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MEDICAL BIOLOGY

TESTS ITEMS

for the first year training students
of the medical faculty

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MOLECULAR AND CELLULAR
LEVELS ORGANIZATION OF LIFE. GENETICS

1. Oval and round organelles with double wall are seen at the electron micrograph. The outer membrane is smooth, the inner membrane folded into cristae contain enzyme ATPase synthetase. These are:
 - A. Mitochondria
 - B. Golgi complex
 - C. Lysosomes
 - D. Centrioles
 - E. Ribosomes
2. A tissue sample of benign tumor was studied under the electron microscope. A lot of small (15-20 nm) spherical bodies, consisting of 2 unequal subunits were detected. These are:
 - A. Golgi complex
 - B. Smooth endoplasmic reticulum
 - C. Ribosomes
 - D. Microtubules
 - E. Mitochondria
3. Low level of albumins and fibri nogen was detected in the patient's blood. Decreased activity of what organelle of the liver hepatocytes can most probably cause it?
 - A. Agranular endoplasmatic reticulum
 - B. Mitochondrions
 - C. Golgi complex
 - D. Granular endoplasmatic reticulum
 - E. Lysosomes
4. 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. Endocytosis
 - B. Exocytosis
 - C. Active transport
 - D. Facilitated diffusion
 - E. All answers are false
5. Labelled amino acids alanine and tryptophane were injected to a mouse in order to study localization of protein synthesis in its cells. The labelled amino acids will be accumulated near the following organellas:
 - A. Smooth endoplasmic reticulum
 - B. Ribosomes
 - C. Cell centre
 - D. Lysosomes
 - E. Golgi apparatus
6. The organisms to be identified have a nucleus surrounded by a nuclear membrane. Genetic material is concentrated predominantly in the chromosomes which consist of

- DNA strands and protein molecules. These cells divide mitotically. Identify these organisms:
- Eukaryotes
 - Bacteriophages
 - Prokaryotes
 - Viruses
 - Bacteria
7. Which of the following processes does a cell use to take up molecules against their concentration gradient?
- Simple diffusion
 - Active transport
 - Facilitated diffusion
 - Endocytosis
 - Osmosis
8. Of the following list of substances that can enter a cell, match the order with the correct mechanism by which they would enter cells: oxygen, water, sodium ions, potassium ions, and bacterium (Note that sodium ions are more concentrated outside cells than inside; potassium ions are more concentrated inside cells than outside):
- Simple diffusion, osmosis, facilitated diffusion, active transport, endocytosis
 - Simple diffusion, osmosis, facilitated diffusion, active transport, exocytosis
 - Osmosis, simple diffusion, facilitated diffusion, active transport, endocytosis
 - Passive transport, osmosis, simple diffusion, facilitated diffusion, active transport
 - Endocytosis, active transport, active transport, facilitated diffusion, exocytosis
9. Facilitated diffusion requires:
- A concentration gradient
 - Energy
 - A membrane transport protein
 - A membrane transport protein and a concentration gradient
 - Special condition around the cell
10. Which of the following transport processes require(s) energy?
- Osmosis
 - Facilitated diffusion
 - Facilitated diffusion and osmosis
 - Facilitated diffusion, osmosis, and endocytosis
 - Endocytosis
11. Many metabolic poisons work by inhibiting ATP production. Which type of transport would be most affected?
- Active transport
 - Facilitated diffusion
 - Osmosis
 - Simple diffusion
 - All types of transport
12. The active transport through the membrane is:
- Transport of substances with using of energy against a gradient of concentration

- B. Transport of substances with using of energy by gradient of concentration
 - C. Transport of substances without of energy usage against a gradient of concentration
 - D. Transport of substances without expense of energy usage by gradient of concentration
 - E. Diffusion
- 13.** Why do erythrocytes swell and burst when placed in water?
- A. Since water concentration is higher outside the cell, water moves inward by passive diffusion
 - B. Since hemoglobin concentration is higher inside the cell, hemoglobin moves outward by exocytosis
 - C. Since potassium ions are more concentrated inside the cells, potassium ions move outward by osmosis
 - D. Erythrocytes pump water inward by active transport to balance osmotic gradients
 - E. Water is a universal solvent and simply dissolves the erythrocyte membranes
- 14.** The basic structural component of membranes is:
- A. Proteins
 - B. Phospholipids
 - C. Polysaccharides
 - D. Glycoprotein
 - E. Corticoids
- 15.** Dissimilation is:
- A. Synthesis in the nucleus
 - B. Lipids synthesis
 - C. Synthesis of proteins
 - D. Synthesis of ATP
 - E. Synthesis in the cell
- 16.** Structure of cellular membrane is:
- A. Friable, albuminous
 - B. Rigid, cellulose
 - C. Rigid, chitinous
 - D. Fluid-mosaic
 - E. Elastic, silicone
- 17.** Name the place of the ATP synthesis:
- A. Lysosomes
 - B. Mitochondria
 - C. Golgi complex
 - D. Peroxisomes
 - E. Plastids
- 18.** The function of the compartmentalization of membranes means the:
- A. Partition of the cell by sites with different metabolic activity
 - B. Partition of the cell by cytoskeletons
 - C. Partition of the cell into sites with different organelles
 - D. Partition of the cell by Golgi complex
 - E. Partition of the cell by endoplasmatic reticulum
- 19.** Between two layers of a membrane are present:
- A. Covalent bonds
 - B. Hydrophobic interactions
 - C. Ionic interactions
 - D. Hydrogen bonds

- E. Protein bonds
- 20.** Assimilation in general is:
- Synthesis of substances in the cell
 - Synthesis of proteins
 - Synthesis of ATP
 - Synthesis in the nucleus
 - Lipids synthesis
- 21.** At the laboratory experiment the eukocyte culture was mixed with staphylococci. Neutrophile leukocytes engulfed and digested bacterial cells. This processes are termed:
- Pinocytosis
 - Phagocytosis
 - Diffusion
 - Facilitated diffusion
 - Osmosis
- 22.** What is the function of the regulator gene?
- Commences the transcription
 - Switches on the structural genes
 - Codes the synthesis of a repressor protein
 - It joins the repressor protein
 - Joins the operator and block the transcription
- 23.** What is the promoter region?
- It is a region of RNA that binds to the RNA polymerase and initiates transcription
 - It is a component of each type of RNA
 - It is responsible for the selective nature of transcription
 - It is a region of a parent DNA strand that binds to the RNA polymerase and initiates transcription
 - It is the region of an intrones
- 24.** The sequences of three nitrogenous bases that initiate or stops translation or specify a particular amino acid in DNA translation are named:
- Polymerase
 - DNA
 - Cells
 - Codon
 - Cystron
- 25.** Three codons tell protein synthesis to cease. They are named:
- Silent
 - Stop
 - Anticodons
 - Start
 - Unit
- 26.** A gene:
- Is synonymous with a chromosome
 - Is composed of mRNA
 - Contains only those nucleotides required to synthesize a protein
 - Is a specific segment of nucleotides in DNA
 - Specifies the sequence of nutrients required by the body
- 27.** A DNA strand has the sequence A-C-A-G-C-C-G-T-
- What would be its complementary strand?
 - A. A-C-A-G-C-C-G-T-A
 - B. U-G-U-C-G-G-C-A-U

- C. G-T-G-A-T-T-A-C-G
- D. T-A-G-C-C-G-A-C-A
- E. T-G-T-C-G-G-C-A-T

28. How much amino acids are coded by gene with 600 nucleotides in both strands?

- A. 300
- B. 600
- C. 200
- D. 100
- E. 1800

29. In genetic code one amino acid often has more than one code triplet. Such characteristic is named:

- A. Degeneracy
- B. Colinearity
- C. Universality
- D. No overlapping
- E. No punctuation

30. A section of chromosomes that codes for a trait can be called a(n):

- A. Gene
- B. Nucleotide
- C. Base-pair
- D. Nucleus
- E. Nucleosome

31. The unit within the nucleus that contains a protein complex (located at the center of the unit) of two H2A, H2B, H3 and H4 histone proteins with DNA wrapped around the complex in two turns, each turn consisting of about 80 base pairs is called a:

- A. Nucleosome
- B. Ribosome

- C. Centrosome
- D. Histosome
- E. Chromosome

32. Which of the following is an accurate statement concerning the differences between DNA and RNA?

- A. RNA is usually double-stranded, but DNA is usually single-stranded
- B. RNA has the sugar deoxyribose, but DNA has the sugar ribose
- C. RNA lacks the base thymine (which is found in DNA) and has uracil instead
- D. RNA contains three different nucleotides, but DNA contains four different nucleotides
- E. DNA and RNA have the same structure

33. Information in DNA is carried in:

- A. The sugar-phosphate backbone of one DNA strand
- B. The base pairs between nucleotides in the two DNA strands
- C. The proteins that bind to the DNA double helix
- D. The order of the nucleotide bases in one DNA strand
- E. The order of the amino acids

34. Which of the following statements about the functions of RNA is correct?

- A. rRNA is an important component of ribosomes

- B. The information for protein synthesis is carried by tRNA
- C. rRNA is an intermediate in the synthesis of mRNA
- D. Translation requires tRNA and mRNA, but not rRNA
- E. tRNA and mRNA are the components of the ribosome structure
- 35.** mRNA complementary to DNA is produced via:
- A. Replication
- B. Translation
- C. Protein synthesis
- D. Reparation
- E. Transcription
- 36.** Since DNA is in the nucleus, and protein synthesis takes place in the cytoplasm, there must be an intermediary that carries the DNA's message to the cytoplasm. This intermediary is called:
- A. tRNA
- B. mRNA
- C. rRNA
- D. ER
- E. ATP
- 37.** Which of this is the type of RNA that carries a specific amino acid to the ribosome?
- A. tRNA
- B. mRNA
- C. rRNA
- D. DNA
- E. iRNA
- 38.** Which of the following is a single-stranded molecule that contains the information for assembly of a specific protein?
- A. Transfer RNA
- B. Messenger RNA
- C. Exon DNA
- D. Intron DNA
- E. Ribosomal RNA
- 39.** DNA:
- A. Takes part directly in protein synthesis by leaving the nucleus and being translated on the ribosome
- B. Has nothing to do with protein synthesis; it is involved only in cell division
- C. Takes part indirectly in protein synthesis; the DNA itself stays in the nucleus
- D. Is involved in protein synthesis within the nucleus
- E. Codes for mRNA but not for tRNA or rRNA
- 40.** Anticodon is the term applied to:
- A. The list of amino acids that corresponds to the genetic code
- B. The concept that multiple codons sometimes code for a single amino acid
- C. The several three-nucleotide stretches that code for "stop"
- D. The part of the tRNA that binds to an amino acid
- E. The part of the tRNA that interacts with the codon
- 41.** The physical or chemical factor damaged DNA. The process of DNA correction is named:

- A. Reparation
 - B. Transduction
 - C. Transcription
 - D. Translation
 - E. Transformation
- 42.** How many hydrogen bonds are between C and G in the DNA?
- A. 1
 - B. 2
 - C. 3
 - D. 0
 - E. 4
- 43.** The structure of the nucleotide in RNA includes:
- A. A nitrogenous bases-deoxyribose-phosphoric acid
 - B. A nitrogenous bases-lactose-phosphoric acid
 - C. A nitrogenous bases-ribose-phosphoric acid
 - D. A nitrogenous bases-glucose-organic acid
 - E. A nitrogenous bases-ribose-hydrochloric acid
- 44.** On an electron micrograph a scientist has identified a structure formed by eight histone proteins and a part of DNA molecule which makes about 1,75 revolutions around the molecules. Which structure has been identified?
- A. Nucleosoma
 - B. Elementary fibril
 - C. Half-chromatid
 - D. Chromatid
 - E. Chromosome
- 45.** An experiment proved that UV irradiated 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. RNA ligase
 - B. Endonuclease
 - C. Primase
 - D. DNA polymerase
 - E. DNA gyrase
- 46.** A gene contains 10 exons and 7 introns. The m-RNA which is synthesized on the template of DNA after the maturation will have the following structure:
- A. 7 introns
 - B. 1 exone and 1 introne
 - C. 10 exons
 - D. 17 exones
 - E. 10 exons and 7 introns
- 47.** The flow of genetic information in cells depends on specific base pairing between nucleotides. Which of the following correctly matches the type of base pairing with the process of translation?
- A. In translation, RNA base-pairs with DNA
 - B. In translation, rRNA base-pairs with DNA

- C. In translation, tRNA base-pairs with rRNA
- D. In translation, tRNA base-pairs with mRNA
- E. In translation, RNA base-pairs with precursor RNA
- 48.** How does the sequence of a strand of DNA correspond to the amino acid sequence of a protein? This concept is explained by the central dogma of molecular biology which states that :
- A. DNA is replicated and sections of the replication are used to make protein
- B. DNA is used to make RNA which is used to make protein
- C. Protein is manufactured directly from DNA without any intermediate
- D. DNA is used to make only enzymes
- E. None of the above
- 49.** Which of the following are directly involved in the production of the mature mRNA from its precursor (primary transcript)?
- A. DNA ligase
- B. Small nuclear ribonucleoprotein particles
- C. RNA
- D. Site-specific recombination enzymes
- E. RNA polymerase
- 50.** In all organisms, the AUG codon codes for:
- A. Termination of transcription
- B. Termination of chain elongation
- C. Formation of a peptide bond between adjacent amino acids
- D. Initiation of translation
- E. Termination tRNA molecule
- 51.** Interrupted coding sequences include long sequences of bases that do not code for amino acids. These noncoding sequences, called _____, are found in _____ cells:
- A. Exons; prokaryotic
- B. Introns; prokaryotic
- C. Exons; eukaryotic
- D. Introns; eukaryotic
- E. None of the above
- 52.** The repressor is a:
- A. Protein molecule
- B. DNA molecule
- C. Lipid molecule
- D. RNA molecule
- E. Carbohydrate
- 53.** What would be the effect of a mutation in the operator that blocked the repressor binding?
- A. The genes would not be expressed
- B. The genes would be repressed by lactose
- C. The genes would be expressed constitutively
- D. The genes would be inducible by lactose
- E. None of the above
- 54.** Synthesis of a protein based on the sequence of messenger RNA:

- A. Is called transcription
 - B. Is catalyzed by DNA polymerase
 - C. Is catalyzed by RNA polymerase
 - D. Is called translation
 - E. Occurs in the nucleus
- 55.** Genes that are always transcribed are called:
- A. Operons
 - B. Repressor genes
 - C. Constitutive genes
 - D. Operator genes
 - E. Transposons
- 56.** The polypeptide consists of 52 amino acids. How many codones has got mRNA which was a matrix?
- A. 44
 - B. 52
 - C. 25
 - D. 156
 - E. 312
- 57.** RNA-polymerase B(II) is blocked due to amanitine poisoning (poison of deathcup). It disturbs:
- A. Synthesis of m-RNA
 - B. Synthesis of t-RNA
 - C. Reverse transcription
 - D. Primers synthesis
 - E. Maturation of m-RNA
- 58.** Examination of a patient revealed reduced contents of magnesium ions that are necessary for attachment of ribosomes to the granular endoplasmic reticulum. It is known that it causes disturbance of protein biosynthesis. What stage of protein biosynthesis will be disturbed?
- A. Transcription
 - B. Translation
 - C. Replication
 - D. Aminoacid activation
 - E. Termination
- 59.** 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. Reparation
 - C. Mutation
 - D. Processing
 - E. Replication
- 60.** A patient has low rate of magnesium ions that are necessary for affixion of ribosomes to the endoplasmic reticulum. It is known that it causes disturbance of protein biosynthesis. At what stage is protein biosynthesis impaired?
- A. Translation
 - B. Transcription
 - C. Replication
 - D. Amino acid activation
 - E. Termination
- 61.** It was found out that some compounds, for instance fungi toxins and some antibiotics can inhibit activity of RNA-

polymerase. What process will be disturbed in a cell in case of inhibition of this enzyme?

