Exam MCQ for KROK – 1
Medical Biology

1. 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

2. 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

3. Nucleolar organizers of the 13-15, 21, 22 human chromosomes contain about 200 cluster genes that synthesize RNA. These regions of chromosomes bear the information on the following type of RNA:
A. rRNA
B. tRNA
C. mRNA
D. snRNA
E. tRNA + rRNA

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

5. During cell division DNA replication occurs after a signal is received from the cytoplasm, then 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

6. Cells of healthy liver actively synthesize glycogen and proteins. What organelles are the most developed in them?
A. Granular and agranular endoplasmic reticulum
B. Cell center
C. Lysosomes
D. Mitochondria
E. Peroxisomes

7. At a certain stage of cell cycle chromosomes reach cellular poles, undergo despiralization; nuclear membranes are being formed around them; nucleolus is restored. What stage of mitosis is it?
A. Telophase
B. Prophase
C. Prometaphase
D. Metaphase
E. Anaphase

8. 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

9. Human red blood cells contain no mitochondria. What is the main pathway for ATP production in these cells?
A. Anaerobic glycolysis
B. Aerobic glycolysis
C. Oxidative phosphorylation
D. Creatine kinase reaction
E. Cyclase reaction

10. Along with normal hemoglobin types there can be pathological ones in the organism of an adult. Name one of them:
A. HbS
B. HbF
C. Hb*A*1
D. Hb*A*2
E. Hb*O*2

11. 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 has been restored to its initial structure with a specific enzyme. In this case the following occurred:

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

12. 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. -OH
B. -SH
C -$CONH_2$
D. -CH_3
E. -NH_2

13. 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

14. 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

15. 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. Ribosomes
B. Agranular endoplasmic reticulum
C. Cell centre
D. Lysosomes
E. Golgi apparatus

16. Highly injured person gradually died. Please choose the indicator of biological death:
A. Autolysis and decay in the cells
B. Disarray of chemical processes
C. Loss of consciousness
D. Absence of palpitation

E. Absence of movements

17. 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. Disturbance of mechanisms of genetic information realization
C. Crossingover
D. Genomic mutations
E. Transduction

18. 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. Deletion
C. Doubling
D. Translocation
E. Replication

19. 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

20. 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

21. 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

22. T-lymphocytes are determined to be affected with HIV. In this case viral

enzyme reverse transcriptase (RNA-dependent DNA-polymerase) catalyzes the synthesis of:
A. DNA based on the viral RNA matrix
B. Viral RNA based on the DNA matrix
C. Viral protein based on the viral RNA matrix
D. Viral DNA based on the DNA matrix
E. Informational RNA based on the viral protein matrix

23. 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. Rifampicin
B. Isoniazid
C. Streptomycin
D. Ethionamide
E. Para-aminosalicylic acid

24. 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

25. 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

26. 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. Lysosomes
B. Golgi complex
C. Ribosome
D. Endoplasmic reticulum
E. Cells centre

27. 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. Mytochondrions

C. Granular endoplasmic reticulum
D. Golgi apparatus
E. Ribosomes

28. 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. Wilson disease
E. Galactosemia

29. 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

30. Normal, actively dividing cells of human red bone marrow are analyzed. What number of cells' chromosomes is typical for G1 period?
A. 46
B. 48
C. 47
D. 45
E. 23

31. 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. Go
C. G1
D. G2
E. M

32. In the life cycle of a cell during mitosis a natural change in the amount of genetic material occurs. The DNA doubles at the following stage:
A. Interphase
B. Prophase
C. Metaphase
D. Anaphase
E. Telophase

33. Protective function of saliva is based on several mechanisms, including the

presence of enzyme that has bactericidal action and causes lysis of complex capsular polysaccharides of staphylococci and streptococci. Name this enzyme:
A. Lysozyme
B. Alpha-amylase
C. Oligo-1,6-glucosidase
D. Collagenase
E. Beta-glucuronidase

34. Streptomycin and other aminoglycosides prevent the joining of formylmethionyl-tRNA by bonding with the 30S ribosomal subunit. This effect leads to disruption of the following process:
A. Translation initiation in procaryotes
B. Translation initiation in eucaryotes
C. Transcription initiation in procaryotes
D. Transcription initiation in eucaryotes
E. Replication initiation in procaryotes

35. Ionizing radiation or vitamin E deficiency affect the cell by increasing lysosome membrane permeability.What are the possible consequences of this pathology?
A. Partial or complete cell destruction
B. Intensive protein synthesis
C. Intensive energy production
D. Restoration of cytoplasmic membrane
E. Formation of maturation spindle

36. Students study the stages of gametogenesis. They analyze a cell with haploid number of chromosomes, with each chromosome consisting of two chromatids. The chromosomes are located in the equatorial plane of the cell. Such situation is typical of 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

