

№	krok 2023
Topic	Mechanisms of hormones action. Thyroid and parathyroid hormones
Task	A 50-year-old patient was diagnosed with myxedema. The development of this pathology is caused by disturbed production of certain hormones. Name these hormones.
Correct answer	Thyroxine and triiodothyronine
B	Insulin and glucagon
C	Cortisol and aldosterone
D	Oxytocin and vasopressin
E	ACTH and growth hormone
№	krok 2023
Topic	Biochemistry of connective tissue, teeth and saliva
Task	A 38-year-old patient complains of a constant joint pain. Laboratory studies detect increased levels of proline and oxyproline in the patient's urine, which indicates problems with the metabolism of the following compound:
Correct answer	Collagen
B	Elastin
C	Chondroitin sulfate
D	Heparin
E	Hyaluronic acid
№	krok 2023
Topic	Mechanisms of hormones action. Thyroid and parathyroid hormones
Task	Tyrosine is used as a substrate in thyroxine synthesis. What chemical element takes part in this process?
Correct answer	Iodine
B	Copper r
C	Calcium
D	Zinc

E	Iron
№	krok 2023
Topic	Catabolism of carbohydrates
Task	Oxidative decarboxylation of pyruvic acid is catalyzed by a multienzyme complex with several functionally linked coenzymes. Name this complex.
Correct answer	Thymidine diphosphate (TDP), flavin adenine dinucleotide (FAD), coenzyme A (CoASH), nicotinamide adenine dinucleotide (NAD), lipoic acid
B	Coenzyme A (CoASH), flavin adenine dinucleotide (FAD), pyridoxal-5-phosphate, tetrahydrofolic acid, carnitine
C	Nicotinamide adenine dinucleotide (NAD), pyridoxal-5-phosphate, thymidine diphosphate (TDP), methylcobalamin, biotin
D	Flavin adenine dinucleotide (FAD), tetrahydrofolic acid, pyridoxal-5-phosphate, thymidine diphosphate (TDP), choline
E	Lipoic acid, tetrahydrofolic acid, pyridoxal-5-phosphate, methylcobalamin
№	krok 2023
Topic	Nutritional Biochemistry
Task	To determine the functional state of the patient's liver, the analysis of animal indican excreted with urine was conducted. Indican is produced during detoxification of putrefaction products of a certain amino acid, which takes place in the large intestine. Name this amino acid.
Correct answer	Tryptophan
B	Cysteine
C	Glycine
D	Serine
E	Valine
№	krok 2023
Topic	Molecular mechanisms of translation

Task	Prolonged exposure of a human body to toxic substances has resulted in destruction of the organelles that perform protein synthesis in the hepatocytes. Name these organelles.
Correct answer	Ribosomes
B	-
C	Peroxisomes
D	Lysosomes
E	Mitochondria
№	krok 2023
Topic	Mechanisms of hormones action. Thyroid and parathyroid hormones
Task	Indirect calorimetry shows that the basal metabolic rate of a person is 40% lower than the norm. What endocrine gland does not function properly in this person, causing this condition?
Correct answer	Thyroid gland
B	Adrenal gland
C	Thymus
D	Pineal gland
E	Pancreas
№	krok 2023
Topic	Nutritional Biochemistry
Task	Folding is a post-translational modification of a protein. What is the mechanism of pepsin folding in the chief cells of the gastric mucosa?
Correct answer	Partial proteolysis
B	Phosphorylation
C	Methylation
D	Covalent modification
E	Acetylation
№	krok 2023
Topic	Hormonal regulation of metabolism

Task	A 30-year-old woman complains of intense thirst and dry mouth after a severe emotional shock. Laboratory testing shows elevated blood sugar levels of 10 mmol/L. What endocrine gland is affected in the patient, causing her condition?
Correct answer	Pancreas
B	Thyroid gland
C	Adrenal glands
D	Pineal gland
E	Gonads
№	krok 2023
Topic	Liver biochemistry
Task	After mushroom poisoning, a person developed yellow coloring of the skin and sclera and dark-colored urine. What pigment causes urine discoloration in patients with hemolytic jaundice?
Correct answer	Unconjugated bilirubin
B	Stercobilin
C	Verdoglobin
D	Bilirubin monoglucuronide
E	Biliverdin
№	krok 2023
Topic	Mechanisms of action of steroid hormones
Task	A man complains of weight loss, rapid physical and mental fatigability, decreased appetite, arterial hypotension, and hyperpigmentation of the skin. Examination allowed diagnosing him with Addison's disease. What endocrine gland is hypofunctional in this case, causing this condition in the patient?
Correct answer	Adrenal glands
B	Parathyroid gland
C	Thyroid gland
D	Pituitary gland

E	Gonads
№	krok 2023
Topic	General ways of exchange of amino acids
Task	Enzyme cofactors include various derivatives of water-soluble vitamins. Which one of them is a component of aminotransferases?
Correct answer	B6
B	B3
C	B1
D	PP
E	B2
№	krok 2023
Topic	Nutritional Biochemistry
Task	In an experiment, the common bile duct of a test animal was diverted outwards. What digestive processes become disturbed as a result?
Correct answer	Hydrolysis and absorption of fats
B	Hydrolysis and absorption of fats, proteins, and carbohydrates
C	Water absorption
D	Hydrolysis and absorption of proteins
E	Hydrolysis and absorption of carbohydrates
№	krok 2023
Topic	Molecular mechanisms of translation
Task	The sequence of DNA triplets determines the arrangement of amino acids in a protein molecule. This characteristic of the genetic code is called:
Correct answer	Triplet code
B	Non-overlapping
C	Universality
D	Colinearity

E	Redundancy
№	krok 2023
Topic	Mechanism of tissue respiration. Peroxide and microsomal oxidation
Task	In some hereditary diseases (e.g., Kearns-Sayre syndrome), mitochondrial destruction can be observed. What cellular processes can be disturbed as a result of it?
Correct answer	ATP synthesis
B	Lipid synthesis
C	Protein synthesis
D	Nuclear division
E	Crossingover
№	krok 2023
Topic	Ammonia exchange in the body
Task	There are several ways of ammonia neutralization in the body, with some organs having their own specific ways. What way of ammonia neutralization is characteristic of brain cells?
Correct answer	Glutamine formation
B	NH_4^+ formation
C	Asparagine formation
D	Creatine formation
E	Urea formation
№	krok 2023
Topic	Nucleotide exchange
Task	A patient diagnosed with gout has a significant increase in the levels of uric acid in the blood. Uric acid is the end product of the metabolism of:
Correct answer	Purine bases
B	Globulins
C	Fatty acids
D	Triglycerides

E	Albumins
№	krok 2023
Topic	Hormonal regulation of metabolism
Task	A diabetes mellitus patient fell unconscious and developed convulsions after administration of insulin. What glucose levels would be detected by blood biochemistry in this case?
Correct answer	1.5 mmol/L
B	5.5 mmol/L
C	8 mmol/L
D	10 mmol/L
E	3.3 mmol/L
№	krok 2023
Topic	Mechanisms of hormones action. Thyroid and parathyroid hormones
Task	A patient has high body temperature, increased basal metabolic rate, and tachycardia at rest, which can be caused by hyperfunction of the:
Correct answer	Thyroid gland
B	Pancreas
C	Neurohypophysis
D	Adrenal cortex
E	Gonads
№	krok 2023
Topic	Hormonal regulation of metabolism
Task	A patient has diabetes mellitus with fasting hyperglycemia of over 72 mmol/L. What blood plasma protein would allow to assess the patient's glycemia levels retrospectively (4-8 weeks prior to the examination)?
Correct answer	Glycated hemoglobin
B	Albumin
C	C-reactive protein

D	Fibrinogen
E	Ceruloplasmin
№	krok 2023
Topic	Nutritional Biochemistry
Task	During a visit to a dentist, the patient's oral mucosa is bright red. The patient has angular stomatitis and cheilosis. What vitamin deficiency is observed in this case?
Correct answer	B2
B	B6
C	B5
D	B1
E	C
№	krok 2023
Topic	Cholesterol exchange. Ketone bodies
Task	In diabetes mellitus, the levels of ketone bodies in the blood increase, causing metabolic acidosis. From what substance are ketone bodies synthesized?
Correct answer	Acetyl-CoA
B	Methylmalonyl-CoA
C	Succinyl-CoA
D	Propionyl-CoA
E	Malonyl-CoA
№	krok 2023
Topic	Hormonal regulation of metabolism
Task	A patient has high levels of vasopressin (antidiuretic hormone) in the blood. What changes in the patient's diuresis will occur in this case?
Correct answer	Polyuria
B	Anuria
C	Oliguria

D	Glycosuria
E	Natriuria
№	krok 2023
Topic	Hormonal regulation of metabolism
Task	Patients with ischemic heart disease are prescribed small doses of aspirin that inhibits the synthesis of platelet aggregation activator thromboxane A2. What substance is thromboxane A2 made of?
Correct answer	Arachidonic acid
B	Malonic acid
C	Glutamic acid
D	Acetic acid
E	Homogentisic acid
№	krok 2023
Topic	General ways of exchange of amino acids
Task	Glutamate decarboxylation produces an inhibitory neurotransmitter in the central nervous system. What neurotransmitter is it?
Correct answer	GABA
B	Glutathione
C	Asparagine
D	Serotonin
E	Histamine
№	krok 2023
Topic	Liver biochemistry
Task	A man came to a doctor with complaints of general weakness and sleep disturbances. Objectively, the patient's skin is yellow. Increased levels of direct bilirubin and bile acids are observed in the blood. Patient's stool is acholic. What condition can be characterized by these changes?

Correct answer	Mechanical jaundice
B	Parenchymatous jaundice
C	Hemolytic jaundiced
D	Gilbert's syndrome
E	Chronic cholecystitis
№	krok 2023
Topic	Mechanisms of hormones action. Thyroid and parathyroid hormones
Task	Membrane-acting protein/peptide hormones regulate metabolism in the cells, using intracellular mediators (messengers) for this purpose. ACTH causes intracellular effects by forming:
Correct answer	Cyclic adenosine monophosphate
B	Inositol trisphosphate
C	Calcium/calmodulin
D	Cyclic guanosine monophosphate
E	–
№	krok 2023
Topic	Hormonal regulation of metabolism
Task	A man came to a doctor with complaints of excessive thirst (polydipsia) and frequent urination with a large amount of urine (polyuria). The patient's history states that 4 weeks ago he was diagnosed with necrosis of the posterior lobe of the pituitary gland caused by a craniocerebral injury. What pathology is observed in the patient?
Correct answer	Diabetes insipidus
B	Cushing syndrome
C	Acromegaly
D	Cushing disease
E	Diabetes mellitus
№	krok 2023
Topic	Classification and mechanism of action of enzymes

Task	The presence of an allosteric center is a structural feature of regulatory enzymes. What is its role?
Correct answer	Binds the regulatory effector
B	Binds the coenzyme
C	Changes the structure of the substrate
D	Promotes the coenzyme dissociation
E	Binds the substrate
№	krok 2017
Topic	Nutrition Biochemistry
Task	A 30-year-old woman has decreased enzyme content in the pancreatic juice. This condition can be caused by insufficient secretion of the following hormone:
Correct answer	Cholecystokininpancreozymin
B	Somatostatin
C	Secretin
D	Gastric inhibitory polypeptide
E	Vasoactive intestinal peptide
№	krok 2017
Topic	Biochemistry of lipid- soluble vitamins
Task	An oculist has detected increased time of darkness adaptation of a patient's eye. What vitamin deficiency can cause such symptom?
Correct answer	A
B	E
C	C
D	K
E	D
№	krok 2017
Topic	General characteristics and functions of the blood

Task	A patient suffers from diabetes mellitus with fasting hyperglycemia over 7,2 mmol/l. What blood plasma protein would allow to assess the patient's glycemia level retrospectively (4-8 weeks prior to examination)?
Correct answer	Glycated hemoglobin
B	Albumin
C	Fibrinogen
D	C-reactive protein
E	Ceruloplasmin
№	krok 2017
Topic	Molecular mechanisms of glucose regulation
Task	A patient is in the state of hypoglycemic coma. What hormone can cause this condition if overdosed?
Correct answer	Insulin
B	Progesterone
C	Cortisol
D	Somatotropin
E	Corticotropin
№	krok 2017
Topic	Principal pathways to amino acids metabolism
Task	A 24-year-old patient has been administered glutamic acid to treat epilepsy. Medicinal effect in this case occurs not due to glutamate itself, but due to the product of its decarboxylation:
Correct answer	γ -aminobutyric acid
B	Histamine 4-monooxygenase
C	Serotonin
D	Dopamine
E	Taurine
№	krok 2017

Topic	Functional and clinical biochemistry of tissues and urine
Task	Mucin aggregates retain water, which results in their viscosity and protective action. It is possible because mucin structure contains:
Correct answer	Glycosaminoglycans
B	Homopolysaccharides
C	Disaccharides
D	Oligosaccharides
E	Glucose
№	krok 2017
Topic	General characteristics and functions of the blood
Task	Along with normal hemoglobin types there can be pathological ones in the body of an adult. Specify one of them:
Correct answer	HbS
B	HbF
C	HbA1
D	HbA2
E	HbO2
№	krok 2017
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	Chronic overdosage of glucocorticoids leads to the development of hyperglycemia. What process of carbohydrate metabolism is responsible for this effect?
Correct answer	Gluconeogenesis
B	Glycogenolysis
C	Aerobic glycolysis
D	Pentose-phosphate cycle
E	Glycogenesis
№	krok 2017

Topic	Functional and clinical biochemistry of tissues and urine
Task	Due to morbid affection of the supraoptic and paraventricular nuclei of the hypothalamus a 40-year-old patient has developed polyuria (10-12 liters per day) and polydipsia. The following hormone is deficient, thus leading to this disturbance:
Correct answer	Vasopressin
B	Oxytocin
C	Corticotropin
D	Somatotropin
E	Thyrotropin
№	krok 2017
Topic	Nutrition Biochemistry
Task	A patient with glossitis presents with disappearance of lingual papillae, reddening and burning pain in the tongue. Blood test: erythrocytes - $2,2 \cdot 10^{12}/l$, hemoglobin - 103 g/l, color index - 1,4. What type of anemia is it?
Correct answer	B ₁₂ folate-deficient
B	Iron deficiency
C	α -thalassemia
D	β -thalassemia
E	Iron refractory
№	krok 2017
Topic	Biochemistry of lipid- soluble vitamins
Task	A woman, who had undergone mastectomy due to breast cancer, was prescribed a course of radiation therapy. What vitamin preparation has marked antiradiation effect due to its antioxidant activity?
Correct answer	Tocopherol acetate
B	Ergocalciferol

C	Riboflavin
D	Cyanocobalamin
E	Folic acid
№	krok 2017
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	Due to trauma the patient's parathyroid glands have been removed, which resulted in inertness, thirst, sharp increase of neuromuscular excitability. Metabolism of the following substance is disturbed:
Correct answer	Calcium
B	Manganese
C	Chlorine
D	Molybdenum
E	Zinc
№	krok 2017
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A doctor has established significant growth retardation, disproportional body build, and mental deficiency of a child. What is the most likely cause of this pathology?
Correct answer	Hypothyroidism
B	Insufficient nutrition
C	Hyperthyroidism
D	Genetic defects
E	Hypopituitarism
№	krok 2017
Topic	Molecular mechanisms of glucose regulation
Task	After introduction of adrenaline the patient's blood glucose level increased. It is caused by intensified:
Correct answer	Glycogenolysis in the liver

B	Glycolysis in the liver
C	Glycolysis in the skeletal muscles
D	Glycogen synthesis
E	Glycogenolysis in the muscles
№	krok 2017
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid gland
Task	A patient during fasting developed ketoacidosis as a result of increased fatty acids decomposition. This decomposition can be inhibited with:
Correct answer	Insulin
B	Glucagon
C	Adrenaline
D	Thyroxin
E	Cortisol
№	krok 2017, 2015
Topic	Nutrition Biochemistry
Task	A patient, who had been eating only polished rice, developed polyneuritis caused by thiamine deficiency. What compound can be indicative of this kind of avitaminosis when excreted with urine?
Correct answer	Pyruvic acid
B	Malate
C	Methylmalonic acid
D	Uric acid
E	Phenylpyruvate
№	krok 2017, 2016
Topic	Functional and clinical biochemistry of tissues and urine

Task	A 19-year-old young man has been examined in a nephrological hospital. Increased potassium content was detected in secondary urine of the patient. Such alterations are the most likely to be caused by the increased secretion of the following hormone:
Correct answer	Aldosterone
B	Oxytocin
C	Adrenaline
D	Glucagon
E	Testosterone
№	krok 2017
Topic	Biochemistry of connective tissue, teeth and saliva
Task	The patient's saliva has been tested for antibacterial activity. What saliva component has antibacterial properties?
Correct answer	Lysozyme
B	Amylase
C	Ceruloplasmin
D	Parotin
E	Cholesterol
№	krok 2017
Topic	Biochemistry of connective tissue, teeth and saliva
Task	A 35-year-old man has come to a dentist with complaints of decreased density of the dental tissue and increased brittleness of his teeth during consumption of hard food. Laboratory analysis measured C a/P correlation in the enamel sample. What value of C a/P indicates increased demineralization?
Correct answer	0,9
B	1,67
C	1,85
D	2,5

E	1,5
№	krok 2017
Topic	Functional and clinical biochemistry of tissues and urine
Task	For biochemical diagnostics of cardiac infarction it is necessary to determine activity of a number of enzymes and their isoenzymes in the blood. What enzyme assay is considered to be optimal for confirming or ruling out cardiac infarction at the early stage, after the patient develops thoracic pain?
Correct answer	Creatine kinase MB isoenzyme
B	Creatine kinase MM isoenzyme
C	LDH ₁ isoenzyme
D	LDH ₅ isoenzyme
E	Cytoplasmic isoenzyme of aspartate aminotransferase
№	krok 2017
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A 56-year-old man presents with parathyroid tumor. The following is observed: muscle weakness, osteoporosis, bone deformation, nephroliths consisting of oxalates and phosphates. The patient's condition is caused by:
Correct answer	Increased secretion of parathyroid hormone
B	Decreased secretion of parathyroid hormone
C	Increased secretion of calcitonin
D	Decreased secretion of calcitriol
E	Increased secretion of thyroxin
№	krok 2017
Topic	Functional and clinical biochemistry of tissues and urine
Task	There is increased activity of AST, LDH ₁ , LDH ₂ , and CPK in the patient's blood. Pathological process most likely occurs in the:

