1. After consumption of rich food a patient has nausea and heartburn, steatorrhea. This condition might be caused by:

a. Increased lipase secretion
b. Amylase deficiency
c. Disturbed phospholipase synthesis
d. Bile acid deficiency
e. Disturbed tripsin synthesis

2. Galactosemia is revealed in the child. Concentration of glucose in the blood is not considerably changed. Deficiency of what enzyme caused this illness?

a. Phosphoglucomutase
b. Amylo-1,6-glucosidase
c. Galactose-1-phosphate uridyltransferase
d. Galactokinase
e. Hexokinase

3. Fatty of phospholipids is disordered due to fat infiltration of the liver. Indicate which of the presented substances can enhance the process of methylation during phospholipids synthesis?

a. Glucose
b. Ascorbic acid
c. Methionine
d. Glycerin
e. Citrate

4. Characteristic sign of glycogenosis is muscle pain during physical work. Blood examination reveals usually hypoglycemia. This pathology is caused by congenital deficiency of the following enzyme:

a. Glycogen phosphorylase
b. Alpha amylase
c. Lysosomal glycosidase
d. Gamma amylase
e. Glucose 6-phosphate dehydrogenase

5. An infant has apparent diarrhea resulting from improper feeding. One of the main diarrhea effects is plentiful excretion of sodium bicarbonate. What form of acid-base balance disorder is the case?

a. Metabolic alkalosis
b. Respiratory alkalosis
c. No disorders of acid-base balance will be observed
d. Metabolic acidosis
e. Respiratory acidosis

6. Methotrexate (structural analogue of the folic acid which is competitive inhibitor of the dihydrofolatreductase) is prescribed for treatment of the malignant tumour.On which level does methotrexate inhibit synthesis of the nucleic acids?

a. Transcription
b. Replication
c. Mononucleotide synthesis
d. Reparation
e. Processing

7. RNA-polymeraseB(II) is blocked due to amanitine poisoning (poison of death-cup). It disturbes:

a. Primers synthesis
b. Maturation of m-RNA
c. Synthesis of t-RNA
d. Reverse transcription
e. Synthesis of m-RNA

8. a.
b.

c.
d.
e.

9. Patient with encephalopathy was admitted to the neurological in-patient department. Correlation of increasing of encephalopathy and substances absorbed by the bloodstream from the intestines was revealed. What substances that are created in the intestines can cause endotoxemia?
a. Biotin
b. Ornithine
c. Butyrate
d. Acetacetate
e. Indole

10. Examination of a patient suffering from cancer of urinary bladder revealed high rate of serotonin and hydroxyanthranilic acid. It is caused by excess of the following amino acid in the organism:
a. Tryptophan
b. Histidine
c. Tyrosine
d. Methionine
e. Alanine

11. A mother consulted a doctor about her 5-year-old child who develops erythemas, vesicular rash and skin itch under the influence of sun. Laboratory studies revealed decreased iron concentration in the blood serum, increased uroporphyrinogen I excretion with the urine. What is the most likely inherited pathology in this child?
a. Intermittent porphyria
b. Erythropoietic porphyria
c. Hepatic porphyria
d. Methemoglobinemia
e. Coproporphyria

12. A 3 year old child with fever was given aspirin. It resulted in intensified erythrocyte haemolysis. Hemolytic anemia might have been caused by congenital insufficiency of the following enzyme:
a. Glucose 6-phosphate dehydrogenase
b. Glycogen phosphorylase
c. gamma-glutamiltransferase
d. Glycerol phosphate dehydrogenase
e. Glucose 6-phosphatase

13. Blood of a 12 year old boy presents low concentration of uric acid and accumulation of xanthine and hypoxanthine. This child has genetic defect of the following enzyme:
a. Arginase
b. Ornithine carbamoyltransferase
c. Glycerylkinase
d. Xanthine oxidase
e. Urease

14. Increased amount of free fatty acids is observed in the blood of the patients with diabetes mellitus. It can be caused by:
a. Increased activity of triglyceridelipase adipocytes
b. Activation of the ketone bodies utilization
c. Decreased activity of phosphatidylcholine-cholesterol-acyltransferase blood plasma
d. Activation of the synthesis of the apolipoproteins
e. Storage of palmitatoil-CoA

15. A patient is ill with diabetes mellitus that is accompanied by hyperglycemia of over 7,2 millimole/l on an empty stomach. The level of what blood plasma protein allows to estimate the glycemia rate retrospectively (4-8 weeks before examination)?

a. Fibrinogen
b. Albumin
c. Glycated hemoglobin
d. C-reactive protein
e. Ceruloplasmin

16. In case of enterobiasis acrihine - the structural analogue of vitamin D2 - is administered. The synthesis disorder of which enzymes does this medicine cause in microorganisms?
a. Peptidases
b. Cytochromeoxidases
c. FAD-dependent dehydrogenases
d. NAD-dependet dehydrogenases
e. Aminotransferases

17. a.
b.
c.
d.
e.

18. Hydroxylation of endogenous substrates and xenobiotics requires a donor of protons. Which of the following vitamins can play this role?
a. Vitamin D6
b. Vitamin P
c. Vitamin C
d. Vitamin E
e. Vitamin A

19. The formation of a secondary mediator is obligatory in membrane-intracellular mechanism of hormone action. Point out the substance that is unable to be a secondary mediator:
a. Ca2+
b. Glycerol
c. Inositol-3,4,5-triphosphate
d. Diacylglycerol
e. CAMP

20. A 4 y.o. child with signs of durative proteinic starvation was admitted to the hospital. The signs were as follows: growth inhibition, anemia, edemata, mental deficiency. Choose a cause of edemata development:
a. Reduced synthesis of lipoproteins
b. Reduced synthesis of glycoproteins
c. Reduced synthesis of globulins
d. Reduced synthesis of hemoglobin
e. Reduced synthesis of albumins

21. Researchers isolated 5 isoenzymic forms of lactate dehydrogenase from the human blood serum and studied their properties. What property indicates that the isoenzymic forms were isolated from the same enzyme?
a. The same physicochemical properties
b. The same molecular weight
c. Catalyzation of the same reaction
d. Tissue localization
e. The same electrophoretic mobility

22. On some diseases it is observed aldosteronism with hypertension and edema due to sodium retention in the organism. What organ of the internal secretion is affected on aldosteronism?
a. Adrenal glands
b. Ovaries

c. Hypophysis
d. Pancreas
e. Testicle

23. An experiment proved that UV-radiated cells of patients with xeroderma pigmentosum restore the native DNA structure slower than cells of healthy individuals as a result of reparation enzyme defection. What enzyme helps this process?
a. DNA polymerase III
b. DNA gyirase
c. RNA ligase
d. Primase
e. Endonuclease

24. A patient with suspicion on epidemic typhus was admitted to the hospital. Some arachnids and insects have been found in his flat. Which of them may be a carrier of the pathogen of epidemic typhus?
a. Houseflies
b. Lice
c. Bed-bugs
d. Spiders
e. Cockroaches

25. A businessman came to India from South America. On examination the physician found that the patient was suffering from sleeping-sickness. What was the way of invasion?
a. With contaminated fruits and vegetables
b. As a result of mosquitos bites
c. As a result of bugs bites
d. Through dirty hands
e. After contact with a sick dogs

26. A 52 year-old patient with bronchial asthma was treated with glucocorticoids. Fever reaction appeared as a result of postinjective abscess. The patient had subfebrile temperature, which didn
a. Violation of heat-producing mechanisms
b. Thermoregulation center inhibition
c. Violation of heat loss through lungs
d. Inflammatory barrier formation in injection place
e. Inhibited endogen pyrogens production

27. A 35-year-old man under the treatment for pulmonary tuberculosis has acute-onset of right big toe pain, swelling, and low-grade fever. The gouty arthritis was diagnosed and high serum uric acid level was found. Which of the following antituberculosis drugs are known for causing high uric acid levels?
a. Cycloserine
b. Rifampicin
c. Aminosalicylic acid
d. Pyrazinamide
e. Thiacetazone

28. During metabolic process active forms of the oxygen including superoxide anion radical are formed in the human body. With help of what enzyme is this anion activated?
a. Peroxidase
b. Catalase
c. Superoxide dismutase
d. Glutathioneperoxidase
e. Glutathionereductase

29. A patient presents high activity of LDH_1,2, aspartate aminotransferase, creatine phosphokinase. In what organ (organs) is the development of a pathological process the most probable?

a. In skeletal muscles (dystrophy, atrophy)
b. In connective tissue
c. In liver and kidneys
d. In the heart muscle (initial stage of myocardium infarction)
e. In kidneys and adrenals

30. Buffer capacity of blood was decreased in the worker due to exhausting muscular work. Entry of what acid substance to the blood can this state be explained?
a. α-ketoglutarate
b. 3-phosphoglycerate
c. Pyruvate
d. 1,3-bisphosphoglycerate
e. Lactate

31. While examining a child a doctor revealed symmetric cheeks roughness, diarrhea, disfunction of the nervous system. Lack of what food components caused it?
a. Phenylalanine, pangamic acid
b. Nicotinic acid, tryptophane
c. Threonine, pantothenic acid
d. Lysine, ascorbic acid
e. Methionine, lipoic acid

32. A13-year-old boy complains of general weakness, dizziness, tiredness. He is mentally retarded. Increased level of valine, isoleucine, leucine is in the blood and urine. Urine has specific smell. What is the diagnosis?
a. Histidinemia
b. Graves disease
c. Addisons disease
d. Tyrosinosis
e. Maple syrup urine disease

33. Increased breaking of vessels, enamel and dentine destruction in scurvy patients are caused by disorder of collagen maturing. What stage of modification of procollagen is disordered in this avitaminosis?
a. Detaching of N-ended peptide
b. Hydroxylation of proline
c. Glycosylation of hydroxylysine residues
d. Formation of polypeptide chains
e. Removal of C-ended peptide from procollagen

34. A 62-year-old female patient has developed a cataract (lenticular opacity) secondary to the diabetes mellitus. What type of protein modification is observed in case of diabetic cataract?
a. Methylation
b. Limited proteolysis
c. Phosphorylation
d. ADP-ribosylation
e. Glycosylation

35. Aspirin has antiinflammatory effect due to inhibition of the cyclooxygenase activity. Level of what biological active acids will decrease?
a. Prostaglandins
b. Catecholamines
c. Iodinethyronyns
d. Biogenic amines
e. Leucotriens

36. The B cells of endocrine portion of pancreas are selectively damaged by alloxan poisoning. How will it be reflected in blood plasma?

a. The level of sugar decreases
b. The content of fibrinogen decrease
c. The content of sugar increases
d. The content of globulins decreases
e. The content of albumins decreases

37. At the aboratory experiment the eukocyte culture was mixed with staphylococci. Neutrophile leukocytes engulfed and digested bacterial cells. This processes are termed:
a. Pinocytosis
b. Facilitated diffusion
c. Osmosis
d. Phagocytosis
e. Diffusion

38. Examination of a patient revealed typical presentations of collagenosis. This pathology is characterized by increase of the following urine index:
a. Hydroxyproline
b. Glucose
c. Ammonium salts
d. Mineral salts
e. Arginine