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

62. A patient's organism has decreased concentration of magnesium ions that are necessary for attachment of ribosomes to the granular endoplasmic reticulum. It is known that this causes protein biosynthesis disturbance. What stage of protein biosynthesis will be disturbed?

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

63. 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

64. It was found out that some compounds, for instance fungi toxins and some antibiotics can inhibit activity of RNA-

polymerase. What process will be disturbed in a cell in case of inhibition of this enzyme?

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

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

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

66. 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

67. During cell division, DNA replication occurs by a signal from the cytoplasm, and a certain portion of the DNA

- helix unwinds and splits into two individual strains. What enzyme facilitates this process?
- RNA polymerase
 - Ligase
 - Helicase
 - Restrictase
 - DNA polymerase
- 68.** During which stage of mitosis does cytokinesis usually occur in animals?
- Prophase
 - Metaphase
 - Anaphase
 - Interphase
 - Telophase
- 69.** A biologist is measuring the amount of DNA in cells growing in the laboratory. The quantity of DNA would be seen to double firstly in:
- G1 interphase
 - Prophase
 - S phase of interphase
 - G2 phase of interphase
 - M phase
- 70.** Which two phases of mitosis are essentially opposite with respect to changes in the nucleus?
- Prophase and telophase
 - Prophase and interphase
 - Prophase and metaphase
 - Metaphase and anaphase
 - Metaphase and telophase
- 71.** A human being has _____ autosomes and _____ sex chromosomes:
- 23, 1
 - 23, 23
 - 2, 2
 - 46, 2
 - 22 pairs, 1 pair
- 72.** The two components that make up a duplicated chromosome are called
- Homologues
 - Sister chromatids
 - Chromatins
 - Translation
 - Karyotype
- 73.** A picture of a person's chromosomes is called a(n):
- Syndrome
 - Chromatin
 - Fingerprint
 - Genetic card
 - Karyotype
- 74.** During which phase of mitosis is DNA replicated?
- Interphase S period
 - Telophase
 - Prophase
 - Interphase G1 period
 - Metaphase
- 75.** During which stage of mitosis do the centromeres split?
- Prophase
 - Interphase
 - Telophase
 - Anaphase
 - Synthesis stage
- 76.** If 10 molecules of DNA are present in the nucleus of a cell, which has just divided, what is the relative amount

- present in this cell during prophase of the next mitosis?
- A. 20
B. 5
C. 10
D. 2
E. 14
- 77.** Somatic cells of a human have ____ chromosomes and are called ____:
- A. 10, haploid
B. 46, diploid
C. 92, diploid
D. 23, haploid
E. 46, haploid
- 78.** Which of the following is not a function of mitosis in humans?
- A. Production of gametes from diploid cells
B. Repair of wounds
C. Growth
D. Replacement of dead cells
E. Replacement of damaged cells
- 79.** During oogenesis, the egg grows in size by accumulating _____ reserves to support future growth and development after fertilization:
- A. Yolk
B. Hormone
C. Sugar
D. Water
E. Mitochondrial
- 80.** What is the major difference between sexual and asexual reproduction?
- A. Sexual reproduction does not require cell division
B. Asexual reproduction produces offspring identical to the parent
C. Asexual reproduction cannot occur in diploid species
D. Asexual reproduction cannot occur in eukaryotes
E. Sexual reproduction produces offspring identical to the parent
- 81.** Gametogenesis is the:
- A. Formation of eggs by the female and sperm by the male
B. Union of an egg and a sperm
C. Cleavage of the embryo
D. Menstrual cycle in the female
E. None of the choices are correct
- 82.** The function of the tail of the sperm is to:
- A. Penetrate the egg
B. Contain the mitochondria
C. Regulate protein synthesis
D. Carry genetic information
E. Move the sperm
- 83.** If $2n = 8$, for a particular cell, then the chromosome number in egg cell after meiosis would be:
- A. 12
B. 10
C. 8
D. 6
E. 4
- 84.** Meiosis is involved in which of the following life cycle events?
- A. Cell regeneration
B. Growth
C. Spermatogenesis

- D. The healing of wounds
E. Development
- 85.** Fertilization in humans normally occurs in the:
- A. Uterus
B. Outer third of the oviducts
C. Vagina
D. Abdominal cavity between ovary and oviducts
E. Ovarian follicle at time of ovulation
- 86.** The final product of spermatogenesis is four:
- A. Sertoli (sustentacular) cells
B. Primary oocytes
C. Primary spermatocytes
D. Spermatids
E. Spermatogonia
- 87.** The acrosome functions to:
- A. Contain enzymes that help a sperm head "digest" its way into an egg
B. Increase the sperm's motility
C. Direct the sperm to the egg
D. Transport the chromosomes into the egg
E. Store energy for swimming to the egg
- 88.** During the process of oogenesis:
- A. Four ovum are produced
B. Only one ovum is produced
C. Sperm cells are produced
D. Only one polar body is produced
E. One ovum and one sperm are produced
- 89.** Parthenogenesis is:
- A. Reproduction where unfertilized eggs develop into mature individuals without fertilization
B. An asexual means of reproduction involving budding
C. Asexual reproduction by splitting or fission into several new individuals
D. Asexual but haploid by means of internal self-fertilization
E. Sexual reproduction by cross-fertilization between hermaphrodites
- 90.** The _____ undergo the first meiotic division in the production of sperm:
- A. Sertoli (sustentacular) cells
B. Primary oocytes
C. Spermatids
D. Spermatogonia
E. Primary spermatocytes
- 91.** A sperm penetrates an egg by:
- A. Melting its way in using nucleic acids in its DNA
B. Forward pressure of the flagellum forcing it through the membrane
C. Enzymes in the acrosome that dissolve the jelly coating
D. Being wedge shaped and chemically attracted to the egg
E. Chromosomes aligning across the membrane and causing spindle fibers to form
- 92.** In oogenesis, the sequence of the development of an egg is:

- A. Ootid, primary oocyte, secondary oocyte, oogonium, ovum
- B. Primary oocyte, secondary oocyte, ootid, oogonium, ovum
- C. Oogonium, ootid, primary oocyte, ovum
- D. Oogonium, primary oocyte, secondary oocyte, ootid, ovum
- E. Oogonium, secondary oocyte, ootid, ovum
- 93.** Polar bodies are best characterized as:
- A. Follicles that did not become the graafian follicle
- B. One haploid nucleus from the first meiotic division and one haploid nucleus from the second meiotic division
- C. Two haploid nuclei from the first meiotic division
- D. Two haploid nuclei from the second meiotic division
- E. Three haploid nuclei; one from the second division and one from the first that then divided again to form two more
- 94.** Exchange of segments between homologous chromosomes is called:
- A. Crossing over
- B. Inversion
- C. Duplication
- D. Translocation
- E. Deletion
- 95.** When two chromosomes resemble each other in size, shape and the kind of hereditary information carried, they are said to be:
- A. Somatic
- B. Diploid
- C. Homologous
- D. Homozygous
- E. Gametes
- 96.** Complete linkage results in the production of only:
- A. Female gametes
- B. Recombinant gametes
- C. No crossover gametes
- D. Male gametes
- E. Crossover Gametes
- 97.** Show the stage of crossing over in prophase 1:
- A. Pachytene
- B. Leptotene
- C. Zygotene
- D. Diplotene
- E. Diakinesis
- 98.** During which stage of meiosis do the homologous chromosomes begin to move toward the poles?
- A. Prophase I
- B. Anaphase I
- C. Telophase I
- D. Anaphase II
- E. Telophase II
- 99.** How many chromosomes (n) and DNA (c) does present in metaphase 2 of meiosis?
- A. $n2c$
- B. nc
- C. $2n2c$
- D. $2n4c$
- E. $4n4c$

- 100.** The last stage of prophase 1 in meiosis is:
- A. Pachytene
 - B. Zygotene
 - C. Diakinesis
 - D. Leptotene
 - E. Diplotene
- 101.** During which stage of meiosis do the sister chromatids begin to move toward the poles?
- A. Prophase I
 - B. Telophase I
 - C. Anaphase I
 - D. Anaphase II
 - E. Telophase II
- 102.** When _____ occurs between nonsister chromatids of homologous, genetic exchange between chromosomes provides new combination of genes that are different from either parent:
- A. Cytokinesis
 - B. Mitosis
 - C. Crossing-over
 - D. Cell division
 - E. Centromeres splitting
- 103.** During which stage of meiosis do tetrads line up at the equator?
- A. Telophase I
 - B. Metaphase II
 - C. Anaphase II
 - D. Metaphase I
 - E. Anaphase I
- 104.** The following events occur in mitosis and/or meiosis. Which event occurs only in meiosis?
- A. Chromatid formation
 - B. Chromosome condensation
 - C. Homologous chromosomes pairing
 - D. Chromosome movement to poles
 - E. DNA replication
- 105.** Moving of the daughter chromatids to the poles of the cell is observed in the mitotically dividing cell. At what stage of the mitotic cycle is this cell?
- A. Metaphase
 - B. Telophase
 - C. Anaphase
 - D. Prophase
 - E. Interphase
- 106.** While studying maximally spiralized chromosomes of human karyotype the process of cell division was stopped in the following phase:
- A. Prophase
 - B. Metaphase
 - C. Interphase
 - D. Anaphase
 - E. Telophase
- 107.** 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
- 108.** While studying maximally spiralized chromosomes of

human karyotype the process of cell division was stopped in the following phase:

- A. Prophase
- B. Interphase
- C. Anaphase
- D. Telophase
- E. Metaphase

109. 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

110. 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. Early telophase
- B. Prophase
- C. Metaphase
- D. Interphase
- E. Late telophase

111. Students study the stages of gametogenesis. They analyze a cell having a haploid number of chromosomes, and each chromosome consists of two chromatids. The chromosomes

are located in the equatorial plane of the cell. Such situation is typical for the following stage of meiosis:

- A. Metaphase of the first division
- B. Anaphase of the first division
- C. Metaphase of the second division
- D. Anaphase of the second division
- E. Prophase of the first division

112. In both mitosis and meiosis, sister chromatids separate during anaphase, but there are _____ haploid daughter nuclei produced by meiosis compared to _____ diploid nuclei by mitosis:

- A. 4,2
- B. 6,3,
- C. 2,4
- D. 3,6
- E. 9,1

113. An animal has 40 chromosomes in its gametes, how many chromosomes would you expect to find in this animal's brain cells?

- A. 1
- B. 80
- C. 20
- D. 40
- E. 46

114. Which statement correctly describes homologous chromosomes?

- A. They are formed during meiosis
- B. They are held together by centromeres

- C. They are not identical
 D. They carry the same gene loci
 E. They are separated during mitosis
- 115.** The genotype of a human zygote will differ from that of both parents. Which of the following does not contribute to this variation?
- A. Random combination of gametes
 B. Chiasmata occurring during meiosis
 C. Mutation of genes
 D. Presence of dominant genes
 E. Independent variation
- 116.** Which of the following is a major difference between mitosis and meiosis?
- A. Interphase is present only in mitosis
 B. DNA replication occurs only in mitosis
 C. Daughter chromatids separate only in meiosis
 D. Homologous chromosomes associate only in meiosis
 E. Chromosomes line up on the cell equator only in meiosis
- 117.** A diploid cell contains two pairs of homologous chromosome. Each pair is heterozygous for a pair of alleles, Aa and Bb respect. After meiosis, how many different combinations of these alleles could be produced in the haploid daughter cells?
- A. 2
 B. 4
 C. 8
 D. 16
 E. 64
- 118.** A diploid cell of a male organism has 16 chromosomes. How many chromosomes will be after meiosis in each of sperm cells?
- A. 8
 B. 16
 C. 32
 D. 46
 E. 4
- 119.** 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
- 120.** Which of the following crosses is a test cross?
- A. Unknown x AA
 B. Unknown x aa
 C. Unknown x Aa
 D. Unknown x unknown
 E. Unknown x AABb

- 121.** If a true-breeding purple plant is crossed with a true-breeding white flowered plant, the possible phenotypes of the first generation of plants are:
- All white
 - 50% purple and 50% white
 - 75% purple and 25% white
 - All purple
 - 50% white and 50% purple
- 122.** If a recessive trait is expressed in an organism's phenotype, what can you determine about its genotype?
- At least one allele in the genotype is recessive
 - You cannot determine anything about the organism's genotype
 - Both alleles in the genotype are dominant
 - Both alleles are linked
 - Both alleles in the genotype are recessive
- 123.** An organism's genotype describes:
- The alleles of the gene it contains
 - The form of a trait it displays
 - Its physical characteristics
 - The way it looks
 - The mutational variations
- 124.** There is an individual with a genotype of CCDD. How many genotypically different gametes based on these two pairs of alleles could be produced?
- 1
 - 2
 - 3
 - 4
 - 6
- 125.** Two alleles for pea plant height are designated T (tall) and t (dwarf). These alleles are found on:
- Genes
 - Sex chromosomes
 - Ribosomes
 - Homologous chromosomes
 - No homologous chromosomes
- 126.** Mendel's idea that pairs of characters separate during gamete formation is called the law of
- Independent assortment
 - Particulate inheritance
 - Dominance
 - Segregation
 - Incomplete dominance
- 127.** Which of the following phenotypic results are expected from a dihybrid cross?
- 1:1:1:1 ratio
 - All dominant for both traits
 - All recessive for both traits
 - 12:3:1 ratio
 - 9:3:3:1 ratio
- 128.** What is the segregation of phenotypes in the F₂ generation of a cross between a tall plant and a dwarf plant?
- 3 tall : 1 dwarf
 - 1 tall : 1 dwarf
 - 1 tall : 2 medium : 1 dwarf
 - All tall
 - All dwarf

- 129.** Which of the following is an example of a dihybrid cross?
- AaBb x aabb
 - aabb x AABB
 - AaBb x AaBb
 - aabb x aabb
 - AABb x aaBB
- 130.** Which of the following correctly identifies the mode of inheritance for the given genetic features?
- Common baldness - dominant
 - Blue eye color - dominant
 - Sickle cell anemia – recessive
 - Polydactyly - recessive
 - Albinism – recessive
- 131.** Mendel's laws are explained by:
- Chromosome behavior in meiosis
 - Chromosome behavior in mitosis
 - Cytokinesis in mitosis and meiosis
 - Mendel's laws have not been explained
 - Chromosome number in nucleus
- 132.** A woman with O (I) blood group has born a child with AB blood group. This woman's husband has A blood group. What genetic interaction explains this phenomenon?
- Codominance
 - Polymery
 - Incomplete dominance
 - Complementation
 - Recessive epistasis
- 133.** 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?
- Complementary interaction
 - Pleiotropy
 - Polymery
 - Codominance
 - Semidominance
- 134.** It is known that the gene responsible for development of blood groups according to ABO system has three allele variants. If a man has IV blood group, it can be explained by the following variability form:
- Mutational
 - Phenotypic
 - Genocopy
 - Phenocopy
 - Combinative
- 135.** 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

136. 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. Complementarity
- B. Codominance
- C. Multiple allelism
- D. Pleiotropy
- E. Incomplete dominance

137. Consider the cross AaBb x AaBb. If the alleles for both genes exhibit complete dominance, what genotypic ratio is expected in the resulting offspring?

