Paragonimiasis
e. Echinococcosis

143. 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. Myiasis
b. Scabies
c. Demodicosis
d. Pediculosis
e. Phthiriasis

144. A family of students who came from Africa got a child with anemia signs. The child died soon. Examination revealed that the childs erythrocytes have abnormal semilunar shape. Specify genotypes of the childs parents:

a. AA x AA
b. Aa x aa
c. Aa x Aa
d. aa x aa
e. Aa x AA

145. 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. All answers are false
b. Exocytosis
c. Active transport
d. Endocytosis
e. Facilitated diffusion

146. 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. Toxoplasmosis
b. Amebiasis
c. Balantidiasis
d. Lambliasis
e. Trichomoniasis

147. 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. Scorpion
b. Mite

c. Tarantula
d. Karakurt spider
e. Solpuga

148. Normal, actively dividing cells of human red bone marrow are analyzed. What number of cells chromosomes is typical for G1 period?
a. 46
b. 47
c. 23
d. 45
e. 48

149. 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. Diphyllobothriasis
b. Enterobiasis
c. Trichocephaliasis
d. Filariasis
e. Ascaridiasis

150. 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. M
b. S
c. G1
d. Go
e. G2

151. A 28-year-old female patient consulted a gynecologist about sterility. Examination revealed underdeveloped ovaries and uterus, irregular menstrual cycle. Analysis of the sex chromatin revealed 2 Barr’s bodies in most somatic cells. What chromosome disease is most likely?
a. Edwards syndrome
b. Klinefelters syndrome
c. Turners syndrome
d. Triple X syndrome
e. Pataus syndrome

152. A patient in a transplantation centre underwent heart transplantation. The organ was taken from a donor who died in a road accident. Foreign heart can be rejected as a result of development of transplantation immunity. It is usually prevented by means of:
a. X-ray therapy
b. Immunosuppressors
c. Ultrasound
d. Chemotherapy
e. Enzymes

153. 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-supressors
b. Plasmoblasts
c. T-lymphocytes-killers
d. B-lymphocyte
e. Stem cells

154. 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. Balantidiasis

b. Urogenital trichomoniasis

c. Intestinal trichomoniasis

d. Lambliasis

e. Toxoplasmosis

155. A boy has I (I0I0) blood group and his sister has IV (IAIB) blood group. What blood groups do their parents have?

a. II (IAI0) and III (IBI0)

b. I (I0I0) and IV (IAIB)

c. I (I0I0) and III (IBI0)

d. III (IBI0) and IV (IAIB)

e. II (IAIA) and III (IBI0)

156. 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. Isotransplantation

b. Heterotransplantation

c. Allotransplantation

d. Xenotransplantation

e. Autotransplantation

157. Sex chromosomes of a woman didnt 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. Pataus syndrome

b. Downs syndrome

c. Turners syndrome

d. Edwards syndrome

e. Cat cry syndrome

158. Cytogenetic examination of a patient with reproductive dysfunction revealed normal karyotype 46 XY in some cells, but most cells have karyotype of Klinefelters syndrome - 47 XXY. Such cell heterogenity is called:

a. Mosaicism

b. Transposition

c. Monomorphism

d. Duplication

e. Inversion

159. As a result of prophylactic medical examination a 7 year old boy was diagnosed with Lesch-Nyhan syndrome (only boys fall ill with it). The boys parents are healthy but his grandfather by his mothers side suffers from the same disease. What type of disease inheritance is it?

a. Autosomal dominant

b. Semidominance

c. Dominant, sex-linked

d. Autosomal recessive

e. Recessive, sex-linked

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

a. Kissing bug

b. Malarial mosquito

c. Mosquito

d. Wohlfahrt fly

e. Stable fly (Stomoxys calcitrans)

161. Woman applied to the medico-genetic consulting centre for information about the risk of haemophilia in her son. Her husband has been suffering from this disease since birth. Woman and her parents are healthy (do not have haemophilia). Is the boy likely to have the disease in this family?