39. Marked increase of activity of
a. Cholecystitis
b. Miocardial infarction
c. Rheumatism
d. Hepatitis
e. Pancreatitis

40. Untrained people often have muscle pain after sprints as a result of lactate accumulation. This might be caused by intensification of the following biochemical process:
a. Glycogenesis
b. Glycolysis
c. Pentose phosphate pathway
d. Gluconeogenesis
e. Lipogenesis

41. A 16-year-old boy was performed an appendectomy. He has been hospitalized for right lower quadrant abdominal pain within 18 hours. The surgical specimen is edematous and erythematous. Infiltration by what of the following cells is the most typical for the process occuring here?
a. Eosinophils
b. Limphocytes
c. Monocytes
d. Neutrophils
e. Basophils

42. ATP synthesis is totaly blocked in a cell. How will the value of membrane rest potential change?
a. It will be considerably increased
b. It will be slightly increased
c. It will disappear
d. First it will increase, then decrease
e. First it will decrease, then increase

43. The concentration of albumins in human blood sample is lower than normal. This leads to edema of tissues. What blood function is damaged?
a. All answers are correct
b. Maintaining the oncotic blood pressure
c. Maintaining the body temperature

d. Maintaining the Ph level
e. Maintaining the blood sedimentation system

44. Examination of a patient suffering from frequent haemorrhages in the inner organs and mucous membranes revealed proline and lysine being included in collagen fibers. Impairment of their hydroxylation is caused by lack of the following vitamin:
a. D
b. C
c. K
d. E
e. A

45. A 20 year old patient complains of general weakness, dizziness, quick fatigability. Blood analysis results: Hb- 80 g/l. Microscopical examination results: erythrocytes are of modified form. This condition might be caused by:
a. Acute intermittent porphyria
b. Hepatocellular jaundice
c. Sickle-cell anemia
d. Obturative jaundice
e. Addisons disease

46. A 48 year old patient complained about intense pain, slight swelling and reddening of skin over the joints, temperature rise up to 38oC. Blood analysis revealed high concentration of urates. This condition might be caused by disturbed metabolism of:
a. Purines
b. Cholesterol
c. Carbohydrates
d. Pyrimidines
e. Collagen

47. A patient has yellow skin colour, dark urine, dark-yellow feces. What substance will have strengthened concentration in the blood serum?
a. Biliverdin
b. Unconjugated bilirubin
c. Mesobilirubin
d. Conjugated bilirubin
e. Verdoglobin

48. A patient has an increased pyruvate concentration in blood. A large amount of it is excreted with the urine. What vitamin is lacking in this patient?
a. D6
b. D2
c. E
d. D3
e. D1

49. Ammonia is a very toxic substance, especially for nervous system. What substance takes the most active part in ammonia detoxication in brain tissues?
a. Glutamic acid
b. Proline
c. Alanine
d. Histidine
e. Lysine

50. A patient has pellagra. Interrogation revealed that he had lived mostly on maize for a long time and eaten little meat. This disease had been caused by the deficit of the following substance in the maize:
a. Tyrosine

b. Alanine
c. Histidine
d. Tryptophan
e. Proline

51. Increased production of thyroidal hormones T3 and T4, weight loss, tachycardia, psychic excitement and so on present on thyrotoxicosis. How do thyroidal hormones effect energy metabolism in the mitochondrion of cells?
a. Stops phosphorylation of substance
b. Activates phosphorylation of substance
c. Disconnect oxidation and oxidated phosphorylation
d. Stops respiratory chain
e. Activates oxidated phosphorylation

52. A patient with high rate of obesity was advised to use carnitine as a food additive in order to enhance "fat burning". What is the role of carnitine in the process of fat oxidation?
a. Activation of intracellular lipolysis
b. Transport of FFA (free fatty acids) from cytosol to the mitochondria
c. It takes part in one of reactions of FFA beta-oxidation
d. Transport of FFA from fat depots to the tissues
e. FFA activation

53. An experimantal animal that was kept on protein-free diet developed fatty liver infiltration, in particular as a result of deficiency of methylating agents. This is caused by disturbed generation of the following metabolite:
a. Linoleic acid
b. Choline
c. Cholesterol
d. DOPA
e. Acetoacetate

54. A patient consulted a doctor about symmetric dermatitis of open skin areas. It was found out that the patient lived mostly on cereals and ate too little meat, milk and eggs. What vitamin deficiency is the most evident?
a. Tocopherol
b. Nicotinamide
c. Folic acid
d. Calciferol
e. Biotin

55. A 46 year old woman suffering from chololithiasis developed jaundice. Her urine became dark-yellow and fece became colourless. Blood serum will have the highest concentration of the following substance:
a. Mesobilirubin
b. Urobilinogen
c. Unconjugated bilirubin
d. Biliverdin
e. Conjugated bilirubin

56. A 46 year old patient applied to a doctor complaining about joint pain that becomes stronger the day before weather changes. Blood examination revealed strengthened concentration of uric acid. The most probable cause of the disease is the intensified disintegration of the following substance:
a. Uridine triphosphate
b. Cytidine monophosphate
c. Adenosine monophosphate
d. Uridine monophosphate
e. Thymidine monophosphate

57. A 42-year man suffering from gout has increased level of urinary acid in the blood. Allopurinol was prescribed to decrease the level of urinary acid. Competitive inhibitor of what enzyme is allopurinol?

a. Hypoxantinphosphoribosiltransferase
b. Guaninedeaminase
c. Adenosinedeaminase
d. Adeninephosphoribosiltransferase
e. Xanthinoxidase

58. A 38 year old patient suffers from rheumatism in its active phase. What laboratory characteristic of blood serum is of diagnostic importance in case of this pathology?

a. Urea
b. Uric acid
c. C-reactive protein
d. Creatinine
e. Transferrin

59. Patient experienced increased susceptibility of the skin to the sunlight. His urine after some time became dark-red. What is the most likely cause of this?

a. Pellagra
b. Alkaptonuria
c. Hemolytic jaundice
d. Albinism
e. Porphyria

60. A patient with serious damage of muscular tissue was admitted to the traumatological department. What biochemical urine index will be increased in this case?

a. Creatinine
b. Glucose
c. Uric acid
d. Mineral salts
e. Common lipids

61. hours after an accute attack of retrosternal pain a patient presented a jump of aspartate aminotransferase activity in blood serum. What pathology is this deviation typical for?

a. Myocardium infarction
b. Collagenosis
c. Diabetes insipidus
d. Diabetes mellitus
e. Viral hepatitis

62. Donor skin transplantation was performed to a patient with extensive burns. On the 8-th day the graft became swollen and changed colour; on the 11-th day graft rejection started. What cells take part in this process?

a. Basophils
b. Erythrocytes
c. T-lymphocytes
d. Eosinophils
e. B-lymphocytes

63. A 30 y.o. woman had been ill for a year when she felt pain in the area of joints for the first time, they got swollen and skin above them became reddened. Provisional diagnosis is rheumatoid arthritis. One of the most probable causes of this disease is a structure alteration of a connective tissue protein:

a. Troponin
b. Collagen
c. Myosin
d. Mucin
e. Ovoalbumin

64. Autopsy of a 12-year-old girl revealed: multiple cutaneous hemmorhages (mostly into the skin of buttocks, lower extremities), serous and mucous memrane hemmorhages, cerebral hemmorhages. Adrenal glands show focal necrosis and massive hemmorhages; kidneys show necrotic nephrosis, suppurative arthritis, iridocyclitis, vasculitis. What is the most probable diagnosis?

a. Radiation sickness
b. Meningococcemia
c. Periarteritis nodosa
d. Epidemic typhus
e. Systemic lupus erythematosus

65. Examination of a 27-year-old patient revealed pathological changes in liver and brain. Blood plasma analysis revealed an abrupt decrease in the copper concentration, urine analysis revealed an increased copper concentration. The patient was diagnosed with Wilson

a. Xanthine oxidase
b. Carbonic anhydrase
c. Ceruloplasmin
d. Leucine aminopeptidase
e. Alcohol dehydrogenase

66. A patient complains about dyspnea provoked by the physical activity. Clinical examination revealed anaemia and presence of the paraprotein in the zone of gamma-globulins. To confirm the myeloma diagnosis it is necessary to determine the following index in the patient

a. Bence Jones protein
b. Haemoglobin
c. Antitrypsin
d. Ceruloplasmin
e. Bilirubin

67. As a result of exhausting muscular work a worker has largely reduced buffer capacity of blood. What acidic substance that came to blood caused this phenomenon?

a. Pyruvate
b. 3-phosphoglycerate
c. -
d. Lactate
e. 1,3-bisphosphoglycerate

68. A patient was delivered to the hospital by an emergency team. Objectively: grave condition, unconscious, adynamy. Cutaneous surfaces are dry, eyes are sunken, face is cyanotic. There is tachycardia and smell of acetone from the mouth. Analysis results: blood glucose - 20,1 micromole/l (standard is 3,3-5,5 micromole/l), urine glucose - 3,5% (standard is - 0). What is the most probable diagnosis?

a. Hypoglycemic coma
b. Acute alcoholic intoxication
c. Anaphylactic shock
d. Hyperglycemic coma
e. Acute heart failure

69. Profuse foam appeared when dentist put hydrogen peroxide on the mucous of the oral cavity. What enzyme caused such activity?

a. Catalase
b. Acetyltransferase
c. Methemoglobinreductase
d. Glucose-6-phosphatdehydrogenase
e. Cholinesterase

70. A 62 years old woman complains of frequent pains in the area of her chest and backbone, rib fractures. A doctor assumed myelomatosis (plasmocytoma). What of the following laboratory characteristics will be of the greatest diagnostical importance?

a. Hypoproteinemia
b. Paraproteinemia
c. Proteinuria
d. Hyperalbuminemia
e. Hypoglobulinemia

71. A newborn child has convulsions that have been observed after prescription of vitamin B6. This most probable cause of this effect is that vitamin B6 is a componet of the following enzyme:
a. Glycogen phosphorylase
b. Glutamate decarboxylase
c. Netoglubarate dehydromine
d. Pyruvate dehydrostase
e. Aminolevulinate synthase

72. Nappies of a newborn have dark spots that witness of formation of homogentisic acid. Metabolic imbalance of which substance is it connected with?
a. Cholesterine
b. Tryptophane
c. Galactose
d. Methionine
e. Thyrosine

73. Pathological changes of the liver and brain were revealed in a 27-year-old patient.The copper concentration is abruptly decreased in blood plasma and increased in the urine. Wilsons disease was diagnosed. Activity of what enzyme in the blood serum should be examined to prove diagnisis?
a. Carboanhydraze
b. Leucinamineopeptidaze
c. Alcoholdehydrogenaze
d. Ceruloplasmin
e. Xanthioxidase

74. A 50-year-old patient complains about general weakness, appetite loss and cardiac arrhythmia. The patient presents with muscle hypotonia, flaccid paralyses, weakened peristaltic activity of the bowels. Such condition might be caused by:
a. Hyperkaliemia
b. Hypoproteinemia
c. Hypokaliemia
d. Hypophosphatemia
e. Hyponatremia

75. An 18-year-old patient has enlarged inguinal lymphnodes, they are painless, thickened on palpation. In the area of genital mucous membrane there is a small-sized ulcer with thickened edges and "laquer" bottom of greyish colour. What is the most probable diagnosis?
a. Tuberculosis
b. Trophic ulcer
c. Gonorrhea
d. Syphilis
e. Lepra