- A. 1:1:1:1
- B. 9:3:3:1
- C. 3:6:3:1:2:1
- D. 1:2:1:2:4:2:1:2:1
- E. 9:7

138. An example of incomplete dominance is:

- A. Pink flowers from white snapdragons crossed with red snapdragons
- B. Albinism
- C. ABO blood types in humans

- D. Eyes color
- E. Color of pea seeds

139. Skin color in humans is determined by several different genes. This is an example of what pattern of inheritance?

- A. Codominance
- B. Incomplete dominance
- C. Multiple alleles
- D. Polygenic inheritance
- E. Epistasis

140. In snapdragons, red flower color, R, is incompletely dominant to white, r, with Rr being pink. A red flowered plant is crossed with a pink flowered one. Which progeny could occur in this cross?

- A. 50% red flowered, 50% pink flowered
- B. Red flowered
- C. Pink flowered
- D. Pink flowered and white flowered
- E. 75% pink flowered and 25% red flowered

141. Brachyphalangy is lethal when homozygous and is dominant in humans. Heterozygotes have characteristically short fingers. Two short-fingered persons are married. What genotypic ratios are expected in their living progeny?

- A. 1 AA:2 Aa:1 aa
- B. 1AA:1aa
- C. 100% aa
- D. 2Aa:aa

E. 1Aa:aa

142. In humans there are three alleles at the ABO locus causing blood types A, B, AB, O. What genotypic combinations are possible in the offspring of a man with AB blood group (IAIB) married to a woman with A blood (IAIO)?

- A. IAIA, IAIO, IAIB, IBIO
- B. IAIA, IAIB
- C. IAIA, IBIO, IAIO
- D. IAIB
- E. IAIB, IOIO

143. What are the chances of a woman with Type AB and a man with Type A having a child with Type O?

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

144. What gene interaction is non-allelic?

- A. Complete dominance
- B. Incomplete dominance
- C. Complementarity
- D. Codominance
- E. Pleiotropy

145. The cross gives a ratio of 13:3. What type of gene interaction?

- A. Epistasis
- B. Complementary genes
- C. Incomplete dominance
- D. Polygenic traits
- E. Pleiotropy

146. Human height is believed to be controlled by at least three pairs of genes. What type of gene interaction?

- A. Complementary genes
- B. Polygenic traits
- C. Incomplete dominance
- D. Pleiotropy
- E. Epistasis

147. Which form of gene interactions is characterized that one gene masks the phenotypic effect of gene from different pair?

- A. Epistasis
- B. Complete dominance
- C. Incomplete dominance
- D. Superdominance
- E. Complementarity

148. Allele is said to be pleiotropic if:

- A. The dominant gene completely masks the effect of recessive gene in heterozygous condition
- B. The dominant allele is partially expressed
- C. Allele has more than one effect on the phenotype
- D. One dominant allele in heterozygous has more expressive manifestation than in homozygous one
- E. One pair of gene prevent the expression of another pair

149. Non allelic genes:

- A. Are situated in the non-homologous chromosomes
- B. Have the same structure

- C. Have the same loci in the homologous chromosomes
- D. Control two alternative expressions
- E. All of the above

150. The example of codominance is:

- A. AB blood group
- B. Blood group B
- C. Blood group A
- D. Blood group O
- E. Pink color in snapdragon flowers

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

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

152. The study of the genealogy of a family with hypertrichosis (helix excessive pilosis) has demonstrated that this symptom is manifested in all generations only in men and is inherited by son from his father. What is the type of hypertrichosis inheritance?

- A. Autosome-recessive
- B. Autosome-dominant
- C. X-linked recessive chromosome

- D. Y-linked chromosome
- E. X-linked dominant chromosome

153. Hypertrichosis of auricles is caused by a gene that is localized in Y-chromosome. Father has this feature. What is the probability to give birth to a boy with such anomaly?

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

154. A patient (male) with Red-green color blindness has two healthy parents. Find his parents genotype:

- A. $XDXd \times XDY$
- B. $XdXd \times XdY$
- C. $XDXd \times XdY$
- D. $XDXD \times XdY$
- E. $XDXD \times XDY$

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

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

- 156.** 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
- 157.** 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
- 158.** Part of the DNA chain turned 180 degree as a result of gamma radiation. What type of mutation took place in the DNA chain?
- A. Deletion
 - B. Doubling
 - C. Translocation
 - D. Inversion
 - E. Replication
- 159.** 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
- 160.** Continuous taking of some drugs foregoing the pregnancy increase the risk of giving birth to a child with genetic defects. What is this effect called?
- A. Embryotoxic effect
 - B. Teratogenic effect
 - C. Mutagenic effect
 - D. Fetotoxic effect
 - E. Blastomogenic effect
- 161.** 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. Replication
 - C. Transcription
 - D. Processing
 - E. Repression
- 162.** 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
- 163.** 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. Translocation
 - C. Inversion
 - D. Insufficiency
 - E. Duplication
- 164.** It is known that the gene responsible for development of blood groups according to ABO system has three allele variants. If a man has IV blood group, it can be explained by the following variability form:
- A. Mutational
 - B. Phenotypic
 - C. Genocopy
 - D. Phenocopy
 - E. Combinative
- 165.** 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. Inversion
 - B. Deletion
 - C. Polyploidy
 - D. Duplication
 - E. Translocation
- 166.** A mother had taken synthetic hormones during pregnancy. Her daughter was born with hirsutismformally resembling of adrenal syndrome. Such manifestation of variability is called:
- A. Phenocopy
 - B. Mutation
 - C. Recombination
 - D. Heterosis
 - E. Replication
- 167.** A female suffered rubella during pregnancy. The child was born with developmental abnormalities, namely cleft lip and palate. The child's genotype is normal. These malformations are a manifestation of:
- A. Polyploidy
 - B. Combinative variability
 - C. Modification variability
 - D. Chromosomal mutation
 - E. Aneuploidy
- 168.** 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:
- Trisomy
 - Phenocopy
 - Monosomy
 - Polysomy
 - Genocopy
- 169.** Some people can roll their tongues whilst others cannot. What is this an example of?
- Variation
 - Genetically inherited characteristic
 - Adaptation
 - Mutation
 - Specialization
- 170.** Chromosomal aberration is:
- Allopolyploid
 - Triploid
 - Duplication
 - Loss nucleotide
 - Insert nucleotide
- 171.** Exchange of segments between non homologous chromosomes is called:
- Crossing over
 - Inversion
 - Duplication
 - Deletion
 - Translocation
- 172.** Variations occurred during meiosis due to:
- Duplicatoin
 - Mutation
 - Crossing over
 - Linkage
 - Disjunction
- 173.** In Klinefelter syndrome, individuals are phenotypically male, but they are tall and thin, have a female-like development of the hips and breasts. The cells of Klinefelter individuals have two X chromosomes and one Y (they are XXY instead of XY). That is, Klinefelter syndrome is a(n):
- Translocation
 - Aneuploidy
 - Polyploidy
 - Duplication
 - Monosomy
- 174.** Cells that have more than two complete sets of chromosomes are termed:
- Aneuploid
 - Diploid
 - Polyploid
 - Nanoploid
 - Trisomy
- 175.** Gene A is normally found on chromosome number 15 in humans. If amniocentesis reveals fetal cells containing gene A on chromosome 17, but not on 15, the best explanation would be that:
- Crossing over occurred during synapsis of meiosis I in one parent's gametes
 - Base substitution occurred either during gametogenesis or in the mitotic divisions following fertilization

- C. An inversion of gene A occurred on chromosome 15
 - D. At least one parent probably had a genetic syndrome
 - E. Translocation occurred
- 176.** Which type of variation can be presented as a line graph?
- A. Continuous
 - B. Genetic
 - C. Discontinuous
 - D. Combinational
 - E. Mutational
- 177.** Gene mutations change:
- A. Structure of chromosomes
 - B. Quantities of sexual chromosomes
 - C. The order nucleotide in DNA
 - D. Arrangements of heterochromatin
 - E. Quantities of autosomes
- 178.** Why are individuals with an extra chromosome 21, which causes Down syndrome, more numerous than individuals with an extra chromosome 3 or chromosome 16?
- A. There are probably more genes on chromosome 21 than on the others
 - B. Chromosome 21 is a sex chromosome, and 3 and 16 are not
 - C. Extra copies of the other chromosomes are probably fatal to the developing embryo
 - D. Down syndrome is not more common, just more serious
 - E. Nondisjunction of chromosomes 3 and 16

probably occurs much less frequently

- 179.** Which one of the following is the only known viable human monosomy?

- A. XO
- B. XYY
- C. YO
- D. XY
- E. XXY

- 180.** A patient has 45 chromosomes. What type of mutation is this?

- A. Duplication
- B. Triploid
- C. Aneuploidy
- D. Loss of the nucleotide
- E. Polyploidy

- 181.** Mutations:

- A. Change a genotype
- B. Arise mass
- C. Do not change a genotype
- D. Always are inherited by offspring
- E. Always have adaptive character

- 182.** A healthy woman has three sons affected by color blindness who were born after her two marriages. Children both of her husbands are healthy. What is the most possible pattern of inheritance of this disease?

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

- 183.** A genetics specialist analyzed the genealogy of a family and found that both males and females may have the illness, not across all the generations, and that healthy parents may have ill children. What is the type of illness inheritance?
- A. Autosomal recessive
 - B. Autosomal dominant
 - C. X-linked dominant
 - D. X-linked recessive
 - E. Y-linked
- 184.** In course of prophylactic medical examination a 7-year-old boy was diagnosed to have daltonism. Parents are healthy, color vision is normal. But grandfather from the mother's side has the same disorder. What is the type of inheriting of this anomaly?
- A. Dominant, sex-linked
 - B. Recessive, sex-linked
 - C. Incomplete domination
 - D. Autosomal-recessive
 - E. Autosomal-dominant
- 185.** 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. Dominant, sex-linked
 - B. Autosomal recessive
 - C. Recessive, sex-linked
 - D. Autosomal dominant
 - E. Semidominance
- 186.** During a prophylactic medical examination a 7-year-old boy was diagnosed with daltonism. His parents are healthy and have normal colour vision, but his grandfather on his mother's side has the same abnormality. What is the type of the abnormality inheritance?
- A. Recessive, sex-linked
 - B. Dominant, sex-linked
 - C. Semidominance
 - D. Autosomal recessive
 - E. Autosomal dominant
- 187.** Examination of a 12-year-old boy with developmental lag revealed achondroplasia: disproportional constitution with evident shortening of upper and lower limbs as a result of growth disorder of epiphyseal cartilages of long tubal bones. This disease is:
- A. Inherited, recessive
 - B. Inherited, sex-linked
 - C. Inherited, dominant
 - D. Congenital
 - E. Acquired
- 188.** 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?
- Autosomal recessive
 - Autosomal dominant
 - Dominant, X-linked
 - Y -linked
 - Recessive, X-linked
- 189.** A couple has a son with haemophilia. The parents are healthy but the maternal grandfather also has haemophilia. Specify the type of inheritance:
- Recessive autosomal
 - Dominant sex-linked
 - Semidominance
 - Autosomal dominant
 - Recessive sex-linked
- 190.** During a prophylactic medical examination a 7-year-old boy was diagnosed with daltonism. His parents are healthy and have normal colour vision, but his grandfather on his mother's side has the same abnormality. What is the type of the abnormality inheritance?
- Dominant, sex-linked
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 - Semidominance
 - Autosomal recessive
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- 191.** A patient (male) with Red-green color blindness has two healthy parents. Find his parents genotype:
- $XdXd \times XdY$
 - $XDXd \times XDY$
 - $XDXd \times XdY$
 - $XDXD \times XdY$
 - $XDXD \times XDY$
- 192.** What type of crossing enables to determine distance between genes in group of linkage?
- Monohybrid
 - Dihybrid
 - Polyhybrid
 - Analyzing
 - Trihybrid
- 193.** What is the probability that a male will inherit an X-linked recessive allele from his father?
- 0%
 - 25%
 - 50%
 - 75%
 - 100%
- 194.** The first person to propose the chromosome theory of inheritance was:
- Thomas Hunt Morgan
 - Walter Sutton
 - Gregor Mendel
 - Francis Crick
 - Theodor Schwann
- 195.** The number of linkage groups of genes in organisms of each biological species is equaled:
- To number of pair's allelic genes
 - To quantity of sexual chromosomes
 - To quantity of autosomes
 - Haploid number of chromosomes