a. 75% of the boys will be ill
b. All boys will be healthy
c. 50% of the boys will be ill
d. All boys will be ill
e. 25% of the boys will be ill

162. 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 fathers disease. What is the type of the disease inheritance?

a. Y-linked
b. Recessive, X-linked
c. Autosomal recessive
d. Autosomal dominant
e. Dominant, X-linked

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

a. Dominant sex-linked
b. Recessive autosomal
c. Recessive sex-linked
d. Semidominance
e. Autosomal dominant

164. Examination of newborns in one of the Ukrainian cities revealed a baby with phenylketonuria. The babys parents do not 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

165. Electrocardiogram of a 45-year-old man showed absence of P-wave in all the leads. What part of the conducting system is blocked?

a. Purkinje’s fibres
b. Sinu-atrial node
c. Common branch of the bundle of His
d. Atrioventricular node
e. Branches of the bundle of His

166. Different functional groups can be presented in the structure of L-amino acids radicals. Identify the group that is able to form ester bond:

a. -SH
b. -CH3
c. -NH2
d. -OH
e. -CONH2

167. The conjugated protein necessarily contains special component as a non-protein part. Choose the substance that can not carry out this function:

a. HNO3
b. Thiamine pyrophosphate
c. Glucose
d. AMP
e. ATP

168. The patient with diabetes mellitus has been delivered in hospital in the state of unconsciousness. Arterial pressure is low. The patient has acidosis. Point substances, which accumulation in the blood results in these manifestations:

a. Cholesterol esters
b. Ketone bodies
c. Monosaccharides
d. Amino acids
e. High fatty acids

169. 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. Initiation
b. Mutation
c. Replication
d. Processing
e. Reparation

170. Patient 54 year-old, 5th day after surgical operation. Blood count: Erythrocytes 3,61012/l, Hemoglobin 95 g/l, Erythrocyte's hemoglobin content (color index) 0,78; Leukocytes 16109l, Platelets 450109l Blood picture: anizocytosis, poikilocytosis, reticulocytes- 3,8%. What anemia does this patient have?

a. Acquired hemolytic anemia
b. Hypoplastic anemia
c. Chronic posthemorragic anemia
d. Acute posthemorragic anemia
e. Anemia from iron deficiency

171. The patient with pneumonia was treated with antibiotics for a long period. After treatment patient complains of frequent and watery stool, abdomenal pain. What is the reason of intestine function disorder?

a. Autoimmune reaction development
b. Antibiotics toxic influence on the GIT
c. Intestinal disbacteriosis development
d. Bacteria toxins influence
e. Hereditary enzyme defect

172. A 16 year-old patient got numerous traumas in automobile accident. Now the patient is haning a shock. AP - 80/60 mm Hg. daily urine volume 60-80 ml. What pathogenic mechanism leads to kidneys function violation?

a. Decreased hydrostatic pressure in glomerular capillaries
b. Increased pressure in Bowman's capsule
c. Trauma of the urinary bladder
d. Increased vasopressin blood concentration
e. Increased osmotic pressure in glomerular capillaries

173. A 25-year-old woman with red and itchy eczematoid dermatitis visits your office. She had a dental procedure one day earlier with administration of a local anesthetic. There were no other findings, although she indicated that she had a history of allergic reactions. Which of the following drugs is most likely involved?

a. Cocaine
b. Bupivacaine
c. Etidocaine
d. Procaine
e. Lidocaine

174. 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 immediately. For what protozoa are such cysts typical?
a. Lamblia
b. Dysenteric amoeba
c. Balantidium
d. Intestinal amoeba
e. Trichomonas

175. According to the data of WHO, for about 250 mln of Earth population fall ill 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. Culex
b. Mansonia
c. Culiseta
d. Anopheles
e. Aedes

176. Labeled amino acids alanine and tryptophane were introduced to a mouse in order to study localization of protein biosynthesis in its cells. Around what organelles will the accumulation of labeled amino acids be observed?
a. Ribosomes
b. Cell centre
c. Golgi apparatus
d. Lysosomes
e. Agranular endoplasmic reticulum