76. Concentration of pyruvate is increased in the patients blood, the most of which is excreted with urine. What avitaminosis is observed in the patient?
a. Avitaminosis D1
b. Avitaminosis D3
c. Avitaminosis
d. Avitaminosis D6
e. Avitaminosis E

77. Carnitine including drug was recomended to the sportsman for improving results. What process is

activated most of all with help of carnitine?
a. Synthesis of ketone bodies
b. Synthesis of steroid hormones
c. Transport of fatty acids to the mitochondria
d. Synthesis of lipids
e. Tissue respiration

78. A patient with suspected diphtheria went through bacterioscopic examination. Examination of throat swab revealed rod-shaped bacteria with volutin granules. What etiotropic preparation should be chosen in this case?
a. Interferon
b. Antidiphtheric antitoxic serum
c. Diphtheria antitoxin
d. Bacteriophage
e. Eubiotic

79. Patient with diabetes mellitus experienced loss of consciousness and convulsions after injection of insulin. What is the result of biochemical blood analysis for concentration of the sugar?
a. 8,0 mmol/L
b. 3,3 mmol/L
c. 5,5 mmol/L
d. 1,5 mmol/L
e. 10,0 mmol/L

80. A woman who has been keeping to a clean-rice diet for a long time was diagnosed with polyneuritis (beriberi). What vitamin deficit results in development of this disease?
a. Riboflavin
b. Thiamine
c. Pyridoxine
d. Ascorbic acid
e. Folic acid

81. Removal of gall bladder of a patient has disturbed processes of Ca absorption through the intestinal wall. What vitamin will stimulate this process?
a. B12
b. K
c. PP
d. C
e. D3

82. A 63-year-old woman developed signs of rheumatoid arthritis. Increase of which indicated blood values level could be helpful in proving diagnosis?
a. General cholesterol
b. R-glycosidase
c. Lipoproteids
d. Acid phosphatase
e. Additive glycosaminoglycans

83. A 1,5-year-old child presents with both mental and physical lag, decolorizing of skin and hair, decrease in catecholamine concentration in blood. When a few drops of 5% solution of trichloroacetic iron had been added to the child
a. Alkaptonuria
b. Albinism
c. Xanthinuria
d. Phenylketonuria
e. Tyrosinosis

84. A patient complains of frequent diarrheas, especially after consumption of fattening food, and of

body weight loss. Laboratory examination revealed steatorrhea; hypocholic feces. What can be the cause of this condition?

a. Obturation of biliary tracts
b. Lack of pancreatic lipase
c. Unbalanced diet
d. Lack of pancreatic phospholipase
e. Mucous membrane inflammation of small intestine

85. On the empty stomach in the patients blood glucose level was 5,65 mmol/L, in an hour after usage of sugar it was 8,55 mmol/L, in a 2 hours - 4,95 mmol/L. Such indicators are typical for:

a. Patient with non-insulin dependent diabetes mellitus
b. Patient with tireotoxicosis
c. Patient with hidden diabetes mellitus
d. Patient with insulin-dependent diabetes mellitus
e. Healthy person

86. A child is languid, apathetic. Liver is enlarged and liver biopsy revealed a significant excess of glycogene. Glucose concentration in the blood stream is below normal. What is the cause of low glucose concentration?

a. Low (absent) activity of glycogene phosphorylase in liver
b. High activity of glycogen synthetase
c. Deficit of a gene that is responsible for synthesis of glucose 1-phosphaturidine transferase
d. Low (absent) activity of glucose 6-phosphatase
e. Low (absent) activity of hexokinase

87. A 65 year old man suffering from gout complains of kidney pain. Ultrasound examination revealed renal calculi. The most probable cause of calculi formation is the strengthened concentration of the following substance:

a. Bilirubin
b. Cholesterol
c. Uric acid
d. Urea
e. Cystine

88. A 65-year-old suffering from the gout man complains of the pain in the kidneys region. On ultrasonic examination the renal calculi were revealed. As a result of what process were they formed?

a. Protein catabolism
b. Heme decay
c. Restoration of cysteine
d. Decay of purine nucleotides
e. Ornithine cycle

89. A 5-year-old child who often fells ill with respiratory diseases has eczematous appearances after consumption of some food products, tendency to prolonged course of inflammatory processes. What kind of diathesis can be suspected in this case?

a. Hemmorhagic
b. Lymphohypoplastic
c. Asthenic
d. Exudative-catharral
e. Arthritism

90. The greater amount of nitrogen is excreted from the organism in form of urea. Inhibition of urea synthesis and accumulation of ammonia in blood and tissues are induced by the decreased activity of the following liver enzyme:

a. Urease
b. Aspartate aminotransferase
c. Carbamoyl phosphate synthetase
d. Amylase

e. Pepsin

91. A 35 y.o. patient who often consumes alcohol was treated with diuretics. There appeared serious muscle and heart weakness, vomiting, diarrhea, AP- 100/60 mm Hg, depression. This condition is caused by intensified excretion with urine of:

a. Sodium
b. Calcium
c. Phosphates
d. Potassium
e. Chlorine

92. After intake of rich food a patient feels nausea and sluggishness; with time there appeared signs of steatorrhea. Blood cholesterine concentration is 9,2 micromole/l. This condition was caused by lack of:

a. Triglycerides
b. Phospholipids
c. Chylomicrons
d. Bile acids
e. Fatty acids

93. Examination of a man who hadnt been consuming fats but had been getting enough carbohydrates and proteins for a long time revealed dermatitis, poor wound healing, vision impairment. What is the probable cause of metabolic disorder?

a. Lack of vitamins PP, H
b. Lack of palmitic acid
c. Lack of linoleic acid, vitamins A, D, E, K
d. Low caloric value of diet
e. Lack of oleic acid

94. A 44-year-old woman complains of common weakness, heart pain, considerable increase of body weigt. Objectively: moon-like face, hirsutism, BP- 165/100 mm Hg, height - 164 cm, weight - 103 kg; fat is mostly accumulated in the region of neck, upper shoulder girdle, stomach. What is the main pathogenetic mechanism of obesity?

a. Increased production of insulin
b. Decreased production of thyroidal hormones
c. Increased production of glucocorticoids
d. Decreased production of glucagon
e. Increased production of mineralocorticoids

95. An experimental animal has been given excessive amount of carbon-labeled glucose for a week. What compound can the label be found in?

a. Vitamin A
b. Methionine
c. Palmitic acid
d. Choline
e. Arachidonic acid

96. After a serious viral infection a 3-year-old child has repeated vomiting, loss of consciousness, convulsions. Examination revealed hyperammoniemia. What may have caused changes of biochemical blood indices of this child?

a. Disorder of biogenic amines neutralization
b. Activated processes of aminoacids decarboxylation
c. Disorder of ammonia neutralization in ornithinic cycle
d. Increased purtefaction of proteins in intestines
e. Inhibited activity of transamination enzymes

97. Examination of a patient with frequent hemorrhages from internals and mucous membranes revealed proline and lysine being a part of collagene fibers. What vitamin absence caused

disturbance of their hydroxylation?

a. Vitamin E

b. Vitamin C

c. Vitamin A

d. Vitamin K

e. Thiamine

98. Albinos can not stand sun impact - they do not aquire sun-tan but get sunburns. Disturbed metabolism of what aminoacid underlies this phenomenon?

a. Glutamic acid

b. Histidine

c. Methionine

d. Tryptophan

e. Phenilalanine

99. A patient with continious bronchopneumonia was admitted to the therapeutic department. Antibiotic therapy did not give much effect. What medication for improvement of immune state should be added to the complex treatment of this patient?

a. Benadryl

b. Paracetamol

c. Analgin

d. Sulfocamphocaine

e. Timaline

100. A patient suffers from hepatic cirrhosis. Examination of which of the following substances excreted by urine can characterize the state of antitoxic function of liver?

a. Uric acid

b. Aminoacids

c. Ammonium salts

d. Kreatinine

e. Hippuric acid

101. Vitamin A together with specific cytoreceptors penetrates through the nuclear membranes, induces transcription processes that stimulate growth and differentiation of cells. This biological function is realized by the following form of vitamin A:

a. Retinol

b. Carotin

c. Trans-retinal

d. Cis-retinal

e. Trans-retinoic acid

102. Products of some proteins hydrolysis and modification are the biologically active substances called hormones. Lipotropin, corticotropin, melanotropin and endorphins are synthesized in the hypophysis of the following protein:

a. Thyreoglobulin

b. Proopiomelanocortin (POMC)

c. Neurostromin

d. Neuroalbumin

e. Neuroglobulin

103. In patients with the biliary tract obstruction the blood coagulation is inhibited; the patients have frequent haemorrhages caused by the subnormal assimilation of the following vitamin:

a. A

b. E

c. C

d. K

e. D

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

a. Y-linked chromosome
b. Autosome-dominant
c. X-linked dominant chromosome
d. X-linked recessive chromosome
e. Autosome-recessive

105. A newborn child suffers from milk curdling in stomach, this means that soluble milk proteins (caseins) transform to insoluble proteins (paracaseins) by means of calcium ions and a certain enzyme. What enzyme takes part in this process?

a. Lipase
b. Renin
c. Gastrin
d. Pepsin
e. Secretin

106. The penetration of the irritable cell membrane for potassium ions has been increased during an experiment. What changes of membrane electric status can occur?

a. Local response
b. No changes
c. Depolarization
d. Action potential
e. Hyperpolarization

107. A sportsman was recommended to take a medication that contains carnitine in order to improve his results. What process is activated by carnitine the most?

a. Fatty acids transport to mitochondrions
b. Synthesis of ketone bodies
c. Tissue respiration
d. Synyhesis of lipids
e. Synthesis of steroid hormones

108. To prevent postoperative bleeding a 6 y.o. child was administered vicasol that is a synthetic analogue of vitamin K. Name post-translational changes of blood coagulation factors that will be activated by vicasol:

a. Polymerization
b. Glycosylation
c. Phosphorylation of serine radicals
d. Partial proteolysis
e. Carboxylation of glutamin acid

109. A 4 years old boy has had recently serious viral hepatitis. Now there are such clinical presentations as vomiting, loss of consciousness, convulsions. Blood analysis revealed hyperammoniemia. Disturbunce of which biochemical process caused such pathological condition of the patient?

a. Disturbed neutralization of ammonia in liver
b. Increased putrefaction of proteins in bowels
c. Inhibition of transamination enzyms
d. Activation of aminoacid decarboxylation
e. Disturbed neutralization of biogenic amines

110. During examination of an 11-month-old infant a pediatrician revealed osteoectasia of the lower extremities and delayed mineralization of cranial bones. Such pathology is usually provoked by the deficit of the following vitamin:

a. Pantothenic acid
b. Thiamin

c. Cholecalciferol
d. Bioflavonoids
e. Riboflavin

111. Examination of a patient suffering from chronic hepatitis revealed a significant decrease in the synthesis and secretion of bile acids. What process will be mainly disturbed in the patient
a. Fat emulsification
b. Carbohydrate digestion
c. Amino acid absorption
d. Glycerin absorption
e. Protein digestion

112. The energy inputs of a healthy man have been measured. In what position was the patient if his energy inputs were less than the main exchange?
a. Rest
b. Nervous exertion
c. Calmness
d. Sleep
e. Easy work