- E. Diploid number of chromosomes
- 196.** If a fruit fly has four linkage groups then it has:
- Four pairs of homologous chromosomes
 - Two pairs of homologous chromosomes
 - Eight pairs of homologous chromosomes
 - Sixteen pairs of homologous chromosomes
 - Eight pairs of nonhomologous chromosomes
- 197.** Why were Thomas Hunt Morgan's experiments important?
- Results helped to explain why more men than women in a family have hemophilia
 - Showed nonsexual traits could be sex-linked
 - Showed that Mendel's explanations of heredity were incomplete
 - Showed how a mutation can affect genders differently
 - Showed modifications
- 198.** The relative position of genes on a chromosome can be done using:
- Karyotyping
 - Linkage mapping
 - Punnett-square method
 - Monohybrid crosses
 - Test crosses
- 199.** The amount of crossing over is primarily determined by the:
- Length of the chromosome
 - Size of the linkage group
 - Length of the linked genes
 - Distance between the linked genes
 - Size of the centromeres
- 200.** If two genes are linked:
- They are on different chromosomes
 - They assort independently
 - They are on the same chromosome
 - They code for the same protein
 - They are on sex chromosomes
- 201.** All of the genes on a single chromosome form a(n):
- Genome
 - Allele
 - Aneuploidy
 - Linkage group
 - Genotype
- 202.** Genes of hemophilia and color blindness are located on distance 10%. What crossing over gamete's and in what quantity can be formed at the woman with a genotype: XHDXhd?
- 45 % XHD; 5 % Xhd
 - 45 % XHD; 45 % Xhd
 - 5 % Xhd; 5 % XHD
 - 5 % Xhd; 45 % XHD
 - 5 % XHD; 5 % Xhd
- 203.** 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?
- Autosomal dominant
 - X-linked recessive
 - X-linked dominant
 - Autosomal recessive
 - Multifactorial
- 204.** A healthy woman has three sons affected by color blindness who were born after her two marriages. Children both of her husbands are healthy. What is the most possible pattern of inheritance of this disease?
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 - Recessive, sex-linked
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 - Autosomal recessive
 - Autosomal dominant
 - Y-linked*
 - Recessive, X-linked
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- Dominant, sex-linked
 - Semidominance
 - Recessive, sex-linked
 - Autosomal recessive
 - Autosomal dominant
- 213.** 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?
- X-linked recessive
 - X-linked dominant
 - Autosomal dominant
 - Autosomal recessive
 - Multifactorial
- 214.** Two carriers of albinism have four children. One of their children is albino and the remaining three are normally pigmented. What is the probability that their next child will be albino?
- 0 %
 - 25 %
 - 75 %

D. 100 %

E. 50%

215. A woman whose husband worked at the Chernobyl nuclear reactor gives birth to a hemophiliac son:

- A. She should blame the reactor accident because the radiation caused the hemophilia
- B. Her husband should sue for divorce because it cannot be his child
- C. Further genetic tests should be done to determine who is at fault
- D. She should not blame the accident because she carried the hemophilia allele
- E. Hemophilia is environmentally induced, not genetic

216. Parents of a color blind female (X^cX^c) could have the genotypes:

- A. XCX^c and X^cY
- B. XCX^c and XCY
- C. X^cX^c and XCY
- D. $XCXC$ and X^cY
- E. $XCXC$ and X^cY^c

217. Sex-linked traits appear more often in males than in females because:

- A. Males are produced in greater numbers
- B. Males have only one X chromosome
- C. Females with a sex-linked trait will die
- D. Sex-linked traits are carried on the y chromosome

E. Females are hemizygous

218. Y-linked traits are inherited:

- A. Only by males
- B. Only by females
- C. By both males and females
- D. Only sometimes
- E. By all offspring's

219. Red-green color blindness is:

- A. An X-linked dominant trait
- B. An Y-linked trait
- C. Both X and Y linked
- D. An X-linked recessive trait
- E. Autosomal trait

220. The X and Y chromosomes in humans are called:

- A. Sex chromosomes
- B. Multiple alleles
- C. Polygenic traits
- D. Codominance
- E. Autosomes

221. A female is heterozygous for the recessive X-linked gene for hemophilia. Her husband is healthy. What proportion of her daughters will be "carriers" for the trait?

- A. 90%
- B. 50%
- C. 0%
- D. 75%
- E. 25%

222. A female is diagnosed with hemophilia, an X-linked recessive gene disorder characterized by failure of blood to clot. In checking her medical history, the doctor will most likely discover that:

- A. Her brother has hemophilia

- B. Her father's mother had hemophilia
- C. Her mother had hemophilia, her father was normal
- D. Her father had hemophilia, her mother was carrier
- E. Her maternal grandmother had hemophilia
- 223.** Which pair of chromosomes would produce a male offspring?
- A. XY
- B. XX
- C. XO
- D. AB
- E. 22A+XX
- 224.** A gene that is not on a sex chromosome is termed:
- A. Y-linked
- B. Chromosomal
- C. X-linked
- D. Autosomal
- E. Dominant
- 225.** In dealing with an X-linked trait, a male will express X chromosome alleles directly in the phenotype because the Y chromosome lacks homology with the X-linked gene. This condition is referred to as being:
- A. Parazygous
- B. Homozygous
- C. Heterozygous
- D. Hemizygous
- E. Monozygous
- 226.** For a male to have X-linked hemophilia:
- A. His mother must have hemophilia
- B. His mother's father must have hemophilia
- C. His mother must be normal
- D. His father's mother must have hemophilia
- E. His sister must have hemophilia
- 227.** Sex-linked genetically inherited traits:
- A. Can appear in both males and females
- B. Are only found in males
- C. Are only found in females
- D. Result from modification
- E. Are lethal
- 228.** Men with red-green color blindness inherited the genes for it from:
- A. Their fathers
- B. Their mothers
- C. Either their mothers or fathers
- D. Their grandparents
- E. Mutational process
- 229.** Pedigree analysis is especially useful in determining the mode of inheritance in organisms:
- A. With very few offspring produced in each generation and with long generation times
- B. With a very large number of offspring per generation and with short generation times
- C. That reproduces asexually
- D. That is haploid
- E. With greater than 500 chromosomes

- 230.** The technical term for the individual in a pedigree who has the phenotype of interest and is the starting point for undertaking the pedigree analysis is:
- A. Proboscis
 - B. Proband
 - C. Progeny
 - D. Grandparent
 - E. Victim
- 231.** A trait that is present in one parent but not present in the second generation is characteristic of a(n):
- A. Autosomal recessive trait
 - B. Autosomal dominant
 - C. Quantitative trait
 - D. Y-linked trait
 - E. X-linked recessive trait
- 232.** What is the best hypothesis for the mode of transmission of a trait where one parent expresses the trait, the other parent does not, and all of the children (regardless of sex) express the trait?
- A. X-linked dominant
 - B. Autosomal recessive
 - C. Autosomal dominant
 - D. Y-linked dominant
 - E. X-linked recessive
- 233.** What is the best hypothesis for the mode of transmission of a trait where neither parent expresses the trait but one half of the sons do?
- A. X-linked recessive
 - B. A new mutation in each of the sons expressing the trait
 - C. Autosomal recessive
 - D. X-linked dominant
 - E. Y-linked dominant
- 234.** A couple has a female child with Tay Sachs disease, and three unaffected children. Neither parent nor any of the four biological grandparents of the affected child has had this disease. The most likely genetic explanation is that Tay Sachs disease is inherited as a(n):
- A. Autosomal dominant
 - B. Sex-linked recessive
 - C. Sex-linked dominant
 - D. Cannot make a reasonable guess from this information
 - E. Autosomal recessive
- 235.** Which is NOT a common method used in human genetic analysis?
- A. Test cross
 - B. Karyotyping
 - C. DNA analysis
 - D. Pedigree analysis
 - E. Somatic cell genetics
- 236.** Monozygotic twins are used in human heritability studies because:
- A. They are raised together in the same environment
 - B. They are genetically identical
 - C. Environmental effects are not important to the expression of their genotypes

D. Monozygotic twins are genetically similar in the same way siblings are; however, they shared the same womb:

E. They are not used in human heritability studies

237. Normal male mates with a female who is homozygous for an X-linked recessive disorder. Of the offspring that they may have, it is probable that:

A. All sons will be affected, and 1/2 the daughters will be carriers

B. No sons will be affected, and all daughters will be carriers

C. All sons will be affected, and all daughters will be affected

D. All sons will be affected, and all daughters will be carriers

E. No sons will be affected, and all daughters will be affected

238. Parents of a child with an autosomal recessive disease are:

A. Obligatory carriers

B. Likely to have mutations in different genes, locus heterogeneity

C. Likely to have more affected sons than daughters

D. Most likely homozygous normal and the disease was caused by a new mutation

E. Not at risk of having another child with the disease

239. If an affected male mates with a normal female and has four

offspring: one normal male, one affected male, and two affected female, the disease is MOST LIKELY inherited as:

A. X linked dominant

B. X linked recessive

C. Autosomal dominant

D. Autosomal recessive

E. Y linked

240. What is the probability of having an affected child if one parent is affected with an autosomal recessive disease and the other parent is a carrier?

A. 1/2

B. 2/3

C. Close to 100% because new mutations are frequent

D. 1/4

E. Zero

241. When a zygote splits, the two identical, independent clusters that develop become:

A. Dizygotic twins

B. Fraternal twins

C. Monozygotic twins

D. Trizygotic twins

E. Sibs

242. In scientific research, the best way to separate the effects of genes and the environment is to study:

A. Monozygotic twins raised in different environments

B. Dizygotic twins

C. Adopted children and their biological parents

- D. Adopted children and their adoptive parents
- E. Dizygotic twins raised in different environments

243. Dizygotic twins result when:

- A. A single egg is fertilized by a sperm and then splits
- B. A single egg is fertilized by two different sperm
- C. Two eggs are fertilized by two different sperm
- D. Either a single egg is fertilized by one sperm or two eggs are fertilized by two different sperm
- E. Two eggs are fertilized by two identical sperm

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

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

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

- A. Methionine
- B. Tryptophan
- C. Phenilalanine
- D. Glutamic acid
- E. Histidine1

246. Examination of initial molecular structure revealed substitution of the glutamic acid by valine. What inherited pathology is it typical for?

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

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

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

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

249. A 6 year old child was delivered to a hospital. Examination revealed that the child couldn't fix his eyes, didn't keep his eyes on toys,

eye ground had the cherry-red spot sign. Laboratory analyses showed that brain, liver and spleen had high rate of ganglioside glycometide.

What congenital disease is the child ill with?

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

250. Nappies of a newborn have dark spots being the evidence of homogentisic acid formation. This is caused by the metabolic disorder of the following substance:

- A. Tyrosine
- B. Galactose
- C. Methionine
- D. Cholesterol
- E. Tryptophan

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

- A. Alkaptonuria
- B. Phenylketonuria
- C. Tyrosinosis

- D. Albinism
- E. Xanthinuria

252. Examination of a 27-year-old patient revealed pathological changes in liver and brain. Blood plasma analysis revealed an abrupt decrease in the copper concentration, urine analysis revealed an increased copper concentration. The patient was diagnosed with Wilson's degeneration. To confirm the diagnosis it is necessary to study the activity of the following enzyme in blood serum:

- A. Ceruloplasmin
- B. Carbonic anhydrase
- C. Xanthine oxidase
- D. Leucine aminopeptidase
- E. Alcohol dehydrogenase

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

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

254. A patient has been diagnosed with alkaptonuria. Choose an enzyme whose deficiency can be the reason for this pathology:

- A. Phenylalanine hydroxylase

- B. Homogentisic acid oxidase
- C. Glutamate dehydrogenase
- D. Pyruvate dehydrogenase
- E. Dioxyphenylalanine decarboxylase

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

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

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

- A. Tyrosine
- B. Phenylalanine
- C. Alanine
- D. Methionine
- E. Valine

257. A patient with homogentisuria has signs of arthritis, ochronosis. In this case, the pain in the joints is associated with the deposition of:

- A. Urates
- B. Phosphates
- C. Oxalates

- D. Homogentisates
- E. Carbonates

258. Alkaptonuria is:

- A. Modification
- B. Mutation
- C. Change of phenotype
- D. Chromosomal disorders
- E. Duplication

259. A young man with phenylketonuria, who was successfully treated following diagnosis on newborn screening, is planning to start a family with his healthy, unaffected, and unrelated partner, who has no family history of phenylketonuria. Phenylketonuria shows autosomal recessive inheritance. What is the probability that their children will be normal?

- A. 25
- B. 75
- C. 100
- D. 0
- E. 50

260. Albinism is caused by an autosomal recessive allele. A man is the carrier of the disorder; his wife does not have albinism and is not a carrier. What is the probability their offspring will have the disorder and others will be carriers?

- A. Albinism

- B. 50% of the offspring will have the disorder; 50% will be carriers
- C. 0% of males would be carriers and 100% of females would be carriers
- D. 50% of the males would have the disorder; 100% of the females would be carriers
- E. 0% of the offspring will have the disorder; 100% will be carriers
- 261.** What is the name of melanin metabolism disorder?
- A. Phenylketonuria
- B. Turner's syndrome
- C. Alkaptonuria
- D. Albinism
- E. Huntington's chorea
- 262.** Name the mode of inheritance for Phenylketonuria:
- A. Autosomal Dominant
- B. Autosomal Recessive
- C. X-Linked Recessive
- D. X-Linked Dominant
- E. Y - Linked
- 263.** Which disease is treated in part by a low-galactose diet?
- A. Cystic Fibrosis
- B. Hemophilia
- C. Galactosemia
- D. Phenylketonuria
- E. Thalassemia
- 264.** Gene for sickle cell anemia is transmitted by:
- A. Autosomes
- B. Sex cells
- C. Blood transfusion
- D. Sex chromosomes
- E. Bone cells
- 265.** Tay-Sachs disease shows autosomal recessive inheritance. Normal heterozygote parents of a newly diagnosed affected child are referred for genetic counseling. It would be correct to tell them that:
- A. The probability that the older unaffected sister of the affected child is a carrier is $1/2$
- B. The probability that their next child will be affected is $1/2$
- C. The fact that their last child was affected means that their next three children will not be affected
- D. The probability that their next child will be affected is $1/4$
- E. The probability that each next child will be a carrier is 1
- 266.** A patient has Sickle cell anemia. What type of mutation is this?
- A. Aneuploid
- B. Duplication
- C. Loss nucleotide
- D. Insert nucleotide
- E. Point mutation
- 267.** What is the diagnostic method of Phenylketonuria?
- A. Biochemical method
- B. Analysis of chromosomes only
- C. Examination of sex chromosome number
- D. Pedigree analysis
- E. DNA analysis