37. Untrained people often have muscle pain after sprints as a result of lactate accumulation. This can be caused by intensification of the following biochemical process:
A. Glycolysis
B. Gluconeogenesis
C. Pentose phosphate pathway
D. Lipogenesis
E. Glycogenesis

38. 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

39. 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*

40. 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

41. 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

42. A mother had taken synthetic hormones during pregnancy. Her daughter was born with hirsutism formally resembling of adrenal syndrome. Such manifestation of variability is called:
A. Phenocopy
B. Mutation
C. Recombination
D. Heterosis
E. Replication

43. A pregnant woman underwent AB0 blood typing. Red blood cells were agglutinated with standard sera of the I and II blood groups, and were not agglutinated with the III group serum. What is the patient's blood group?
A. B(III)
B. 0(I)
C. A(II)

D. AB(IV)
E. -

44. 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

45. 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. -

46. 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

47. Examination of an 18-year-old girl revealed the following features: hypoplasia of the ovaries, broad S houlders, narrow pelvis, shortening of the lower extremities, "sphinx neck". Mental development is normal. The girl was diagnosed with Turner's syndrome. What kind of chromosome abnormality is it?
A. Monosomy X
B. Trisomy X
C. Trisomy 13
D. Trisomy 18
E. Nullisomy X

48. 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

49. 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. -

50. 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

51. 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

52. A female patient saught medicalgenetic 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'

53. An 18-year-old woman has body disproportion, wing-like folds on the skin of her neck, underdeveloped ovaries, nuclei of her buccal epithelium cells have no Barr bodies. Dermatoglyphics method revealed that her adt angle is 66o. What provisional diagnosis can be made in this case?
A. Turner's syndrome

B. Cri du chat (cat cry) syndrome
C. Kleinfelter's syndrome
D. Patau's syndrome
E. Edwards' syndrome

54. During determining the blood group according to the AB0 system with salt solutions of monoclonal antibodies agglutination did not occur with any of the solutions. What blood group is it?
A. 0 (I)
B. A (II)
C. B (III)
D. AB (IV)
E. -

55. 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

56. A doctor was addressed by a 30-yearold man. There is a probability of the patient being HIV-positive. To clarify the diagnosis the doctor proposed to perform polymerase chain reaction. The basic process in this kind of investigation is:
A. Gene amplification
B. Transcription
C. Genetic recombination
D. Genomic mutation
E. Chromosome mutation

57. It is known that the gene responsible for development of blood groups according to AB0 system has three allele variants. Existence of the IV blood group can be explained by the following variability form:
A. Combinative
B. Mutational
C. Phenotypic
D. Genocopy
E. Phenocopy

58. Sex chromatin was detected during examination of a man's buccal epithelium. It is characteristic of the following chromosome disease:
A. Klinefelter's syndrome
B. Down's disease
C. Turner's syndrome
D. Triple X syndrome

E. Hypophosphatemic rickets

59. A person with the fourth blood group (genotype I^AI^B) has in erythrocytes both antigen A controlled by allele I^A and antigen B controlled by allele I^B. This phenomenon is an example of the following gene interation:
A. Codominance
B. Complementarity
C. Semidominance
D. Polymery
E. Epistasis

60. A 2-year-old boy is diagnosed with Down syndrome. What chromosomal changes can cause this disease?
A. Trisomy 21
B. Trisomy 13
C. Trisomy X
D. Trisomy 18
E. Monosomy X

61. Blood group of a 30-year-old man has been determined before a surgery. The blood was Rhesus-positive. Agglutination did not occur with standard 0 (I), A (II), and B (III) serums. The blood belongs to the following group:
A. 0 (I)
B. A (II)
C. B (III)
D. AB (IV)
E. -

62. 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

63. Sex chromatin was detected during examination of a man's buccal epithelium. It is characteristic of the following chromosome disease:
A. Klinefelter's syndrome
B. Down's disease
C. Turner's syndrome
D. Triple X syndrome
E. Hypophosphatemic rickets

64. Parents of a sick 5-year-old girl visited a genetic consultation. Karyotype investigation revealed 46 chromosomes. One chromosome of the 15th pair was abnormally long, having a part of the chromosome belonging to the 21st pair attached to it. What mutation occurred in this girl?