113. Glutamate decarboxylation results in formation of inhibitory transmitter in CNS. Name it:
a. Glutathione
b. Serotonin
c. Asparagine
d. GABA
e. Histamine

114. In course of histidine catabolism a biogenic amin is formed that has powerful vasodilatating effect. Name it:
a. Serotonin
b. Noradrenalin
c. Dopamine
d. Histamine
e. Dioxyphenylalanine

115. Utilization of arachidonic acid via cyclooxigenase pathway results in formation of some bioactive substances. Name them:
a. Thyroxine
b. Somatomedins
c. Insulin-like growth factors
d. Prostaglandins
e. Biogenic amins

116. After a sprint an untrained person develops muscle hypoxia. This leads to the accumulation of the following metabolite in muscles:
a. Glucose 6-phosphate
b. Oxaloacetate
c. Ketone bodies
d. Acetyl CoA
e. Lactate

117. Myocyte cytoplasm contains a big number of dissolved metabolites of glucose oxidation. Name one of them that turns directly into a lactate:
a. Pyruvate
b. Glycerophosphate
c. Fructose 6-phosphate
d. Glucose 6-phosphate
e. Oxaloacetate

118. Emotional stress causes activation of hormon-sensitive triglyceride lipase in the adipocytes. What secondary mediator takes part in this process?

a. Cyclic guanosine monophosphate
b. Diacylglycerol
c. Ions of
d. Cyclic adenosine monophosphate
e. Adenosine monophosphate

119. A patient diagnosed with carcinoid of bowels was admitted to the hospital. Analysis revealed high production of serotonin. It is known that this substance is formed of tryptophane aminooacid. What biochemical mechanism underlies this process?

a. Decarboxylation
b. Microsomal oxydation
c. Formation of paired compounds
d. Transamination
e. Desamination

120. A genetics specialist analyzed the genealogy of a family and found that both males and females may have the illness, not across all the generations, and that healthy parents may have ill children. What is the type of illness inheritance?

a. X-linked recessive
b. Y-linked
c. Autosomal dominant
d. X-linked dominant
e. Autosomal recessive

121. Analysis of amniotic fluid that was obtained as a result of amniocentesis (puncture of amniotic sac) revealed cells the nuclei of which contain sex chromatin (Barrs body). What can it be evidence of?

a. Trisomy
b. Polyploidy
c. Development of male fetus
d. Genetic disorders of fetus development
e. Development of female fetus

122. Vitamin B1 deficiency results in disturbance of oxidative decarboxylation of alpha-ketoglutaric acid. This will disturb synthesis of the following coenzyme:

a. Coenzyme A
b. Thiamine pyrophosphate
c. Flavine adenine dinucleotide (FAD)
d. Nicotinamide adenine dinucleotide (NAD)
e. Lipoic acid

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

a. Galactosemia
b. Lactosemia
c. Fructosemia
d. Steroid diabetes
e. Diabetes mellitus

124. According to clinical indications a patient was administered pyridoxal phosphate. What processes is this medication intended to correct?

a. Synthesis of purine and pyrimidine bases
b. Protein synthesis
c. Oxidative decarboxylation of ketonic acids
d. Desamination of purine nucleotide
e. Transamination and decarboxylation of aminoacids

125. A 45 y.o. woman suffers from Cushings syndrome - steroid diabetes. Biochemical examination revealed: hyperglycemia, hypochloremia. Which of the under-mentioned processes is the first to be activated?

a. Glucose reabsorption
b. Glycogenolysis
c. Gluconeogenesis
d. Glucose transport to the cell
e. Glycolysis

126. Autopsy of a 46-year-old man revealed multiple brown-and-green layers and hemmorhages on the mucous membrane of rectum and sigmoid colon; slime and some blood in colon lumen; histologically - fibrinous colitis. In course of bacteriological analysis of colon contents S.Sonne were found. What is the most probable diagnosis?

a. Salmonellosis
b. Cholera
c. Dysentery
d. Yersiniosis
e. Crohns disease

127. A patient had been ill with bronchial asthma for many years and died from asthmatic fit. Histologic lung examination revealed: lumen of bronchioles and small bronches contain a lot of mucus with some eosinophils, there is sclerosis of alveolar septums, dilatation of alveole lumen. What mechanism of development of hypersensibility reaction took place?

a. Reagin reaction
b. Immunocomplex reaction
c. Granulomatosis
d. Cytolysis determined by lymphocytes
e. Cytotoxic reaction

128. Desulfiram is widely used in medical practice to prevent alcocholism. It inhibits aldehyde dehydrogenase. Increased level of what metabolite causes aversion to alcochol?

a. Malonyl aldehyde
b. Ethanol
c. Acetaldehyde
d. Propionic aldehyde
e. Methanol

129. A 1-year-old child with symptoms of muscle involvement was admitted to the hospital. Examination revealed carnitine deficiency in his muscles. What process disturbance is the biochemical basis of this pathology?

a. Actin and myosin synthesis
b. Transporting of fatty acids to mitochodrions
c. Substrate phosphorylation
d. Regulation of Ca2+ level in mitochondrions
e. Lactic acid utilization

130. The patient with complaints of permanent thirst applied to the doctor. Hyperglycemia, polyuria and increased concentration of 17-ketosteroids in the urine were revealed. What disease is the most likely?

a. Myxoedema
b. Insulin-dependent diabetes mellitus
c. Steroid diabetes
d. Type I glycogenosis
e. Addisons disease

131. Index of pH of the blood changed and became 7,3 in the patient with diabetus mellitus. Detecting of the components of what buffer system is used while diagnosing disorder of the acid-base equilibrium?

a. Oxyhemoglobin
b. Protein
c. Phosphate
d. Hemoglobin
e. Bicarbonate

132. As a result of posttranslative modifications some proteins taking part in blood coagulation, particularly prothrombin, become capable of calcium binding. The following vitamin takes part in this process:
a. A
b. C
c. K
d. D1
e. D2

133. Objective examination of a patient revealed: slender figure, big skull, highly developed frontal region of face, short extremities. What constitutional type is it characteristic for?
a. Muscular
b. Cerebral
c. Mixed
d. Respiratory
e. Digestive

134. A 38-year-old patient died during intractable attack of bronchial asthma. Histologic examination revealed mucus accumulation in bronchial lumen, a lot of fat cells (labrocytes) in the wall of bronches, many of them are in the state of degranulation, there are also a lot of eosinophils. What pathogenesis of bronchial changes is it?
a. Atopy
b. Immunocomplex mechanism
c. Granulomatosis
d. Cellular cytolysis
e. Cytotoxic, cytolytic action of antibodies

135. Diabetes mellitus causes ketosis as a result of activated oxidation of fatty acids. What disorders of acid-base equilibrium may be caused by excessive accumulation of ketone bodies in blood?
a. Respiratory alcalosis
b. Metabolic acidosis
c. Any changes wount happen
d. Metabolic alcalosis
e. Respiratory acidosis

136. A woman with 0 (I) blood group has born a child with AB blood group. This womans husband has A blood group. What genetic interaction explains this phenomenon?
a. Incomplete dominance
b. Complementation
c. Codominance
d. Polymery
e. Recessive epistasis

137. Depressions and emotional insanities result from the deficit of noradrenalin, serotonin and other biogenic amines in the brain. Their concentration in the synapses can be increased by means of the antidepressants that inhibit the following enzyme:
a. L-amino-acid oxidase
b. Diamine oxidase
c. Monoamine oxidase
d. D-amino-acid oxidase
e. Phenylalanine-4-monooxygenase

138. A 3 year old child with symptoms of stomatitis, gingivitis and dermatitis of open skin areas was delivered to a hospital. Examination revealed inherited disturbance of neutral amino acid transporting in the bowels. These symptoms were caused by the deficiency of the following vitamin:

a. Pantothenic acid
b. Cobalamin
c. Biotin
d. Niacin
e. Vitamin A

139. During hypersensitivity test a patient got subcutaneous injection of an antigen which caused reddening of skin, edema, pain as a result of histamine action. This biogenic amine is generated as a result of transformation of the following histidine amino acid:

a. Decarboxylation
b. Phosphorylation
c. Deaminization
d. Isomerization
e. Methylation

140. A patient with suspected diagnosis "progressing muscular dystrophy" got his urine tested. What compound will confirm this diagnosis if found in urine?

a. Kreatine
b. Porphyrin
c. Calmodulin
d. Myoglobin
e. Collagen

141. A patient complained about dizziness, memory impairment, periodical convulsions. It was revealed that these changes were caused by a product of decarboxylation of glutamic acid. Name this product:

a. THFA
b. GABA
c. TDP
d. Pyridoxal phosphate
e. ATP

142. A sportsman needs to improve his sporting results. He was recommended to take a preparation that contains carnitine. What process is activated the most by this compound?

a. Fatty acids transporting
b. Calcium ions transporting
c. Vitamin K transporting
d. Glucose transporting
e. Amino acids transporting

143. A doctor examined a child and revealed symptoms of rachitis. Development of this desease was caused by deficiency of the following compound:

a. D3
b. Tocopherol
c. Retinol
d. Naphtaquinone
e. Biotin

144. Laboratory examination of a child revealed increased concentration of leucine, valine, isoleucine and their ketoderivatives in blood and urine. Urine smelt of maple syrup. This disease is characterized by the deficit of the following enzyme:

a. Glucose-6-phosphatase
b. Aminotransferase
c. Dehydrogenase of branched amino acids
d. Phosphofructokinase

e. Phosphofructomutase

145. A 9-month-old infant is fed with artificial formulas with unbalanced vitamin D6 concentration. The infant presents with pellagral dermatitis, convulsions, anaemia. Convulsion development might be caused by the disturbed formation of:

a. GABA
b. Serotonin
c. Dopamine
d. DOPA
e. Histamine

146. It was found out that some compounds, for instance fungi toxins and some antibiotics can inhibit activity of RNA-polymerase. What process will be disturbed in a cell in case of inhibition of this enzyme?

a. Reparation
b. Transcription
c. Replication
d. Processing
e. Translation

147. When blood circulation in the damaged tissue is restored, then lactate accumulation comes to a stop and glucose consumption decelerates. These metabolic changes are caused by activation of the following process:

a. Lipolysis
b. Anaerobic glycolysis
c. Aerobic glycolysis
d. Gluconeogenesis
e. Glycogen biosynthesis

148. During starvation muscle proteins break up into free amino acids. These compounds will be the most probably involved into the following process:

a. Glycogenolysis
b. Decarboxylation
c. Gluconeogenesis in muscles
d. Synthesis of higher fatty acids
e. Gluconeogenesis in liver

149. Surgical removal of a part of stomach resulted in disturbed absorption of vitamin B12, it is excreted with feces. The patient was diagnosed with anemia. What factor is necessary for absorption of this vitamin?