- 268.** What method is used to diagnose the Hemophilia carrier?
- Analysis of chromosomes only
 - Examination of sex chromosome number
 - Pedigree analysis
 - Population statistic method
 - Study of twins
- 269.** Choose the right type of heredity of Albinism:
- Gene mutation in Autosomes Dominantly inherited traits
 - Gene mutation in sex chromosomes Recessively inherited traits
 - Gene mutation in Autosomes Recessively inherited traits
 - Gene mutation in sex chromosomes Dominantly inherited traits
 - Aneuploid
- 270.** A woman who was sick with rubella during the pregnancy gave birth to a deaf child with hare lip and cleft palate. This congenital defect is an example of:
- Phenocopy
 - Edward's syndrome
 - Genocopy
 - Patau's syndrome
 - Down's syndrome
- 271.** An individual is characterized by rounded face, broad forehead, a Mongolian type of eyelid fold, flattened nasal bridge, permanently open mouth, projecting lower lip, protruding tongue, short neck, flat hands, and stubby fingers. What diagnosis can be put to the patient?
- Klinefelter's syndrome
 - Alkaptonuria
 - Supermales
 - Down's syndrome
 - Turner's syndrome
- 272.** Autopsy of a newborn boy revealed polydactyilia, 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?
- Trisomy of the 13th chromosome
 - Trisomy of the 18th chromosome
 - Trisomy of the 21st chromosome
 - Nondisjunction of sex chromosomes
 - Partial monosomy
- 273.** 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, XX
 - C. 47, XXY
 - D. 46, XY
 - E. 47, XXX
- 274.** 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. Triple X syndrome
 - C. Patau's syndrome
 - D. Klinefelter's syndrome
 - E. Turner's syndrome
- 275.** 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. 48, XXXY
 - B. 48, XXYY
 - C. 47, XXY
 - D. 47, XXX
 - E. 46, XX
- 276.** 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. Down's syndrome
 - B. Patau's syndrome
 - C. Turner's syndrome
 - D. Edwards' syndrome
 - E. Cat cry syndrome
- 277.** Examination of an 18-year-old girl revealed the following features hypoplasia of the ovaries, broad shoulders, 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. Trisomy X
 - B. Monosomy X
 - C. Trisomy 13
 - D. Trisomy 18
 - E. Nullisomy X
- 278.** 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

279. 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. Klinefelter syndrome
- B. Morris syndrome
- C. Trisomy X syndrome
- D. Down syndrome
- E. Turner's syndrome

280. 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

281. 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. Somatic mutation
- B. Recessive mutation
- C. Abnormal gametogenesis
- D. Dominant mutation
- E. Chromosomal mutation

282. 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. Down's
- B. Turner's
- C. Klinefelter's
- D. Edwards'
- E. Trisomy X

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

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

284. A patient intending to undergo a gender reassignment surgery has been admitted to a specialised clinic. In the course of examination both male and female gonades have been revealed, with male structure of external genitals.

- What kind of genital maldevelopment has the patient?
- Male pseudohermaphroditism
 - Female pseudohermaphroditism
 - Accessory ovary
 - Ectopia of testis
 - True hermaphroditism
- 285.** A 2-year-old boy is diagnosed with Down syndrome. What chromosomal changes may be the cause of this disease?
- Trisomy 21
 - Trisomy 13
 - Trisomy X
 - Trisomy 18
 - Monosomy X
- 286.** A female patient sought medical genetic consultation. Physical examination revealed pterygium colli deformity (webbed neck), broad chest, underdeveloped breasts. Study of buccal epithelium cells revealed no X-chromatin in the nuclei. This indicates that the patient has the following syndrome:
- Klinefelter's
 - Turner's
 - Patau's
 - Down's
 - Edwards'
- 287.** What would be the sex of an XXY individual?
- Male
 - Female
 - Hermaphrodite
 - Mosaic
 - It is lethal mutation
- 288.** Individuals with three copies of most autosomes do not survive. Individuals with an extra X chromosome, however, survive with relatively mild (compared to autosomal abnormalities) consequences. Why?
- The X chromosome contains few genes while autosomes contain a large number
 - The extra X chromosome(s) are inactivated
 - The X chromosome determines sex only
 - The X chromosome abnormalities affect males only
 - None of the above
- 289.** X-inactivation can be used to identify individuals who are:
- Homozygous unaffected
 - Heterozygous
 - Homozygous affected
 - Missing or extra X chromosome
 - Hemizygous
- 290.** What causes Turner's syndrome?
- Being monosomic for X chromosome
 - Any one extra chromosome
 - Any one fewer chromosome
 - Being trisomic for chromosome 21
 - Being trisomic for chromosome 11

- 291.** Trisomy XXX is otherwise called:
- Klinefelter's syndrome
 - Turner's syndrome
 - Supermale
 - Down's syndrome
 - Superfemale
- 292.** Albino allele (a) frequency 0,01. How many normal alleles (A) are in population?
- 0,49
 - 1/10 000
 - 0,99
 - 0,9
 - 0,89
- 293.** In Klinefelter syndrome, individuals are phenotypically male, but they are tall and thin, have a female-like development of the hips and breasts. The cells of Klinefelter individuals have two X chromosomes and one Y (they are XXY instead of XY). That is, Klinefelter syndrome is a(n):
- Aneuploidy
 - Translocation
 - Polyploidy
 - Duplication
 - Monosomy
- 294.** A person with two X chromosomes and one Y chromosome would appear to be:
- Female
 - Male
 - Both male and female
 - Neither male nor female
 - Any of the above, depending on the number of other chromosomes
- 295.** Which one of the following is the only known viable human monosomy?
- XYY
 - YO
 - XO
 - XY
 - XXY
- 296.** Which type of chromosomal alteration is responsible for the disorder cri du chat?
- Deletion
 - Inversion
 - Duplication
 - Genetic imprinting
 - Translocation
- 297.** What is the diagnostic method of Downs Syndrome?
- Examination of sex chromosome number
 - Biochemical analysis
 - Pedigree analysis
 - Analysis of chromosomes only
 - DNA analysis
- 298.** What is the name of XYY disorder?
- Supermales
 - Down Syndrome
 - Klinefelter's Syndrome
 - Turner's Syndrome
 - Alkaptonuria
- 299.** A patient (female) has two Barr body's. What is the name of this disorder?
- Klinefelter's Syndrome
 - Superfemale

- C. Turner's Syndrome
- D. Down Syndrome
- E. Supermales

300. What method is used to diagnose Turner's syndrome?

- A. Analysis of chromosomes only
- B. Examination of sex chromosome number
- C. Analysis of chromosomes and examination of sex chromosome number
- D. Pedigree analysis
- E. DNA analysis

301. A Barr body is:

- A. An organelle involved in protein synthesis
- B. Another term for chromosomes as they are seen during cell division

- C. Condensed X chromosome
- D. Visible in cells of both males and females
- E. Present only in males, because their female chromosomes are inactivated

302. In humans, Down syndrome has been shown to be due to abnormalities in embryonic development brought about by:

- A. Deletion of a part of a chromosome
- B. Inversion of a chromosome
- C. Three copies of chromosome #18
- D. An extra chromosome # 21
- E. A missing chromosome

**POPULATION - SPECIES, BIOGEOCENOTIC
AND BIOSPHERICAL LEVELS
OF LIVING THINGS ORGANIZATION**

- 303.** 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. Intestinal amoeba
 - B. Dysenteric amoeba
 - C. Balantidium
 - D. Trichomonas
 - E. Lamblia
- 304.** 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. Toxoplasma
 - B. Leishmania
 - C. Intestinal trichomonad
 - D. Lamblia
 - E. Trypanosome
- 305.** As an example of specific human parasites one can name Plasmodium falciparum, human pinworm and some others. The source of parasite invasion is always a human. Such specific human parasites cause the diseases that are called:
- A. Zoonoses
 - B. Anthroozoonoses
 - C. Infections
 - D. Anthroponoses
 - E. Multifactorial diseases
- 306.** Patients have similar complaints: weakness, pain in the intestines, and disorder of gastrointestinal tract. Examination of the feces revealed that one patient who has cysts with four nuclei should be hospitalized immediately. What kind of protozoa has such cysts?
- A. Intestinal amoeba
 - B. Dysenteric amoeba
 - C. Balantidium
 - D. Trichomonas
 - E. Lamblia
- 307.** A patient is suspected with liver abscess. He was admitted to the surgical department. For a long time the patient had stayed on business in one of African countries. and felt repeatedly ill with acute gastrointestinal disorders.

- What protozoan disease let it be?
- Trypanosomosis
 - Leishmaniasis
 - Amebiasis
 - Malaria
 - Toxoplasmosis
- 308.** What symptom is typical for amebiasis?
- Headache
 - High temperature
 - Toothache
 - Diarrhea
 - Cough
- 309.** Fresh feces of the patient with dysfunction of gut were studied under the microscope. Admixture of blood and numerous protozoan cells with pseudopodia and erythrocytes in the cytoplasm have been found in the feces. What species of Protozoa were found?
- Entamoeba coli*
 - Entamoeba gingivalis*
 - Leishmania*
 - Lamblia*
 - Entamoeba histolitica*
- 310.** Which one is a pathogenic organism?
- Entamoeba histolitica* (forma magna)
 - Entamoeba histolitica* (forma minuta)
 - Entamoeba histolitica* (cyst)
 - Entamoeba coli*
 - Amoeba proteus*
- 311.** What forms of *Entamoeba histolitica* can be revealed in the feces of the patient suffering from amoebiasis?
- Cysts with 2 nuclei
 - Cysts with 1 nucleus
 - Entamoeba histolitica* (forma magna)
 - Eggs
 - Sporozoites
- 312.** What is mode of invasion by the *Entamoeba histolitica*?
- Using raw meat
 - Through injured skin
 - Through mosquitoes' bites
 - Swallowing cysts
 - Through tsetse bites
- 313.** Name the specific feature of *Entamoeba histolytica* (mature cyst)
- 2 nuclei
 - 8 nuclei
 - Food vacuoles with erythrocytes
 - Cilia
 - 4 nuclei
- 314.** What is specific morphology of *Entamoeba coli* (mature cyst)
- 8 nuclei
 - 2 nuclei
 - 4 nuclei
 - Food vacuoles with erythrocytes
 - Cilia
- 315.** What do we call a form of association between organisms from which one uses other as environment for living and

- from which it obtains food
from him and damage him?
- mutualism
 - commensalisms
 - symbiosis
 - preying
 - Parasitism
- 316.** The laboratory examination of amoebiasis is based on:
- Immunology
 - Examination of vaginal and urethral discharge
 - Stool examination
 - Blood test
 - Liquor test
- 317.** What is the infective stage of Dysenteric amoeba?
- Immature cyst
 - Trophozoite
 - Mature cyst
 - Egg
 - Sporozoites
- 318.** What is the diagnostic stage of Dysenteric amoeba?
- Mature cyst
 - Immature cyst
 - Trophozoite
 - Egg
 - Sporozoites
- 319.** The localization of Dysenteric amoeba in human organism:
- Oral cavity
 - Small intestine
 - Large intestine
 - Stomach
 - Heart
- 320.** The localization of Entamoeba gingivalis in human organism:
- Large intestine
 - Oral cavity
 - Small intestine
 - Stomach
 - Rectum
- 321.** The mechanical vectors cysts of Entamoeba histolytica are:
- Mosquitoes
 - Lice
 - Bugs
 - Fleas
 - Flies and cockroaches
- 322.** Parents with an ill child consulted an infectionist. They had been working in one of Asian countries for a long time. The child has sallow skin, loss of appetite, laxity, enlarged liver, spleen, peripheral lymph nodes. What protozoal illness can be suspected?
- Balantidiasis
 - Amebiasis
 - Toxoplasmosis
 - Visceral leishmaniasis
 - Lambliasis
- 323.** A duodenal content smear of a patient with indigestion contains protozoa 10-18 micrometers large. They have pear-shaped bodies, 4 pairs of filaments, two symmetrically located nuclei in the broadened part of body. What kind of the lowest organisms is it?
- Dysentery amoeba
 - Trichomonas
 - Lambliasis
 - Intestinal amoeba

E. Balantidium

324. 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. Trichomonas buccalis
- C. Trypanosoma gambiense
- D. Trichomonas vaginalis
- E. Lamblia intestinalis

325. 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. Lambliasis
- B. Intestinal trichomoniasis
- C. Urogenital trichomoniasis
- D. Toxoplasmosis
- E. Balantidiasis

326. Which Protozoa is an agent of the transmissible disease?

- A. Entamoeba gingivalis
- B. Toxoplasma gondii
- C. Leishmania tropica
- D. Lamblia intestinalis
- E. Trichomonas vaginalis

327. What type of parasites Leishmania is?

- A. Facultative parasite
- B. Ectoparasite
- C. Endoparasite
- D. Pseudoparasite
- E. Temporary parasite

328. What is geographical distribution of Trypanosoma cruzi?

- A. East Africa
- B. West Africa
- C. Central America
- D. India
- E. Cosmopolitan

329. Who is vector of leishmaniasis?

- A. Anopheles
- B. Triatoma bug
- C. Phlebotomus
- D. Tsetse fly
- E. Glossina

330. Who is vector of sleeping sickness?

- A. Phlebotomus
- B. Mosquito
- C. Tsetse fly
- D. Anopheles
- E. Triatoma bug

331. Who is vector of Chagas disease?

- A. Triatoma bug
- B. Phlebotomus
- C. Glossina
- D. Tsetse fly
- E. Anopheles

332. What is laboratory diagnosis of trypanosomiasis?

- A. Microscopic examination of vaginal and urethral discharges
- B. Microscopic examination of feces
- C. Microscopic examination of urine
- D. Microscopic examination of saliva
- E. Microscopic analysis of blood smear

333. What is laboratory diagnosis of giardiasis?

- A. Microscopic analysis of blood smear
- B. Microscopic examination of vaginal and urethral discharges
- C. Microscopic examination of urine
- D. Microscopic examination of feces
- E. Microscopic examination of saliva

334. What is laboratory diagnosis of leishmaniasis?

- A. Microscopic examination of vaginal and urethral discharges
- B. Microscopic examination of urine
- C. Microscopic examination of feces
- D. Microscopic analysis of blood smear
- E. Microscopic examination of saliva

335. What is invasive stage for *Giardia lamblia*?

- A. Trophozoite
- B. Cyst
- C. Egg

D. Promastigote

E. Amastigote

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

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

337. A patient has been brought to the hospital with the complaints of headache, pain in left hypochondrium. He has been ill for 1,5 weeks. The sudden illness began with the increase of body temperature up to 39, 90C. In 3 hours the temperature decreased and hydroperiosis began. The attacks repeat rhythmically in 48 hours. The patient had visited one African country. The doctors have suspected malaria. What method of laboratory diagnostics is necessary to use?

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

338. Slime, blood and protozoa 30-200 microns long have been revealed in a man's feces. The body is covered with cilia and has correct oval form with a little bit narrowed anterior and wide round shaped posterior end. At the anterior end a mouth is visible. In cytoplasm there are two nuclei and two short vacuoles. What are the described features typical for?