177. Highly injured person gradually died. Please choose the indicator of biological death:
a. Loss of consciousness
b. Disarray of chemical processes
c. Autolysis and decay in the cells
d. Absence of palpitation
e. Absence of movements

178. After breathing with poisonous steams there is an increased quantity of slime in respiratory passages of a chemical production worker. What of respiratory tract epithelial cells participate in mucousa moistening?
a. Goblet cells
b. Endocrine cells
c. Intercalated cells
d. Langergans cells
e. Fibroblasts

179. A patient suffering from thyrotoxicosis symptoms of vegetoasthenic syndrome was revealed. What of the following would show the histological appearance of a thyroid gland being stimulated by thyroid-stimulating hormone (TSH)?
a. An abundance of colloid in the lumen of the follicle
b. Decreased numbers of parafollicular capillaries
c. Decreased numbers of follicular cells
d. Increased numbers of parafollicular cells
e. Columnar-shaped follicular cells

180. The reason of occurrence of some diseases of an oral cavity is connected with structural peculiarities of its mucous membrane. What morphological attributes characterize these features?
a. Simple columnar ciliated epithelium
b. Transitional epithelium, no submucosa
c. No muscularis mucosa, stratified squamous epithelium
d. Well developed muscularis, no submucosa
e. Transitional epithelium, no muscularis mucosa

181. In some regions of South Africa there is a spread sickle-shaped cell anemia, in which erythrocytes have shape of a sickle as a result of substitution of glutamin by valine in the hemoglobin molecule. What is the cause of this disease?

a. Crossingover
b. Disturbance of mechanisms of genetic information realization
c. Gene mutation
d. Genomic mutations
e. Transduction

182. 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. Teniasis
c. Ascaridiasis
d. Trichiniasis
e. Echinococcosis

183. If strong oxidizers get into the bloodstream, a methemoglobin is formed. It is a compound, where iron (II) becomes iron (III). What has to be done to save the patient?

a. Respiratory centers have to be stimulated
b. Interchangeable hemotransfusion has to be done
c. He has to be calmed down and put to bed
d. Patient has to be exposed to the fresh air
e. He has to be given pure oxygen

184. A 10-year-old child complains of weakness, nausea, irritability. Helminthes of white color and 5-10 mm long were found on the underwear. On microscopy of the scrape from the perianal folds achromic ova of the unsymmetrical form were revealed. Indicate what helminth is parasiting on the child?

a. Ascaris lumbricoides
b. Trichina
c. Trichuris
d. Enterobins vermicularis
e. Ancylostoma duodenalis

185. Parents with ill child came to the infectionist. They worked in one of the Asian countries for a long time. Child has earthy colored skin, loss of appetite, laxity, enlarged liver, spleen, peripheral glands. What protozoan illness can this child have?

a. Lambliasis
b. Visceral leishmaniasis
c. Amebiasis
d. Balantidiasis
e. Toxoplasmosis

186. White-haired, with blue eyes girl was born in healthy parents. Irritability, anxiety, troubled sleep and feeding developed in the first months of life of the infant. What method of genetic investigation should be used for the exact diagnosis?

a. Biochemical
b. Twin
c. Population-statistical
d. Genealogical
e. Cytological

187. After the trauma, the patient’s right n.vagus was damaged. Which violation of the cardiac activity is possible in this case?

a. Violation of the automatism of a Kiss-Fleck node

b. Violation of a conductivity in the right auricle
c. Arrhythmia
d. Block of a conductivity in the atrio-ventricular node
e. Violation of the automatism of a atrio-ventricular node

188. In the ovary specimen colored with hematoxylin-eosin, follicle is determined where cubic-shaped follicle epithelium cells are placed in 1-2 layers, and scarlet covering is seen around ovocyte. Name this follicle:
a. Primordial
b. Mature
c. Atretic
d. Primary
e. Secondary

189. While studing of the family tree with history of hypertrichosis (hyperhirsutism of the ear) this sign was founded only in the men and it was inherited from father to the son. Define the type of hypertrichosis inheritance?
a. Autosomal- recessive
b. Connected with X-chromosome recessive
c. Connected with X-chromosome dominant
d. Connected with Y-chromosome
e. Autosomal-dominant