Correct answer	Heart
B	Skeletal muscles
C	Kidneys
D	Liver
E	Adrenal glands
№	krok 2017
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A patient with autoimmune thyroiditis has been prescribed a peptide hormonal agent. Specify this agent:
Correct answer	L-thyroxin
B	Trimethoprim
C	Triamcinolone
D	Triquilar
E	Tamoxifen
№	krok 2017
Topic	Nutrition Biochemistry
Task	A 42-year-old woman, who has been keeping to a vegetarian diet for a long period of time, consulted a doctor. Examination revealed negative nitrogen balance in the patient. What factor is the most likely cause of such a condition?
Correct answer	Insufficient amount of proteins in the diet
B	Insufficient amount of dietary fiber
C	Excessive amount of fats in the diet
D	Insufficient amount of fats in the diet
E	Decreased rate of metabolic processes
№	krok 2017
Topic	Specific Amino Acid Metabolism

Task	A patient presents with dysfunction of the cerebral cortex accompanied by epileptic seizures. He has been administered a biogenic amine synthesized from glutamate and responsible for central inhibition. What substance is it?
Correct answer	γ -aminobutyric acid
B	Serotonin
C	Dopamine
D	Acetylcholine
E	Histamine
№	krok 2017, 2016
Topic	Nutrition Biochemistry
Task	A 40-year-old patient suffers from intolerance of dairy products. This condition has likely developed due to insufficiency of the following digestive enzyme:
Correct answer	Lactase
B	Lipase
C	Maltase
D	Invertase
E	Amylase
№	krok 2017
Topic	Nutrition Biochemistry
Task	After examining a patient a doctor recommended him to exclude rich meat and vegetable broths, spices, and smoked products from the diet, since the patient was found to have:
Correct answer	Increased secretion of hydrochloric acid by the stomach glands
B	Reduced secretion of hydrochloric acid by the stomach glands
C	Reduced motility of the gastrointestinal tract
D	Reduced salivation
E	Biliary dyskinesia
№	krok 2017, 2016, 2012

Topic	Nutrition Biochemistry
Task	Roentgenologically confirmed obstruction of common bile duct resulted in preventing bile from inflowing to the duodenum. What process is likely to be disturbed?
Correct answer	Fat emulgation
B	Protein absorption
C	Carbohydrate hydrolysis
D	Hydrochloric acid secretion in stomach
E	Salivation inhibition
№	krok 2017
Topic	Biochemistry of connective tissue, teeth and saliva
Task	To assess the rate of collagen disintegration during certain connective tissue disturbances, it is necessary to measure the urine content of the following:
Correct answer	Oxyproline
B	Ornithine
C	Proline
D	Lysine
E	Urea
№	krok 2017
Topic	Biochemistry of connective tissue, teeth and saliva
Task	During tooth brushing it is not uncommon for oral mucosa to be injured. However, bleeding quickly stops on its own. What substances in saliva quickly staunch the flow of blood during minor oral injuries?
Correct answer	Procoagulants
B	Lipolytic enzymes
C	Amylolytic enzymes
D	Mineral substances
E	Lysozyme and mucin

№	krok 2017
Topic	Carbohydrate anabolism
Task	In postabsorptive state glycogen synthesis is increased in liver and muscles. The synthesis involves the following substance:
Correct answer	Uridine triphosphate (UTP)
B	Guanosine triphosphate (GTP)
C	Cytidine triphosphate (CTP)
D	Thymidine triphosphate (TTP)
E	Adenosine triphosphate (ATP)
№	krok 2017, 2016
Topic	Nutrition Biochemistry
Task	A 50-year-old man came to a hospital with complaints of memory disorders, painful sensations along the nerve trunks, decreased mental ability, circulatory disorders and dyspepsia. Anamnesis states excessive alcohol consumption. What vitamin deficiency can result in such symptoms?
Correct answer	Thiamine
B	Niacin
C	Retinol
D	Calciferol
E	Riboflavin
№	krok 2017
Topic	Specific and common ways of catabolism
Task	What coenzyme of flavin-dependent dehydrogenases participates in the reactions of tricarboxylic acid cycle?
Correct answer	Flavin adenine dinucleotide (FAD)
B	Flavin mononucleotide (FMN)
C	Nicotinamideadenine dinucleotide (NAD ⁺)
D	Thymidine diphosphate (TDP)

E	Heme
№	krok 2017
Topic	topic: Carbohydrate anabolism
Task	A patient suffering from malaria has developed hemolytic anemia after taking primaquine antimalarial drug. Hereditary insufficiency of the following enzyme in erythrocytes will be observed in this case:
Correct answer	Glucose 6-phosphate dehydrogenase
B	Triosephosphate isomerase
C	Lipase
D	Fructose 1-phosphate aldolase
E	Phosphofructokinase
№	krok 2017
Topic	Molecular mechanisms of translation.
Task	Amino acids join to each other in ribosomes of granular endoplasmic reticulum. Knowing the sequence of amino acids and applying genetic code, it is possible to determine the sequence of nucleoids in:
Correct answer	mRNA
B	Introns
C	Proteins
D	Carbohydrates
E	rRNA
№	krok 2017
Topic	Nutrition Biochemistry
Task	A patient is diagnosed with pancreatitis. Starch decomposition disturbance occurs in the patient's intestine due to deficiency of the following pancreatic enzyme:
Correct answer	Amylase
B	Tripsin

C	Chymotrypsin
D	Lipase
E	Carboxypeptidase
№	krok 2016
Topic	Nutrition Biochemistry
Task	A patient with gastric juice hypersecretion has been recommended to exclude from the diet rich broths and vegetable infused water. A doctor recommended it, because these food products stimulate production of the following hormone:
Correct answer	Gastrin
B	Secretin
C	Cholecystokinin
D	Somatostatin
E	Neurotensin
№	krok 2016
Topic	Biochemistry of lipid- soluble vitamins
Task	An oculist detected increased time of darkness adaptation of a patient's eye. What vitamin deficiency can cause such symptom?
Correct answer	A
B	E
C	C
D	K
E	D
№	krok 2016
Topic	Nutrition Biochemistry
Task	Examination of a patient revealed dermatitis, diarrhea, dementia. What vitamin deficiency is the cause of this condition?
Correct answer	Nicotinamide

B	Ascorbic acid
C	Folic acid
D	Biotin
E	Rutin
№	krok 2016, 2015
Topic	Principal pathways to amino acids metabolism
Task	A woman has scalded her hand with boiling water. The affected area of her skin became red, swollen and painful. This effect is caused by accumulation of the following substance:
Correct answer	Histamine
B	Lysine
C	Thiamine
D	Glutamine
E	Asparagine
№	krok 2016, 2015
Topic	Biochemistry of lipid- soluble vitamins
Task	There are various diseases that cause sharp increase of active oxygen, thus leading to cell membranes destruction. Antioxidants are used to prevent it from happening. The most potent natural antioxidant is:
Correct answer	α -tocopherol
B	Glucose
C	Vitamin D
D	Fatty acids
E	Glycerol
№	krok 2016, 2014
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands

Task	A 49-year-old patient was found to have a disproportionate enlargement of hands, feet, nose, ears, superciliary arches and cheek bones. Blood test revealed hyperglycemia, impaired glucose tolerance. What is the most likely cause of this pathology development?
Correct answer	Hypersecretion of growth hormone
B	Posterior pituitary hormone hypersecretion
C	Insulin hyposecretion
D	Vasopressin hyposecretion
E	Glucocorticoid hypersecretion
№	krok 2016
Topic	General characteristics and functions of the blood
Task	A patient suffers from mutation of a gene that corresponds with hemoglobin synthesis. This condition led to development of sickle-cell disease. Name the pathological hemoglobin characteristic of this disease:
Correct answer	HbS
B	HbA
C	HbF
D	HbA1
E	Bart-Hb
№	krok 2016
Topic	Molecular mechanisms of translation.
Task	Genetic information is stored in DNA but does not participate directly in protein synthesis within DNA cells. What process ensures transfer of genetic information into polypeptide chain?
Correct answer	Translation
B	Formation of rRNA
C	Formation of tRNA
D	Formation of iRNA
E	Replication

№	krok 2016, 2015
Topic	Nutrition Biochemistry
Task	A patient is diagnosed with seborrheic dermatitis caused by vitamin H (biotin) deficiency. Observed is activity disruption of the following enzyme:
Correct answer	Acetyl-CoA carboxylase
B	Pyruvate decarboxylase
C	Alcohol dehydrogenase
D	Aminotransferases
E	Carbamoyl phosphate synthetase
№	krok 2016
Topic	Molecular mechanisms of glucose regulation
Task	Glucose content of blood keeps at sufficient level after one week of starvation. Is it caused by activation of the following process:
Correct answer	Gluconeogenesis
B	Glycolysis
C	Glycogenolysis
D	Tricarboxylic acid cycle
E	Glycogen phosphorolysis
№	krok 2016, 2015
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A 43-year-old woman complains of weight loss, hyperhidrosis, low-grade fever, increased irritability. She has been found to have hyperfunction of the sympathetic-adrenal system and basal metabolism. These disorders can be caused by hypersecretion of the following hormone:
Correct answer	Thyroxine
B	Somatotropin
C	Corticotropin
D	Insulin

E	Aldosterone
№	krok 2016
Topic	Liver biochemistry
Task	For several days a 55-year-old woman has been suffering from pain attacks in the right upper quadrant after eating fatty foods. Visually, there is yellowness of sclera and skin. The patient has acholic stool, beer-colored urine. What substance present in the patient's urine causes its dark color?
Correct answer	Conjugated bilirubin
B	Ketone bodies
C	Unconjugated bilirubin
D	Stercobilin
E	Bilirubin glucuronides
№	krok 2016
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A 40-year-old woman suffering from diffuse toxic goiter presents with constant increase of her body temperature. What mechanism results in such clinical presentation?
Correct answer	Separation of oxidation and phosphorylation in cell mitochondria
B	Increased breakdown of glycogen in hepatic cells
C	Increased catabolism of protein in cells
D	Increased excitability of nerve cells
E	Increased cell sensitivity to catecholamines
№	krok 2016
Topic	The mechanism of tissue respiration. Peroxisome and microsomal oxidation
Task	Periodontitis induces development of lipid peroxidation in the periodontal tissues, as well as increase in malondialdehyde and hydrogen peroxide concentration in the oral cavity. Which of the following enzymes provides antioxidant protection?
Correct answer	Catalase

B	Amylase
C	Maltase
D	Lactase
E	Invertase
№	krok 2016, 2012
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Osteolaterism is characterized by a decrease in collagen strength caused by significantly less intensive formation of crosslinks in collagen fibrils. This phenomenon is caused by the low activity of the following enzyme:
Correct answer	Lysyl oxidase
B	Monoamine oxidase
C	Prolyl hydroxylase
D	Lysyl hydroxylase
E	Collagenase
№	krok 2016
Topic	Metabolism of nucleic acids.
Task	In the course of evolution there developed molecular mechanisms for correction of damaged DNA molecules. This process is called:
Correct answer	Reparation
B	Transcription
C	Translation
D	Replication
E	Processing
№	krok 2016
Topic	Functional and clinical biochemistry of tissues and urine

Task	A patient with pituitary tumor complains of increased daily diuresis (polyuria). Glucose concentration in blood plasma equals 4,8 mmol/l. What hormone can be the cause of this, if its secretion is disturbed?
Correct answer	Vasopressin
B	Aldosterone
C	Natriuretic hormone
D	Insulin
E	Angiotensin I
№	krok 2016
Topic	Carbohydrate anabolism
Task	Sulfanilamides are applied as antimicrobial agents in clinical practice. Sulfanilamide treatment, however, can result in hemolytic anemia development in patients that suffer from genetic defect of the following enzyme of pentose phosphate metabolism in erythrocytes:
Correct answer	Glucose-6-phosphate dehydrogenase
B	Hexokinase
C	Transketolase
D	Transaldolase
E	Pyruvate kinase
№	krok 2016
Topic	Metabolism of nucleic acids.
Task	Under the influence of physical factors there can develop defects in a DNA molecule. Ultraviolet irradiation, for instance, can cause development of dimers. Dimers are two adjacent pyrimidine bases joined together. Name these bases:
Correct answer	Thymine and cytosine
B	Adenine and thymine
C	Guanine and cytosine
D	Adenine and guanine

E	Guanine and thymine
№	krok 2016
Topic	Nutrition Biochemistry
Task	A 32-year-old patient has B ₂ hypovitaminosis. The specific symptoms such as epithelial, mucosal, skin and corneal lesions are the most likely to be caused by the deficiency of:
Correct answer	Flavin coenzymes
B	Cytochrome a1
C	Cytochrome oxidase
D	Cytochrome b
E	Cytochrome c
№	krok 2016
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Calcification of dental tissues is significantly influenced by osteocalcin protein that can bind calcium ions due to the presence of the following modified amino acid residues in the polypeptide chain:
Correct answer	γ -carbon glutamine
B	Alanine
C	γ -aminobutyric
D	Carboxy asparagine
E	δ -aminopropionic
№	krok 2016
Topic	General characteristics of the hemostatic system
Task	Which of the named below is the substrate of activated Christmas factor that takes part in blood coagulation?
Correct answer	Factor X
B	Vitamin K

C	Fibrinogen
D	Fibrin
E	Thrombin
№	krok 2016
Topic	Metabolism of ammonia in the body
Task	A 2-year-old child presents with mental development retardation, intolerance of proteins, severe hyperammonemia against the background of low blood urea content. This condition is caused by the congenital deficiency of the following mitochondrial enzyme:
Correct answer	Carbamoyl phosphate synthetase
B	Citrate synthase
C	Succinate dehydrogenase
D	Malate dehydrogenase
E	Monoamine oxidase
№	krok 2016
Topic	Functional and clinical biochemistry of tissues and urine
Task	Corticosteroid analogues induce breakdown of muscle proteins into free amino acids. Under such conditions these amino acids become involved with the following processes:
Correct answer	Gluconeogenesis in liver
B	Glycolysis in muscles
C	Synthesis of higher fatty acids
D	Glycogenolysis
E	Decarboxylation
№	krok 2016
Topic	Metabolism of nucleic acids.
Task	Patients suffering from xeroderma pigmentosum have extremely photosensitive skin due to disrupted excision repair. Specify the process that is affected in such patients:
Correct answer	Repair of DNA molecule

B	Synthesis of iRNA
C	Maturation of iRNA
D	Synthesis of protein primary structure
E	Intron extraction and exon connection
№	krok 2016
Topic	Principal pathways to amino acids metabolism
Task	Significant amount of biogenic amines in body tissues can be subject to oxidative deamination due to the action of the following enzyme:
Correct answer	Monoamine oxidase
B	Transaminase
C	D-amino acid oxidase
D	Isomerase
E	L-amino acid dehydrogenase
№	krok 2015
Topic	Molecular mechanisms of translation.
Task	Experimental studies revealed steroid hormones to have an effect on protein synthesis. They influence synthesis of the following substances:
Correct answer	Specific messenger RNA
B	Adenosine triphosphate
C	Specific transfer RNA
D	Guanosine triphosphate
E	Specific ribosomal RNA
№	krok 2015
Topic	Specific Amino Acid Metabolism
Task	Mother had noticed her 5-year-old child's urine to become dark in colour. Bile pigments in urine were not detected. The diagnosis of alcaptonuria was made. What pigment is deficient?
Correct answer	Homogentisic acid oxidase

B	Phenylalanine hydroxylase
C	Tyrosinase
D	Oxyphenylpyruvate oxidase
E	Phenylpyruvate decarboxylase
№	krok 2015
Topic	Principal pathways to amino acids metabolism
Task	Biogenic amines, such as histamine, serotonin, dopamine and others, are highly active substances affecting various physiological functions. What transformation process of amino acids results in biogenic amines being produced in somatic tissues?
Correct answer	Decarboxylation
B	Deamination
C	Transamination
D	Oxidation
E	Reductive amination
№	krok 2015
Topic	The mechanism of tissue respiration. Peroxide and microsomal oxidation
Task	In the process of metabolism human body produces active oxygen forms, including superoxide anion radical O_2^- . This anion is inactivated by the following enzyme:
Correct answer	Superoxide dismutase
B	Catalase
C	Peroxidase
D	Glutathione peroxidase
E	Glutathione reductase
№	krok 2015, 2012
Topic	Functional and clinical biochemistry of tissues and urine

Task	A 34-year-old patient has low endurance of physical loads. At the same time skeletal muscles have increased concentration of glycogen. This is caused by the reduced activity of the following enzyme:
Correct answer	Glycogen phosphorylase
B	Glucose-6-phosphate dehydrogenase
C	Phosphofructokinase
D	Glycogen synthase
E	Glucose-6-phosphatase
№	krok 2015
Topic	Nutrition Biochemistry
Task	A patient has been prescribed pyridoxal phosphate. What processes are corrected with this drug?
Correct answer	Transamination and decarboxylation of amino acids
B	Oxidative decarboxylation of keto acids
C	Deamination of amino acids
D	Synthesis of purine and pyrimidine bases
E	Protein synthesis
№	krok 2015
Topic	General characteristics and functions of the blood
Task	A 67-year-old patient has atherosclerosis of cardiac and cerebral vessels. Examination revealed hyperlipidemia. What class of blood plasma lipoproteids is most important in atherosclerosis pathogenesis?
Correct answer	Low-density lipoproteids
B	Chylomicrons
C	α -lipoproteids
D	High-density lipoproteids
E	–

№	krok 2015
Topic	Molecular mechanisms of glucose regulation
Task	Glucose content of blood stays at sufficient level after one week of starvation. Is it caused by activation of the following process:
Correct answer	Gluconeogenesis
B	Glycolysis
C	Glycogenolysis
D	Tricarboxylic acid cycle
E	Glycogen phosphorolysis
№	krok 2015, 2014, 2012
Topic	
Task	A 12-year-old child is of short stature, has disproportionate body structure and mental retardation. These characteristics might be caused by the hyposecretion of the following hormone:
Correct answer	Thyroxine
B	Insulin
C	Cortisol
D	Somatotropin
E	Glucagon
№	krok 2015, 2014, 2012
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A 12-year-old child is of short stature, has disproportionate body structure and mental retardation. These characteristics might be caused by the hyposecretion of the following hormone:
Correct answer	Thyroxine
B	Insulin
C	Cortisol