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

339. 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. Malarial plasmodiums
- B. Dermotropic leishmania
- C. Viscerotropic leishmania
- D. Trypanosomes

E. Toxoplasms

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

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

341. 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. Amebiasis
- B. Toxoplasmosis
- C. Balantidiasis
- D. Lambliasis
- E. Trichomoniasis

342. A male patient has fever and enanthesis. As a result of the examination involving serological tests he has been diagnosed with fasciola hepatica. It was found out that the patient had been infected through raw river water.

Which stage of fasciola life cycle is invasive for humans?

- A. Adolescaria

- B. Metacercaria
- C. Ovum
- D. Miracidium
- E. Cysticercus

343. 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. Urinalysis
- B. Study of cerebrospinal fluid
- C. Microscopy of blood smears
- D. Microscopy of bone marrow
- E. Punctate

344. After 2 weeks of blood transfusion a recipient has developed fever. What protozoal disease let it be?

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

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

- A. Leishmania
- B. Lamblia
- C. Amoeba

- D. Trichomonas
- E. Toxoplasma

346. Humans can be only the intermediate host for:

- A. Toxoplasma gondii
- B. Intestinal amoeba
- C. Lamblia intestinalis
- D. Dysentery ameba
- E. Trichomonas vaginalis

347. What parasite doesn't form a cyst?

- A. Balantidium coli
- B. Entamoeba histolitica
- C. Plasmodium vivax
- D. Lamblia intestinalis
- E. Giardia duodenalis

348. What is Toxoplasma gondii pathogenesis?

- A. Duodenitis in pregnancy women
- B. Hydrocephalus in fetus
- C. High temperature
- D. In liver abscess in pregnancy women
- E. Cough in pregnancy women

349. What is specific morphology of Toxoplasma gondii trophozoite?

- A. 2 nucleus
- B. Konoid
- C. Flagella
- D. Food vacuoles with erythrocytes
- E. Cilia

350. What stage of malaria parasite is invasive to the man?

- A. Sporozoites
- B. Trophozoite
- C. Schizonts

- D. Male and female gametes
- E. Oocysts

351. What is diagnostics of toxoplasmosis?

- A. Feces examination
- B. Blood examination
- C. Urine examination
- D. Serological test
- E. Biopsy

352. What stage of malaria parasite is invasive to the mosquito?

- A. Gametocytes
- B. Sporozoites
- C. Trophozoite
- D. Schizonts
- E. Oocysts

353. Who is the final host of the causative agent of malaria?

- A. Human
- B. Sandfly
- C. Tsetse fly
- D. Mosquito Anopheles
- E. Bug

354. Who is the intermediate host of the causative agent of malaria?

- A. Human
- B. Mosquito Anopheles
- C. Sandfly
- D. Tsetse fly
- E. Bug

355. The laboratory examination of malaria is based on:

- A. Stool examination
- B. Skin biopsy
- C. Microscopic examination of blood
- D. Examination of vaginal discharge

- E. Examination of urethral discharge

356. The localization of *Balantidium coli* in human organism:

- A. Oral cavity
- B. Small intestine
- C. Large intestine
- D. Stomach
- E. Rectum

357. 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. Opisthorchosis
- C. Beef tapeworm infection
- D. Echinococcosis
- E. Diphyllorhynchiasis

358. 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. Intestinal schistosomiasis
- B. Japanese schistosomiasis
- C. Opisthorchiasis
- D. Urogenital schistosomiasis
- E. Dicrocoeliasis

- 359.** In patients with chronic cholecystitis were found eggs *Fasciola hepatica* in the feces. What stage is invasive for the final host of the parasite:
- Readia
 - Adolescaria
 - Cercaria
 - Miracidium
 - Sporocyst
- 360.** Localization of *Dicrocoelium lanceatum* in humans is:
- Pancreas
 - Liver
 - Bile ducts
 - The blood vessels of the intestine
 - Urinary bladder
- 361.** During surgical operation (removing of pulmonary abscess) in patient's lung was found red-brown helminth oval in shape, length 1 cm. What kind of parasite can cause a lung abscess in patient:
- Paragonimus ringer*
 - Fasciola hepatica*
 - Opistorchis felinus*
 - Dicrocoelium lanceatum*
 - Schistosoma hematobium*
- 362.** In patient's feces during oviscopy were found eggs of *Schistosoma mansoni*. Specify the localization of this parasite in the human body:
- In the veins of the mesentery of the small pelvis
 - The veins of the urogenital system
 - The portal vein
 - In peripheral blood
 - In blood vessels of intestines
- 363.** What kind of worms that can develop only with change of the hosts?
- Contact worms
 - Biohelminthes
 - Heohelminthes
 - Definitive
 - Temporary
- 364.** Name connective tissue in Plathelminthes:
- Ectoderm
 - Endoderm
 - Parenchyma
 - Mesoderm
 - Mesenchyme
- 365.** The main characteristics of the Trematodes class are:
- Have the primary body cavity
 - Sexually separated
 - The excretory system protonephridia's type
 - Open circulatory system
 - The esophagus has a bulb
- 366.** Put correct order of the stages for *Fasciola hepatica* life cycle:
- Egg – miracidium – sporocyst – redia – cercaria – adolescaria
 - Miracidium – sporocyst – redia – cercaria – mature individuals
 - Sporocyst – miracidium – cercaria – redia
 - Egg – larva – mature individuals

E. Metacercaria – cercaria – sporocyst – redia

367. What stage of *Opistorchis felinus* is invasive to final host:

- A. Redia
- B. Cercaria
- C. Metacercaria
- D. Miracidium
- E. Sporocyst

368. In patient was found pancreatic cancer as result of *Opistorchis felinus* development. What are the preventive measures?

- A. Finding miracidium in feces
- B. Finding of parasite eggs in sputum
- C. Finding eggs in faeces
- D. Finding eggs in the urinary sediment
- E. Finding miracidium in the gut

369. Determine the correct order of *Dicrocoelium lanceatum* development:

- A. Egg – miracidium – first-generation sporocysts – second generation sporocysts – cercaria – metacercaria
- B. Sporocyst – miracidium – metacercaria – cercaria
- C. Egg – miracidium – sporocyst – redia – adoleskaria
- D. Egg – miracidium – cercaria – metacercaria – sporocyst
- E. Egg – cercaria – miracidium – sporocyst

370. Who are an intermediate hosts for lung fluke (*Paragonium westermani*)?

- A. Terrestrial molluscs kind *Zebrina*, ants genus *Formica*
- B. Shellfish kind *Bithinia*, Carp fish
- C. Shellfish kind *Melania*, freshwater crayfish and crabs
- D. Shellfish kind *Bithinia*, salmon fish
- E. Freshwater clams different genera

371. The way of Schistosomes invasion is:

- A. Cercaria actively penetrate the human body through the skin
- B. After ants ingestion
- C. By eating of fish with metacercaria
- D. When you use unboiled water with cercaria
- E. By eating of lobsters and crabs with Metacercaria

372. What types of personal prevention measures for fascioliasis?

- A. Do not eat improperly salted fish
- B. Do not eat raw crayfish and crabs
- C. Do not eat poorly thermally processed beef
- D. Do not eat bad pork meat
- E. Do not drink unboiled water from open reservoirs

373. The patient is suspected opistorchosis. What makes it

- possible to diagnose the disease?
- Detection of parasite eggs in the sputum
 - Detection miracidiums in faeces
 - Detection of eggs in the faeces
 - Detection of eggs in the urine sediment
 - Detection of miracidium in the gut
- 374.** A 26-year-old female consulted a doctor about having stool with white flat moving organisms resembling noodles. Laboratory analysis revealed proglottids with the following characteristics: long, narrow, with a longitudinal channel of the uterus with 17-35 lateral branches on each side. What kind of intestinal parasite was found?
- Taenia solium*
 - Hymenolepis nana*
 - Diphyllobothrium latum*
 - Taeniarhynchus saginatus*
 - Echinococcus granulosus*
- 375.** 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?
- Echinococcosis
 - Teniasis
 - Trichiniasis
 - Ascariasis
 - Diphyllobothriasis
- 376.** 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?
- Echinococcosis
 - Ascariasis
 - Enterobiasis
 - Taeniarhynchosis
 - Taeniasis
- 377.** Find correct features of the immature segments for Cestoda?
- Contain only uterus with eggs
 - They are hermaphroditic
 - They do not have testes
 - They do not have reproductive system
 - Contain only ovaries
- 378.** What enzymes can be secreted by tegument and protect helminthes from digestion in the gut of the host?
- Anticoagulative
 - Proteolytic
 - Antyproteolitic
 - Mucolytic

E. Serous

379. What systematic feature of the Cestoidea structure is used for diagnosis of disease?

- A. Shape of scolex
- B. Body shape
- C. Shape of uterus
- D. Presence of tegument
- E. Number of body segments

380. What kind of Cestoda larval stage has a spherical shape and six hooks?

- A. Oncosphere
- B. Bladder-worm
- C. Cysticercus
- D. Cystycercoid
- E. Plerocercoid

381. Patient has taeniarhynchosis. Localization of *Taeniarinchus saginatus* in human body is:

- A. The sigmoid colon
- B. Skeletal muscle
- C. Small intestine
- D. The large intestine
- E. Blood

382. After eating of beef meet with blood a man has got indigestion, he began to lose weight. What worm can lead to such symptoms?

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

383. In woman's feces were found mature segments of helminth with 7-12 pairs of branches filled of eggs. Name parasite:

- A. *Hymenolepis nana*
- B. *Taeniarinchus saginatus*
- C. *Taenia solium*
- D. *Diphyllobothrium latum*
- E. *Ancylostoma duodenale*

384. How person can get cysticercosis?

- A. After eating of raw or poorly thermally processed pork
- B. After entering eggs of *Taeniarinchus saginatus* in the human body
- C. After ingesting of *Taenia solium* eggs with contaminated water
- D. After eating of raw or poorly fried beef
- E. After eating of poorly cooked or raw fish

385. The child has dysbacteriosis, headache, irritability. In faeces were found eggs of *Hymenolepis nana*. What measure of personal prevention of hymenolepiasis?

- A. Do not eat poorly thermally processed pork
- B. Do not eat poorly thermally processed beef
- C. Do not eat badly salted or fried fish
- D. Observe good personal hygiene
- E. Reveal and treat patients

386. What worm has length of 4-5 cm, pear-shaped scolex with 4 suckers and row of hooks?

- A. *Taenia solium*
- B. *Taeniarinchus saginatus*
- C. *Echinococcus granulosus*

- D. *Hymenolepis nana*
- E. *Diphyllobothrium latum*

387. What steps of life cycle for *Taenia solium*?

- A. Mature individuals – onchospheres – eggs – bladder-warm
- B. Cysticercus – eggs – onchospheres – mature individuals
- C. Mature individuals – bladder-warm – onchospheres – eggs
- D. Eggs – onchospheres – cysticercoid – mature individuals
- E. Eggs – onchospheres – cysticercus – mature individuals

388. Who is the intermediate host for *Hymenolepis nana*:

- A. Human
- B. Sheep
- C. Predatory fish
- D. Pigs
- E. Cattle

389. Find structural features of cestodes:

- A. Have esophagus and three lips
- B. The digestive system is absent
- C. Have anus
- D. The respiratory system is represented by trachea
- E. Have the front, middle and hindgut

390. According to life cycle, *Hymenolepis nana* refers to:

- A. Contact helminthes
- B. Biohelminths
- C. Heohelminths

- D. Optional helminths
- E. Tissue helminths

391. General diagnosis of teniasis is:

- A. Immunological reaction
- B. Identification of cysticercus in feces
- C. Investigation of gastric contents
- D. Identify proglotyde in feces
- E. Detection onchospheres in feces

392. Find the invasive stage of *Diphyllobothrium latum* for final host:

- A. Proceroid
- B. Coracidium
- C. Plerocercoid
- D. Egg
- E. Proglottid

393. What is *Echinococcus granulosus* pathogenicity?

- A. Pressure atrophy of the affected tissue
- B. Anemia (B12 avitaminosis)
- C. High temperature
- D. Liver damage
- E. Cough

394. What is classification for *Diphyllobothrium latum*?

- A. Platyhelminthes, Trematoda, Pseudophyllidea
- B. Platyhelminthes, Cestoda, Pseudophyllidea
- C. Platyhelminthes, Turbellaria Cyclophyllidea
- D. Platyhelminthes, Cestoda, Pseudophyllidea
- E. Platyhelminthes, Cestoda, Cyclophyllidea

- 395.** Who are intermediate hosts for *Diphyllobothrium latum*?
- 1 – snail, 2 – ants
 - 1 – copepod crustacea (Cyclops), 2– crayfish
 - 1 – water snail (*Melania*) , 2 – fish
 - 1 – copepod crustacea (Cyclops), 2 – fish
 - Man
- 396.** Indicate the invasive stage of *Diphyllobothrium latum* for the second intermediate host:
- Proceroid
 - Coracidium
 - Plerocercoid
 - Egg
 - Proglottids
- 397.** What is preventive measure of echinococcosis?
- Pet dogs should be dewormed periodically
 - Thorough cooking or freezing of fish
 - Thorough cooking or freezing of crayfish
 - Thorough cooking or freezing of beef
 - Thorough cooking or freezing of pork
- 398.** What is diagnostic method for diphyllobotriasis?
- Immunodiagnosis
 - Finding eggs in urine
 - Finding eggs in feces
 - Finding gravid proglottids in feces
 - Biopsy
- 399.** The final host for echinococcus can be:
- Herbivorous mammals
 - Man
 - Dogs
 - Gophers
 - Predatory fish
- 400.** Specify the location of bladder-worms of *Echinococcus granulosus* in the host's body:
- Small intestine
 - Blood
 - Stomach
 - Lungs
 - Colon
- 401.** Specify the morphological features of *Echinococcus granulosus*:
- Fixing organ- bothria
 - The width of the hermaphrodite segments longer than the length
 - Length 1.2 - 3.7 mm
 - Scolex has oval shape
 - Strobila consist of 3 - 4 segments
- 402.** What kind of helminthosis is characterized by the development of anemia?
- Diphyllobothrium latum*
 - Taenia solium*
 - Echinococcus granulosus*
 - Teaniarhynchus saginatus*
 - Echinococcus multilocularis*
- 403.** Indicate the invasive stage of *Echinococcus granulosus* for humans:
- Hydatid cyst
 - Oncosphere

- C. Gravid proglottids
 D. Eggs
 E. Cisticercus
- 404.** Indicate the infectious stage of *Diphyllobothrium latum* for copepod crustacea:
 A. Proceroid
 B. Plerocercoid
 C. Coracidium
 D. Egg
 E. Proglottids
- 405.** The patient is suspected diphyllobothriasis. What makes it possible to diagnose the disease?
 A. Finding of larva in the faeces
 B. Finding of eggs in the faeces
 C. Finding plerocercoid in faeces
 D. Finding of eggs in the urine sediment
 E. Finding of plerocercoid in the gut
- 406.** The way of *Diphyllobothrium latum* invasion is:
 A. By eating of raw pork meat
 B. When you use unboiled water with proglottids
 C. By eating of raw beef meat
 D. By eating of raw fish and poorly salted caviar
 E. By eating of lobsters and crabs
- 407.** What is classification for *Ascaris lubricoides*?
 A. Nematelminthes, Trematoda, Ascaridae
 B. Nematelminthes, Nematoda, Filariidae
 C. Nematelminthes, Nematoda, Ascaridae
 D. Platyhelminthes, Turbellaria, Ascaridae
 E. Nematelminthes, Nematoda, Cyclophyllidea
- 408.** After what time eggs of *Ascaris lubricoides* become invasive?
 A. 4-6 hours
 B. 7 days
 C. 1 hour
 D. 24 days
 E. 1 year
- 409.** Indicate the invasive stage of *Trichocephalus trichiurus* for human?
 A. Eggs with larva
 B. Rhabditiform larva
 C. Adult worm
 D. Encapsulated larva
 E. Filariform larva
- 410.** What is geographical distribution of *Entorobius vermicularis*?
 A. India
 B. East Africa
 C. West Africa
 D. Central America
 E. Cosmopolitan
- 411.** What is diagnostic method of ancylostomiasis?
 A. Finding eggs on perianal region
 B. Finding rhabditiform larva in feces
 C. Finding eggs in feces
 D. Finding microfilaria in feces
 E. Biopsy
- 412.** What stage of *Ancylostoma duodenale* is invasive to humans?