190. 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 helminths had twisted ends. What is the most likely diagnosis?
a. Teniasis
b. Diphyllobothriasis
c. Enterobiasis
d. Ascaridiasis
e. Opisthorchiasis

191. Part of the DNA chain turned about 180 degree due to gamma radiation. What type of mutation took place in the DNA chain?
a. Inversion
b. Doubling
c. Replication
d. Translocation
e. Deletion

192. 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. Inversion
c. Duplication
d. Insufficiency
e. Deletion

193. Genetic structure of eukaryote is "exon-intron-exon". This structure-functional organization of gene caused transcription peculiarities. What will be pro-i-RNA according to the schema?
a. Exon-exon
b. Exon-exon-intron
c. Exon-intron-exon
d. Intron-exon
e. Exon-intron

194. 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. Operon depression
b. Convariant replication
c. Operon repression
d. Reverse translation
e. Reverse transcription

195. 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. Conservative
b. Semiconservative
c. Identical
d. Analogous
e. Dispersed

196. A teenager was irradiated with high radiation dose that resulted in serious damages of lymphoid system, lysis of many lymphocytes. Restoration of normal hemogram is possible due to the functioning of the following gland:

a. Adrenal
b. Thymus
c. Liver
d. Thyroid
e. Pancreas

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

a. Viral DNA on DNA matrix
b. MRNA on the matrix of virus protein
c. Virus informational RNA on the matrix of DNA
d. DNA on virus ribosomal RNA
e. DNA on the matrix of virus mRNA

198. A patient after pathological process has a thickened alveolar membrane. The direct consequence of the process will be the reduction of:

a. Minute respiratory capacity
b. Oxygen capacity of blood
c. Diffuse lung capacity
d. Alveolar lung ventilation
e. Reserve expiratiory capacity

199. An ovary specimen stained by hematoxylin-eosin presents a follicle, where cells of follicular epithelium are placed in 1-2 layers and have cubic form, there is a bright-red membrane around the ovocyte. What follicle is it?

a. Primordial
b. Mature
c. Atretic
d. Primary
e. Secondary

200. 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. Amebiasis
b. Ascariasis
c. Enterobiasis
d. Trichocephalosis

e. Ankylostomiasis

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

a. Lambliasis
b. Toxoplasmosis
c. Malaria
d. Leishmaniasis
e. Amebiasis

202. A patient experienced a sudden temperature rise up to 39 degrees. After 6 hours the temperature normalized. On the 2-nd day the attack recurred: in the period of paroxysm the temperature reached 41 degrees, apyrexial period began after 8 hours. What type of temperature profile is it?

a. Recurrent
b. Septic
c. Continued
d. Intermitting
e. Hectic

203. Larvae were detected occasionally on the microscopic examination of the sputum of the patient with pneumonia. Eosinophiles were detected on the blood examination. What helminthiasis can be diagnosed?

a. Opistorchis
b. Ascariasis
c. Trichocephaliasis
d. Enterobiosis
e. Paragonimiasis

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

a. Translation
b. Processing
c. Repression
d. Transcription
e. Replication

205. 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. Phenocopy
b. Combinative
c. Phenotypic
d. Mutational
e. Genocopy

206. 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. Beef tapeworm infection
c. Diphyllobothriasis
d. Echinococcosis
e. Teniasis

207. 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. Dicroceliasis
b. Urogenital schistosomiasis
c. Japanese schistosomiasis
d. Intestinal schistosomiasis
e. Opisthorchiasis

208. A child complains of general weakness, loss of appetite, a troubled sleep, itching in the perianal area. The provisional diagnosis is enterobiasis. In order to specify this diagnosis it is necessary to perform:
a. Immune diagnostics
b. Duodenal contents analysis
c. Roentgenoscopy
d. Biopsy of muscle tissue
e. Scraping from perianal folds

209. 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 childs father likely to have?
a. I (0), Rh+
b. I (0), Rh-
c. II (A), Rh-
d. II (A), Rh+
e. III (B), Rh+