D	Somatotropin
E	Glucagon
№	krok 2015, 2012
Topic	Functional and clinical biochemistry of tissues and urine
Task	A patient presented to a hospital with complaints about quick fatigability and significant muscle weakness. Examination revealed an autoimmune disease that causes functional disorder of receptors in the neuromuscular synapses. This will result in the disturbed activity of the following mediator:
Correct answer	Acetylcholine
B	Noradrenaline
C	Dopamine
D	Serotonin
E	Glycine
№	krok 2015, 2013
Topic	The mechanism of tissue respiration. Peroxide and microsomal oxidation
Task	Periodontitis induces the development of lipid peroxidation in the periodontal tissues, as well as an increase in malondialdehyde and hydrogen peroxide concentration in the oral cavity. Which of the following enzymes provides antioxidant protection?
Correct answer	Catalase
B	Amylase
C	Maltase
D	Lactase
E	Invertase
№	krok 2015, 2014
Topic	Biochemistry of connective tissue, teeth and saliva

Task	Osteolaterism is characterized by a decrease in collagen strength caused by much less intensive formation of crosslinks in the collagen fibrils. This phenomenon is caused by hypoactivity of the following enzyme:
Correct answer	Lysyl oxidase
B	Monoamino-oxidase
C	Prolyl hydroxylase
D	Lysyl hydroxylase
E	Collagenase
№	krok 2015, 2012
Topic	Metabolism of nucleic acids.
Task	An oncological patient had been administered methotrexate. With time target cells of the tumour lost sensitivity to this drug. At the same time the change in gene expression of the following enzyme is observed:
Correct answer	Dehydropholate reductase
B	Thiaminase
C	Deaminase
D	Pholate oxidase
E	Pholate decarboxylase
№	krok 2015, 2013
Topic	General characteristics and functions of the blood
Task	Wilson's disease is a disorder of copper transport which leads to the accumulation of this metal in brain and liver cells. It is associated with a disturbance in the synthesis of the following protein:
Correct answer	Ceruloplasmin
B	Metallothionein
C	Transcobalamin
D	Haptoglobin

E	Siderophilin
№	krok 2015
Topic	Functional and clinical biochemistry of tissues and urine
Task	A patient with pituitary tumor complains of increased daily diuresis (polyuria). Glucose concentration in blood plasma equals 4,8 mmol/l. What hormone can be the cause of this if its secretion is disturbed?
Correct answer	Vasopressin
B	Aldosterone
C	Natriuretic hormone
D	Insulin
E	Angiotensin I
№	krok 2015
Topic	General characteristics and functions of the blood
Task	A patient is diagnosed with pancreatic diabetes with associated hyperglycemia. Glycemia rate can be assessed retrospectively (4-8 weeks prior to examination) by measuring concentration of the following blood plasma protein:
Correct answer	Glycated hemoglobin
B	Albumin
C	Fibrinogen
D	C-reactive protein
E	Ceruloplasmin
№	krok 2015, 2014
Topic	Nutrition Biochemistry
Task	A 32-year-old patient has B ₂ hypovitaminosis. The specific symptoms such as epithelial, mucosal, skin and corneal lesions are most likely to be caused by the deficiency of:
Correct answer	Flavin coenzymes

B	Cytochrome a1
C	Cytochrome oxidase
D	Cytochrome b
E	Cytochrome c
№	krok 2015
Topic	General characteristics of the hemostatic system
Task	Activation of certain hemostasis system factors is done through calcium ions attachment. What structural component allows this attachment?
Correct answer	Gamma-carboxyglutamic acid
B	Gamma-aminobutyric acid
C	Gamma-oxybutyric acid
D	Hydroxyproline
E	Mono amino dicarboxylic acids
№	krok 2015
Topic	Liver biochemistry
Task	A 43-year-old patient has acute pancreatitis with concomitant disruption of common bile duct patency. What condition can it result in?
Correct answer	Mechanical jaundice
B	Hemolytic jaundice
C	Hepatocellular jaundice
D	Hepatic coma
E	Portal hypertension
№	krok 2015, 2014
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Calcification of dental tissues is significantly influenced by osteocalcin protein which has an ability to bind calcium ions due to the presence of the following modified amino acid residues in the polypeptide chain:

Correct answer	γ -carbon glutamine
B	Alanine
C	γ -aminobutyric
D	Carboxy asparagine
E	δ -aminopropionic
№	krok 2015, 2013
Topic	Metabolism of nucleic acids.
Task	Continuous treatment of cancer patients with methotrexate over time reduces the target cell's sensitivity to the drug. In this case gene amplification of the following enzyme is observed:
Correct answer	Dihydrofolate reductase
B	Thiaminase
C	Deaminase
D	Thioredoxin reductase Thioredoxin reductase
E	–
№	krok 2015
Topic	Metabolism of nucleic acids.
Task	Ability to divide is characteristic of procariotic and eukaryotic cells. Procariotic cell division is different from that of eukaryotic, but there is one molecular process that is the basis of both types of division. Name this process.
Correct answer	DNA replication
B	Transcription
C	Reparation
D	Translation
E	Gene amplification
№	krok 2015
Topic	Biochemistry of connective tissue, teeth and saliva

Task	A patient with hypoparathyreosis has multiple carious lesions of teeth. This pathology is caused by insufficiency of the following hormone:
Correct answer	Calcitonin
B	Thyroxin
C	Triiodothyronine
D	Thyroidstimulating hormone
E	Somatotropin
№	krok 2015
Topic	Functional and clinical biochemistry of tissues and urine
Task	A patient has myocardial infarction. The first several hours of such medical condition will be characterized by significant increase of activity of the following enzyme in his blood serum:
Correct answer	Creatine phosphokinase
B	Lactate dehydrogenase ₄
C	Aspartate aminotransferase
D	Lactate dehydrogenase ₅
E	Alanine-aminotransferase
№	krok 2015
Topic	Nutrition Biochemistry
Task	A 9-month-old infant is on bottle feeding. Formula used in feeding has insufficient content of vitamin B ₆ . The infant has seizures possibly caused by disruption in production of the following substance in the body:
Correct answer	Gamma aminobutyric acid (GABA)
B	Serotonin
C	Histamine
D	Dopamine
E	β-alanine

№	krok 2014
Topic	General characteristics and functions of the blood
Task	In some areas of South Africa many people have sickle cell disease characterized by red blood cells that assume an abnormal sickle shape due to the substitution of glutamic acid for valine in the hemoglobin molecule. What is the cause of this disease?
Correct answer	Gene mutation
B	Disturbances of the mechanisms of genetic information transmission
C	Crossing-over
D	Genomic mutation
E	Transduction
№	krok 2014
Topic	Carbohydrate catabolism
Task	A 32-year-old female has gingivitis accompanied by gingival hypoxia. At the same time, the level of the following metabolite of carbohydrate metabolism is greatly increased in periodontal tissues:
Correct answer	Lactate
B	Ribose-5-phosphate
C	Glycogen
D	Glucose-6-phosphate
E	NADPH
№	krok 2014
Topic	Biochemistry of lipid- soluble vitamins
Task	Hormonal form of a certain vitamin induces genome level synthesis of C a-binding proteins and enterocytes thus regulating the intestinal absorption of C a ²⁺ ions required for dental tissue development. What vitamin is it?
Correct answer	D ₃

B	A
C	B ₁
D	E
E	K
№	krok 2014
Topic	Molecular mechanisms of glucose regulation
Task	A 36-year-old patient with diabetes mellitus had seizures with loss of consciousness after an insulin injection. What was the result of blood glucose test?
Correct answer	2,5 mmol/l
B	3,3 mmol/l
C	8,0 mmol/l
D	10 mmol/l
E	5,5 mmol/l
№	krok 2014
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	Following thyroid surgery, a 47-year-old female patient had fibrillary twitching of muscles in the arms, legs and face. These disorders can be treated by the introduction of the following hormone:
Correct answer	Parathyroid hormone
B	Triiodothyronine
C	Thyrotropin
D	Thyroxine
E	Thyroid-stimulating hormone
№	krok 2014
Topic	Liver biochemistry

Task	A 25-year-old patient with a hereditary enzymopathy (Gilbert's disease) has a disorder of bilirubin conjugation in liver. What enzyme is not synthesized in this patient?
Correct answer	UDP-glucuronyl transferase
B	UDP-glucose pyrophosphorylase
C	UDP-glycogen transferase
D	Ornithine carbomoyltransferase
E	Amidophosphoribosyltransferase
№	krok 2014
Topic	Biochemistry of lipid- soluble vitamins
Task	A 48-year-old female patient with a history of cholelithiasis has recurring steatorrhea. What vitamin deficiency may develop as a complication of the current disease?
Correct answer	K
B	B ₆
C	C
D	P P
E	B ₁₂
№	krok 2014
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A 43-year-old female complains of weight loss, hyperhidrosis, low-grade fever, increased irritability. She has been found to have hyperfunction of the sympatheticadrenal system and basal metabolism. These disorders can be caused by hypersecretion of the following hormone:
Correct answer	Thyroxine
B	Somatotropin
C	Corticotropin
D	Insulin
E	Aldosterone

№	krok 2014
Topic	Lipid catabolism
Task	A 1-year-old child with the symptoms of affection of limb and trunk muscles had been admitted to a hospital. Examination revealed muscle carnitine deficiency. The biochemical basis of this pathology is a disruption of the following process:
Correct answer	Transport of fatty acids to mitochondria
B	Regulation of Ca^{2+} level in mitochondria
C	Substrate phosphorylation
D	Utilization of lactic acid
E	Oxidative phosphorylation
№	krok 2014
Topic	Liver biochemistry
Task	For several days a 55-year-old female patient has had pain attacks in the right upper quadrant after eating fatty foods. Visually, there is yellowness of sclera and skin. The patient has acholous stool, beer-colored urine. What substance present in the patient's urine causes its dark color?
Correct answer	Conjugated bilirubin
B	Ketone bodies
C	Unconjugated bilirubin
D	Stercobilin
E	Bilirubin glucuronides
№	krok 2014
Topic	Carbohydrate anabolism
Task	One of the means of regulating enzyme activity in a human body is the covalent modification. Glycogen phosphorylase and glycogen synthetase activity is regulated by the following type of covalent modification:
Correct answer	Phosphorylation-dephosphorylation

B	ADP-ribosylation
C	Methylation
D	Hydrolysis
E	Sulfonation
№	krok 2014
Topic	Nutrition Biochemistry
Task	Alterations in protein digestion in the small intestine are induced by the impairment of trypsin and chymotrypsin activity. What enzyme deficiency may be the cause of this impairment?
Correct answer	Enterokinase
B	Pepsin
C	Amylase
D	Maltase
E	Lipase
№	krok 2014
Topic	Biochemistry of connective tissue, teeth and saliva
Task	A 34-year-old patient has a history of periodontitis. As a result of increased collagen degradation, there is a significantly increased urinary excretion of one of the amino acids. Which one?
Correct answer	Hydroxyproline
B	Valine
C	Alanine
D	Glycine
E	Serine
№	krok 2014
Topic	Carbohydrate catabolism
Task	In some anaerobic bacteria the pyruvate produced by glycolysis is converted to the ethyl alcohol (alcoholic fermentation). What is the biological significance of this process?

Correct answer	NAD+ replenishment
B	Lactate production
C	ADP production
D	Providing the cells with NADPH
E	ATP production
№	krok 2014
Topic	Nutrition Biochemistry
Task	A 36-year-old female patient who has been limiting the number of foodstuffs in her diet for 3 months presents with a decrease in body weight, deterioration of physical and mental health, face edemata. These changes may be caused by the deficiency of the following nutrients:
Correct answer	Proteins
B	Vitamins
C	Fats
D	Carbohydrates
E	Micronutrients
№	krok 2014
Topic	Principal pathways to amino acids metabolism
Task	Vitamin-like substance choline is contained in phospholipids which are the main components of biological membranes. What sulphur-containing amino acid serves as the donor of methyl groups for the synthesis of choline?
Correct answer	Methionine
B	Serine
C	Glycine
D	Alanine
E	Threonine
№	krok 2014
Topic	General characteristics and functions of the blood

Task	Patients with erythropoietic porphyria (Gunther's disease) have teeth that fluoresce red on exposure to ultraviolet light; photosensitive skin; red urine. This disease is associated with the lack of the following enzyme:
Correct answer	Uroporphyrinogen-III cosynthase
B	Uroporphyrinogen-I synthase
C	Delta-aminolevulinate synthase
D	Uroporphyrinogen decarboxylase
E	Ferrochelatase
№	krok 2014
Topic	Carbohydrate anabolism
Task	In patients with glycogenolysis, that is von Gierke's disease, the conversion of glucose-6-phosphate into glucose is inhibited, which is accompanied by the improper breakdown of glycogen in the liver. The cause of this condition is the following enzyme deficiency:
Correct answer	Glucose-6-phosphatase
B	Glycogen phosphorylase
C	Glucose-6-phosphate dehydrogenase
D	Phosphofructokinase
E	Phosphoglucomutase
№	krok 2014
Topic	Nutrition Biochemistry
Task	What vitamin is a component of glutamic acid decarboxylase, participates in the production of GABA, and its deficiency is manifested by seizures?
Correct answer	Pyridoxine
B	Cobalamin
C	Tocopherol
D	Folic acid
E	Ascorbic acid

№	krok 2014
Topic	Metabolism of nucleic acids.
Task	During reproduction of some RNA-containing viruses that cause tumors in animals, genetic information can be transmitted in the opposite direction from the RNA to the DNA via a specific enzyme. The enzyme of reverse transcription is called:
Correct answer	Reverse transcriptase
B	DNA polymerase
C	Ligase
D	Primase
E	Topoisomerase
№	krok 2014
Topic	Nutrition Biochemistry
Task	Pyruvic acid as an intermediate metabolite of carbohydrate, lipid and amino acid metabolism can undergo oxidative decarboxylation. The cause of this process is the lack of the following nutrient in the diet:
Correct answer	Thiamin
B	Pyridoxine
C	Ascorbic acid
D	Citrine
E	Pangamic acid
№	krok 2014
Topic	Liver biochemistry
Task	A patient with alcohol-induced liver injury has an impairment of biotransformation of xenobiotics and endogenous toxic compounds. These changes are likely to be caused by hypoactivity of the following chromoprotein:
Correct answer	Cytochrome P-450
B	Hemoglobin

C	Cytochrome oxidase
D	Cytochrome b
E	Cytochrome c1
№	krok 2013
Topic	The mechanism of tissue respiration. Peroxide and microsomal oxidation
Task	Oral mucosa of a patient was treated with hydrogen peroxide. Instead of foaming, the blood turned brown. That is possible in case of reduced concentration of the following enzyme:
Correct answer	Catalase
B	Pseudocholinesterase
C	Glucose-6-phosphate dehydrogenase
D	Acetyltransferase
E	Methemoglobin reductase
№	krok 2013
Topic	
Task	Electrophoretic study of blood serum of a patient with pneumonia revealed an increase in one of the protein fractions. What fraction is it?
Correct answer	Γ -globulins
B	Albumins
C	α_1 -globulins
D	α_2 -globulins
E	β -globulins
№	krok 2013
Topic	Biochemistry of connective tissue, teeth and saliva
Task	When a wound heals, a scar takes its place. What substance is the main component of its connective tissue?
Correct answer	Collagen

B	Elastin
C	Keratan sulfate
D	Chondroitin sulfate
E	Hyaluronic acid
№	krok 2013
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Cationic glycoproteins are the major components of parotid saliva. What amino acids are responsible for their positive charge?
Correct answer	Lysine, arginine, histidine
B	Aspartate, glutamate, glycine
C	Aspartate, arginine, glutamate
D	Glutamate, valine, leucine
E	Cysteine, glycine, proline
№	krok 2013
Topic	Biochemistry of lipid- soluble vitamins
Task	A patient has enamel erosion. What vitamin should be administered for its treatment?
Correct answer	D ₃
B	C
C	K
D	B ₁
E	P P
№	krok 2013, 2011
Topic	Metabolism of ammonia in the body
Task	After severe viral hepatitis a 4-year-old boy presents with vomiting, occasional loss of consciousness, convulsions. Blood test revealed hyperammoniemia. Such condition is caused by a disorder of the following biochemical hepatic process:

Correct answer	Disorder of ammonia neutralization
B	Disorder of biogenic amines neutralization
C	Protein synthesis inhibition
D	Activation of amino acid decarboxylation
E	Inhibition of transamination enzymes
№	krok 2013
Topic	Nutrition Biochemistry
Task	A 50-year-old patient has been examined by a dentist and found to have crimson smooth tongue. Blood analysis revealed a decrease in RBC level and hemoglobin concentration, colour index of 1,3, symptoms of megaloblastic hematopoiesis, degenerative changes in WBCs. What blood disorder was found in this patient?
Correct answer	B ₁₂ -folic-acid-deficiency anemia
B	Iron deficiency anemia
C	Myeloid leukemia
D	Aplastic anemia
E	Hemolytic anemia
№	krok 2013
Topic	Functional and clinical biochemistry of tissues and urine
Task	A 50-year-old woman with myocardial infarction has been delivered to the intensive care unit. Which enzyme's activity will be most increased during the first two days?
Correct answer	Aspartate aminotransferase
B	Alanine aminotransferase
C	Alanine aminopeptidase
D	LDH ₄
E	LDH ₅
№	krok 2013

Topic	Molecular mechanisms of glucose regulation
Task	A patient with rheumatoid arthritis has been given hydrocortisone for a long time. He has developed hyperglycemia, polyuria, glycosuria, thirst. These complications of treatment result from the activation of the following process:
Correct answer	Gluconeogenesis
B	Glycogenolysis
C	Glycogenesis
D	Glycolysis
E	Lipolysis
№	krok 2013, 2011
Topic	Principal pathways to amino acids metabolism
Task	Depressions and emotional disorders result from noradrenaline, serotonin and other biogenic amines deficiency in brain. Concentration of these compounds in synapses can be increased by means of antidepressants that inhibit the activity of the following enzyme:
Correct answer	Monoamine oxidase
B	Diamine oxidase
C	L-amino acid oxidase
D	D-amino acid oxidase
E	Phenylalanine-4-monooxygenase
№	krok 2013
Topic	Specific Amino Acid Metabolism
Task	Inhibitory effect of GABA is due to the increased permeability of the postsynaptic membrane for chloride ions. This mediator is produced as a result of decarboxylation of the following amino acid:
Correct answer	Glutamate
B	Aspartate
C	Glutamine

D	Asparagine
E	Arginine
№	krok 2013
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A 37-year-old patient has lost 5 kg in weight over the past three months, he complains of hand tremor, excessive sweating, exophthalmos, tachycardia. These changes might have been caused by the increased secretion of the following hormone:
Correct answer	Thyroxine
B	Cortisol
C	Insulin
D	Glucagon
E	Thyrocalcitonin
№	krok 2013
Topic	Functional and clinical biochemistry of tissues and urine
Task	After a person had drunk 1,5 liters of water, the amount of urine increased significantly, and its relative density decreased to 1,001. These changes are a result of decreased water reabsorption in the distal nephron portion due to reduced secretion of:
Correct answer	Vasopressin
B	Aldosterone
C	Angiotensin II
D	Renin
E	Prostaglandins
№	krok 2013
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	Degeneration of glycogen in liver is stimulated by glucagon. What secondary messenger (mediator) is thus formed in the cell?
Correct answer	c-AMP

B	c-GMP
C	CO
D	NO
E	Triacylglycerol
№	krok 2013
Topic	Carbohydrate anabolism
Task	It is known that the pentose phosphate pathway occurring in the adipocytes of adipose tissue acts as a cycle. What is the main function of this cycle in the adipose tissue?
Correct answer	NADPH ₂ generation
B	Ribose-phosphate production
C	Xenobiotic detoxification
D	Energy generation
E	Glucose oxidation to end products
№	krok 2013
Topic	Liver biochemistry
Task	Examination of a chemical plant worker who had had a poisoning revealed an increase in total bilirubin concentration at the expense of indirect fraction. Feces and urine are characterized by high stercobilin concentration. The level of direct bilirubin in blood plasma is normal. What type of jaundice is the case?
Correct answer	Hemolytic
B	Obstructive
C	Hepatic
D	Parenchymatous
E	Mechanical
№	krok 2013
Topic	Metabolism of nucleic acids.

