1. Chemical composition of the cell

2. Biogenic elements

3. Water - role in the cell and organism

4. Inorganic salts - role in the cell and organism

5. Organic molecules and compounds

6. Fatty acids and lipids - role in the cell and organism

7. Carbohydrates - structure and function

8. Amino acids and proteins

9. Nitrogen bases

1. Describe the structure and function of the DNA molecule

2. What is a nucleotide and what does it consist of?

3. Gene – definition, structure, structure

4. Types of sequences in the DNA molecule

5. Define the process of denaturation, renaturation and hybridization of DNA. What is the significance of these processes?

6. Polymorphism of the DNA coil

7. What is the structure and function of the RNA molecule?

8. Similarities and differences in the structure and function of DNA and RNA molecules

9. Information RNA - structure and function

10. Transport RNA - structure and function

11. Ribosomal RNA - structure and function

12. RNA fractions

1. What is replication? In which organelle, in which phase of the cell cycle and in what way does the replication process take place?

2. Initiation of replication

3. Which enzymes participate in replication and what is their role?

4. In which direction does replication ALWAYS take place? What is the consequence of that?

5. Describe the replication of the leading strand of DNA

6. Describe the replication of the lagging strand of DNA

7. Errors that occur during replication. Spontaneous mutation rate

8. Transitions and transversions

9. If 40% guanine is present in one segment of a DNA molecule of 5000 base pairs, what is the number of thymine nucleotides in that segment?

10. The gene segment has the following sequence of nucleotides: 3`-ATGAGTTGGACTGAC-5`. Determine the sequence of bases on the complementary strand of DNA and mark its 3' and 5' ends. Determine the sequence of bases on the RNA primer that originates on that segment and mark the 3' and 5' ends of the chain.

11 Define code, codon and anticodon. What is their biological meaning?

12. Basic characteristics of the genetic code