210. 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. 46(XX)
b. 47(XXX)
c. 48(XXYY)
d. 48(XXXY)
e. 47(XXY)

211. Two days after consumption of smoked pork a patient got face and eye-lid 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. Ascarid
c. Hookworm
d. Whipworm
e. Pinworm

212. A lymph node punctate of a patient with suspected protozoal disease was examined. Examination of the stained specimen (Romanovskys stain) revealed some crescent bodies with pointed end, blue cytoplasm and red nucleus. What protozoans were revealed in the smears?
a. Viscerotropic leishmania
b. Trypanosomes
c. Malarial plasmodiums
d. Dermotropic leishmania
e. Toxoplasms

213. The guide of the scientific expedition in India was native who always was with his dog. What invasive diseases can be transmitted by the dog if it is the source of invasion?
a. Paragonimiasis
b. Teniasis
c. Echinococcosis
d. Dicroceliasis
e. Fascioliasis

214. 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. Dermatotropic leishmaniasis
b. Scabies
c. Myiasis
d. Demodicosis
e. Pediculosis

215. A patient has acne on his face. Microscopic 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. Phthiriasis
b. Demodicosis
c. Myiasis
d. Scabies
e. Pediculosis

216. A family of students who came from Africa got a child with anemia signs. The child died soon. Examination revealed that the childs erythrocytes have abnormal semilunar shape. Specify genotypes of the childs parents:

a. Aa x aa
b. Aa x AA
c. Aa x aa
d. AA x AA
e. Aa x Aa

217. 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. Phenylketonuria
b. Gout
c. Tay-Sachs disease
d. Wilson disease
e. Galactosemia

218. A 39-year-old woman has madescence in the region of mammilla, a small ulcer with inflammatory hyperemia and cutaneous edema. Histologic examination of tissue sampling from this area revealed in the malpighian layer of thickened epidermis atypical cells with light and optically empty cytoplasm, with no intracellular bridges. Such cells were also found in the orifice of big mammal gland ducts. What is the most probable diagnosis?

a. Intraductal cancer
b. Epidermoid cancer
c. Melanocarcinoma
d. Pagets disease
e. Basal cell carcinoma

219. 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. Facilitated diffusion
b. All answers are false
c. Endocytosis
d. Active transport
e. Exocytosis

220. 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. Toxoplasmosis
c. Trichomoniasis
d. Lambliasis
e. Amebiasis

221. 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. Ascaridiasis
c. Trichocephaliasis
d. Enterobiasis
e. Diphyllobothriasis

222. A 28-year-old female patient consulted a gynecologist about sterility. Examination revealed underdeveloped ovaries and uterus, irregular menstrual cycle. Analysis of the sex chromatin revealed 2 Barr's bodies in most somatic cells. What chromosome disease is most likely?

a. Turners syndrome
b. Triple X syndrome
c. Pataus syndrome
d. Edwards syndrome
e. Klinefelters syndrome

223. Examination of duodenal contents revealed some pyriform protozoa with twin nuclei and four pairs of flagella. There were two supporting filaments between the nuclei and a suctorial disc on the ventral side. What representative of protozoa was revealed in this patient?

a. Lamblia
b. Leishmania
c. Trypanosome
d. Intestinal trichomonad
e. Toxoplasma

224. 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. Taeniasis
b. Echinococcosis
c. Enterobiasis
d. Ascaridiasis
e. Taeniarhynchosis

225. 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. T-lymphocytes-supressors
c. Stem cells
d. B-lymphocyte
e. Plasmoblasts

226. A boy has I (I0I0) blood group and his sister has IV (IAIB) blood group. What blood groups do their parents have?

a. III (IBI0) and IV (IAIB)
b. I (I0I0) and III (IBI0)
c. II (IAIA) and III (IBI0)

d. I (I0I0) and IV (IAIB)

e. II (IAI0) and III (IBI0)

227. 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. Allotransplantation

b. Isotransplantation

c. Heterotransplantation

d. Autotransplantation

e. Xenotransplantation

228. 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 girls state?