Task	DNA replication occurs during the cell division when a signal is received from the cytoplasm, and a certain portion of the DNA helix is unwound and divided into two chains. The helix is unwound by the following enzyme:
Correct answer	Helicase
B	RNA polymerase
C	Ligase
D	Restrictase
E	DNA polymerase
№	krok 2013
Topic	Liver biochemistry
Task	A patient with a pronounced icteritiousness of skin, sclera and mucous membranes has urine of dark beer colour and colourless feces. Direct bilirubin in blood is elevated, urine contains bilirubin. What type of jaundice is it?
Correct answer	Obstructive
B	Parenchymatous
C	Hemolytic
D	Conjugation
E	Excretory
№	krok 2013
Topic	Metabolism of nucleic acids.
Task	Nucleolus organizers of human chromosomes 13-15, 21, 22 include about gene clusters that synthesize RNA. These chromosomal regions contain the information on the following type of RNA:
Correct answer	rRNA
B	tRNA
C	mRNA
D	snRNA

E	tRNA + rRNA
№	krok 2013
Topic	Nutrition Biochemistry
Task	Steatosis is caused by accumulation of triacylglycerols in hepatocytes. One of the mechanisms of this disease is to reduce the utilization of neutral fat VLDL. What lipotropic substances prevent the steatosis development?
Correct answer	Methionine, B ₆ , B ₁₂
B	Arginine, B ₂ , B ₃
C	Alanine, B ₁ , P P
D	Valine, B ₃ , B ₂
E	Isoleucine, B ₁ , B ₂
№	krok 2013
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	It is known that many hormones act through the adenylate cyclase system causing the enzyme activation by phosphorylation. What enzyme is activated by hormonal signals and catalyzes glycogen breakdown?
Correct answer	Phosphorylase
B	Phosphotransferase
C	Glucomutase
D	Phosphatase
E	Tyrosinase
№	krok 2013
Topic	Carbohydrate anabolism
Task	It has been revealed that intense physical exercise causes activation of gluconeogenesis in liver of experimental rats. Which substance is glucose precursor in this case?
Correct answer	Pyruvate

B	Glycogen
C	Palmitate
D	Urea
E	Stearate
№	krok 2013
Topic	General characteristics and functions of the blood
Task	A patient has symptoms of atherosclerosis. What plasma lipid transport forms should have an increased concentration?
Correct answer	LDL
B	HDL
C	IDL
D	VLDL
E	Chylomicrons
№	krok 2013
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Some proteins of saliva have a protective function. Which of them protects the oral mucosa from the mechanical damage?
Correct answer	Mucin
B	Lysozyme
C	Catalase
D	Peroxidase
E	Renin
№	krok 2012, 2007
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	Examination of a 32-year-old patient revealed disproportional skeleton size, enlargement of superciliary arches, nose, lips, tongue, jaw bones, feet. What gland's function was disturbed?
Correct answer	Hypophysis

B	Epiphysis
C	Pancreas
D	Thyroid
E	Suprarenal
№	krok 2012, 2011, 2010, 2009
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A child has abnormal formation of tooth enamel and dentin as a result of low concentration of calcium ions in blood. Such abnormalities might be caused by deficiency of the following hormone:
Correct answer	Parathormone
B	Thyrocalcitonin
C	Thyroxin
D	Somatotropic hormone
E	Triiodothyronine
№	krok 2012, 2011
Topic	Functional and clinical biochemistry of tissues and urine
Task	A man has a considerable decrease in diuresis as a result of 1,5 l blood loss. The primary cause of such diuresis disorder is the hypersecretion of the following hormone:
Correct answer	Vasopressin
B	Corticotropin
C	Natriuretic
D	Cortisol
E	Parathormone
№	krok 2012, 2007
Topic	Nutrition Biochemistry

Task	Examination of a child who hasn't got fresh fruit and vegetables during winter revealed numerous subcutaneous hemorrhages, gingivitis, carious cavities in teeth. What vitamin combination should be prescribed in this case?
Correct answer	Ascorbic acid and rutin
B	Thiamine and pyridoxine
C	Folic acid and cobalamin
D	Riboflavin and nicotinamide
E	Calciferol and ascorbic acid
№	krok 2012, 2011
Topic	Functional and clinical biochemistry of tissues and urine
Task	A patient has been delivered to a hospital with a provisional diagnosis of progressing muscle dystrophy. This diagnosis can be confirmed by the increased concentration of the following substance found in urine:
Correct answer	Kreatine
B	Pyruvate
C	Carnosine
D	Troponin
E	Hydroxyproline
№	krok 2012
Topic	Molecular mechanisms of glucose regulation
Task	Before the cells can utilize the glucoze, it is first transported from the extracellular space through the plasmatic membrane inside theml. This process is stimulated by the following hormone:
Correct answer	Insulin
B	Glucagon
C	Thyroxin
D	Aldosterone
E	Adrenalin

№	krok 2012, 2011, 2010
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Parodontitis is treated with calcium preparations and a hormone that stimulates tooth mineralization and inhibits tissue resorption. What hormone is it?
Correct answer	Calcitonin
B	Parathormone
C	Adrenalin
D	Aldosterone
E	Thyroxine
№	krok 2012
Topic	General characteristics of the hemostatic system
Task	After implantation of a cardiac valve a young man constantly takes indirect anticoagulants. His state was complicated by hemorrhage. What substance content has decreased in blood?
Correct answer	Prothrombin
B	Haptoglobin
C	Heparin
D	Creatin
E	Ceruloplasmin
№	krok 2012, 2007
Topic	Molecular mechanisms of glucose regulation
Task	Chronic overdosage of glucocorticoids leads to the development of hyperglycemia. What process of carbohydrate metabolism is responsible for this effect?
Correct answer	Gluconeogenesis
B	Glycogenolysis
C	Aerobic glycolysis
D	Pentose-phosphate cycle
E	Glycogenesis

№	krok 2012, 2011
Topic	Functional and clinical biochemistry of tissues and urine
Task	After prolonged exercising people usually experience intense muscle pain. What is its most likely cause
Correct answer	Accumulation of lactic acid in muscles
B	Intensified disintegration of muscle proteins
C	Accumulation of creatinine in muscles
D	Increased muscle excitability
E	Increased concentration of ADP in muscles
№	krok 2012
Topic	Nutrition Biochemistry
Task	Leukoses are treated with antimetabolite methotrexate. What vitamin is its antagonist?
Correct answer	Folic acid
B	Cyanocobalamin
C	Phyllochinone
D	Piridoxine
E	Rutin
№	krok 2012
Topic	Functional and clinical biochemistry of tissues and urine
Task	A patient at the early stage of diabetes mellitus was found to have polyuria. What is its cause?
Correct answer	Hyperglycemia
B	Ketonemia
C	Hypocholesterolemia
D	Hypercholesterolemia
E	Hyperkaliemia
№	krok 2012
Topic	General characteristics and functions of the blood

Task	A 67-year-old patient has atherosclerosis of cardiac and cerebral vessels. Examination revealed hyperlipidemia. What class of blood plasma lipoproteids is most important in atherosclerosis pathogenesis?
Correct answer	Low-density lipoproteids
B	Chylomicrons
C	α -lipoproteids
D	High-density lipoproteids
E	–
№	krok 2012, 2009
Topic	Lipid catabolism
Task	A sportsman needs to improve his sporting results. He was recommended a drug containing carnitine. What process is activated by this compound in the first place?
Correct answer	Transport of fatty acids
B	Transport of amino acids
C	Transport of calcium ions
D	Transport of glucose
E	Transport of vitamin K
№	krok 2012, 2009
Topic	Carbohydrate catabolism
Task	After restoration of blood circulation in damaged tissue accumulation of lactate comes to a stop and speed of glucose consumption slows down. These metabolic changes are caused by activation of the following process:
Correct answer	Aerobic glycolysis
B	Anaerobic glycolysis
C	Lipolysis
D	Gluconeogenesis
E	Glycogen biosynthesis

№	krok 2012
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A 45-year-old woman has been diagnosed with endemic goiter. What mechanism has caused hyperplasia of thyroid gland in this patient?
Correct answer	Increased thyrotropin production
B	Increased thyroxine production
C	Increased iodine absorption
D	Increased hydration of derma and hypodermic cellulose
E	Increased catecholamine production
№	krok 2012, 2011, 2010
Topic	Specific Amino Acid Metabolism
Task	On examination a male patient was diagnosed with acute radiation disease. Laboratory examination revealed abrupt decrease in serotonin found in blood platelets. A likely cause of decrease in serotonin concentration would be metabolic imbalance of the following substance:
Correct answer	5-oxytryptophane
B	Tyrosine
C	Histidine
D	Phenyl alanine
E	Serine
№	krok 2012
Topic	Biochemistry of connective tissue, teeth and saliva
Task	A 60-year-old patient was found to have a dysfunction of main digestive enzyme of saliva. This causes the disturbance of primary hydrolysis of:
Correct answer	Carbohydrates
B	Fats
C	Proteins
D	Cellulose

E	Lactose
№	krok 2012, 2010, 2008
Topic	Nutrition Biochemistry
Task	Examination of a patient revealed that dental hypoplasia was caused by hypovitaminosis of vitamins A and D. These vitamins were administered perorally but they didn't have any medicinal effect. What is the probable cause of disturbed vitamin assimilation?
Correct answer	Bile acid deficiency
B	Hypochlorhydria
C	Hyperchlorhydria
D	Achylia
E	Achlorhydria
№	krok 2012
Topic	Metabolism of nucleic acids.
Task	In the course of evolution there appeared molecular mechanisms for correction of damaged DNA molecules. This process is called:
Correct answer	Reparation
B	Transcription
C	Translation
D	Replication
E	Processing
№	krok 2012
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	Deficiency of linoleic and linolenic acids in an organism induces skin damages, hair loss, slow wound healing, thrombocytopenia, low resistance to infectious diseases. These symptoms are most likely to be caused by the disturbed synthesis of the following substances:
Correct answer	Eicosanoids
B	Interleukins

C	Interferons
D	Catecholamines
E	Corticosteroids
№	krok 2012
Topic	Metabolism of nucleic acids.
Task	Skin of patients with pigment xeroderma is very sensitive to the sun radiation, there is a risk of skin cancer development. The reason for this is hereditary deficiency of UF-endonuclease. As a result of this defect the following process is disturbed:
Correct answer	DNA reparation
B	Transcription
C	DNA replication
D	Translation
E	Initiation
№	krok 2012
Topic	Specific and common ways of catabolism
Task	Examination of a patient revealed II grade obesity. It is known that he consumes a lot of sweets and rich food, has sedentary way of life. That's why anabolic metabolism has the priority in his organism. Which of the following pathways is amphibolic?
Correct answer	Cycle of tricarboxylic acids
B	Glyconeogenesis
C	Lipolysis
D	Glycolysis
E	Fatty acids oxidation
№	krok 2012
Topic	Biochemistry of lipid- soluble vitamins

Task	A few days before an operation a patient should be administered vitamin K or its synthetic analogue Vicasol. Vitamin K takes part in the following posttranslational modification of the II, VII, IX, X blood clotting factors:
Correct answer	Carboxylation
B	Decarboxylation
C	Deamination
D	Transamination
E	Glycosylation
№	krok 2012
Topic	Liver biochemistry
Task	An infectious disease unit admitted a patient with signs of jaundice caused by hepatitis virus. Select an indicator that is specific only for parenchymatous jaundice:
Correct answer	Increase in ALT and AST rate
B	Hyperbilirubinemia
C	Bilirubinuria
D	Cholaemia
E	Urobilinuria
№	krok 2012
Topic	Specific Amino Acid Metabolism
Task	A patient presents with dysfunction of cerebral cortex accompanied by epileptic seizures. He has been administered a biogenic amine synthesized from glutamate and responsible for central inhibition. What substance is it?
Correct answer	Gamma-amino butyric acid
B	Serotonin
C	Dopamine
D	Acetylcholine
E	Histamine

№	krok 2012
Topic	Liver biochemistry
Task	Toxic affection of liver results in dysfunction of protein synthesis. It is usually accompanied by the following kind of dysproteinemia:
Correct answer	Absolute hypoproteinemia
B	Relative hypoproteinemia
C	Absolute hyperproteinemia
D	Relative hyperproteinemia
E	Paraproteinemia
№	krok 2012
Topic	Molecular mechanisms of translation.
Task	A cell of granular endoplasmatic reticulum is at the stage of translation, when mRNA advances to the ribosomes. Amino acids get bound by peptide bonds in a certain sequence thus causing polypeptide biosynthesis. The sequence of amino acids in a polypeptide corresponds with the sequence of:
Correct answer	mRNA codons
B	tRNA nucleotides
C	tRNA anticodons
D	rRNA nucleotides
E	rRNA anticodons
№	krok 2011, 2010
Topic	Metabolism of nucleic acids.
Task	Inside a human cell the informational RNA containing both exons and introns was delivered to the granular endoplasmic reticulum to the ribosomes. What process does NOT take place?
Correct answer	Processing
B	Replication
C	Transcription

D	Translation
E	Prolongation
№	krok 2011
Topic	Molecular mechanisms of translation.
Task	One of the protein synthesis stages is recognition. The first iRNA triplet starts with UAU triplet. What complementary triplet is found in tRNA?
Correct answer	AUA
B	AAA
C	GUG
D	UGU
E	CUC
№	krok 2011, 2010
Topic	Nutrition Biochemistry
Task	A 30-year-old woman has subnormal concentration of enzymes in the pancreatic juice. This might be caused by the hyposecretion of the following gastro-intestinal hormone:
Correct answer	Cholecystokininpancreozymin
B	Somatostatin
C	Secretin
D	Gastro-inhibiting peptide
E	Vaso-intestinal peptide
№	krok 2011
Topic	General characteristics of the hemostatic system
Task	A patient complains of frequent gingival haemorrhages he has been experiencing since his childhood. Blood test revealed a deficiency in blood-coagulation factor VIII. This means that the patient has an impairment of:
Correct answer	Prothrombinase generation
B	Thrombin generation

C	Fibrin generation
D	Thrombocyte adhesion
E	Thrombocyte aggregation
№	krok 2011
Topic	Nutrition Biochemistry
Task	During an acute experiment some of diluted solution of hydrochloric acid was injected into the duodenal cavity of an experimental animal. This will result in hypersecretion of the following hormone:
Correct answer	Secretin
B	Gastrin
C	Motilin
D	Neurotensin
E	Histamine
№	krok 2011
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A child presents with symptoms of psychic and physical retardation (cretinism). It is usually associated with the following hormone deficiency:
Correct answer	Thyroxin
B	Somatotropic
C	Calcitonin
D	Insulin
E	Testosterone
№	krok 2011
Topic	Carbohydrate catabolism
Task	A 32-year-old female patient suffers from gingivitis accompanied by gum hypoxia. What metabolite of carbohydrate metabolism is produced in the periodontium tissues more actively in this case?