- A. Egg
- B. Rhabditiform larva
- C. Filariform larva
- D. Adult worm
- E. Encapsulated larva

413. The location of *Trichocephalus trichiurus* in human's body is:

- A. Liver
- B. LungsLungs
- C. Colon
- D. Pancreas
- E. Large intestine

414. Specify the location of *Ancylostoma* in the human's body:

- A. Duodenum
- B. LungsLungs
- C. Liver
- D. Large intestine
- E. Skin

415. What is invasive stage of *Entorobius vermicularis* for humans?

- A. Eggs with larva
- B. Rhabditiform larva
- C. Adult worm
- D. Encapsulated larva
- E. Filariform larva

416. What is personal preventive measure of ascariasis?

- A. Regular examinations of preschool children
- B. Wearing shoes and other protective clothes
- C. Inspection and cooking or freezing of pork
- D. Washing hands before meals
- E. Control of mosquitoes

417. What kind of Nematode is contact helminth?

- A. *Ancylostoma duodenale*
- B. *Trichocephalus trichiurus*
- C. *Entorobius vermicularis*
- D. *Ascaris lubricoides*
- E. *Diphyllobothrium latum*

418. What is diagnostic method of trichocephalosis?

- A. Finding eggs on perianal region
- B. Finding rhabditiform larva in feces
- C. Finding microfilaria in feces
- D. Finding eggs in feces
- E. Biopsy

419. Specify the localization of *Entorobius vermicularis* in the human's body:

- A. Lungs
- B. Duodenum
- C. Skin
- D. Large intestine
- E. Liver

420. What stage of *Ancylostoma duodenale* can penetrate into human's body?

- A. Eggs, through dirty hands
- B. Eggs, with water
- C. Rhabditiform larva, through skin
- D. Filariform larva, through skin
- E. Rhabditiform larva, through dirty hands

421. What sexual dimorphism for Nematodes?

- A. Females have cylindrical body
- B. Hermaphrodites
- C. Males are generally larger

- D. The males have a curved posterior end
- E. Females are smaller
- 422.** What is classification for *Wuchereria bancrofti*?
- A. Nemathelminthes, Trematoda, Ascaridae
- B. Nemathelminthes, Nematoda, Ascaridae
- C. Platyhelminthes, Turbellaria, Ascaridae
- D. Nemathelminthes, Nematoda, Filariidae
- E. Nemathelminthes, Nematoda, Cyclophyllidea
- 423.** Indicate the disease where humans are dead-end hosts:
- A. Filariasis
- B. Loiasis
- C. Ascariasis
- D. Trichinelliasis
- E. Dracunculiasis
- 424.** What is *Wuchereria bancrofti* pathogenesis?
- A. Pressure atrophy of the affected tissue
- B. Pruritus
- C. Elephantiasis
- D. Liver damage
- E. Cough, asthma
- 425.** Who are the intermediate host for *Dracunculus medinensis*?
- A. Mosquito
- B. Cattle
- C. Man
- D. Cyclops
- E. Crisops
- 426.** What kind of nematodes is transmitted by bite of mosquito?
- A. *Dracunculus medinensis*
- B. *Onchocerca volvulus*
- C. *Toxocara canis*
- D. *Wuchereria bancrofti*
- E. *Loa loa*
- 427.** What is the infective stage of *Trichinella spiralis*?
- A. Encysted larva
- B. Cercaria
- C. Redia
- D. Miracidium
- E. Eggs
- 428.** What is diagnostic stage of *Dracunculus medinensis*:
- A. Cercaria
- B. Miracidium
- C. Stool examination
- D. Worm under the skin
- E. Redia
- 429.** What is laboratory examination of *Trichinella spiralis* based on?
- A. Blood
- B. Liquor
- C. Serological tests
- D. Muscle biopsy
- E. Stool examination
- 430.** What is the infective stage of *Wuchereria bancrofti*?
- A. Cercaria
- B. Worm under the skin
- C. Miracidium
- D. Eggs
- E. Larva

- 431.** What kind of nematodes is transmitted by bite of Chrysops flies?
- Loa loa
 - Wuchereria bancrofti
 - Onchocerca volvulus
 - Toxocara canis
 - Dracunculus medinensis
- 432.** Specify the location of Loa loa in the human's body:
- Skin
 - Lymph
 - Eyes
 - Lungs
 - Stomach
- 433.** Specify the location of Wuchereria bancrofti in the human's body:
- Skin
 - Eyes
 - Lungs
 - Lymph
 - Stomach
- 434.** Specify the location of Strongyloides stercoralis in the human's body:
- Large intestine
 - Liver
 - Pancreas
 - Small intestine
 - Brain
- 435.** What stage of Strongyloides stercoralis penetrates into the human's body?
- Eggs, through the dirty hands
 - Rhabditiform larva, through the skin
 - Rhabditiform larva, through the dirty hands
 - Filariform larva, through the skin
 - Eggs, through the skin
- 436.** Specify the location of Onchocerca volvulus in the human's body:
- Muscles
 - Joints
 - Lungs
 - Skin
 - Stomach
- 437.** 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 ovums of unsymmetrical form were revealed. Indicate what helminth is parasiting on the child?
- Ancylostoma duodenalis
 - Trichuris
 - Enterobius vermicularis
 - Trichina
 - Ascaris lumbricoides
- 438.** Microscopic examination of the sputum of a patient with pneumonia occasionally revealed some larvae. Eosinophiles were detected on blood examination. What helminthiasis can be diagnosed?
- Enterobiosis
 - Trichocephaliasis
 - Paragonimiasis

D. Ascariasis

E. Opisthorchosis

439. 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. Biopsy of muscle tissue

C. Immune diagnostics

D. Scraping from perianal folds

E. Duodenal contents analysis

440. In the perianal folds of a 5-year-old girl her mother has found some white "worms" that caused itch and anxiety in the child. The "worms" were sent to the laboratory. During examination the physician saw white filiform helminths 0,5-1 cm long, with pointed ends, some helminthes had twisted ends. What is the most likely diagnosis?

A. Diphyllbothriasis

B. Teniasis

C. Ascariasis

D. Enterobiasis

E. Opisthorchiasis

441. 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. Ascariasis

B. Amebiasis

C. Trichocephalosis

D. Ankylostomiasis

E. Enterobiasis

442. A miner consulted a physician about the appearance of body rash followed by a loss of appetite, bloating, duodenal pain, frequent bowel movements, dizziness. Ovosopic 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. Strongyloidiasis

B. Trichocephalosis

C. Ancylostomiasis

D. Hymenolepiasis

E. Enterobiasis

443. A patient consulted a physician about chest pain, cough, fever. Roentgenography of lungs revealed eosinophilic infiltrates which were found to contain the larvae. What kind of helminthiasis are these presentations typical for?

A. Echinococcosis

B. Fascioliasis

C. Ascariasis

D. Cysticercosis

E. Trichinosis

- 444.** In one of Polessye regions there was an outbreak of helminthiasis manifested by cramps and facial edmata. The developed preventive measures in particular included ban for eating infested pork even after heat processing. What helminthiasis was the case?
- Taeniarhynchosis
 - Teniasis
 - Echinococcosis
 - Alveococcosis
 - Trichinosis
- 445.** A man has worked in an African country for 3 years. A month after is 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?
- Filariasis
 - Diphyllobothriasis
 - Ascariasis
 - Enterobiasis
 - Trichocephalasis
- 446.** While on holiday in the countryside a boy found a spider with the following morphological peculiarities: body length of 2 cm, round black abdomen with two rows of red dots on its dorsal surface, four pairs of segmented extremities covered with tiny black hairs. Identify this arthropod:
- Scorpion
 - Karakurt spider
 - Solifugae
 - Mite
 - Tarantula
- 447.** A patient presents with acne and inflammatory alterations of facial skin. Microscopial investigation of lesion foci has revealed live arthropods sized 0,2-0,5 mm. They have prolate vermiform form and four pairs of thin short limbs located in the middle part of the body. The revealed arthropods cause:
- Scabies
 - Pediculosis
 - Phthiriasis
 - Demodicosis
 - Dermamyiasis
- 448.** 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:
- Demodicosis
 - Scabies
 - Myiasis
 - Pediculosis
 - Dermatotropic leishmaniasis
- 449.** Indicate medical importance of Cyclops:
- Cyclops are intermediate hosts for the pork tapeworm (*Tenia solium*)
 - Cyclops are intermediate hosts for the broad tapeworm (*Difillobotrium latum*) and *Dracunculus medinensis*
 - Cyclops are intermediate hosts for the beef tapeworm (*Tenia saginata*)
 - Cyclops are intermediate hosts for the blood fluke
 - All of the above
- 450.** Name a species which lives in the follicles and wax glands of the human forehead, nose, chin, but usually does not cause any symptoms:
- Sarcoptes scabiei*
 - Ornithodoros papillipes*
 - Ixodes persulcatus*
 - Demodex folliculorum*
 - Pediculus humanus*
- 451.** Who are the carriers of taiga encephalitis?
- Ornithodoros papillipes*
 - Dermacentor marginatus*
 - Ixodes persulcatus*
 - Ixodes ricinus*
 - Dermacentor pictus*
- 452.** The woman found inside her ear *Ixodes* tick. Describe the life cycle of this arthropods:
- Egg - larva - nymph - adult
 - Larva - nymph - nymph - adult
 - Egg - nymph - adult - doll
 - Larva - adults - nymph - egg
 - Egg - larva - pupa - adult
- 453.** The child complains of itching between the fingers and the lower abdomen which is worse at night. Skin analyzing revealed tick size of 0.3 - 0.4 mm. Specify the type of parasite.
- Ixodes persulcatus*
 - Demodex folliculorum*
 - Dermacentor pictus*
 - Sarcoptes scabiei*
 - Ornithodoros papillipes*
- 454.** Ticks with size 0.2 - 2.5 mm are the parasites of birds and can carry infectious disease belongs to:
- Family Solpugae
 - Family Gamasoidae
 - Family Aranei
 - Family Argasidae
 - Family Ixodidae
- 455.** After walk through the forest, a man found a tick which was sucking his leg. Specify the family of this tick?
- Family Ixodidae
 - Family Aranei
 - Family Solpugae
 - Family Gamasoidae
 - Family Argasidae

- 456.** What kind of mites found in countries with warm climates, has an oval body, no dorsal shield and living in caves and old?
- Ornithodoros papillipes
 - Ixodes ricinus
 - Dermacentor pictus
 - Ixodes persulcatus
 - Dermacentor marginatus
- 457.** What kind of these ticks can carry tularemia?
- Ixodes ricinus, Ornithodoros papillipes
 - Ixodes ricinus, Dermacentor pictus
 - Ixodes ricinus, Demodex folliculorum
 - Ixodes persulcatus, Sarcoptes scabiei
 - Ornithodoros papillipes, Dermacentor nutalli
- 458.** Gamasid ticks can cause:
- Scabious
 - Tularemia
 - Dermatitis
 - Acne
 - Tick-borne typhus
- 459.** How a person can become infected with Demodex folliculorum?
- Contact with clothes of sick people
 - Insect bites
 - Contamination of wounds
 - Passing of hemolymph with rickettsia into a wound on the skin
 - Crushing lice and passing of hemolymph into the wound
- 460.** What kind of spiders have neurotoxic poison which causes asthma, spasm of bronchus, swoons:
- Demodex folliculorum
 - Sarcoptes scabiei
 - Ixodes persulcatus
 - Latrodectus tredecimguttatus
 - Ixodes persulcatus
- 461.** To the dermatologist came the young man, suffering from acne on his face. During the study was taken material from the internal contents of acne and were found an arthropods (0.5 mm.) They had a worm-like shape and reduced four pairs of limbs placed in the front of the body. What kind of parasite is this:
- Ixodes persulcatus
 - Dermacentor pictus
 - Sarcoptes scabiei
 - Demodex folliculorum
 - Ornithodoros papillipes
- 462.** Larvae of ticks have:
- Underdeveloped mouthparts
 - Size 6-8 mm
 - Four pairs of walking limbs
 - Three pairs of walking limbs
 - No segmentation of the body
- 463.** A sick man with high temperature and a lot of tiny wounds on the body has been admitted to the hospital. Lice have been found in the folds