A. Translocation
B. Deletion
C. Inversion
D. Deficiency
E. Duplication

65. Determining a patient's blood group with monoclonal test-reagents revealed positive agglutination reaction to anti-A and anti-B reagents, and negative reaction to anti-D. What blood group does this patient have?
A. IV (AB) Rh (-)
B. II (A) Rh (+)
C. III (B) Rh (-)
D. IV (AB) Rh (+)
E. I (0) Rh (+)

66. Deaf parents with genotypes DDee and ddEE gave birth to a child with normal hearing. Specify the interaction of D and E genes:
A. Complementary interaction
B. Complete dominance
C. Epistasis
D. Polymery
E. Overdominance

67. Cystinuria manifests itself in a human as cystine stones in the kidneys (homozygous individuals) or increased cystine content in the urine (heterozygous individuals). Cystinuria is a monogenic disorder. Determine the type of interaction between the genes of cystinuria and normal urine cystine excretion:
A. Semidominance
B. Epistasis
C. Complete dominance
D. Complementarity
E. Codominance

68. A young family came for a genetic counseling to identify the father of their child. The husband insists that the child does not resemble him at all and cannot possibly be his. Polymerase chain reaction method for person identification is based on the following:
A. Gene amplification
B. Nucleotide deletion
C. Genetic recombination
D. Missense mutation
E. Transduction

69. Clinical presentations of a woman allowed provisionally diagnosing her with X polysomy. Cytogenetic method is applied to clarify the diagnosis. The diagnosis will be confirmed if the patient's karyotype is:
A. 47, XXX
B. 48, XXXY

C. 48, XXYY
D. 47, XXY
E. 46, XX

70. A 45-year-old woman gave birth to a boy with cleft maxilla (cleft lip and palate). On additional examination there are significant disturbances of the boy's nervous, cardiovascular, and visual systems. Karyotype investigation allowed diagnosing the patient with trisomy 13. What syndrome is present in the boy?
A. Patau
B. Down
C. Kleinfelter
D. Turner
E. DiGeorge

71. 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 (don't have haemophilia). Is the boy likely to have the disease in this family?
A. All boys will be healthy
B. All boys will be ill
C. 50/% of the boys will be ill
D. 25/% of the boys will be ill
E. 75/% of the boys will be ill

72. 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

73. 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. Entodermal epithelium of a tooth plate and mesenhime
C. Mesodermal epithelium and mesenhime
D. I, II brachial arches
E. Entodermal epithelium and mesoderm

74. 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. Cytological

C. Twin
D. Genealogical
E. Population-statistical

75. 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 Y-chromosome
B. Autosomal- recessive
C. Autosomal-dominant
D. Connected with X-chromosome recessive
E. Connected with X-chromosome dominant

76. 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-exon
B. Exon-exon-intron
C. Exon-exon
D. Intron-exon
E. Exon-intron

77. 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

78. 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

79. 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

80. A woman with the III (B), Rh (-) blood group gave birth to a child with the II (A) blood group. The child is diagnosed with hemolytic disease of newborn caused by rhesus incompatibility. What blood group and Rh are likely in the father?
A. II (A), Rh+
B. I (0), Rh+
C. III (B), Rh+
D. I (0), Rh-
E. II (A), Rh-

81. 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

82. 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. Triple X syndrome
B. Edwards' syndrome
C. Patau's syndrome
D. Klinefelter's syndrome
E. Turner's syndrome

83. 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

84. 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)

85. 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. Chemotherapy
C. Ultrasound
D. Enzymes
E. X-ray therapy

86. 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

87. 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

88. 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

89. 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

90. 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. Pleiotropy
B. Complementary interaction
C. Polymery
D. Codominance
E. Semidominance

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

92. 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 boy's parents are healthy but his grandfather by his mother's side suffers from the same disease. What type of disease inheritance is it?
A. Recessive, sex-linked
B. Dominant, sex-linked
C. Autosomal recessive
D. Autosomal dominant
E. Semidominance

93. Exposure to colchicine resulted in metaphase plate of a human containing 23 chromosomes more than it is normal. Name this mutation:
A. Polyploidy
B. Aneuploidy
C. Polyteny
D. Inversion
E. Translocation

94. 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

95. A married couple came for a genetic counseling. The husband suffers from insulin-independent diabetes mellitus, while the wife is healthy. What is the probability of their child developing insulin-independent diabetes mellitus?
A. Higher than in the population
B. The same as in the population

C. Lower than in the population
D. 100%
E. 50%

96. An infant has been diagnosed with microcephaly. Doctors suspect that this brain disorder developed due to the fact that the mother had been taking actinomycin D during her pregnancy. What germinal layers have been affected by this teratogen?
A. Ectoderm
B. Entoderm
C. Mesoderm
D. Entoderm and mesoderm
E. All germinal layers

97. An 8-week-pregnant woman with acute respiratory disease and temperature rise up to 39.0 ºC 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

98. 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

99. 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. Toxoplasma
C. Leishmania
D. Intestinal trichomonad
E. Trypanosome

100. 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

101. 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. Phtirus pubis
C. Pulex irritans
D. Cimex lectularius
E. Blattella germanica