a. Malignization

b. Mutagenic

c. Teratogenic

d. Carcinogenic

e. Mechanic

229. Sex chromosomes of a woman did not 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. Turners syndrome

b. Pataus syndrome

c. Cat cry syndrome

d. Edwards syndrome

e. Downs syndrome

230. Hartnup disease is caused by point mutation of only one gene which results in disturbance of tryptophane absorption in the bowels and its resorption in the renal tubules. It is the reason for disorder of both digestive and urination systems. What genetic phenomenon is observed in this case?

a. Codominance

b. Semidominance

c. Complementary interaction

d. Polymery

e. Pleiotropy

231. Cytogenetic examination of a patient with reproductive dysfunction revealed normal karyotype 46 XY in some cells, but most cells have karyotype of Klinefelters syndrome - 47 XXY. Such cell heterogenity is called:

a. Duplication

b. Monomorphism

c. Inversion

d. Transposition

e. Mosaicism

232. A young man has come to the genetic consultation. He complains of abnormalities in his physical and reproductive development. Microscopy of his oral mucosa cells shows one Barr body. What karyotype is the most likely in this young man?

a. 47, XY, +18

b. 47, XYY

c. 45, X0

d. 47, XY, +21

e. 47, XXY

233. The mother’s karyotype has 45 chromosomes. It was determined that translocation of chromosome 21 to chromosome 14 had occurred. What disorder is likely to be observed in the child of this woman if the father’s karyotype is normal?

a. Klinefelter syndrome
b. Edwards syndrome
c. Morris syndrome (androgen insensitivity)
d. Down syndrome
e. Patau syndrome

234. During regular examination of schoolchildren, a scrape from the perianal folds of a 10-year-old girl shows asymmetrical oval eggs with larvae inside. What diagnosis can be made?
a. Trichuriasis
b. Ancylostomiasis
c. Ascariasis
d. Amebiasis
e. Enterobiasis

235. A young woman, a foreign student from Tehran, has made an appointment with the urologist. She complains of the sensation of heaviness in her lower abdomen and a small amount of blood being excreted with urine at the end of each urination. Microscopy of urine detects the presence of parasite eggs, approximately 140x70 micron in size, with a terminal spike. What diagnosis can be made by the infectious diseases specialist?
a. Opisthorchiasis
b. Paragonimiasis
c. Fascioliasis
d. Schistosomiasis
e. Dicroceliasis

236. Cells of a person working in the Chornobyl Exclusion Zone have undergone a mutation in DNA molecule. However, with time the damaged interval of DNA molecule restored ist initial structure with a specific enzyme. In this case the following occurred:
a. Translation
b. Repair
c. Transcription
d. Replication
e. Reverse transcription

237. A man is a carrier of HIV that is an RNA virus. The cells of this patient synthesize viral DNA. This process is based on:
a. Transcription
b. Replication
c. Reverse transcription
d. Repair
e. Translation

238. The parents with normal hearing have two daughters and a son, who are congenitally deaf. Their other 5 children are healthy. What is the pattern of deafness inheritance in this case?
a. Y-linked
b. Autosomal recessive
c. X-linked recessive
d. Autosomal dominant
e. X-linked dominant

239. Ingestion of plants and mushrooms that grow along highways is dangerous due to risk of lead poisoning. What is the main source of environmental pollution with this chemical element?
a. Herbicides
b. Chemical fertilizers
c. Sewage
d. Acid rains
e. Exhaust fumes

240. Long-term taking of medicines can affect cells of the liver. Particularly, it can cause marked hypertrophy of agranular endoplasmic reticulum due to the following function of this organelle:

a. Formation of maturation spindle
b. Intracellular digestion
c. Nucleic acid synthesis
d. Protein synthesis
e. Detoxication of harmful substances

241. Dwellers of a village located in the taiga make a living by harvesting berries. Lately the occurrence of alveococcosis in the village population has increased. What is the source of invasion in this case?

a. Foxes
b. Sick people
c. Rodents
d. Birds
e. Fish