- of his clothing. What disease can be suspected?
- Tularemia
 - Scabies
 - Malaria
 - Plague
 - Epidemic typhus
- 464.** A patient with suspicion on epidemic typhus was admitted to the hospital. Some arachnids and insects have been found in his flat. Which of them may be a carrier of the pathogen of epidemic typhus?
- Lice
 - Spiders
 - Bed-bugs
 - Cockroaches
 - Houseflies
- 465.** 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:
- Phthirus pubis*
 - Pulex irritans*
 - Cimex lectularius*
 - Pediculus humanus humanus*
 - Blattella germanica*
- 466.** What is pediculosis?
- Pediculosis - skin disease caused by being infected with ticks
 - Pediculosis - skin disease caused by being infected with fleas
 - Pediculosis - skin disease caused by being infected with itch mites
 - Pediculosis -heavy infestation of hair with lice
 - All of the above
- 467.** What stage of development for *Blattella germanica*?
- Egg - larva (caterpillar) - pupa - imago
 - Egg - larva - nymph - imago
 - Egg - larva - imago
 - Blattella germanica* is vivipara
 - larva - pupa - imago
- 468.** *Pediculus humanus humanus* is a vector of the causative agent for?
- Plague
 - Taiga encephalitis
 - Scabies
 - Epidemic typhus
 - Pediculosis
- 469.** The child has light-gray lice with dark pigmented spots on thorax and abdomen. Name of this parasite:
- Pediculus humanus capitis*
 - Pulex irritans*
 - Pediculus humanus corporis*
 - Phthirus pubis*
 - Xenopsylla cheopis*
- 470.** Life cycle of fleas going through the stage:
- Egg - larva - pupa - imago
 - Egg - larva - imago
 - Egg - pupa - imago
 - Egg - adult organism
 - Egg - larva - pupa - nymph

- 471.** A man diagnosed with phtiriasis. Specify where is the localization of the parasite:
- On the skin of head
 - In the folds of clothes and underwear
 - At the hairy areas of the skin, except head
 - In the horny layer of the epidermis
 - The ducts of the sebaceous glands and hair bags
- 472.** Residents of the house noticed in their dark apartments wingless insect with a flattened laterally body. Determine what kind of insects and what can they carry?
- The bugs, vectors of Chagas' disease
 - Mites that carry the spirochete
 - Lice, rickettsial vectors
 - The fleas that carry the plague bacteria
 - Cockroaches, vectors of pathogens of intestinal infections
- 473.** In kindergarten, three children have lice. Indicate which stage of development of the lice feed on blood?
- Adults and larvae
 - Only adults
 - Only the larvae
 - Adults, larvae and pupae
 - Eat only females at all stages of development
- 474.** The patient was diagnosed with Chagas' disease. Who is a carrier of this disease?
- Cimex lectularius*
 - Phthirus pubis*
 - Xenopsylla cheopis*
 - Pulex irritans*
 - Triatoma infestans*
- 475.** What kind of louse has a wide body (length 1.5 mm - female, male - 1mm) and female lays up to 3 eggs per day?
- Phthirus pubis*
 - Pediculus humanus capitis*
 - Pediculus humanus corporis*
 - Pulex irritans*
 - Cimex lectularius*
- 476.** A woman pay attention to the small wingless insects that jump, and in the morning on the body noticed the bite marks. Determine who is this?
- Pediculus humanus capitis*
 - Pulex irritans*
 - Phthirus pubis*
 - Pediculus humanus corporis*
 - Cimex lectularius*
- 477.** The carrier of spirochetes - agents a form of relapsing fever can be:
- Pediculus humanus capitis*
 - Pulex irritans*
 - Phthirus pubis*
 - Blatta orientalis*
 - Xenopsylla cheopis*
- 478.** Which of the insects can develop with complete metamorphosis?
- Lice

B. Locust

C. Cockroaches

D. Bedbugs

E. Fleas

479. Find correct type of insects segmentation?

A. Homonomous

B. At the cephalothorax and abdomen

C. On the head, chest and abdomen

D. Only segmented abdomen

E. The body is not segmented

480. What is medical importance for *Blattella germanica*?

A. Transmissible carriers of protozoa cysts and helminth eggs

B. Vector of Chagas disease

C. Mechanical carriers of protozoa cysts and helminth eggs

D. Transmissible carriers of plague and typhus

E. Mechanical vectors of leishmaniasis and trypanosomiasis

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

A. As a result of mosquito's bites

B. With contaminated fruits and vegetables

C. As a result of bug's bites

D. Through dirty hands

E. After contact with a sick dogs

482. 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 area of the following mosquitoes:

A. *Culex*

B. *Aedes*

C. *Mansonia*

D. *Anopheles*

E. *Culiseta*

483. 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. Kissing bug

B. Stable fly (*Stomoxys calcitrans*)

C. Wohlfahrt fly

D. Malarial mosquito

E. Mosquito

484. The larvae of *Anopheles* mosquitoes:

A. Have a conical respiratory siphon

B. Haven't a respiratory siphon

C. Have a respiratory siphon, which arranged at an angle to the surface

D. Have a respiratory siphon, which located on the surface of the water horizontally

E. Have a cylindrical respiratory siphon

- 485.** The patient lives in Central Asia. He has a cutaneous leishmaniasis. What insects are carriers of this disease?
- Anopheles maculipennis
 - Simuliidae sp.
 - Tabanidae sp.
 - Phlebotomus sp.
 - Ceratopogonidae sp.
- 486.** Horseflies can be carriers of:
- Relapsing fever
 - Leishmaniasis
 - Siberian plague
 - Malaria
 - African sleeping sickness
- 487.** The larvae of Anopheles mosquitoes live in:
- Contaminated pools, which well heated by the sun
 - Exclusively in pure or nearly pure waters
 - Gutter
 - Damp basements premises
 - In rotting leaves
- 488.** An insect that can be human's parasite only in the larval stage is:
- The head louse
 - Slimies
 - Wohlfahrtia magnifica
 - Horsefly
 - Mosquito
- 489.** Choose the correct sequence for gonotrophic cycle stages female mosquito genus Culex:
- Nutrition of blood - the maturation of eggs - searching of pond - eggs laying - finding of a host - nutrition of blood
 - The maturation of eggs - nutrition of blood – searching of pond - eggs laying – finding of a host - the blood nutrition
 - Nutrition of blood - searching of pond - the maturation of eggs - eggs laying - finding of a host - nutrition of blood
 - Searching of pond - nutrition of blood - the maturation of eggs - eggs laying - finding of a host - nutrition of blood
 - Finding of a host - nutrition of blood - the maturation of eggs - nutrition of blood - searching of pond – eggs leaving
- 490.** A woman was bitten by Anopheles maculipennis. What kind of helminths can transmit this mosquito?
- Enterobius vermicularis and Ascaris lumbricoides
 - Ancylostoma duodenale and Trichocephalus trichiurus
 - Loa loa and Onchocerca volvulus
 - Dracunculus medinensis and Trichinella spiralis
 - Wuchereria bancrofti and Brugia malayi
- 491.** Adult insect makes an angle 45 degrees to the surface, has yellowish brown color, one lobe with continuous row of hairs, spotted wings. Determine what kind of insect it is:
- Mosquito Anopheles
 - Mosquito Culex

C. Mosquito *Aedes*

D. Deer fly

E. Black fly

492. The mosquito larvae which did not have respiratory tubes and therefore placed on the surface of the water horizontally belongs to:

A. *Culex*

B. Muscidae

C. *Aedes*

D. *Anopheles*

E. Tabanidae

493. During a holiday in nature, a man was bitten by *Aedes* mosquitoes. What kind of disease can they carry?

A. American trypanosomiasis

B. Dengue fever and tularemia

C. African trypanosomiasis

D. Malaria and filariases

E. Papatachifever and cutaneous leishmaniasis

494. What features are typical to development of *Culex*?

A. The larvae have a breathing siphon and placed in the water at an angle

B. Imago has dark spots on the wings

C. Eggs of mosquitoes have air belts

D. Larvae have respiratory ducts and arranged horizontally on the water surface

E. Pupae have conical breathing tubes

495. A woman diagnosed with sepsis. She was bitten by

Diptera on holiday. On the site of the bite formed strong irritation. What type could cause the appearance of irritation and sepsis?

A. *Musca domestica*

B. *Stomoxys calcitrans*

C. *Wohlfartia magnifica*

D. *Anopheles maculipennis*

E. *Aedes vexans*

496. How would you characterize the medical importance of Fleas?

A. Either temporary or permanent ectoparasites

B. Vector of plague caused by *Yersinia pestis*

C. Causative agent of pediculosis

D. Mechanical transmitters of protozoan infections

E. Non of above

497. In the child's left ear cavity were found insects larvae, which eat away and destroy the blood vessels. Specify the type of insect:

A. *Wohlfartia magnifica*

B. *Tabanus bovinus*

C. *Glossina palpalis*

D. *Aedes vexans*

E. *Stomoxys calcitrans*

498. The man who came from a tropical country, in a smear of blood were found S - shaped unicellular parasites with undulating membrane. The patient complains of muscle weakness and depression. What disease has man and

what kind of insect is a vector of the parasite?

- A. Giardiasis, vector *Blattella germanica*
- B. Balantidiasis, vector *Musca domestica*
- C. African trypanosomiasis, vector *Glossina palpalis*
- D. Malaria, vector *Anopheles maculipennis*
- E. Dermotropic leishmaniasis, vector *Phlebotomus*

Answers

1. A.	2. C.	3. D.	4. B.
5. B.	6. A.	7. B.	8. A.
9. D.	10. E.	11. A.	12. A.
13. A.	14. B.	15. D.	16. D.
17. B.	18. A.	19. B.	20. A.
21. B.	22. C.	23. D.	24. D.
25. B.	26. D.	27. E.	28. D.
29. A.	30. A.	31. A.	32. C.
33. D.	34. A.	35. E.	36. B.
37. A.	38. B.	39. C.	40. E.
41. A.	42. C.	43. C.	44. A.
45. B.	46. C.	47. D.	48. B.
49. A.	50. D.	51. D.	52. A.
53. C.	54. A.	55. C.	56. B.
57. A.	58. B.	59. D.	60. A.
61. D.	62. A.	63. A.	64. C.
65. A.	66. A.	67. C.	68. E.
69. C.	70. A.	71. E.	72. B.
73. E.	74. A.	75. D.	76. A.
77. B.	78. A.	79. A.	80. B.
81. A.	82. E.	83. E.	84. C.
85. B.	86. D.	87. A.	88. B.
89. A.	90. E.	91. C.	92. D.
93. E.	94. A.	95. C.	96. C.
97. A.	98. B.	99. A.	100. C.
101. D.	102. C.	103. D.	104. C.
105. C.	106. B.	107. A.	108. E.
109. A.	110. C.	111. C.	112. A.
113. B.	114. D.	115. A.	116. D.
117. B.	118. A.	119. A.	120. B.
121. D.	122. E.	123. A.	124. B.
125. D.	126. A.	127. E.	128. A.
129. C.	130. E.	131. A.	132. E.
133. B.	134. E.	135. B.	136. D.
137. B.	138. A.	139. D.	140. A.
141. D.	142. A.	143. B.	144. C.
145. A.	146. B.	147. A.	148. C.
149. A.	150. A.	151. A.	152. D.
153. D.	154. A.	155. B.	156. C.
157. A.	158. D.	159. A.	160. C.
161. C.	162. A.	163. B.	164. E.

165. C.	166. A.	167. C.	168. E.
169. B.	170. C.	171. E.	172. C.
173. B.	174. C.	175. E.	176. A.
177. C.	178. C.	179. A.	180. C.
181. A.	182. C.	183. A.	184. B.
185. C.	186. A.	187. C.	188. C.
189. E.	190. B.	191. B.	192. D.
193. A.	194. A.	195. D.	196. A.
197. C.	198. B.	199. D.	200. C.
201. D.	202. C.	203. A.	204. D.
205. A.	206. B.	207. A.	208. D.
209. B.	210. A.	211. B.	212. C.
213. C.	214. B.	215. D.	216. A.
217. B.	218. A.	219. D.	220. A.
221. B.	222. D.	223. A.	224. D.
225. D.	226. B.	227. A.	228. B.
229. A.	230. B.	231. A.	232. C.
233. A.	234. E.	235. A.	236. B.
237. A.	238. A.	239. B.	240. A.
241. C.	242. A.	243. C.	244. C.
245. C.	246. D.	247. D.	248. D.
249. E.	250. A.	251. B.	252. A.
253. A.	254. B.	255. D.	256. A.
257. D.	258. B.	259. C.	260. A.
261. D.	262. B.	263. C.	264. A.
265. D.	266. E.	267. A.	268. C.
269. C.	270. A.	271. D.	272. A.
273. C.	274. B.	275. D.	276. C.
277. B.	278. A.	279. E.	280. A.
281. C.	282. C.	283. C.	284. E.
285. A.	286. B.	287. A.	288. B.
289. D.	290. A.	291. E.	292. C.
293. A.	294. B.	295. C.	296. A.
297. D.	298. A.	299. B.	300. C.
301. C.	302. D.	303. B.	304. D.
305. D.	306. B.	307. C.	308. D.
309. E.	310. A.	311. C.	312. D.
313. E.	314. A.	315. E.	316. C.
317. C.	318. A.	319. C.	320. B.
321. E.	322. D.	323. C.	324. D.
325. C.	326. C.	327. B.	328. D.
329. E.	330. C.	331. D.	332. E.
333. A.	334. C.	335. C.	336. A.

337. C.	338. B.	339. E.	340. B.
341. C.	342. A.	343. C.	344. C.
345. E.	346. A.	347. C.	348. B.
349. B.	350. A.	351. D.	352. A.
353. D.	354. A.	355. C.	356. C.
357. B.	358. D.	359. B.	360. B.
361. A.	362. E.	363. B.	364. C.
365. C.	366. A.	367. C.	368. C.
369. A.	370. C.	371. A.	372. E.
373. C.	374. D.	375. E.	376. A.
377. B.	378. C.	379. C.	380. A.
381. D.	382. E.	383. C.	384. C.
385. D.	386. D.	387. E.	388. A.
389. B.	390. A.	391. D.	392. C.
393. A.	394. D.	395. D.	396. A.
397. A.	398. C.	399. C.	400. D.
401. E.	402. A.	403. D.	404. C.
405. B.	406. D.	407. C.	408. D.
409. D.	410. E.	411. C.	412. C.
413. C.	414. A.	415. D.	416. D.
417. C.	418. D.	419. D.	420. D.
421. D.	422. D.	423. D.	424. C.
425. D.	426. D.	427. A.	428. D.
429. D.	430. E.	431. A.	432. C.
433. D.	434. D.	435. D.	436. D.
437. C.	438. D.	439. D.	440. D.
441. E.	442. C.	443. C.	444. E.
445. A.	446. B.	447. D.	448. B.
449. B.	450. D.	451. C.	452. B.
453. D.	454. D.	455. D.	456. E.
457. A.	458. C.	459. A.	460. D.
461. D.	462. D.	463. E.	464. A.
465. D.	466. D.	467. C.	468. D.
469. A.	470. A.	471. C.	472. D.
473. A.	474. E.	475. A.	476. B.
477. A.	478. E.	479. C.	480. C.
481. C.	482. D.	483. C.	484. B.
485. D.	486. C.	487. B.	488. C.
489. A.	490. E.	491. A.	492. D.
493. B.	494. A.	495. C.	496. D.
497. A.	498. C.		

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