102. 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

103. A patient who has recently arrived 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 prove or to disprove 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

104. As an example of specific human parasites one can name Plasmodium falciparum, human pinworm and some others. The source of parasite invasion in these cases is always a human. Such specific human parasites cause the diseases that are called:
A. Anthroponoses
B. Zoonoses
C. Anthropozoonoses
D. Infections
E. Multifactorial diseases

105. A group of Ukrainian tourists returning from Samarqand was bringing with them gerbils. During examination in customs office ulcers were detected on the skin of the animals. What protozoa is the most likely to cause the disease in the animals, if mosquitos are the carriers?
A. Leishmania tropica major

B. Balantidium coli
C. Plasmodium falciparum
D. Trypanosoma cruzi
E. Toxoplasma gondii

106. A patient diagnosed with acute dysentery has been treated for 3 days in an infectious diseases hospital. On admission there were complaints of high temperature, stomachache and fluid excrements with mucus up to 8-10 times a day. What sample should be taken for analysis?
A. Feces
B. Urine
C. Bile
D. Liquor
E. Blood

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

108. In one of Polessia regions there was an outbreak of helminthiasis manifested by cramps and facial edemas. 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

109. Autopsy of a Middle-Eastern woman, who had been suffering from wasting fever for a long time, revealed enlarged blackened liver and spleen. Bone marrow was hyperplastic and black-colored as well. Cerebral cortex was smoky grey. What disease is it characteristic of?
A. Malaria
B. AIDS
C. Epidemic typhus
D. Sepsis
E. Hepatitis

110. A 26-year-old woman 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

111. In the South and Central America there can be found a species of trypanosomes that is the causative agent of Chagas disease. What animal is the infection carrier specific to this disease?
A. Triatomine bug
B. Cockroach
C. Tsetse fly
D. Mosquito
E. Gnat

112. In one of Polessye regions there was an outbreak of helminthiasis manifested by cramps and facial edemas. 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

113. During dehelmintization there was a 3.5-meter-long tapeworm produced from the patient's intestine.There are 4 suckers and hooks on the tapeworm's scolex. Mature segments of the tapeworm are immobile and have up to 12 uterine branches. What disease is it?
A. Teniasis
B. Echinococcosis
C. Beef tapeworm infection
D. Diphyllobothriasis
E. Opisthorchiasis

114. 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

115. 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. Anopheles
B. Culex
C. Aedes
D. Mansonia
E. Culiseta

116. 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

117. 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. Enterobins vermicularis
B. Ascaris lumbricoides
C. Ancylostoma duodenalis
D. Trichina
E. Trichuris

118. 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. Visceral leishmaniasis
B. Balantidiasis
C. Amebiasis
D. Toxoplasmosis
E. Lambliasis

119. 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. Enterobiasis
B. Diphyllobothriasis
C. Teniasis
D. Ascaridiasis

E. Opisthorchiasis

120. 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

121. 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. Ancylostomiasis

122. 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

123. 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. Ascariasis
B. Enterobiosis
C. Trichocephaliasis
D. Paragonimiasis
E. Opistorchis

124. 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

125. 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

126. A child complains of general weakness, loss of appetite, a troubled sleep, itching in theperianal area. The provisional diagnosis is enterobiasis. In order to specify this diagnosis it is necessary to perform:
A. Scraping from perianal folds
B. Roentgenoscopy
C. Biopsy of muscle tissue
D. Immune diagnostics
E. Duodenal contents analysis

127. 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. Pinworm
C. Ascarid
D. Whipworm
E. Hookworm

128. 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

129. 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. Echinococcosis
B. Teniasis
C. Paragonimiasis
D. Dicroceliasis
E. Fascioliasis

130. 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

131. 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

132. 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

133. 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

134. 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

135. 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. Wohlfahrtia fly
B. Kissing bug
C. Stable fly (Stomoxys calcitrans)
D. Malarial mosquito
E. Mosquito

136. A shepherd, who tended to the flock of sheep with his dogs, gradually developed pain in the chest and bloody expectorations. X-ray revealed spheric helminth larvae in the patient's lungs. Specify the helminth that could be the causative agent of this disease:
A. *Echinococcus*
B. *Hymenolepis nana*
C. *Diphylobotrium latum*
D. *Fasciola hepatica*
E. *Taenia solium*

137. A patient with probable liver abscess was delivered to a surgical department. The patient for a long time had been on an assignment in an African country and had recurrent cases of acute gastrointestinal disturbance. What protozoan disease can it be?
A. Amebiasis
B. Trypanosomiasis
C. Leishmaniasis
D. Malaria
E. Toxoplasmosis

138. 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. Amphibian
B. Fishes
C. Reptiles
D. Mammals
E. Birds