Correct answer	Lactate
B	Ribose 5-phosphate
C	Glycogen
D	Glucose 6-phosphate
E	NADPH-H
№	krok 2011
Topic	Functional and clinical biochemistry of tissues and urine
Task	A month after a serious operation a 38-year-old patient has recovered and has now positive nitrogen balance. Urine of this patient may be found to have low concentration of the following nitrogen-containing substance:
Correct answer	Urea
B	Lactate
C	Stercobilinogen
D	Galactose
E	17-ketosteroids
№	krok 2011
Topic	General characteristics and functions of the blood
Task	A patient suffers from hypertension and atherosclerosis. He should reduce the consumption of the following lipide:
Correct answer	Cholesterol
B	Oleic acid
C	Lecithin
D	Monooleate glyceride
E	Phosphatidyl serine
№	krok 2011
Topic	Molecular mechanisms of glucose regulation

Task	Before the cells can utilize the glucoze, it is first transported from the extracellular space through the plasmatic membrane inside theml. This process is stimulated by the following hormone:
Correct answer	Insulin
B	Glucagon
C	Thyroxin
D	Aldosterone
E	Adrenalin
№	krok 2011
Topic	Nutrition Biochemistry
Task	A patient's blood shows an increased concentration of pyruvate which is excreted with urine for the most part. This is typical for the following vitamin deficiency:
Correct answer	B ₁
B	E
C	B ₃
D	B ₆
E	B ₂
№	krok 2011
Topic	Biochemistry of lipid- soluble vitamins
Task	A 35-year-old female patient with a chronic renal disease has developed osteoporosis. The cause of this complication is the deficiency of the following substance:
Correct answer	1,25-dihydroxy-D ₃
B	25-hydroxy-D ₃
C	D ₃
D	D ₂
E	Cholesterol
№	krok 2011

Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A 50-year-old man sustained a great stress. This caused a dramatic increase in adrenalin and noradrenaline concentration. What enzymes catalyze the inactivation of the latter?
Correct answer	Monoamine oxidases
B	Glycosidases
C	Peptidases
D	Carboxylase
E	Tyrosinase
№	krok 2011
Topic	Biochemistry of connective tissue, teeth and saliva
Task	A child has an acute renal failure. What biochemical factor found in saliva can confirm this diagnosis?
Correct answer	Increase in urea concentration
B	Increase in glucose concentration
C	Decrease in glucose concentration
D	Increase in concentration of higher fatty acids
E	Decrease in nucleic acid concentration
№	krok 2011
Topic	Specific Amino Acid Metabolism
Task	Analysis of a newborn's urine revealed phenylpyruvic acid. Its presence in urine is associated with the following pathology:
Correct answer	Phenylketonuria
B	Alkaptonuria
C	Albinism
D	Tyrosinosis
E	Gout
№	krok 2011

Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	An emotional stress induces activation of hormone-sensitive triglyceride lipase in the adipocytes. What secondary mediator takes part in this process?
Correct answer	Cyclic adenosine monophosphate
B	cGMP
C	AMP
D	Diacylglycerol
E	Ca ²⁺ ions
№	krok 2011
Topic	Nutrition Biochemistry
Task	Examination of a 45-year-old man who had kept to a vegetarian diet for a long time revealed negative nitrogen balance. Which peculiarity of his diet is the cause of this phenomenon?
Correct answer	Lack of proteins
B	Lack of fats
C	Excess of water
D	Excess of carbohydrates
E	Lack of vitamins
№	krok 2011
Topic	Liver biochemistry
Task	A 2-day-old baby has yellowish skin and mucous membranes. This might be caused by the temporary lack of the following enzyme:
Correct answer	UDP-glucuronil transferase
B	Sulfotransferase
C	Haem synthetase
D	Hemoxygenase
E	Biliverdine reductase

№	krok 2011
Topic	General characteristics and functions of the blood
Task	A 29-year-old patient was delivered to a hospital because of intoxication with carbon monoxide. Objectively: the patient presents with symptoms of severe hypoxia - evident dyspnea, cyanosis, tachycardia. What compound is produced as a result of intoxication with carbon monoxide?
Correct answer	Carboxyhemoglobin
B	Methemoglobin
C	Carbhemoglobin
D	Sulfhemoglobin
E	Oxyhemoglobin
№	krok 2011
Topic	Liver biochemistry
Task	A 25-year-old patient has been diagnosed with chronic hepatitis. The patient complains of 10 kg weight loss within 2 months. Objectively: the patient has dry peeling skin, pale with yellow shade, petechial haemorrhages, stomatorrhagia. Petechial haemorrhages and stomatorrhagia are caused by the disturbance of the following hepatic function:
Correct answer	Protein synthesizing
B	Chromogenic
C	Glycogen synthesizing
D	Detoxication
E	Depositing
№	krok 2011
Topic	Molecular mechanisms of glucose regulation
Task	A 29-year-old female patient has moon face, upper body obesity, striae on her anterior abdominal wall, hirsutism; urine shows an increased rate of 17-oxy ketosteroids. What disease are these presentations typical for?
Correct answer	Itsenko-Cushing syndrome

B	Pheochromocytoma
C	Conn's syndrome
D	Primary aldosteronism
E	Secondary aldosteronism
№	krok 2011
Topic	Functional and clinical biochemistry of tissues and urine
Task	A 20-year-old patient complains of morbid thirst and huperdiuresis (up to 10 l daily). Glucose concentration in blood is normal but it is absent in urine. The patient has been diagnosed with diabetes insipidus. What hormonal drug is the most appropriate for management of this disorder?
Correct answer	Vasopressin
B	Cortisol
C	Thyroxin
D	Oxytocin
E	Insulin
№	krok 2011
Topic	The mechanism of tissue respiration. Peroxide and microsomal oxidation
Task	A cell has been treated with a substance that blocks nucleotide phosphorilation in the mitochondrions. What process of cell activity will be disturbed in the first place?
Correct answer	ATP resynthesis
B	Synthesis of mitochondrial proteins
C	Oxidative phosphorilation
D	Integration of functional protein molecules
E	Fragmentation of big mitochondrions into lesser ones
№	krok 2011
Topic	Metabolism of nucleotide

Task	A 1,7-year-old child with a developmental delay and manifestations of self-agression has the concentration of uric acid in blood at the rate of 1,96 millimole/l. What metabolic disorder is this typical for?
Correct answer	Lesch-Nyhan syndrome
B	Podagra
C	Acquired immunodeficiency syndrome
D	Gierke's disease
E	Cushing's basophilism
№	krok 2011
Topic	Biochemistry of lipid- soluble vitamins
Task	A cell with vitamin E deficit had been affected by ionizing radiation. This induced an intensified release of hydrolytic enzymes into the cytoplasm and thus a complete destruction of intracellular structures - autolysis. What organellas caused this phenomenon?
Correct answer	Lysosomes
B	Endoplasmic reticulum
C	Golgi complex
D	Microbodies
E	Mitochondrions
№	krok 2010
Topic	Molecular mechanisms of glucose regulation
Task	Glucose concentration in a patient's blood is 15 millimole/l (reabsorption threshold is 10 millimole/l). What effect can be expected?
Correct answer	Glucosuria
B	Diuresis reduction
C	Reduced glucose reabsorption
D	Reduced vasopressin secretion
E	Reduced aldosterone secretion

№	krok 2010
Topic	The mechanism of tissue respiration. Peroxide and microsomal oxidation
Task	A patient complains about attacks of laboured breathing, dizziness. He works at a chemical plant producing hydrocyanic acid. The described symptoms might be associated with dysfunction of the following enzyme:
Correct answer	Cytochrome oxidase
B	Lactate dehydrogenase
C	Succinate dehydrogenase
D	Catalase
E	Pyruvate dehydrogenase
№	krok 2010
Topic	Nutrition Biochemistry
Task	A patient has increased pyruvate concentration in blood. Large amount of it is excreted with urine. What vitamin deficiency is observed?
Correct answer	B ₁
B	E
C	B ₃
D	B ₆
E	B ₂
№	krok 2010
Topic	Lipid catabolism
Task	A patient with high obesity was recommended to take carnitine as a food additive for better fat burning. What function is fulfilled by carnitine in the process of fat oxidation?
Correct answer	Transport of fatty acids from the cytosol to the mitochondria
B	Transport of fatty acids from the fat depots to the tissues
C	Participation in one of the reactions of beta-oxidation of fatty acids

D	Fatty acid activation
E	Intracellular lipolysis activation
№	krok 2010
Topic	Metabolism of ammonia in the body
Task	Examination of urine in a newborn revealed presence of citrulline and high ammonia concentration. This baby is most likely to have the disorder of the following substance production:
Correct answer	Urea
B	Uric acid
C	Ammonia
D	Creatinine
E	Creatine
№	krok 2010, 2008
Topic	Specific Amino Acid Metabolism
Task	Pellagra may be caused by maize domination and low quantity of animal foodstuffs in the dietary intake. This pathology results from lack of the following amino acid:
Correct answer	Tryptophane
B	Isoleucine
C	Phenylalanine
D	Methionine
E	Histidine
№	krok 2010
Topic	Nutrition Biochemistry
Task	A patient is found to have increased permeability of blood vessel walls accompanied by increased gingival haemorrhage, petechial skin haemorrhages, dedentition. What pathology is observed in this patient?
Correct answer	Hypovitaminosis C

B	Hypervitaminosis D
C	Hypervitaminosis C
D	Hypovitaminosis D
E	Hypovitaminosis A
№	krok 2010, 2009
Topic	Carbohydrate anabolism
Task	A 38 year old patient takes aspirin and sulfanilamides. After their intake intensified erythrocyte haemolysis is observed which is caused by deficiency of glucose 6-phosphate dehydrogenase. This pathology is caused by failure of the following coenzyme:
Correct answer	N ADP – H
B	F AD – H ₂
C	Pyridoxal phosphate
D	F M N – H ₂
E	Ubiquinone
№	krok 2010
Topic	Nutrition Biochemistry
Task	A patient was diagnosed with seborrheic dermatitis associated with vitamin H (biotin) deficiency. The patient has disturbed activity of the following enzyme:
Correct answer	Acetyl-CoA-carboxylase
B	Pyruvate decarboxylase
C	Alcohol dehydrogenase
D	Amino transferase
E	Carbomoyl phosphate synthetase
№	krok 2010
Topic	Molecular mechanisms of glucose regulation

Task	During starvation normal rate of glucose is maintained by means of gluconeogenesis activation. What substance can be used as a substrate for this process?
Correct answer	Alanine
B	Ammonia
C	Adenine
D	Urea
E	Guanine
№	krok 2010, 2009
Topic	The mechanism of tissue respiration. Peroxide and microsomal oxidation
Task	Researches of the latest decades established that immediate "executors" of cell apoptosis are special enzymes called caspases. Generation of one of them proceeds with participation of cytochrome C. What is its function in a normal cell?
Correct answer	Enzyme of respiratory chain of electron transport
B	Enzyme of tricarboxylic acid cycle
C	Enzyme of beta-oxidation of fatty acids
D	Component of H ⁺ ATP system
E	Component of pyruvate-dehydrogenase system
№	krok 2010, 2009
Topic	Nutrition Biochemistry
Task	Treatment of many diseases involves use of cocarboxylase (thiamine pyrophosphate) for supplying cells with energy. What metabolic process is activated in this case?
Correct answer	Oxidizing decarboxylation of pyruvate
B	Glutamate deamination
C	Amino acids decarboxylation
D	Decarboxylation of biogenic amines
E	Detoxication of harmful substances in liver

№	krok 2010
Topic	Biochemistry of connective tissue, teeth and saliva
Task	A 60-year-old female patient presents with hypoactivity of the principal digestive enzyme of saliva. This is usually accompanied by disturbed primary hydrolysis of:
Correct answer	Carbohydrates
B	Fats
C	Proteins
D	Cellulose
E	Lactose
№	krok 2010
Topic	Biochemistry of connective tissue, teeth and saliva
Task	A child with renal insufficiency exhibits delayed teeth eruption. This is most likely caused by the abnormal formation of the following substance:
Correct answer	1,25 (OH) ₂ D ₃
B	Glycocyamine
C	Glutamate
D	α-ketoglutarate
E	Hydroxylysine
№	krok 2010
Topic	General characteristics and functions of the blood
Task	Patients with erythropoietic porphyria (Gunther's disease) are known to have photoesthetic skin, red urine. In the ultraviolet light their teeth exhibit bright red fluorescence. This disease is associated with deficiency of the following enzyme:
Correct answer	Uroporphyrinogen-III-cosynthase
B	Uroporphyrinogen-I-synthase
C	Delta-aminolevulinate synthase

D	Uroporphyrinogen decarboxylase
E	Ferrochelatase
№	krok 2010
Topic	Biochemistry of connective tissue, teeth and saliva
Task	In spring a patient experiences petechial haemorrhages, loosening of teeth, high liability to colds. A doctor supposes hypobitaminosis C. In this respect loosening of teeth can be explained by:
Correct answer	Structural failure of collagen in the periodontal ligaments
B	Structural change of glycosaminoglycan
C	Increased permeability of periodont membranes
D	Mechanical damage of teeth
E	Disturbed oxidation-reduction process in the periodont
№	krok 2009
Topic	Molecular mechanisms of translation.
Task	Formation of ribosome subunits in a cell was disturbed in course of an experiment (by means of activated mutagenic factors). This will have an effect on the following metabolic process:
Correct answer	Protein biosynthesis
B	Carbohydrate biosynthesis
C	ATP synthesis
D	Photosynthesis
E	Biological oxidation
№	krok 2009
Topic	Liver biochemistry
Task	Examination of a patient who has recently had a hepatic disease revealed low concentration of prothrombin in blood. First of all this will cause disturbance of:
Correct answer	Second phase of coagulation haemostasis
B	First phase of coagulation haemostasis
C	Vasculothrombocytic haemostasis

D	Fibrinolysis
E	Anticoagulative blood properties
№	krok 2009
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A patient has hyperkalemia and hyponatremia. Such changes might be caused by hyposecretion of the following hormone:
Correct answer	Aldosterone
B	Vasopressin
C	Cortisol
D	Parathormone
E	Natriuretic
№	krok 2009
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Analysis of a patient's saliva revealed high concentration of lactate. This is most probably caused by activation of the following process:
Correct answer	Anaerobic glucose breakdown
B	Aerobic glucose breakdown
C	Glycogen breakdown
D	Carbohydrate hydrolysis
E	Glucose-lactate cycle
№	krok 2009
Topic	Specific Amino Acid Metabolism
Task	A patient diagnosed with malignant carcinoid has extremely high concentration of serotonin in blood. This biogenic amine can be formed from the following amino acid:
Correct answer	Tryptophan
B	Alanine
C	Leucine

D	Threonine
E	Methionine
№	krok 2009
Topic	Biochemistry of lipid- soluble vitamins
Task	A patient suffering from chronic renal insufficiency has got osteoporosis. Osteoporosis was caused by abnormal synthesis of the following regulator of mineral metabolism in kidneys:
Correct answer	1, 25(OH) ₂ D ₃ formation
B	Proline hydroxylation
C	Lysine hydroxylation
D	Glutamate carboxylation
E	Cortisol hydroxylation
№	krok 2009
Topic	Biochemistry of lipid- soluble vitamins
Task	Parodontosis is treated by means of antioxidants. Which of the following natural compounds is used as an antioxidant:
Correct answer	Tocopherol
B	Thiamine
C	Gluconate
D	Pyridoxine
E	Choline
№	krok 2009
Topic	General characteristics and functions of the blood
Task	A patient has high sunlight sensitivity of skin. During standing his urine turns dark-brown. What is the most probable cause of this condition?
Correct answer	Porphyria
B	Haemolytic jaundice

C	Albinism
D	Pellagra
E	Alkaptonuria
№	krok 2009
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Periodontitis is accompanied by activation of proteolysis in the periodontium tissues. The evidence of proteolysis activation is increase of the following component of oral liquid:
Correct answer	Amino acids
B	Organic acids
C	Glucose
D	Biogenic amines
E	Cholesterol
№	krok 2009
Topic	Specific Amino Acid Metabolism
Task	A patient has been diagnosed with alkaptonuria. This pathology is caused by deficiency of the following enzyme:
Correct answer	Oxidase of homogentisic acid
B	Phenylalanine hydroxylase
C	Glutamate dehydrogenase
D	Pyruvate dehydrogenase
E	DOPA decarboxylase
№	krok 2009
Topic	The mechanism of tissue respiration. Peroxide and microsomal oxidation
Task	Potassium cyanide that is a poison came into a patient's organism and caused death a few minutes after it. The most probable cause of its toxic effect was abnormal activity of:
Correct answer	Cytochrome oxidase
B	Catalase

C	AT P -synthetase
D	N ADP – H-dehydrogenase
E	Haemoglobin synthesis
№	krok 2009
Topic	Molecular mechanisms of glucose regulation
Task	During starvation normal rate of glucose is maintained by means of activation of gluconeogenesis. What substance can be used as a substrate for this process?
Correct answer	Alanine
B	Ammonia
C	Adenine
D	Urea
E	Guanine
№	krok 2009
Topic	Liver biochemistry
Task	A patient with apparent icteritiousness of skin, sclera and mucous membranes was admitted to the hospital. The patient's urine was of brown ale colour, analysis revealed presence of direct bilirubin. Feces had low concentration of bile pigments. What type of jaundice is it?
Correct answer	Obturbative
B	Parenchymatous
C	Haemolytic
D	Conjugated
E	Absorbtion
№	krok 2009
Topic	Carbohydrate anabolism
Task	A 22 year old woman has been taking sulfanilamides for a long time that led to symptoms of hemolytic anaemia caused by hereditary disturbance of synthesis of glucose 6-phosphate dehydrogenase. This enzyme of pentose-phosphate cycle is responsible for generation of:

Correct answer	N ADP – H ₂
B	N AD
C	F AD
D	F M N
E	AT P
№	krok 2009
Topic	Nutrition Biochemistry
Task	A newborn has signs of dyspepsia after milk feeding. Symptoms of dyspepsia disappear when milk is substituted for glucose solution. The newborn has low activity of the following enzyme:
Correct answer	Lactase
B	Invertase
C	Maltase
D	Amylase
E	Isomaltase
№	krok 2009
Topic	Biochemistry of connective tissue, teeth and saliva
Task	A child has physical and mental retardation, serious abnormalities in connective tissue of internal organs; urine contains keratan sulfates. This is caused by metabolic disorder of the following substance:
Correct answer	Glycosaminoglycan
B	Collagen
C	Elastin
D	Fibronectin
E	Hyaluronic acid
№	krok 2009
Topic	Biochemistry of lipid- soluble vitamins

Task	A 10 month old child has high excitability, sleep disturbance, amyotonia, retarded dentition, teeth erupt with inadequate enamel calcification. These changes are caused by deficiency of the following vitamin:
Correct answer	Cholecalciferol
B	Riboflavin
C	Thiamine
D	Retinol
E	Nicotinamide
№	krok 2009
Topic	Molecular mechanisms of glucose regulation
Task	A patient with Itsenko-Cushing syndrome has persistent hyperglycemia and glycosuria, hypertension, osteoporosis,obesity. Increased synthesis and hypersecretion of the following hormone will be observed in this case:
Correct answer	Cortisol
B	Adrenaline
C	Glucagon
D	Thyroxin
E	Aldosterone
№	krok 2008
Topic	Functional and clinical biochemistry of tissues and urine
Task	A 20 y.o. patient complains about morbid thirst and profuse urination (up to 10 l a day). Glucose concentration in blood is normal, urine contains no glucose. Such condition may be caused by deficiency of the following hormone:
Correct answer	Vasopressin
B	Oxytocin
C	Insulin
D	Triiodothyronine

E	Cortisol
№	krok 2008
Topic	Biochemistry of lipid- soluble vitamins
Task	Hepatic disfunctions accompanied by insufficient inflow of bile to the bowels result in coagulation failure. This phenomenon can be explained by:
Correct answer	Vitamin K deficiency
B	Iron deficiency
C	Thrombocytopenia
D	Erythropenia
E	Leukopenia
№	krok 2008
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	Examination of a patient revealed enlargement of some body parts (jaw, nose, ears, feet, hands), but body proportions were conserved. It might be caused by intensified secretion of the following hormone:
Correct answer	Somatotropin
B	Somatostatin
C	Tetraiodothyronine
D	Triiodothyronine
E	Cortisol
№	krok 2008
Topic	Nutrition Biochemistry
Task	A patient has disturbed digestion of proteins, fats and carbohydrates. It is most likely to be caused by reduced secretion of the following digestive juice:
Correct answer	Pancreatic
B	Saliva
C	Gastric