a. Gastrin
b. Pepsin
c. Folic acid
d. Gastromucoprotein
e. Hydrochloric acid

150. A newborn develops dyspepsia after the milk feeding. When the milk is substituted by the glucose solution the dyspepsia symptoms disappear. The newborn has the subnormal activity of the following enzyme:

a. Lactase
b. Maltase
c. Isomaltase
d. Amylase
e. Invertase

151. Patients who suffer from severe diabetes and dont receive insulin have metabolic acidosis. This is caused by increased concentration of the following metabolites:

a. Triacylglycerols

b. Cholesterol
c. Fatty acids
d. Unsaturated fatty acids
e. Ketone bodies

152. A 4 year old child with hereditary renal lesion has signs of rickets, vitamin D concentration in blood is normal. What is the most probable cause of rickets development?
a. Increased excretion of calcium
b. Hypofunction of parathyroid glands
c. Lack of calcium in food
d. Impaired synthesis of calcitriol
e. Hyperfunction of parathyroid glands

153. A 6 year old child was delivered to a hospital. Examination revealed that the child couldnt fix his eyes, didnt keep his eyes on toys, eye ground had the cherry-red spot sign. Laboratory analyses showed that brain, liver and spleen had high rate of ganglioside glycometide. What congenital disease is the child ill with?
a. Niemann-Pick disease
b. MacArdle disease
c. Wilsons syndrome
d. Turners syndrome
e. Tay-Sachs disease

154. In clinical practice tuberculosis is treated with izoniazid preparation - that is an antivitamin able to penetrate into the tuberculosis bacillus. Tuberculostatic effect is induced by the interference with replication processes and oxidation-reduction reactions due to the buildup of pseudo-coenzyme:
a. CoQ
b. NAD
c. FMN
d. FAD
e. TDP

155. A newborn child was found to have reduced intensity of sucking, frequent vomiting, hypotonia. Urine and blood exhibit increased concentration of citrulline. What metabolic process is disturbed?
a. Ornithinic cycle
b. Glycolysis
c. Cori cycle
d. Glyconeogenesis
e. Tricarboxylic acid cycle

156. Dietary intake of a 30 year old nursing woman contains 1000 mg of calcium, 1300 mg of phosphorus and 20 mg of iron per day. It is necessary to change content of these mineral substances in the following way:
a. To reduce iron content
b. To increase phosphorus content
c. To reduce fluorine content
d. To increase calcium content
e. To increase iron content

157. Cardinal symptoms of primary hyperparathyroidism are osteoporosis and renal lesion along with development of urolithiasis. What substance makes up the basis of these calculi in this disease?
a. Cholesterol
b. Calcium phosphate
c. Cystine
d. Uric acid
e. Bilirubin

158. Study of conversion of a food colouring agent revealed that neutralization of this xenobiotic

takes place only in one phase - microsomal oxydation. Name a component of this phase:
a. Cytochrome A
b. Cytochrome oxidase
c. Cytochrome B
d. Cytochrome C
e. Cytochrome p-450

159. A patient had hemorrhagic stroke. Blood examination revealed strengthened kinin concentration.The patient was prescribed contrical. It was administered in order to inhibit the following proteinase:
a. Pepsin
b. Chemotrypsin
c. Collagenase
d. Kallikrein
e. Trypsin

160. A 49-year-old driver complains about unbearable constricting pain behind the breastbone irradiating to the neck. The pain arose 2 hours ago. Objectively: the patient
a. Stenocardia
b. Acute pancreatitis
c. Acute myocardial infarction
d. Cholelithiasis
e. Diabetes mellitus

161. After consumption of rich food a patient has nausea and heartburn, steatorrhea. This condition might be caused by:
a. Amylase deficiency
b. Disturbed phospholipase synthesis
c. Increased lipase secretion
d. Disturbed tripsin synthesis
e. Bile acid deficiency

162. Galactosemia is revealed in the child. Concentration of glucose in the blood is not considerably changed. Deficiency of what enzyme caused this illness?
a. Galactokinase
b. Hexokinase
c. Amylo-1,6-glucosidase
d. Phosphoglucomutase
e. Galactose-1-phosphate uridyltransferase

163. Fatty of phospholipids is disordered due to fat infiltration of the liver. Indicate which of the presented substances can enhance the process of methylation during phospholipids synthesis?
a. Citrate
b. Methionine
c. Glucose
d. Ascorbic acid
e. Glycerin

164. Characteristic sign of glycogenosis is muscle pain during physical work. Blood examination reveals usually hypoglycemia. This pathology is caused by congenital deficiency of the following enzyme:
a. Lysosomal glycosidase
b. Glycogen phosphorylase
c. Alpha amylase
d. Glucose 6-phosphate dehydrogenase
e. Gamma amylase

165. An infant has apparent diarrhea resulting from improper feeding. One of the main diarrhea

effects is plentiful excretion of sodium bicarbonate. What form of acid-base balance disorder is the case?

a. Metabolic acidosis
b. Respiratory acidosis
c. No disorders of acid-base balance will be observed
d. Respiratory alkalosis
e. Metabolic alkalosis

166. Methotrexate (structural analogue of the folic acid which is competitive inhibitor of the dihydrofolatreductase) is prescribed for treatment of the malignant tumour.On which level does methotrexate inhibit synthesis of the nucleic acids?

a. Reparation
b. Processing
c. Replication
d. Transcription
e. Mononucleotide synthesis

167. RNA-polymeraseB(II) is blocked due to amanitine poisoning (poison of death-cup). It disturbes:

a. Maturation of m-RNA
b. Synthesis of m-RNA
c. Reverse transcription
d. Synthesis of t-RNA
e. Primers synthesis

168. Pain along large nervous stems and increased amount of pyruvate in the blood were revealed in the patient. Insufficiency of what vitamin can cause such change?

a. B1
b. PP
c. Biotin
d. Pantothenic acid
e. B2

169. Patient with encephalopathy was admitted to the neurological in-patient department. Correlation of increasing of encephalopathy and substances absorbed by the bloodstream from the intestines was revealed. Whatsubstances that are created in the intestines can cause endotoxemia?

a. Butyrate
b. Biotin
c. Ornithine
d. Indole
e. Acetacetate

170. Examination of a patient suffering from cancer of urinary bladder revealed high rate of serotonin and hydroxyanthranilic acid. It is caused by excess of the following amino acid in the organism:

a. Histidine
b. Alanine
c. Tryptophan
d. Methionine
e. Tyrosine

171. A mother consulted a doctor about her 5-year-old child who develops erythemas, vesicular rash and skin itch under the influence of sun. Laboratory studies revealed decreased iron concentration in the blood serum, increased uroporphyrinogen I excretion with the urine. What is the most likely inherited pathology in this child?

a. Methemoglobinemia
b. Coproporphyria
c. Intermittent porphyria
d. Erythropoietic porphyria
e. Hepatic porphyria

172. A 3 year old child with fever was given aspirin. It resulted in intensified erythrocyte haemolysis. Hemolytic anemia might have been caused by congenital insufficiency of the following enzyme:

a. Glycogen phosphorylase
b. Glucose 6-phosphatase
c. Glucose 6-phosphate dehydrogenase
d. Glycerol phosphate dehydrogenase
e. γ-glutamiltransferase

173. Blood of a 12 year old boy presents low concentration of uric acid and accumulation of xanthine and hypoxanthine. This child has genetic defect of the following enzyme:

a. Ornithine carbamoyltransferase
b. Glycerylkinase
c. Arginase
d. Urease
e. Xanthine oxidase

174. Increased amount of free fat acids is observed in the blood of the patients with diabetes mellitus. It can be caused by:

a. Activation of the synthesis of the apolipoproteins
b. Decreased activity of phosphatidylcholine-cholesterol-acyltransferase blood plasma
c. Storage of palmitatoil-CoA
d. Activation of the ketone bodies utilization
e. Increased activity of triglyceridelipase adipocytes

175. A 46-year-old female patient has a continuous history of progressive muscular (Duchennes) dystrophy. Which blood enzyme changes will be of diagnostic value in this case?

a. Adenylate cyclase
b. Creatine phosphokinase
c. Pyruvate dehydrogenase
d. Lactate dehydrogenase
e. Glutamate dehydrogenase

176. A patient is ill with diabetes mellitus that is accompanied by hyperglycemia of over 7,2 Mmol/l on an empty stomach. The level of what blood plasma protein allows to estimate the glycemia rate retrospectively (4-8 weeks before examination)?

a. C-reactive protein
b. Ceruloplasmin
c. Albumin
d. Fibrinogen
e. Glycated hemoglobin

177. In case of enterobiasis acrihine - the structural analogue of vitamin D2 - is administered. The synthesis disorder of which enzymes does this medicine cause in microorganisms?

a. Cytochromeoxidases
b. NAD-dependet dehydrogenases
c. Aminotransferases
d. FAD-dependent dehydrogenases
e. Peptidases

178. A 10-year-old girl often experiences acute respiratory infections with multiple spotty haemorrages in the places of clothes friction. Hypovitaminosis of what vitamin is present at the girl?

a. C
b. B1
c. B2
d. A
e. B6

179. Hydroxylation of endogenous substrates and xenobiotics requires a donor of protons. Which of

the following vitamins can play this role?

a. Vitamin P
b. Vitamin E
c. Vitamin A
d. Vitamin C
e. Vitamin B6

180. A 4 y.o. child with signs of durative proteinic starvation was admitted to the hospital. The signs were as follows: growth inhibition, anemia, edemata, mental deficiency. Choose a cause of edemata development:

a. Reduced synthesis of glycoproteins
b. Reduced synthesis of albumins
c. Reduced synthesis of hemoglobin
d. Reduced synthesis of globulins
e. Reduced synthesis of lipoproteins

181. Researchers isolated 5 isoenzymic forms of lactate dehydrogenase from the human blood serum and studied their properties. What property indicates that the isoenzymic forms were isolated from the same enzyme?

a. Tissue localization
b. The same electrophoretic mobility
c. The same molecular weight
d. The same physicochemical properties
e. Catalyzation of the same reaction

182. On some diseases it is observed aldosteronism with hypertension and edema due to sodium retention in the organism. What organ of the internal secretion is affected on aldosteronism?

a. Ovaries
b. Testicle
c. Adrenal glands
d. Pancreas
e. Hypophysis

183. An experiment proved that UV-radiated cells of patients with xeroderma pigmentosum restore the native DNA structure slower than cells of healthy individuals as a result of reparation enzyme defection. What enzyme helps this process?

a. DNA gyirase
b. Endonuclease
c. Primase
d. RNA ligase
e. DNA polymerase III

184. A patient with suspicion on epidemic typhus was admitted to the hospital. Some arachnids and insects have been found in his flat. Which of them may be a carrier of the pathogen of epidemic typhus?

a. Lice
b. Bed-bugs
c. Houseflies
d. Cockroaches
e. Spiders

185. Tere is observed inhibited fibrillation in the patients with bile ducts obstruction, bleeding due to low level of absorbtion of some vitamin. What vitamin is in deficit?

a. E
b. Carotene
c. A
d. D
e. K

186. A 52 year-old patient with bronchial asthma was treated with glucocorticoids. Fever reaction appeared as a result of postinjective abscess. The patient had subfebrile temperature, which didn't correspond to latitude and severity of inflammatory process. Why did patient have low fever reaction?

a. Violation of heat-producing mechanisms
b. Thermoregulation center inhibition
c. Violation of heat loss through lungs
d. Inflammatory barrier formation in injection place
e. Inhibited endogen pyrogens production

187. A 35-year-old man under the treatment for pulmonary tuberculosis has acute-onset of right big toe pain, swelling, and low-grade fever. The gouty arthritis was diagnosed and high serum uric acid level was found. Which of the following antituberculosis drugs are known for causing high uric acid levels?

