Educational Institution
"GRODNO STATE MEDICAL UNIVERSITY"
CREDIT QUESTIONS
on Biochemistry
for the medical faculty for international students
specialty 1-79 01 01 Medical Affair
2019/2020 academic year

1. Proteins as the major components of the body. Functions of proteins.
2. Structure of amino acids. Peptide bond formation.
3. Physicochemical properties of proteins.
4. Colour reactions of amino acids and proteins.
5. Total serum protein.
6. Structure of proteins: primary, secondary, tertiary and quaternary.
7. Biologically important peptides; classification, representatives,
8. Simple proteins; representatives, characteristics, biological functions.
9. Conjugated proteins; representatives, characteristics, biological functions.
10. Properties of enzymes. Active and allosteric centers in enzymes.
11. Simple and conjugated enzymes. Cofactors of enzymes.
12. Co-enzymatic functions of vitamins.
13. Mechanism of enzyme catalysis.
14. Specificity of enzymes.
15. Classification of enzymes.
16. Factors affecting enzymatic reaction rate (temperature, pH, substrate and enzyme concentration).
17. Inhibition of enzymes.
18. Tissue-specific enzymes.
19. Serum enzymes used in clinical diagnosis. Origin of serum enzymes.
20. Chemical composition of nucleic acids. Differences between DNA and RNA.
21. DNA: composition, structure, cell localization, biological role.
22. RNA: types, composition, structures, cell localization, biological role.
23. The central dogma of molecular biology.
24. Biosynthesis of DNA in eukaryotic cells: substrates, enzymes, scheme.
25. Biosynthesis of RNA in eukaryotic cells: substrates, enzymes, steps, scheme.
26. The genetic code: its characteristic features.
27. Metabolism and metabolic pathways. Interrelations between anabolism and catabolism.
28. The specific and common pathways of catabolism.
29. General properties and functions of biological membranes.
30. Chemical composition and structure of biological membranes.
31. Types of transport mechanisms across membrane.
32. Bioenergetics of the cell.
33. High-energy compounds: structure, biological role.
34. ATP: structure, biological role; the ways of its formation (oxidative and substrate-level phosphorylation) and use.
35. Electron transport chain (ETC), its structural organization and functioning.

36. Oxidative phosphorylation, mechanisms. The chemiosmotic theory of oxidative phosphorylation.
37. The citric acid cycle: scheme and biological role.
38. Relation of the cytric acid cycle with the electron transport chain, energy yield of the cytric acid cycle.
39. Oxidase, peroxidase, dioxyganase and monooxygenase types of oxidation.
40. Antioxidant systems, role of enzymes and non-enzymatic antioxidants.
41. General characteristics of hormones: properties, types of biological action. Classification of hormones on the chemical structure, site of formation.
42. Second messengers: cyclic purine nucleotides, calcium ions.
43. Mechanism of action of hormones binding with the intracellular receptors.
44. Thyroid hormones: structure, target tissues, biological effects. Hyper- and hypoproduction of the hormones.
45. Pancreatic hormones: insulin, glucagon. Target tissues, biological effects. Hyper- and hypoproduction of the hormones.
46. Adrenaline and noradrenaline: structure, target tissues, biological effects. Hyperproduction of adrenaline.
47. Female sex hormones: structure of estradiol and progesterone, target tissues, effects on metabolism and functions. Hyper- and hypoproduction of the hormones.
48. Male sex hormones: structure of testosterone, target tissues, effects on metabolism and functions**.** Hyper- and hypoproduction of the hormones.
49. Components of human's food. The significance of nutrition for the vital activity. Essential food components.
50. Vitamins, general characteristics, classification, biological functions.
51. Sources of vitamins for a human. Causes of hypo- and hypervitaminoses.

Head of Department of Biochemistry,
professor V.V.Lelevich

It was approved by the meeting
of department of Biochemistry
protocol № 4 from 22.11. 2019