D	Bile
E	Intestinal
№	krok 2008
Topic	
Task	After sprinting untrained people feel muscular pain as a result of lactate accumulation. It may be connected with intensification of the following biochemical process:
Correct answer	Glycolysis
B	Glyconeogenesis
C	Pentose-phosphate cycle
D	Lipogenesis
E	Glycogenesis
№	krok 2008
Topic	Biochemistry of lipid- soluble vitamins
Task	A patient suffering from chronic renal insufficiency felt ill with osteoporosis. It is caused by disturbed synthesis of the following regulator of mineral metabolism:
Correct answer	1, 25() ₂ D ₃ generation
B	Proline hydroxylation
C	Lysine hydroxylation
D	Glutamate carboxylation
E	Cortisol hydroxylation
№	krok 2008
Topic	Lipid catabolism
Task	Blood of patients ill with diabetes mellitus has high content of free fatty acids. It may be caused by:
Correct answer	High activity of triglyceride lipase of adipocytes
B	Accumulation of palmitoyl-CoA in the cytosol

C	Activation of ketone bodies utilization
D	Activation of synthesis of apolipoproteins A-1, A-2, A-4
E	Low activity of phosphatidylcholine-cholesterol-acyltransferase of plasma
№	krok 2008
Topic	Biochemistry of connective tissue, teeth and saliva
Task	A patient with systemic scleroderma has an intensified collagen destruction. Collagen destruction will be reflected by intensified urinary excretion of the following amino acid:
Correct answer	Oxyproline
B	Alanine
C	Tryptophane
D	Serine
E	Phenylalanine
№	krok 2008
Topic	Biochemistry of connective tissue, teeth and saliva
Task	What substance makes the saliva viscous and mucous and performs protective function, including protection from mechanical injury of mouth mucous membrane?
Correct answer	Mucin
B	Glucose
C	Kallikrein
D	Amylase
E	Lysozyme
№	krok 2008
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Parodontitis is accompanied by proteolysis activation in the parodontium tissues. Proteolysis activation is signaled by increase of the following component of mouth liquid:
Correct answer	Amino acids
B	Organic acids

C	Glucose
D	Biogenic amines
E	Cholesterol
№	krok 2008
Topic	Specific Amino Acid Metabolism
Task	A hospital admitted a 9 y.o. boy with mental and physical retardation. Biochemical blood analysis revealed high content of phenylalanine. Such condition may be caused by blocking of the following enzyme:
Correct answer	Phenylalanine-4-monooxygenase
B	Oxidase of homogentisic acid
C	Glutamine transaminase
D	Aspartate aminotransferase
E	Glutamate decarboxylase
№	krok 2008
Topic	Nutrition Biochemistry
Task	A patient is ill with dermatitis, diarrhea, dementia. During history taking it was revealed that the main foodstuff of the patient was maize. These disturbances are caused by deficiency of the following vitamin:
Correct answer	P P
B	B ₁
C	B ₂
D	B ₉
E	B ₈
№	krok 2008
Topic	Specific Amino Acid Metabolism

Task	A patient applied to a doctor complaining about dizziness, memory impairment, periodical convulsions. It was found out that such changes were caused by a product of glutamic acid decarboxylation. What product is meant?
Correct answer	GABA
B	Pyridoxalphosphate
C	Thymidine diphosphate
D	ATP
E	Tetrahydrofolate
№	krok 2008
Topic	Nutrition Biochemistry
Task	A hospital admitted a patient with complaints about abdominal swelling, diarrhea, meteorism after consumption of food rich in proteins. It is indicative of disturbed protein digestion and their intensified decaying. What substance is the product of this process in the bowels?
Correct answer	Indole
B	Bilirubin
C	Cadaverine
D	Agmatine
E	Putrescine
№	krok 2008
Topic	Lipid catabolism
Task	A sportsman has to improve his sport results. He was recommended to take a preparation containing carnitine. What process is activated by this compound to the greatest extent?
Correct answer	Fatty acid transport
B	Amino acid transport
C	Calcium ion transport
D	Glucose transport
E	Vitamin K transport

№	krok 2008
Topic	Specific Amino Acid Metabolism
Task	Laboratory examination of a child revealed high content of leucine, valine, isoleucine and their ketoderivates in blood and urine. Urine had the typical smell of maple syrup. This disease was caused by deficiency of the following enzyme:
Correct answer	Dehydrogenase of branched amino acids
B	Aminotransferase
C	Glucose-6-phosphatase
D	Phosphofructokinase
E	Phosphofructomutase
№	krok 2008
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	Isonitol triphosphates are produced in the organism tissues as a result of phosphatidyl inositol diphosphate hydrolysis. In the mechanism of hormone activity they perform the function of secondary mediators (messengers). What is their activity in the cell aimed at?
Correct answer	Release of calcium ions from the cell depots
B	Activation of adenylate cyclase
C	Activation of protein kinase A
D	Inhibition of phosphodiesterase
E	Inhibition of protein kinase C
№	krok 2008
Topic	The mechanism of tissue respiration. Peroxide and microsomal oxidation
Task	Hydrocyanic acid and cyanides are the most violent poisons. According to the dose the death follows after a few seconds or minutes. The death is caused by the inhibited activity of the following enzyme:
Correct answer	Cytochrome oxidase
B	Acetylcholinesterase

C	ATP-synthetase
D	Catalase
E	Methemoglobin reductase
№	krok 2008
Topic	: Liver biochemistry
Task	Enzymatic jaundices are characterized by disbalanced activity of UDP-glucuronyl transferase. What compound is accumulated in the blood serum in case of these pathologies?
Correct answer	Indirect bilirubin
B	Direct bilirubin
C	Biliverdin
D	Mesobilirubin
E	Verdoglobin
№	krok 2008
Topic	Specific Amino Acid Metabolism
Task	A patient has an allergic reaction accompanied by itching, edemata and reddening of skin. What biogenic amine has an increased concentration in the tissues?
Correct answer	Histamine
B	Serotonin
C	Tryptamine
D	Dopamine
E	Gamma-aminobutyric acid
№	krok 2008
Topic	Nutrition Biochemistry
Task	Clinical examination enabled to make a provisional diagnosis: stomach cancer. Gastric juice contained lactic acid. What type of glucose catabolism turns up in the cancerous cells?
Correct answer	Anaerobic glycolysis
B	Pentose-phosphate cycle

C	Gluconeogenesis
D	Aerobic glycolysis
E	Glucose-alanine cycle
№	krok 2008
Topic	Liver biochemistry
Task	Blood analysis of a patient ill with jaundice revealed increase of total bilirubin by its indirect fraction. Urine and feces are intensively stained. What is the most probable mechanism of these abnormalities?
Correct answer	Increased erythrocyte hemolysis
B	Obstructed bile outflow from the liver
C	Damage of liver parenchyma
D	Disturbed formation of direct bilirubin
E	Disturbed conversion of urobilinogen in liver
№	krok 2008
Topic	Biochemistry of connective tissue, teeth and saliva
Task	In order to prevent gum inflammation and to improve regeneration of epithelial periodontium cells manufacturers add to the tooth pastes one of the following vitamins:
Correct answer	Retinol
B	Calciferol
C	Thiamine
D	Biotin
E	Phyloquinone
№	krok 2008
Topic	Metabolism of nucleic acids.
Task	A newborn child gains weight very slowly, his urine contains too much orotic acid that is indicative of disturbed synthesis of pyrimidine nucleotides. What metabolite should be used in order to normalize metabolism?

Correct answer	Uridine
B	Adenosine
C	Guanosine
D	Thymidine
E	Histidine
№	krok 2008
Topic	Molecular mechanisms of translation.
Task	A group of researchers set an experiment and obtained anucleate mutant cells. In the first place they will have disturbed synthesis of the following compounds:
Correct answer	Ribosomal RNA
B	Transfer RNA
C	Lipids
D	Monosaccharides
E	Polysaccharides
№	krok 2008
Topic	Molecular mechanisms of glucose regulation
Task	A patient with Itsenko-Cushing syndrome has persistent hyperglycemia and glycosuria, hypertension, osteoporosis, obesity. What hormone's synthesis and secretion are intensified in this case?
Correct answer	Cortisol
B	Adrenaline
C	Glucagon
D	Thyroxin
E	Aldosterone
№	krok 2007
Topic	General characteristics and functions of the blood

Task	A man lost consciousness in a car with running engine where he had been waiting for a friend for a long time. What hemoglobin compaund can be found in the blood of the patient?
Correct answer	Carboxyhemoglobin
B	Deoxyhemoglobin
C	Carbhemoglobin
D	Methemoglobin
E	Oxyhemoglobin
№	krok 2007
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A patient has the sudden decrease of Ca^{2+} content in blood. What hormone secretion will increase?
Correct answer	Parathormone
B	Thyrocalcitonin
C	Aldosterone
D	Vasopressin
E	Somatotropin
№	krok 2007
Topic	Nutrition Biochemistry
Task	A man has considerable disorder of protein, fat and carbohydrate digestion. Reduced secretion of what digestive juice is the most probable cause of this phenomenon?
Correct answer	Pancreatic juice
B	Saliva
C	Gastric juice
D	Bile
E	Intestinal juice
№	krok 2007

Topic	Molecular mechanisms of hormone action.
Task	A patient has hyperkalemia and hyponatremia. Reduced secretion of what hormone may cause such changes?
Correct answer	Aldosterone
B	Vasopressin
C	Cortisol
D	Parathormone
E	Natriuretic hormone
№	krok 2007
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	A patient has hypocalcemia. What hormone deficiency may be its cause?
Correct answer	Parathormone
B	Thyrocalcitonin
C	Aldosterone
D	Corticotropin
E	Corticoliberin
№	krok 2007
Topic	Nutrition Biochemistry
Task	A patient has increased permeability of blood-vessel walls, increased gingival hemorrhage, small punctate hematomas on his skin, falling of teeth. What disturbance of vitamin metabolism can account for these symptoms?
Correct answer	Hypovitaminosis C
B	Hypervitaminosis D
C	Hypervitaminosis C
D	Hypovitaminosis D
E	Hypovitaminosis A
№	krok 2007

Topic	Molecular mechanisms of glucose regulation
Task	A patient with diabetes mellitus had an insuline injection. It caused loss of consciousness and convulsions. What was the result of biochemic blood analysis on glucose content?
Correct answer	2,5 mmole/l
B	3,3 mmole/l
C	8,0 mmole/l
D	10 mmole/l
E	5,5 mmole/l
№	krok 2007
Topic	Specific Amino Acid Metabolism
Task	Examination of a 6 days old infant revealed phenyl pyruvate and phenyl acetate excess in his urine. What aminoacid metabolism is disturbed in the child's organism?
Correct answer	Phenylalanine
B	Tryptophan
C	Methionine
D	Histidine
E	Arginine
№	krok 2007
Topic	Biochemistry of connective tissue, teeth and saliva
Task	A patient who is ill with scurvy displays disturbed processes of connective tissue formation that leads to loosening and falling of teeth. Disturbed activity of what enzyme causes these symptomp?
Correct answer	Lisilhydroxylase
B	Glycosiltransferase
C	Elastase
D	Procollagenpeptidase of N-terminal peptide
E	Procollagenpeptidase of C-terminal peptide

№	krok 2007
Topic	Biochemistry of lipid- soluble vitamins
Task	A patient who suffers from chronic renal insufficiency fell ill with osteoporosis. Disturbed synthesis of what mineral metabolism's regulator is the cause of osteoporosis?
Correct answer	Formation of 1, 25(O) ₂ D ₃
B	Proline hydroxylation
C	Lysine hydroxylation
D	Glutamate carboxylation
E	Cortisol hydroxylation
№	krok 2007
Topic	The mechanism of tissue respiration. Peroxide and microsomal oxidation
Task	Cyanide poisoning causes immediate death. What is the mechanism of cyanide effect at the molecular level?
Correct answer	They inhibit cytochromoxidase
B	They bind substrates of tricarboxylic acid cycle
C	They block succinate dehydrogenase
D	They inactivate oxygene
E	They inhibit cytochrome B
№	krok 2007
Topic	Biochemistry of lipid- soluble vitamins
Task	A patient has the folowing changes: disorder of twilight vision, drying out of conjunctiva and cornea. Such disorders may be caused by deficiency of vitamin:
Correct answer	Vitamin A
B	Vitamin B
C	Vitamin C
D	Vitamin D

E	Vitamin B ₁₂
№	krok 2007
Topic	Biochemistry of lipid- soluble vitamins
Task	What vitamin deficiency leads to both disorder of reproductive function and dystrophy of skeletal muscles?
Correct answer	Vitamin E
B	Vitamin A
C	Vitamin K
D	Vitamin D
E	Vitamin B ₁
№	krok 2007
Topic	Biochemistry of lipid- soluble vitamins
Task	A child has disturbed enamel and dentine formation as a result of decreased content of calcium ions in his blood. What hormone deficiency may cause such changes?
Correct answer	Thyreocalcitonin
B	Somatotropin
C	Thyroxin
D	Parathormone
E	Triiodothyronine
№	krok 2007
Topic	Biochemistry of connective tissue, teeth and saliva
Task	What substance makes saliva viscous and mucous, has protective function, protects mucous membrane of oral cavity from mechanical damage?
Correct answer	Mucin
B	Glucose
C	Kallikrein

D	Amylase
E	Lysozyme
№	krok 2007
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Parodontitis is accompanied by activation of proteolysis in parodontium tissues. Increase of what oral fluid's component is the evidence of proteolysis activation?
Correct answer	Aminoacids
B	Organic acids
C	Glucose
D	Biogenic amines
E	Cholesterol
№	krok 2007
Topic	Lipid catabolism
Task	Examination of an ill child's blood revealed inherited hyperlipoproteinemia. Genetic defect of what enzyme synthesis causes this phenomenon?
Correct answer	Lipoprotein lipase
B	Glycosidase
C	Proteinase
D	Hemsynthetase
E	Phenylalanine hydroxylase
№	krok 2007
Topic	Functional and clinical biochemistry of tissues and urine
Task	A 42 year old woman diagnosed with diabetes mellitus was admitted th the endocrinological department with complaints of thirst, excessive appetite. What pathological components are revealed in course of laboratory examination of the patient's urine?
Correct answer	Glucose, ketone bodies
B	Protein, aminoacids

C	Protein, creatine
D	Bilirubin, urobilin
E	Blood
№	krok 2007
Topic	Metabolism of nucleotide
Task	A patient has increased content of uric acid in his blood that is clinically presented by pain syndrome as a result of urate deposition in the joints. What process does this acid result from?
Correct answer	Lysis of purine nucleotides
B	Lysis of pyrimidine nucleotides
C	Heme catabolism
D	Proteolysis
E	Reutilization of purine bases
№	krok 2007
Topic	Functional and clinical biochemistry of tissues and urine
Task	A non trained man has usually muscular hypoxia after a sprint. What metabolite accumulates in the muscles as a result of it?
Correct answer	Lactate
B	Ketone bodies
C	Glucose 6-phosphate
D	Oxaloacetate
E	-
№	krok 2007
Topic	Carbohydrate catabolism
Task	Myocyte cytoplasm contains a big number of dissolved metabolites of glucose oxidation. Name one of them that turns directly into lactate:
Correct answer	Pyruvate
B	Oxaloacetate

C	Glycerophosphate
D	Glucose 6-phosphate
E	Fructose 6-phosphate
№	krok 2007
Topic	Specific Amino Acid Metabolism
Task	A patient is diagnosed with alkaptonuria. Name a defect enzyme that causes this pathology:
Correct answer	Oxydase of homogentisine acid
B	Phenylalanine hydroxylase
C	Glutamate dehydrogenase
D	Pyruvate dehydrogenase
E	Dioxyphenylalanine decarboxylase
№	krok 2007
Topic	Principal pathways to amino acids metabolism
Task	In compliance with the clinical presentations a man was prescribed pyridoxalphosphate. What processes are corrected by this preparation?
Correct answer	Transamination and decarboxylation of amino acids
B	Oxidative decarboxilation of keto acids
C	Desamination of purine nucleotides
D	Synthesis of purine and pyrimidine bases
E	Protein synthesis
№	krok 2007
Topic	Biochemistry of lipid- soluble vitamins
Task	A 2 year old child suffers from intestinal dysbacteriosis that lead to the development hemorrhagic syndrome. The most probable cause of hemorrhage is:
Correct answer	Vitamin K deficiency
B	Activation of tissue thromboplastin
C	Hypovitaminosis PP

D	Fibrinogen deficiency
E	Hypocalcemia
№	krok 2007
Topic	Liver biochemistry
Task	A patient ill with jaundice has increased content of conjugated bilirubin and bile acids in blood, no stercobilinogen in urine. What jaundice are these symptoms typical for?
Correct answer	Obstructive
B	Hepatic
C	Hepatocellular
D	Hemolytic
E	Cythemolytic
№	krok 2007
Topic	Biochemistry of lipid- soluble vitamins
Task	While the examination of patient's oral cavity the dentist found xerostomia, numerous erosions. What vitamin deficit caused this effect?
Correct answer	Vitamin A
B	Vitamin K
C	Vitamin P
D	Vitamin H
E	Vitamin P P
№	krok 2018
Topic	Carbohydrates anabolism
Task	The patient exhausted by starvation presents with intensification of the following process in the liver and kidneys:
Correct answer	Gluconeogenesis
B	Urea synthesis
C	Bilirubin synthesis

D	Hippuric acid synthesis
E	Uric acid synthesis
№	krok 2018
Topic	Functional and clinical biochemistry of tissues and urine
Task	Mucin aggregates retain water, which results in their viscosity and protective action. It is possible because mucin structure contains:
Correct answer	Glycosaminoglycans
B	Homopolysaccharides
C	Disaccharides
D	Oligosaccharides
E	Glucose
№	krok 2018
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	Chronic overdosage of glucocorticoids leads to the development of hyperglycemia. What process of carbohydrate metabolism is responsible for this effect?
Correct answer	Gluconeogenesis
B	Glycogenolysis
C	Aerobic glycolysis
D	Pentose-phosphate cycle
E	Glycogenesis
№	krok 2018
Topic	Functional and clinical biochemistry of tissues and urine
Task	The patient, who for a long time has been keeping to an unbalanced low-protein diet, developed fatty liver infiltration. Name the substance, absence of which in the diet can lead to this condition:
Correct answer	Methionine
B	Alanine