a. Aminosalicylic acid
b. Pyrazinamide
c. Thiacetazone
d. Cycloserine
e. Rifampicin

188. During metabolic process active forms of the oxygen including superoxide anion radical are formed in the human body. With help of what enzyme is this anion activated?

a. Glutathionereductase
b. Superoxide dismutase
c. Peroxidase
d. Catalase
e. Glutathioneperoxidase

189. A patient presents high activity of LDH1,2, aspartate aminotransferase, creatine phosphokinase. In what organ (organs) is the development of a pathological process the most probable?

a. In connective tissue
b. In liver and kidneys
c. In skeletal muscles (dystrophy, atrophy)
d. In kidneys and adrenals
e. In the heart muscle (initial stage of myocardium infarction)

190. Buffer capacity of blood was decreased in the worker due to exhausting muscular work. Entry of what acid substance to the blood can this state be explained?

a. 1,3-bisphosphoglycerate
b. Pyruvate
c. Lactate
d. α-ketoglutarate
e. 3-phosphoglycerate

191. While examining the child the doctor revealed symmetric cheeks roughness, diarrhea, disfunction of the nervous system. Lack of what food components caused it?

a. Threonine, pantothenic acid
b. Lysine, ascorbic acid
c. Nicotinic acid, tryptophane
d. Methionine, lipoic acid
e. Phenylalanine, pangamic acid

192. A13-year-old boy complains of general weakness, dizziness, tiredness. He is mentally retarded. Increased level of valine, isoleucine, leucine is in the blood and urine. Urine has specific smell. What is the diagnosis?

a. Addisons disease
b. Histidinemia
c. Graves disease
d. Maple syrup urine disease

e. Tyrosinosis

193. A 62-year-old female patient has developed a cataract (lenticular opacity) secondary to the diabetes mellitus. What type of protein modification is observed in case of diabetic cataract?

a. ADP-ribosylation
b. Phosphorylation
c. Glycosylation
d. Methylation
e. Limited proteolysis

194. Aspirin has antiinflammatory effect due to inhibition of the cyclooxygenase activity. Level of what biological active acids will decrease?

a. Biogenic amines
b. Iodinethyronyns
c. Leucotriens
d. Catecholamines
e. Prostaglandins

195. At the aboratory experiment the eukocyte culture was mixed with staphylococci. Neutrophile leukocytes engulfed and digested bacterial cells. This processes are termed:

a. Osmosis
b. Phagocytosis
c. Diffusion
d. Pinocytosis
e. Facilitated diffusion

196. Examination of a patient revealed typical presentations of collagenosis. This pathology is characterized by increase of the following urine index:

a. Mineral salts
b. Ammonium salts
c. Arginine
d. Glucose
e. Hydroxyproline

197. Marked increase of activity of MB-forms of CPK (creatinephosphokinase) and LDH-1 were revealed on the examination of the patients blood. What is the most likely pathology?

a. Miocardial infarction
b. Rheumatism
c. Cholecystitis
d. Pancreatitis
e. Hepatitis

198. Untrained people often have muscle pain after sprints as a result of lactate accumulation. This might be caused by intensification of the following biochemical process:

a. Lipogenesis
b. Glycogenesis
c. Gluconeogenesis
d. Pentose phosphate pathway
e. Glycolysis

199. A 16-year-old boy was performed an appendectomy. He has been hospitalized for right lower quadrant abdominal pain within 18 hours. The surgical specimen is edematous and erythematous. Infiltration by what of the following cells is the most typical for the process occuring here?

a. Limphocytes
b. Monocytes
c. Eosinophils
d. Basophils
e. Neutrophils

200. ATP synthesis is totaly blocked in a cell. How will the value of membrane rest potential change?

a. It will disappear

b. It will be considerably increased

c. First it will decrease, then increase

d. First it will increase, then decrease

e. It will be slightly increased

201. The concentration of albumins in human blood sample is lower than normal. This leads to edema of tissues. What blood function is damaged?

a. Maintaining the oncotic blood pressure

b. Maintaining the body temperature

c. All answers are correct

d. Maintaining the blood sedimentation system

e. Maintaining the Ph level

202. Examination of a patient suffering from frequent haemorrhages in the inner organs and mucous membranes revealed proline and lysine being included in collagen fibers. Impairment of their hydroxylation is caused by lack of the following vitamin:

a. C

b. K

c. D

d. A

e. E

203. A 20 year old patient complains of general weakness, dizziness, quick fatigability. Blood analysis results: Hb- 80 g/l. Microscopical examination results: erythrocytes are of modified form. This condition might be caused by:

a. Addisons disease

b. Sickle-cell anemia

c. Acute intermittent porphyria

d. Hepatocellular jaundice

e. Obturative jaundice

204. A 48 year old patient complained about intense pain, slight swelling and reddening of skin over the joints, temperature rise up to 38oC. Blood analysis revealed high concentration of urates. This condition might be caused by disturbed metabolism of:

a. Carbohydrates

b. Purines

c. Cholesterol

d. Collagen

e. Pyrimidines

205. A patient has yellow skin colour, dark urine, dark-yellow feces. What substance will have strengthened concentration in the blood serum?

a. Verdoglobin

b. Biliverdin

c. Conjugated bilirubin

d. Mesobilirubin

e. Unconjugated bilirubin

206. A patient has an increased pyruvate concentration in blood. A large amount of it is excreted with the urine. What vitamin is lacking in this patient?

a. B1

b. B3

c. B2

d. B6

e. E

207. Ammonia is a very toxic substance, especially for nervous system. What substance takes the most active part in ammonia detoxication in brain tissues?

a. Histidine
b. Alanine
c. Lysine
d. Proline
e. Glutamic acid

208. A patient has pellagra. Interrogation revealed that he had lived mostly on maize for a long time and eaten little meat. This disease had been caused by the deficit of the following substance in the maize:

a. Alanine
b. Histidine
c. Tyrosine
d. Proline
e. Tryptophan

209. Increased production of thyroidal hormones T3 and T4, weight loss, tachycardia, psychic excitement and so on present on thyrotoxicosis. How do thyroidal hormones effect energy metabolism in the mitochondrion of cells?

a. Stops respiratory chain
b. Activates oxidated phosphorylation
c. Activates phosphorylation of substance
d. Stops phosphorylation of substance
e. Disconnect oxidation and oxidated phosphorylation

210. A patient with high rate of obesity was advised to use carnitine as a food additive in order to enhance "fat burning". What is the role of carnitine in the process of fat oxidation?

a. Transport of FFA from fat depots to the tissues
b. FFA activation
c. Activation of intracellular lipolysis
d. Transport of FFA (free fatty acids) from cytosol to the mitochondria
e. It takes part in one of reactions of FFA beta-oxidation

211. An experimental animal that was kept on protein-free diet developed fatty liver infiltration, in particular as a result of deficiency of methylating agents. This is caused by disturbed generation of the following metabolite:

a. DOPA
b. Acetoacetate
c. Linoleic acid
d. Choline
e. Cholesterol

212. A 46 year old woman suffering from chololithiasis developed jaundice. Her urine became dark-yellow and feces became colourless. Blood serum will have the highest concentration of the following substance:

a. Unconjugated bilirubin
b. Mesobilirubin
c. Urobilinogen
d. Conjugated bilirubin
e. Biliverdin

213. A 38 year old patient suffers from rheumatism in its active phase. What laboratory characteristic of blood serum is of diagnostic importance in case of this pathology?

a. Uric acid
b. Creatinine
c. Transferrin
d. C-reactive protein

e. Urea

214. Patient experienced increased susceptibility of the skin to the sunlight. His urine after some time became dark-red. What is the most likely cause of this?

a. Alkaptonuria

b. Porphyria

c. Albinism

d. Hemolytic jaundice

e. Pellagra

215. A patient with serious damage of muscular tissue was admitted to the traumatological department. What biochemical urine index will be increased in this case?

a. Common lipids

b. Mineral salts

c. Uric acid

d. Creatinine

e. Glucose

216. 12 hours after an accute attack of retrosternal pain a patient presented a jump of aspartate aminotransferase activity in blood serum. What pathology is this deviation typical for?

a. Diabetes insipidus

b. Myocardium infarction

c. Collagenosis

d. Viral hepatitis

e. Diabetes mellitus

217. A 30 y.o. woman had been ill for a year when she felt pain in the area of joints for the first time, they got swollen and skin above them became reddened. Provisional diagnosis is rheumatoid arthritis. One of the most probable causes of this disease is a structure alteration of a connective tissue protein:

a. Collagen

b. Myosin

c. Troponin

d. Ovoalbumin

e. Mucin

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

a. Carbonic anhydrase

b. Leucine aminopeptidase

c. Alcohol dehydrogenase

d. Ceruloplasmin

e. Xanthine oxidase

219. A patient complains about dyspnea provoked by the physical activity. Clinical examination revealed anaemia and presence of the paraprotein in the zone of gamma-globulins. To confirm the myeloma diagnosis it is necessary to determine the following index in the patient’s urine:

a. Bilirubin

b. Ceruloplasmin

c. Antitrypsin

d. Bence Jones protein

e. Haemoglobin

220. As a result of exhausting muscular work a worker has largely reduced buffer capacity of blood. What acidic substance that came to blood caused this phenomenon?

a. -

b. Lactate
c. 1,3-bisphosphoglycerate
d. Pyruvate
e. 3-phosphoglycerate

221. A 2-year-old child with mental and physical retardation has been delivered to a hospital. He presents with frequent vomiting after having meals. There is phenylpyruvic acid in urine. Which metabolism abnormality is the reason for this pathology?
a. Lipidic metabolism
b. Water-salt metabolism
c. Phosphoric calcium metabolism
d. Amino-acid metabolism
e. Carbohydrate metabolism

222. A patient was delivered to the hospital by an emergency team. Objectively: grave condition, unconscious, adynamy. Cutaneous surfaces are dry, eyes are sunken, face is cyanotic. There is tachycardia and smell of acetone from the mouth. Analysis results: blood glucose - 20,1 micromole/l (standard is 3,3-5,5 micromole/l), urine glucose - 3,5% (standard is - 0). What is the most probable diagnosis?
a. Hyperglycemic coma
b. Acute heart failure
c. Anaphylactic shock
d. Acute alcoholic intoxication
e. Hypoglycemic coma

223. Profuse foam appeared when dentist put hydrogen peroxide on the mucous of the oral cavity. What enzyme caused such activity?
a. Glucose-6-phosphatdehydrogenase
b. Methemoglobinreductase
c. Cholinesterase
d. Acetyltransferase
e. Catalase

224. A 62 y.o. woman complains of frequent pains in the area of her chest and backbone, rib fractures. A doctor assumed myelomatosis (plasmocytoma). What of the following laboratory characteristics will be of the greatest diagnostical importance?
a. Hyperalbuminemia
b. Hypoglobulinemia
c. Hypoproteinemia
d. Paraproteinemia
e. Proteinuria

225. A newborn child has convulsions that have been observed after prescription of vitamin B6. This most probable cause of this effect is that vitamin B6 is a componet of the following enzyme:
a. Glutamate decarboxylase
b. Netoglubarate dehydromine
c. Glycogen phosphorylase
d. Aminolevulinate synthase
e. Pyruvate dehydrostase