C	Cholesterol
D	Arachidonic acid
E	Biotin
№	krok 2018
Topic	Molecular mechanisms of glucose regulation
Task	After introduction of adrenaline the patient's blood glucose level increased. It is caused by intensified:
Correct answer	Glycogenolysis in the liver
B	Glycolysis in the liver
C	Glycolysis in the skeletal muscles
D	Glycogen synthesis
E	Glycogenolysis in the muscles
№	krok 2018
Topic	Carbohydrate catabolism
Task	Oxidative decarboxylation of pyruvic acid is catalyzed by a multienzyme complex with several functionally linked coenzymes. Name this complex:
Correct answer	Thymidine diphosphate (TDP), flavin adenine dinucleotide (FAD), coenzyme A (CoASH), nicotine amide adenine di-nucleotide (NAD), lipoic acid
B	Flavin adenine dinucleotide (FAD), tetrahydrofolic acid, pyridoxal-5-phosphate, thymidine diphosphate (TDP), choline
C	Nicotine amide adenine dinucleotide (NAD), pyridoxal-5-phosphate, thymidine diphosphate (TDP), methylcobalamin, biotin
D	Coenzyme A (CoASH), flavin adenine dinucleotide (FAD), pyridoxal-5-phosphate, tetrahydrofolic acid, carnitine
E	Lipoic acid, tetrahydrofolic acid, pyridoxal-5-phosphate, methylcobalamin
№	krok 2018
Topic	Functional and clinical biochemistry of tissues and urine

Task	In what organ biotransformation (metabolic transformation) of most medicinal agents occurs upon their introduction into an organism?
Correct answer	Liver
B	Kidneys
C	Intestine
D	Skin
E	Lungs
№	krok 2018
Topic	Enzymes Fundamentals
Task	Breakdown of cyclic adenosine monophosphate (cAMP) and cyclic guanosine monophosphate (cGMP) into simple, non-cyclic nucleoside monophosphates is catalyzed by the following enzyme:
Correct answer	Phosphodiesterase
B	Glycogen phosphorylase
C	Glucose 6-phosphatase
D	Protein kinase
E	Adenylate cyclase
№	krok 2018
Topic	Nutrition Biochemistry
Task	A 42-year-old woman, who has been keeping to a vegetarian diet for a long period of time, consulted a doctor. Examination revealed negative nitrogen balance in the patient. What factor is the most likely cause of such a condition?
Correct answer	Insufficient amount of proteins in the diet
B	Insufficient amount of dietary fiber
C	Excessive amount of fats in the diet
D	Insufficient amount of fats in the diet
E	Decreased rate of metabolic processes

№	krok 2018
Topic	Specific Amino Acid Metabolism
Task	A patient presents with dysfunction of the cerebral cortex accompanied by epileptic seizures. He has been administered a biogenic amine synthesized from glutamate and responsible for central inhibition. What substance is it?
Correct answer	γ -aminobutyric acid
B	Serotonin
C	Dopamine
D	Acetylcholine
E	Histamine
№	krok 2018
Topic	Biochemistry of connective tissue, teeth and saliva
Task	What enzyme has demineralization effect, i. e. intensifies decomposition of mineral components of the tooth tissues?
Correct answer	Acid phosphatase
B	Alkaline phosphatase
C	Glucose 6-phosphatase
D	Glycogen phosphorylase
E	Phosphotransferase
№	krok 2018
Topic	Carbohydrate catabolism
Task	Erythrocytes of the patient with hemolytic anemia present with significant decrease of pyruvate kinase activity. What metabolic process is disturbed in this case?
Correct answer	Glycolysis
B	Glycogenolysis
C	Gluconeogenesis
D	Pentose-phosphate pathway of glucose oxidation

E	Glycogen synthesis
№	krok 2018
Topic	Special pathways of amino acids metabolism
Task	To determine functional state of the patient's liver, the analysis of animal indican excreted with urine was conducted. This substance is produced in the process of detoxification of putrefaction products of a certain amino acid, which takes place in the large intestine. Name this amino acid:
Correct answer	Tryptophan
B	Valine
C	Glycine
D	Serine
E	Cysteine
№	krok 2018
Topic	Nutrition Biochemistry
Task	Beriberi is a classical example of thiamine deficiency. Active form of this vitamin is synthesized by an enzyme belonging to the following group:
Correct answer	Transferases
B	Oxidoreductases
C	Hydrolases
D	Lyases
E	Isomerase
№	krok 2018
Topic	General characteristics and functions of the blood
Task	Blood serum of the patient has milky appearance. Biochemical analysis revealed high content of triacylglycerols and chylomicrons. This condition is caused by hereditary defect of the following enzyme:
Correct answer	Lipoprotein lipase

B	Phospholipase
C	Pancreatic lipase
D	Adipose tissue hormone-sensitive lipase
E	Phosphodiesterase
№	krok 2018
Topic	Special pathways of amino acids metabolism
Task	Dopamine precursor - dioxyphenylalanine (DOPA) - is used in treatment of Parkinson's disease. This active substance is produced from the following amino acid:
Correct answer	Tyrosine
B	Alanine
C	Cysteine
D	Histidine
E	Tryptophan
№	krok 2018
Topic	Nutrition Biochemistry
Task	A 50-year-old man came to a hospital with complaints of memory disorders, painful sensations along the nerve trunks, decreased mental ability, circulatory disorders and dyspepsia. Anamnesis states excessive alcohol consumption. What vitamin deficiency can result in such symptoms?
Correct answer	Thiamine
B	Niacin
C	Retinol
D	Calciferol
E	Riboflavin
№	krok 2018
Topic	Liver biochemistry

Task	A patient came to the doctor with complaints of general weakness and sleep disturbances. Objectively the patient's skin is yellow. In blood there is increased concentration of direct bilirubin and bile acids. Acholic stool is observed. What condition can be characterized by these changes?
Correct answer	Mechanical jaundice
B	Hemolytic jaundice
C	Parenchymatous jaundice
D	Familial nonhemolytic (Gilbert's) syndrome
E	Chronic cholecystitis
№	krok 2018
Topic	Cellular respiration mechanisms. Peroxide and microsomal oxidation
Task	A doctor has made a diagnosis of gingivitis and recommended the patient to rinse the oral cavity with an oxidizing agent. Specify this agent:
Correct answer	Hydrogen peroxide
B	Boric acid
C	Salicylic acid
D	Phenol
E	Brilliant green
№	krok 2018
Topic	Cellular respiration mechanisms. Peroxide and microsomal oxidation
Task	Rotenone is known to inhibit respiratory chain. What complex of mitochondrial respiratory chain is inhibited by this substance?
Correct answer	NADH-coenzyme Q reductase
B	Cytochrome oxidase
C	Coenzyme Q - cytochrome c reductase
D	Succinate-coenzyme Q reductase
E	Adenosine triphosphate synthetase

№	krok 2019
Topic	Nutrition biochemistry
Task	The patient, who for a long time has been keeping to an unbalanced low-protein diet, developed fatty liver infiltration. Name the substance, absence of which in the diet can lead to this condition:
Correct answer	Methionine
B	Arachidonic acid
C	Cholesterol
D	Biotin
E	Alanine
№	krok 2019
Topic	Blood fundamentals
Task	Blood serum of the patient has milky appearance. Biochemical analysis revealed high content of triacylglycerols and chylomicrons. This condition is caused by hereditary defect of the following enzyme:
Correct answer	Lipoprotein lipase
B	Phospholipase
C	Phosphodiesterase
D	Pancreatic lipase
E	Adipose tissue hormone-sensitive lipase
№	krok 2019
Topic	Liver biochemistry
Task	Laboratory analysis revealed UDP- glucuronyl transferase deficiency in the patient. What blood values can confirm this enzymopathy?
Correct answer	Hyperbilirubinemia
B	Phenylketonuria
C	Indicanuria

D	Uremia
E	Ketoacidosis
№	krok 2019
Topic	General characteristics and functions of the blood
Task	A patient suffers from diabetes mellitus with fasting hyperglycemia over 7,2 mmol/l. What blood plasma protein would allow to assess the patient's glycemia level retrospectively (4-8 weeks prior to examination)?
Correct answer	Glycated hemoglobin
B	C-reactive protein
C	Fibrinogen
D	Albumin
E	Ceruloplasmin
№	krok 2019
Topic	Molecular mechanisms of hormone action. Hormones of the thyroid and parathyroid glands
Task	Chronic overdosage of glucocorticoids leads to the development of hyperglycemia. What process of carbohydrate metabolism is responsible for this effect?
Correct answer	Gluconeogenesis
B	Glycogenolysis
C	Aerobic glycolysis
D	Glycogenesis
E	Pentose-phosphate cycle
№	krok 2019
Topic	Molecular mechanisms of glucose regulation
Task	The patient exhausted by starvation presents with intensification of the following process in the liver and kidneys:
Correct answer	Gluconeogenesis
B	Bilirubin synthesis

C	Urea synthesis
D	Hippuric acid synthesis
E	Uric acid synthesis
№	krok 2019
Topic	Functional and clinical biochemistry of organs and tissues
Task	It is known that in metabolism of catecholamine mediators the special role belongs to monoamine oxidase (MAO). How does this enzyme inactivate these mediators (noradrenaline, adrenaline, dopamine)?
Correct answer	Oxidative deamination
B	Hydrolysis
C	Carboxylation
D	Methyl group removal
E	Amino group attachment
№	krok 2019
Topic	Nutrition biochemistry
Task	A 50-year-old man came to a hospital with complaints of memory disorders, painful sensations along the nerve trunks, decreased mental ability, circulatory disorders and dyspepsia. Anamnesis states excessive alcohol consumption. What vitamin deficiency can result in such symptoms?
Correct answer	Thiamine
B	Riboflavin
C	Niacin
D	Retinol
E	Calciferol
№	krok 2019
Topic	Specific amino acid metabolism

Task	30 minutes after dental treatment the patient developed red itching spots on the face and oral mucosa. The patient was diagnosed with urticaria. What bioactive substance with vasodilating and pruriginous effect is produced during this type of allergic reaction?
Correct answer	Histamine
B	Prostaglandin E2
C	Leukotriene B4
D	Interleukin-1
E	Bradykinin
№	krok 2019
Topic	Mechanism of hormonal action
Task	Breakdown of cyclic adenosine monophosphate (cAMP) and cyclic guanosine monophosphate (cGMP) into simple, non-cyclic nucleoside monophosphates is catalyzed by the following enzyme:
Correct answer	Phosphodiesterase
B	Protein kinase
C	Adenylate cyclase
D	Glycogen phosphorylase
E	Glucose 6-phosphatase
№	krok 2019
Topic	Nutrition biochemistry
Task	Beriberi is a classical example of thiamine deficiency. Active form of this vitamin is synthesized by an enzyme belonging to the following group:
Correct answer	Transferases
B	Isomerase
C	Oxidoreductases
D	Hydrolases
E	Lyases

№	krok 2019
Topic	Principal pathways to amino acids metabolism
Task	A patient presents with dysfunction of the cerebral cortex accompanied by epileptic seizures. He has been administered a biogenic amine synthesized from glutamate and responsible for central inhibition. What substance is it?
Correct answer	Gamma -aminobutyric acid
B	Serotonin
C	Histamine
D	Acetylcholine
E	Dopamine
№	krok 2019
Topic	Principal pathways to amino acids metabolism
Task	Dopamine precursor - dioxyphenylalanine (DOPA) - is used in treatment of Parkinson's disease. This active substance is produced from the following amino acid:
Correct answer	Tyrosine
B	Tryptophan
C	Cysteine
D	Alanine
E	Histidine
№	krok 2019
Topic	Functional and clinical biochemistry of tissues and urine
Task	Mucin aggregates retain water, which results in their viscosity and protective action. It is possible because mucin structure contains:
Correct answer	Glycosaminoglycans
B	Glucose
C	Disaccharides
D	Homopolysaccharides

E	Oligosaccharides
№	krok 2019
Topic	Carbohydrate catabolism
Task	Oxidative decarboxylation of pyruvic acid is catalyzed by a multienzyme complex with several functionally linked coenzymes. Name this complex:
Correct answer	Thymidine diphosphate (TDP), flavin adenine dinucleotide (FAD), coenzyme A (CoASH), nicotine amide adenine dinucleotide (NAD), lipoic acid
B	Nicotine amide adenine dinucleotide (NAD), pyridoxal-5-phosphate, thymidine diphosphate (TDP), methylcobalamin, biotin
C	Lipoic acid, tetrahydrofolic acid, pyridoxal-5-phosphate, methylcobalamin
D	Coenzyme A (CoASH), flavin adenine dinucleotide (FAD), pyridoxal-5-phosphate, tetrahydrofolic acid, carnitine
E	Flavin adenine dinucleotide (FAD), tetrahydrofolic acid, pyridoxal-5-phosphate, thymidine diphosphate (TDP), choline
№	krok 2019
Topic	Cellular respiration mechanisms. Peroxide and microsomal oxidation
Task	Rotenone is known to inhibit respiratory chain. What complex of mitochondrial respiratory chain is inhibited by this substance?
Correct answer	NADH-coenzyme Q reductase
B	Adenosine triphosphate synthetase
C	Succinate-coenzyme Q reductase
D	Coenzyme Q - cytochrome c reductase
E	Cytochrome oxidase
№	krok 2019
Topic	Carbohydrate catabolism
Task	Erythrocytes of the patient with hemolytic anemia present with significant decrease of pyruvate kinase activity. What methabolic process is disturbed in this case?

Correct answer	Glycolysis
B	Pentose-phosphate pathway of glucose oxidation
C	Gluconeogenesis
D	Glycogenolysis
E	Glycogen synthesis
№	krok 2019
Topic	Biochemistry of connective tissue, teeth and saliva
Task	What enzyme has demineralization effect, i. e. intensifies decomposition of mineral components of the tooth tissues?
Correct answer	Acid phosphatase
B	Phosphotransferase
C	Alkaline phosphatase
D	Glycogen phosphorylase
E	Glucose 6-phosphatase
№	krok 2019
Topic	Molecular mechanisms of glucose regulation
Task	After introduction of adrenaline the patient's blood glucose level increased. It is caused by intensified:
Correct answer	Glycogenolysis in the liver
B	Glycolysis in the skeletal muscles
C	Glycogen synthesis
D	Glycolysis in the liver
E	Glycogenolysis in the muscles
№	krok 2020
Topic	. Molecular basis of bioenergetics
Task	In some hereditary diseases (e.g., Kearns-Sayre syndrome), mitochondrial destruction can be observed. What cellular processes can be disturbed in the result?

Correct answer	ATP synthesis
B	Lipid synthesis
C	Crossingover
D	Nuclear division
E	Protein synthesis
№	krok 2020
Topic	Biochemistry of connective tissue, tooth tissue and saliva.
Task	During examination of the patients, a dentist noted that many of them have dull, non-glossy enamel with porcelainlike and pigmented spots. Some patients have single or multiple enamel defects that manifest as colorless or pigmented erosions. These changes in the teeth developed in the result of the excessive intake of a certain substance by the organism. Name this substance:
Correct answer	Fluorine
B	Magnesium
C	Potassium
D	Calcium
E	Sodium
№	krok 2020
Topic	Metabolism of nucleic acids.
Task	An AIDS patient presents with reverse transcriptase enzyme activity in the cells affected by HIV infection. This enzyme takes part in the synthesis of the following nucleic acid:
Correct answer	DNA
B	mRNA
C	tRNA
D	rRNA
E	Pre-mRNA
№	krok 2020
Topic	Metabolism of amino acids

Task	Tyrosine is used as a substrate in thyroxine synthesis. What chemical element takes part in this process?
Correct answer	Iodine
B	Copper
C	Calcium
D	Zinc
E	Iron
№	krok 2020
Topic	Metabolism of nucleic acids.
Task	Some mRNA triplets (UAA, UAG, UGA) code no amino acids and terminate the information readout instead, i.e., they can stop the process of transcription. These triplets are called:
Correct answer	Stop codons
B	Introns
C	Exons
D	Anticodons
E	Operators
№	krok 2020
Topic	Metabolism of nucleic acids.
Task	The patient's joints are enlarged and painful. The patient's blood urate levels are high. Name this pathology:
Correct answer	Gout
B	Rickets
C	Scurvy
D	Pellagra
E	Caries
№	krok 2020
Topic	Biochemistry of human nutrition

Task	After an exposure to radiation, the patient is recommended to include more vegetable oils in his diet as they are a source of polyene fatty acids. Name the acid that has three double bonds:
Correct answer	Linolenic acid
B	Palmitic acid
C	Arachidonic acid
D	Stearic acid
E	Oleic acid
№	krok 2020
Topic	Biochemistry of connective tissue, tooth tissue and saliva.
Task	Mucin aggregates retain water, which results in their viscosity and protective action. It is possible because mucin structure contains:
Correct answer	Glycosaminoglycans
B	Homopolysaccharides
C	Oligosaccharides
D	Disaccharides
E	Glucose
№	krok 2020
Topic	Metabolism of nucleic acids.
Task	Replication is one of the reactions of matrix synthesis. What new molecule forms on the DNA molecule in the result of replication?
Correct answer	DNA
B	mRNA
C	tRNA
D	Pro-mRNA
E	rRNA
№	krok 2020
Topic	Biochemistry of connective tissue, tooth tissue and saliva.

Task	The patient's saliva has been tested for antibacterial activity. What saliva component has antibacterial properties?
Correct answer	Lysozyme
B	Amylase
C	Cholesterol
D	Ceruloplasmin
E	Parotin
№	krok 2020
Topic	Biochemistry of coagulation, anti- coagulation and fibrinolytic blood systems.
Task	A sample of the patient's blood was taken for analysis in the presence of heparin. By its chemical structure, this anticoagulant belongs to:
Correct answer	Glycosaminoglycans
B	Triacylglycerols
C	Phospholipids
D	Hemeproteins
E	Simple proteins
№	krok 2020
Topic	Functional and clinical biochemistry tissues and urea
Task	A 58-year-old man has a clinical presentation of acute pancreatitis. This diagnosis can be confirmed, if urine levels of a certain substance are elevated. Name this substance:
Correct answer	Amylase
B	Albumin
C	Urea
D	Uric acid
E	Residual nitrogen
№	krok 2020
Topic	Functional and clinical biochemistry tissues and urea

Task	It is known that calcium ions, along with other factors, enable contraction of the muscle tissue. In the process of muscle contraction, calcium interacts with the following structures:
Correct answer	Troponin protein of thin fibrils
B	Myosin protein of thick fibrils
C	Actomyosin complex of sarcolemma
D	Calsequestrin protein
E	Actin protein of thin fibrils
№	krok 2020
Topic	Metabolism of nucleic acids.
Task	A structural gene - a segment of a DNA molecule - was damaged. However, it did not result in an amino acid replacement in the protein, because after a time the damage was corrected. It indicates such DNA ability as:
Correct answer	Repair
B	Reverse transcription
C	Replication
D	Mutation
E	Transcription
№	krok 2020
Topic	Functional and clinical biochemistry tissues and urea
Task	A 25-year-old patient has marked muscle weakness. What electrolytes in the blood plasma should be measured first?
Correct answer	Calcium ions
B	Chlorine ions
C	Potassium ions
D	Sodium ions
E	Magnesium ions
№	krok 2021

Topic	"Molecular mechanisms of translation".
Task	During a class in molecular biology, the mutations resulting in production of abnormal hemoglobin are being studied. What amino acid substitution occurs when S-hemoglobin is being produced, resulting in the development of sickle-cell anemia?
Correct answer	Glutamic acid is substituted with valine
B	Histidine is substituted with arginine
C	Threonine is substituted with lysine
D	Lysine is substituted with glutamine
E	Glycine is substituted with asparagine
№	krok 2021
Topic	Molecular mechanisms of glucose regulation
Task	Urinalysis shows glucosuria in a patient with diabetes mellitus. What is the renal threshold for glucose?
Correct answer	15.5 mmol/L
B	5.55 mmol/L
C	20.0 mmol/L
D	8.88 mmol/L
E	1.0 mmol/L
№	krok 2021
Topic	Nutritional Biochemistry
Task	A 3-year-old child was hospitalized with signs of stomatitis, gingivitis, and dermatitis on the bare areas of skin. Examination determined a hereditary disorder of neutral amino acid transport in the intestine. What vitamin is deficient in this patient, causing such signs?
Correct answer	Cobalamin
B	Pantothenic acid
C	Niacin
D	Biotin

E	Vitamin A
№	krok 2021
Topic	Hormonal regulation of metabolism "
Task	What hormone of parotid glands intensifies teeth mineralization by stimulating calcium supply to the calcified tissues?
Correct answer	Calcitonin
B	Glucagon
C	Cortisol
D	Parotin
E	Parathyrin
№	krok 2021
Topic	Mechanisms of hormones action. Thyroid and parathyroid hormones
Task	On clinical examination a woman presents with excessive sweating, tachycardia, loss of weight, and tremor. What endocrine pathology can cause these signs?
Correct answer	Hyperthyroidism
B	Hypoaldosteronism
C	Hypothyroidism
D	Hypergonadism
E	Hypogonadism
№	krok 2021
Topic	Hormonal regulation of metabolism
Task	It is known that in metabolism of catecholamine mediators the special role belongs to monoamine oxidase (MAO). How does this enzyme activate these mediators (noradrenaline, adrenaline, dopamine)?
Correct answer	Oxidative deamination
B	Methyl group removal.
C	Hydrolysis

D	Carboxylation
E	Amino group attachment
№	krok 2021
Topic	Molecular mechanisms of translation".
Task	During DNA sequencing and biochemical analysis of a polypeptide, it was determined that the linear sequence of nucleotide triplets corresponds with the amino acid sequence in the polypeptide chain. What characteristic of the genetic code was determined?
Correct answer	Triplet nature
B	Collinearity
C	Nonoverlapping
D	Universality
E	Degeneracy
№	krok 2021
Topic	General characteristics and functions of blood
Task	Increased levels of high-density lipoproteins lead to decreased risk of atherosclerosis. What is the mechanism of anti-atherosclerotic effect of high-density lipoproteins?
Correct answer	They extract cholesterol from tissue
B	They supply tissues with cholesterol
C	They facilitate cholesterol absorption in the intestine
D	They activate cholesterol transformation into bile acid
E	They take part in cholesterol breakdown
№	krok 2021
Topic	Biochemistry of fat-soluble vitamins
Task	Formation of dental bone tissue requires calcium. The active form of vitamin D plays a large role in calcium metabolism and is produced in:
Correct answer	Kidneys and liver
B	Stomach and heart

C	Liver and muscles
D	Kidneys and heart
E	Intestine and liver
№	krok 2021
Topic	Catabolism of carbohydrates
Task	Oxidative decarboxylation of pyruvic acid is catalyzed by a multienzyme complex with several functionally linked coenzymes. Name this complex:
Correct answer	Thymidine diphosphate (TDP), flavin adenine dinucleotide (FAD), coenzyme A (CoASH), nicotine amide adenine dinucleotide (NAD), lipoic acid
B	Lipoic acid, tetrahydrofolic acid, pyridoxal-5-phosphate, methylcobalamin
C	Coenzyme A (CoASH), flavin adenine dinucleotide (FAD), pyridoxal-5-phosphate, tetrahydrofolic acid, carnitine
D	Flavin adenine dinucleotide (FAD), tetrahydrofolic acid, pyridoxal-5-phosphate, thymidine diphosphate (TDP), choline
E	Nicotine amide adenine dinucleotide (NAD), pyridoxal-5-phosphate, thymidine diphosphate (TDP), methylcobalamin, biotin
№	krok 2021
Topic	
Task	Phenylketonuria belongs to the following group of molecular metabolic diseases:
Correct answer	Amino acid metabolism disorders
B	Hereditary disorders of lipid metabolism
C	Carbohydrate metabolism disorders
D	Hereditary disorders of connective tissue metabolism
E	Mineral metabolism disorders
№	krok 2021
Topic	Nutritional Biochemistry

Task	Trying to lose weight, a woman has limited the amount of products in her diet. Three months later she developed edema and increased urine output, which indicates that her diet is low on the following type of nutrients:
Correct answer	Proteins
B	Minerals
C	Vitamins
D	Lipids
E	Carbohydrates
№	krok 2021
Topic	Nutritional Biochemistry
Task	A 35-year-old woman is brought to the physician because of a 4-month history of progressive weakness of both lower limbs. She notes difficulty climbing stairs and complains of lethargy and loss of muscle bulk. Her diet consists primarily of "polished" rice. A diagnosis of dry beriberi is suspected. Deficiency of which of the following vitamins is most likely to be detected in her blood?
Correct answer	Vitamin B_1 (thiamine)
B	Vitamin B_6 (pyridoxine)
C	Vitamin B_3 (niacin)
D	Vitamin C (ascorbic acid)
E	Vitamin B_2 (riboflavin)
№	krok 2021
Topic	Hormonal regulation of metabolism "
Task	A man with a cardiovascular pathology presents with overproduction of angiotensin II. What enzyme takes part in angiotensin II synthesis?
Correct answer	Angiotensin converting enzyme
B	Kininase

C	Kallikrein
D	Cyclooxygenase
E	Urokinase
№	krok 2021
Topic	Mechanisms of hormones action. Thyroid and parathyroid hormones
Task	Tyrosine is used as a substrate in thyroxine synthesis. What chemical element takes part in this process?
Correct answer	Iodine
B	Iron
C	Copper
D	Calcium
E	Zinc
№	krok 2021
Topic	Hormonal regulation of metabolism
Task	Examination of a 32-year-old man shows disproportional skeletal structure and enlargement of the supraorbital ridge, nose, lips, tongue, jawbones, and feet. What is the likely cause of these disturbances?
Correct answer	Increased levels of somatotropin
B	Increased concentration of glucagon
C	Decreased concentration of insulin
D	Increased levels of thyroxine
E	Increased levels of catecholamines
№	krok 2021
Topic	General characteristics of blood
Task	The patient's salivary porphyrin concentration allowed diagnosis of him with porphyria. This disease leads to disturbed synthesis of the following compound:
Correct answer	Heme

B	Phospholipids
C	Uric acid
D	Creatine
E	Glycogen
№	krok 2021
Topic	Nutritional Biochemistry
Task	To determine functional state of the patient's liver, the analysis of animal indican excreted with urine was conducted. This substance is produced in the process of detoxification of putrefaction products of a certain amino acid, which takes place in the large intestine. Name this amino acid:
Correct answer	Tryptophan
B	Glycine
C	Serine
D	Cysteine
E	Valine
№	krok 2021
Topic	Classification and mechanism of action of enzymes
Task	An enzyme, connected to substrate, interacts with it only with a part of its molecule. Name this part:
Correct answer	Active center
B	Allosteric center
C	Cofactor
D	Coenzyme
E	Polypeptide chain portion
№	krok 2021
Topic	Mechanisms of hormones action. Thyroid and parathyroid hormones

Task	A child presents with delayed mental development, delayed growth and formation of the teeth, late development of ossification foci, and low basal metabolic rate. What endocrine gland is functionally insufficient, causing this condition?
Correct answer	Thyroid gland
B	Gonads
C	Neurohypophysis
D	Adrenal glands
E	Pancreas
№	krok 2022
Topic	Hormonal regulation of metabolism
Task	After a traumatic brain injury the patient developed a urinary system dysfunction — polyuria. What hormone secretion was disturbed, resulting in polyuria in this patient?
Correct answer	Vasopressin
B	Insulin
C	Adrenaline
D	Mineralocorticoids
E	ACTH
№	krok 2022
Topic	Nucleotide exchange
Task	Laboratory analysis confirmed the patient's diagnosis of gout. What analysis was conducted to make this diagnosis?
Correct answer	Measuring uric acid levels in the blood and urine
B	Measuring urine ammonia levels
C	Measuring residual nitrogen in the blood
D	Measuring urine creatinine levels
E	Measuring urea levels in the blood and urine
№	krok 2022

Topic	Nutritional Biochemistry
Task	Deficiency of a certain vitamin can result in a group of symptoms called pellagra. Dermatitis, diarrhea, and dementia are the three main symptoms in such cases. Name the deficient vitamin:
Correct answer	Vitamin <i>PP</i>
B	Vitamin <i>C</i>
C	Vitamin <i>B2</i>
D	Vitamin <i>Bi</i>
E	Vitamin <i>A</i>
№	krok 2022
Topic	General characteristics and functions of blood
Task	A patient diagnosed with atherosclerosis, ischemic heart disease, and rest angina pectoris was hospitalized into the cardiology department. Laboratory analysis shows high lipid levels in his blood plasma. What class of plasma lipids plays the main role in pathogenesis of atherosclerosis?
Correct answer	High-density lipoproteins
B	Fatty acid-albumin complexes
C	Chylomicrons
D	Low-density lipoproteins
E	α -lipoproteins
№	krok 2022
Topic	Nutritional Biochemistry
Task	Every diet includes products with dietary fiber. These fibers cannot be digested by gastrointestinal enzymes and cannot be absorbed by the body. What is the role of dietary fiber?
Correct answer	Stimulates motor function of alimentary tract
B	Inhibits motor function of alimentary tract
C	Inhibits absorptive function of alimentary tract
D	Inhibits secretion of enzymes in digestive juices

E	Inhibits secretory function of alimentary tract
№	krok 2022
Topic	Specific ways of amino acid exchange
Task	Nitrogen(II) oxide is an unstable molecule that takes part in vasodilation, immune processes, and neurotransmission. What enzyme participates in formation of nitrogen(II) oxide from arginine?
Correct answer	NO-synthase
B	Argininosuccinate lyase
C	Ornithine carbamoyl transferase
D	Argininosuccinate synthetase
E	Arginase
№	krok 2022
Topic	Anabolism of carbohydrates
Task	A child with a point mutation presents with absence of glucose 6-phosphatase, hypoglycemia, and hepatomegaly. These signs are characteristic of:
Correct answer	Von Gierke disease (glycogen storage disease type I)
B	Parkinson disease
C	Addison disease (primary adrenal insufficiency)
D	McArdle disease (glycogen storage disease type V)
E	Gaucher disease
№	krok 2022
Topic	Hormonal regulation of metabolism
Task	A patient is in a state of hypoglycemic coma. What hormone can cause this condition if overdosed?
Correct answer	Insulin
B	Progesterone
C	Cortisol
D	Somatotropin

E	Corticotropin
№	krok 2022
Topic	"Characteristics and intracellular exchange of lipids".
Task	To improve digestion of fatty food, the patient was prescribed a bile-containing preparation. What components of this preparation take part in emulsification of fats?
Correct answer	Bile acids
B	Cholesterol and its ethers
C	Higher fatty acids
D	Bilirubin glucuronides
E	Diglycerides
№	krok 2022
Topic	: Biochemistry of connective tissue, teeth and saliva
Task	During parodontosis, destruction of protein and polysaccharide components of connective tissue occurs. Which of the proteins listed below is a component of connective tissue?
Correct answer	Collagen
B	Ceruloplasmin
C	Transferrin
D	Albumin
E	Antitrypsin
№	krok 2022
Topic	General characteristics and functions of blood
Task	A patient suffers from diabetes mellitus with fasting hyperglycemia over 7.2 mmol/L. What blood plasma protein would allow to assess the patient's glycemia level retrospectively (4-8 weeks prior to examination)?
Correct answer	Glycated hemoglobin
B	C-reactive protein
C	Fibrinogen

D	Ceruloplasmin
E	Albumin
№	krok 2022
Topic	Ammonia exchange in the body
Task	Presence of citrulline and high ammonia levels are detected in the urine of a newborn. This child is likely to present with disturbed production of the following substance:
Correct answer	Urea
B	Creatinine
C	Creatine
D	Uric acid
E	Ammonia
№	krok 2022
Topic	Liver biochemistry
Task	In what organ does biotransformation (metabolic transformation) of most medicinal agents occur upon their introduction into an organism?
Correct answer	Liver
B	Kidneys
C	Intestine
D	Skin
E	Lung
№	krok 2022
Topic	Mechanisms of hormones action. Thyroid and parathyroid hormones
Task	Examination of a patient shows base metabolism increased by 50%. This change is caused by increased secretion of the following hormone:
Correct answer	Thyroxine
B	Prolactin
C	Growth hormone

D	Parathormone
E	Insulin
№	krok 2022
Topic	Nucleic acid exchange.
Task	A structural gene — a DNA molecule segment — was damaged. However, it did not result in amino acid replacement in the protein, because after a time this damage was corrected with specific enzymes. Name this DNA ability:
Correct answer	Repair
B	Replication
C	Mutation
D	Reverse transcription
E	Transcription
№	krok 2022
Topic	Nutritional Biochemistry
Task	A 26-year-old man presents with anemia against the background of chronic gastritis with intrinsic Castle factor deficiency. What type of anemia is characteristic of such cases?
Correct answer	<i>B</i> ₁₂ and folate deficiency
B	Thalassemia
C	Chronic posthemorrhagic
D	Iron-deficiency
E	Hypoplastic
№	krok 2022
Topic	Catabolism of carbohydrates
Task	Erythrocyte needs energy in the form of ATP for its vital functions. What process supplies erythrocytes with necessary amount of ATP?
Correct answer	Anaerobic glycolysis

B	β -oxidation of fatty acids
C	Pentose phosphate pathway
D	Tricarboxylic acid cycle
E	Aerobic oxidation of glucose
№	krok 2022
Topic	Biochemistry of fat-soluble vitamins
Task	A 14-year-old patient presents with disturbed twilight vision. What vitamin is deficient in the body of this patient?
Correct answer	A
B	B_{12}
C	B_6
D	B_1
E	C
№	krok 2022
Topic	Hormonal regulation of metabolism
Task	A 36-year-old patient with diabetes mellitus developed seizures with loss of consciousness after an insulin injection. What was the result of blood glucose test?
Correct answer	2.5 mmol/L
B	5.5 mmol/L
C	8.0 mmol/L
D	3.3 mmol/L
E	10 mmol/L
№	krok 2022
Topic	Hormonal regulation of metabolism
Task	A person develops alimentary (nutritional) hyperglycemia after eating, which stimulates secretion of the following hormone:

Correct answer	Insulin
B	Glucagon
C	Adrenaline
D	Noradrenaline
E	Cortisol
№	krok 2022
Topic	Functional and clinical biochemistry of tissues and urine
Task	An 84-year-old patient suffers from parkinsonism. One of the pathogenetic development elements of this disease is deficiency of a certain mediator in some of the brain structures. Name this mediator:
Correct answer	Dopamine
B	Histamine
C	Acetylcholine
D	Noradrenaline
E	Adrenaline
№	krok 2022
Topic	Biochemistry of connective tissue, teeth and saliva
Task	Lysozyme is a hydrolyzing enzyme that provides protective function of saliva. Its antibacterial properties are based on its ability to break the structural integrity of a bacterial cell wall by inducing hydrolysis of the following:
Correct answer	Glycosidic bonds of mucopolysaccharides
B	Peptide bonds of proteins
C	Ester bonds of lipids
D	Cell wall antigens and endotoxins
E	Glycosidic bonds of nitrogen bases and pentoses
№	krok 2022
Topic	Nucleic acid exchange.

Task	Among organic substances of a cell there is a polymer composed of dozens, hundreds, and thousands of monomers. This molecule is capable of self-reproduction and can be an information carrier. X-ray structure analysis shows this molecule to consist of two complementary spiral threads. Name this compound:
Correct answer	DNA
B	RNA
C	Hormone
D	Carbohydrate
E	Cellulose
№	krok 2022
Topic	General ways of exchange of amino acids
Task	A 24-year-old patient was administered glutamic acid to treat epilepsy. Medicinal effect in this case occurs not due to glutamate itself, but due to the product of its decarboxylation:
Correct answer	γ -aminobutyric acid
B	Dopamine
C	Histamine 4-monooxygenase
D	Taurine
E	Serotonin
№	krok 2022
Topic	Catabolism of carbohydrates
Task	Intensive physical work leads to accumulation of lactic acid in muscles. What enzyme enables formation of lactic acid from pyruvate in the process of anaerobic glycolysis?
Correct answer	Lactate dehydrogenase
B	Pyruvate carboxylase
C	Phosphofruktokinase
D	Pyruvate dehydrogenase
E	Aldolase

No	krok 2022
Topic	Liver biochemistry
Task	A patient came to the doctor with complaints of general weakness and sleep disturbances. Objectively the patient's skin is yellow. In blood there is increased concentration of direct bilirubin and bile acids. Acholic stool is observed. What condition can be characterized by these changes?
Correct answer	Mechanical jaundice
B	Parenchymatous jaundice
C	Hemolytic jaundice
D	Familial nonhemolytic (Gilbert's) syndrome
E	Chronic cholecystitis