226. Pathological changes of the liver and brain were revealed in a 27-year-old patient.The copper concentration is abruptly decreased in blood plasma and increased in the urine. Wilsons disease was diagnosed. Activity of what enzyme in the blood serum should be examined to prove diagnisis?
a. Xanthioxidase
b. Carboanhydraze
c. Ceruloplasmin
d. Leucinamineopeptidaze
e. Alcoholdehydrogenaze

227. A 50-year-old patient complains about general weakness, appetite loss and cardiac arrhythmia. The patient presents with muscle hypotonia, flaccid paralyses, weakened peristaltic activity of the bowels. Such condition might be caused by:

a. Hyponatremia
b. Hypokaliemia
c. Hyperkaliemia
d. Hypoproteinemia
e. Hypophosphatemia

228. An 18-year-old patient has enlarged inguinal lymphnodes, they are painless, thickened on palpation. In the area of genital mucous membrane there is a small-sized ulcer with thickened edges and "laquer" bottom of greyish colour. What is the most probable diagnosis?

a. Trophic ulcer
b. Gonorrhea
c. Tuberculosis
d. Lepra
e. Syphilis

229. Concentration of pyruvate is increased in the patients blood, the most of which is excreted with urine. What avitaminosis is observed in the patient?

a. Avitaminosis B1
b. Avitaminosis B3
c. Avitaminosis B2
d. Avitaminosis B6
e. Avitaminosis E

230. Carnitine including drug was recomended to the sportsman for improving results. What process is activated most of all with help of carnitine?

a. Synthesis of lipids
b. Tissue respiration
c. Synthesis of steroid hormones
d. Synthesis of ketone bodies
e. Transport of fatty acids to the mitochondria

231. A patient with suspected diphtheria went through bacterioscopic examination. Examination of throat swab revealed rod-shaped bacteria with volutin granules. What etiotropic preparation should be chosen in this case?

a. Bacteriophage
b. Eubiotic
c. Interferon
d. Antidiphtheric antitoxic serum
e. Diphtheria antitoxin

232. A woman who has been keeping to a clean-rice diet for a long time was diagnosed with polyneuritis (beriberi). What vitamin deficit results in development of this disease?

a. Ascorbic acid
b. Folic acid
c. Riboflavin
d. Thiamine
e. Pyridoxine

233. Removal of gall bladder of a patient has disturbed processes of Ca absorption through the intestinal wall. What vitamin will stimulate this process?

a. PP
b. B12
c. K
d. D3
e. C

234. A 63-year-old woman developed signs of rheumatoid arthritis. Increase of which indicated blood values level could be helpful in proving diagnosis?

a. Lipoproteids
b. General cholesterol
c. R-glycosidase
d. Additive glycosaminoglycans
e. Acid phosphatase

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

a. Tyrosinosis
b. Alkaptonuria
c. Phenylketonuria
d. Albinism
e. Xanthinuria

236. A patient complains of frequent diarrheas, especially after consumption of fattening food, and of body weight loss. Laboratory examination revealed steatorrhea; hypocholic feces. What can be the cause of this condition?

a. Lack of pancreatic phospholipase
b. Unbalanced diet
c. Mucous membrane inflammation of small intestine
d. Lack of pancreatic lipase
e. Obturation of biliary tracts

237. On the empty stomach in the patients blood glucose level was 5,65 mmol/L, in an hour after usage of sugar it was 8,55 mmol/L, in a 2 hours - 4,95 mmol/L. Such indicators are typical for:

a. Patient with tireotoxicosis
b. Healthy person
c. Patient with insulin-dependent diabetes mellitus
d. Patient with hidden diabetes mellitus
e. Patient with non-insulin dependent diabetes mellitus

238. A 65-year-old suffering from the gout man complains of the pain in the kidneys region. On ultrasonic examination the renal calculi were revealed. As a result of what process were they formed?

a. Ornithine cycle
b. Protein catabolism
c. Decay of purine nucleotides
d. Heme decay
e. Restoration of cysteine

239. The greater amount of nitrogen is excreted from the organism in form of urea. Inhibition of urea synthesis and accumulation of ammonia in blood and tissues are induced by the decreased activity of the following liver enzyme:

a. Carbamoyl phosphate synthetase
b. Urease
c. Pepsin
d. Amylase
e. Aspartate aminotransferase

240. After intake of rich food a patient feels nausea and sluggishness; with time there appeared signs of steatorrhea. Blood cholesterine concentration is 9,2 micromole/l. This condition was caused by lack of:

a. Phospholipids
b. Chylomicrons
c. Triglycerides

d. Fatty acids

e. Bile acids

241. Examination of a man who hadnt been consuming fats but had been getting enough carbohydrates and proteins for a long time revealed dermatitis, poor wound healing, vision impairment. What is the probable cause of metabolic disorder?

a. Lack of oleic acid

b. Lack of linoleic acid, vitamins A, D, E, K

c. Lack of vitamins PP, H

d. Lack of palmitic acid

e. Low caloric value of diet

242. A 44-year-old woman complains of common weakness, heart pain, considerable increase of body weigt. Objectively: moon-like face, hirsutism, AP- 165/100 mm Hg, height - 164 cm, weight - 103 kg; fat is mostly accumulated in the region of neck, upper shoulder girdle, stomach. What is the main pathogenetic mechanism of obesity?

a. Decreased production of glucagon

b. Increased production of mineralocorticoids

c. Decreased production of thyroidal hormones

d. Increased production of insulin

e. Increased production of glucocorticoids

243. An experimental animal has been given excessive amount of carbon-labeled glucose for a week. What compound can the label be found in?

a. Choline

b. Arachidonic acid

c. Methionine

d. Vitamin A

e. Palmitic acid

244. After a serious viral infection a 3-year-old child has repeated vomiting, loss of consciousness, convulsions. Examination revealed hyperammoniemia. What may have caused changes of biochemical blood indices of this child?

a. Increased purtefaction of proteins in intestines

b. Inhibited activity of transamination enzymes

c. Activated processes of aminoacids decarboxylation

d. Disorder of biogenic amines neutralization

e. Disorder of ammonia neutralization in ornithinic cycle

245. Examination of a patient with frequent hemorrhages from internals and mucous membranes revealed proline and lysine being a part of collagene fibers. What vitamin absence caused disturbance of their hydroxylation?

a. Vitamin K

b. Thiamine

c. Vitamin E

d. Vitamin C

e. Vitamin A

246. A 36-year-old female patient has a history of collagen disease. Urine analysis is likely to reveal an increased concentration of the following metabolite:

a. Urea

b. Urobilinogen

c. Indican

d. Creatinine

e. Oxyproline

247. Albinos cant stand sun impact - they dont aquire sun-tan but get sunburns. Disturbed metabolism of what aminoacid underlies this phenomenon?

a. Tryptophan
b. Methionine
c. Phenilalanine
d. Glutamic acid
e. Histidine

248. A patient with continious bronchopneumonia was admitted to the therapeutic department. Antibiotic therapy didnt give much effect. What medication for improvement of immune state should be added to the complex treatment of this patient?
a. Sulfocamphocaine
b. Analgin
c. Timaline
d. Benadryl
e. Paracetamol

249. Products of some proteins hydrolysis and modification are the biologically active substances called hormones. Lipotropin, corticotropin, melanotropin and endorphins are synthesized in the hypophysis of the following protein:
a. Neuroglobulin
b. Thyreoglobulin
c. Neuroalbumin
d. Neurostromin
e. Proopiomelanocortin (POMC)

250. In patients with the biliary tract obstruction the blood coagulation is inhibited; the patients have frequent haemorrhages caused by the subnormal assimilation of the following vitamin:
a. D
b. A
c. K
d. E
e. C

251. The study of the genealogy of a family with hypertrichosis (helix excessive pilosis) has demonstrated that this symptom is manifested in all generations only in men and is inherited by son from his father. What is the type of hypertrichosis inheritance?
a. Autosome-recessive
b. X-linked recessive chromosome
c. X-linked dominant chromosome
d. Y-linked chromosome
e. Autosome-dominant

252. A newborn child suffers from milk curdling in stomach, this means that soluble milk proteins (caseins) transform to insoluble proteins (paracaseins) by means of calcium ions and a certain enzyme. What enzyme takes part in this process?
a. Pepsin
b. Secretin
c. Lipase
d. Renin
e. Gastrin

253. The penetration of the irritable cell membrane for potassium ions has been increased during an experiment. What changes of membrane electric status can occur?
a. Action potential
b. Depolarization
c. Hyperpolarization
d. Local response
e. No changes

254. A sportsman was recommended to take a medication that contains carnitine in order to improve his results. What process is activated by carnitine the most?

a. Tissue respiration
b. Fatty acids transport to mitochondrions
c. Synthesis of ketone bodies
d. Synthesis of steroid hormones
e. Synyhesis of lipids

255. To prevent postoperative bleeding a 6 y.o. child was administered vicasol that is a synthetic analogue of vitamin K. Name post-translational changes of blood coagulation factors that will be activated by vicasol:

a. Phosphorylation of serine radicals
b. Polymerization
c. Glycosylation
d. Carboxylation of glutamin acid
e. Partial proteolysis

256. A 4 y.o. boy has had recently serious viral hepatitis. Now there are such clinical presentations as vomiting, loss of consciousness, convulsions. Blood analysis revealed hyperammoniemia. Disturbunce of which biochemical process caused such pathological condition of the patient?

a. Increased putrefaction of proteins in bowels
b. Disturbed neutralization of biogenic amines
c. Disturbed neutralization of ammonia in liver
d. Activation of aminoacid decarboxylation
e. Inhibition of transamination enzyms

257. During examination of an 11-month-old infant a pediatrician revealed osteoectasia of the lower extremities and delayed mineralization of cranial bones. Such pathology is usually provoked by the deficit of the following vitamin:

a. Riboflavin
b. Cholecalciferol
c. Pantothenic acid
d. Thiamin
e. Bioflavonoids

258. Examination of a patient suffering from chronic hepatitis revealed a significant decrease in the synthesis and secretion of bile acids. What process will be mainly disturbed in the patient’s bowels?

a. Carbohydrate digestion
b. Protein digestion
c. Fat emulsification
d. Glycerin absorption
e. Amino acid absorption

259. The energy inputs of a healthy man have been measured. In what position was the patient if his energy inputs were less than the main exchange?

a. Calmness
b. Sleep
c. Easy work
d. Rest
e. Nervous exertion

260. Glutamate decarboxylation results in formation of inhibitory transmitter in CNS. Name it:

a. Asparagine
b. GABA
c. Histamine
d. Glutathione
e. Serotonin

261. In course of histidine catabolism a biogenic amin is formed that has powerful vasodilatating effect. Name it:

a. Noradrenalin
b. Dopamine
c. Serotonin
d. Dioxyphenylalanine
e. Histamine

262. Utilization of arachidonic acid via cyclooxigenase pathway results in formation of some bioactive substances. Name them:

a. Prostaglandins
b. Biogenic amins
c. Insulin-like growth factors
d. Somatomedins
e. Thyroxine

263. After a sprint an untrained person develops muscle hypoxia. This leads to the accumulation of the following metabolite in muscles:

a. Oxaloacetate
b. Lactate
c. Acetyl CoA
d. Ketone bodies
e. Glucose 6-phosphate

264. Myocyte cytoplasm contains a big number of dissolved metabolites of glucose oxidation. Name one of them that turns directly into a lactate:

a. Glucose 6-phosphate
b. Fructose 6-phosphate
c. Oxaloacetate
d. Glycerophosphate
e. Pyruvate

265. Emotional stress causes activation of hormon-sensitive triglyceride lipase in the adipocytes. What secondary mediator takes part in this process?

a. Diacylglycerol
b. Ions of Ca2+
c. Cyclic guanosine monophosphate
d. Adenosine monophosphate
e. Cyclic adenosine monophosphate

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

a. Phenylalanine hydroxylase
b. Pyruvate dehydrogenase
c. Dioxyphenylalanine decarboxylase
d. Homogentisic acid oxidase
e. Glutamate dehydrogenase

267. A patient diagnosed with carcinoid of bowels was admitted to the hospital. Analysis revealed high production of serotonin. It is known that this substance is formed of tryptophane aminooacid. What biochemical mechanism underlies this process?

a. Transamination
b. Formation of paired compounds
c. Desamination
d. Microsomal oxydation
e. Decarboxylation

268. A genetics specialist analyzed the genealogy of a family and found that both males and females

may have the illness, not across all the generations, and that healthy parents may have ill children. What is the type of illness inheritance?

a. Autosomal recessive
b. X-linked dominant
c. Y-linked
d. X-linked recessive
e. Autosomal dominant

269. Vitamin B1 deficiency results in disturbance of oxidative decarboxylation of ?-ketoglutaric acid. This will disturb synthesis of the following coenzyme:

a. Lipoic acid
b. Coenzyme A
c. Nicotinamide adenine dinucleotide (NAD)
d. Flavine adenine dinucleotide (FAD)
e. Thiamine pyrophosphate

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

a. Lactosemia
b. Diabetes mellitus
c. Galactosemia
d. Steroid diabetes
e. Fructosemia

271. According to clinical indications a patient was administered pyridoxal phosphate. What processes is this medication intended to correct?

a. Protein synthesis
b. Transamination and decarboxylation of aminoacids
c. Desamination of purine nucleotide
d. Oxidative decarboxylation of ketonic acids
e. Synthesis of purine and pyrimidine bases

272. A 45 y.o. woman suffers from Cushings syndrome - steroid diabetes. Biochemical examination revealed: hyperglycemia, hypochloremia. Which of the under-mentioned processes is the first to be activated?

a. Glycogenolysis
b. Glucose transport to the cell
c. Glycolysis
d. Gluconeogenesis
e. Glucose reabsorption

273. Autopsy of a 46-year-old man revealed multiple brown-and-green layers and hemmorhages on the mucous membrane of rectum and sigmoid colon; slime and some blood in colon lumen; histologically - fibrinous colitis. In course of bacteriological analysis of colon contents S.Sonne were found. What is the most probable diagnosis?

a. Yersiniosis
b. Crohns disease
c. Cholera
d. Salmonellosis
e. Dysentery

274. A patient had been ill with bronchial asthma for many years and died from asthmatic fit. Histologic lung examination revealed: lumen of bronchioles and small bronches contain a lot of mucus with some eosinophils, there is sclerosis of alveolar septums, dilatation of alveole lumen. What mechanism of development of hypersensibility reaction took place?

a. Cytolysis determined by lymphocytes
b. Granulomatosis
c. Cytotoxic reaction

d. Immunocomplex reaction
e. Reagin reaction

275. Desulfiram is widely used in medical practice to prevent alcocholism. It inhibits aldehyde dehydrogenase. Increased level of what metabolite causes aversion to alcochol?
a. Methanol
b. Acetaldehyde
c. Malonyl aldehyde
d. Ethanol
e. Propionic aldehyde

276. The patient with complaints of permanent thirst applied to the doctor. Hyperglycemia, polyuria and increased concentration of 17-ketosteroids in the urine were revealed. What disease is the most likely?
a. Type I glycogenosis
b. Addisons disease
c. Insulin-dependent diabetes mellitus
d. Myxoedema
e. Steroid diabetes

277. Index of pH of the blood changed and became 7,3 in the patient with diabetus mellitus. Detecting of the components of what buffer system is used while diagnosing disorder of the acid-base equilibrium?
a. Protein
b. Bicarbonate
c. Hemoglobin
d. Phosphate
e. Oxyhemoglobin

278. As a result of posttranslative modifications some proteins taking part in blood coagulation, particularly prothrombin, become capable of calcium binding. The following vitamin takes part in this process:
a. B2
b. K
c. A
d. C
e. B1

279. Objective examination of a patient revealed: slender figure, big skull, highly developed frontal region of face, short extremities. What constitutional type is it characteristic for?
a. Mixed
b. Respiratory
c. Digestive
d. Muscular
e. Cerebral

280. Diabetes mellitus causes ketosis as a result of activated oxidation of fatty acids. What disorders of acid-base equilibrium may be caused by excessive accumulation of ketone bodies in blood?
a. Respiratory acidosis
b. Respiratory alcalosis
c. Metabolic alcalosis
d. Any changes wount happen
e. Metabolic acidosis

281. A woman with 0 (I) bllod group has born a child with AB blood group. This womans husband has A blood group. What genetic interaction explains this phenomenon?
a. Codominance
b. Incomplete dominance

c. Complementation
d. Recessive epistasis
e. Polymery

282. Depressions and emotional insanities result from the deficit of noradrenalin, serotonin and other biogenic amines in the brain. Their concentration in the synapses can be increased by means of the antidepressants that inhibit the following enzyme:
a. Phenylalanine-4-monooxygenase
b. Monoamine oxidase
c. L-amino-acid oxidase
d. Diamine oxidase
e. D-amino-acid oxidase

283. A 3 year old child with symptoms of stomatitis, gingivitis and dermatitis of open skin areas was delivered to a hospital. Examination revealed inherited disturbance of neutral amino acid transporting in the bowels. These symptoms were caused by the deficiency of the following vitamin:
a. Vitamin A
b. Pantothenic acid
c. Niacin
d. Cobalamin
e. Biotin

284. A patient with suspected diagnosis "progressing muscular dystrophy" got his urine tested. What compound will confirm this diagnosis if found in urine?
a. Myoglobin
b. Calmodulin
c. Collagen
d. Porphyrin
e. Kreatine

285. A patient complained about dizziness, memory impairment, periodical convulsions. It was revealed that these changes were caused by a product of decarboxylation of glutamic acid. Name this product:
a. TDP
b. Pyridoxal phosphate
c. GABA
d. ATP
e. THFA

286. A sportsman needs to improve his sporting results. He was recommended to take a preparation that contains carnitine. What process is activated the most by this compound?
a. Vitamin K transporting
b. Fatty acids transporting
c. Calcium ions transporting
d. Amino acids transporting
e. Glucose transporting

287. A doctor examined a child and revealed symptoms of rachitis. Development of this desease was caused by deficiency of the following compound:
a. Naphtaquinone
b. Retinol
c. Biotin
d. Tocopherol
e. 1,25 [OH]-dichydroxycholecalciferol

288. Laboratory examination of a child revealed increased concentration of leucine, valine, isoleucine and their ketoderivatives in blood and urine. Urine smelt of maple syrup. This disease is characterized by the deficit of the following enzyme:

a. Phosphofructokinase
b. Phosphofructomutase
c. Aminotransferase
d. Glucose-6-phosphatase
e. Dehydrogenase of branched amino acids

289. It was found out that some compounds, for instance fungi toxins and some antibiotics can inhibit activity of RNA-polymerase. What process will be disturbed in a cell in case of inhibition of this enzyme?
a. Transcription
b. Replication
c. Reparation
d. Translation
e. Processing

290. When blood circulation in the damaged tissue is restored, then lactate accumulation comes to a stop and glucose consumption decelerates. These metabolic changes are caused by activation of the following process:
a. Anaerobic glycolysis
b. Gluconeogenesis
c. Glycogen biosynthesis
d. Aerobic glycolysis
e. Lipolysis

291. During starvation muscle proteins break up into free amino acids. These compounds will be the most probably involved into the following process:
a. Gluconeogenesis in liver
b. Synthesis of higher fatty acids
c. Decarboxylation
d. Glycogenolysis
e. Gluconeogenesis in muscles

292. Surgical removal of a part of stomach resulted in disturbed absorption of vitamin B12, it is excreted with feces. The patient was diagnosed with anemia. What factor is necessary for absorption of this vitamin?
a. Hydrochloric acid
b. Gastrin
c. Gastromucoprotein
d. Pepsin
e. Folic acid

293. A newborn develops dyspepsia after the milk feeding. When the milk is substituted by the glucose solution the dyspepsia symptoms disappear. The newborn has the subnormal activity of the following enzyme:
a. Isomaltase
b. Lactase
c. Maltase
d. Invertase
e. Amylase

294. Patients who suffer from severe diabetes and dont receive insulin have metabolic acidosis. This is caused by increased concentration of the following metabolites:
a. Unsaturated fatty acids
b. Fatty acids
c. Ketone bodies
d. Triacylglycerols
e. Cholesterol

295. In clinical practice tuberculosis is treated with izoniazid preparation - that is an antivitamin able to penetrate into the tuberculosis bacillus. Tuberculostatic effect is induced by the interference with replication processes and oxidation-reduction reactions due to the buildup of pseudo-coenzyme:

a. FMN
b. FAD
c. NAD
d. TDP
e. CoQ

296. A male patient has been diagnosed with acute radiation disease. Laboratory examination revealed a considerable reduction of platelet serotonin level. The likely cause of platelet serotonin reduction is the disturbed metabolism of the following substance:

a. Tyrosine
b. Phenylalanine
c. Serine
d. 5-oxytryptofane
e. Histidine

297. Dietary intake of a 30 year old nursing woman contains 1000 mg of calcium, 1300 mg of phosphorus and 20 mg of iron per day. It is necessary to change content of these mineral substances in the following way:

a. To increase iron content
b. To reduce iron content
c. To increase calcium content
d. To reduce fluorine content
e. To increase phosphorus content

298. Cardinal symptoms of primary hyperparathyroidism are osteoporosis and renal lesion along with development of urolithiasis. What substance makes up the basis of these calculi in this disease?

a. Bilirubin
b. Cholesterol
c. Uric acid
d. Cystine
e. Calcium phosphate

299. Study of conversion of a food colouring agent revealed that neutralization of this xenobiotic takes place only in one phase - microsomal oxydation. Name a component of this phase:

a. Cytochrome p-450
b. Cytochrome C
c. Cytochrome oxidase
d. Cytochrome A
e. Cytochrome B

300. A 49-year-old driver complains about unbearable constricting pain behind the breastbone irradiating to the neck. The pain arose 2 hours ago. Objectively: the patient’s condition is grave, he is pale, heart tones are decreased. Laboratory studies revealed high activity of creatine kinase and LDH1. What disease are these symptoms typical for?

a. Acute pancreatitis
b. Cholelithiasis
c. Diabetes mellitus
d. Acute myocardial infarction
e. Stenocardia

301. Plasmic factors of blood coagulation are exposed to post-translational modification with the participation of vitamin K. It is necessary as a cofactor in the enzyme system of γ-carboxylation of protein factors of blood coagulation due to the increased affinity of their molecules with calcium ions. What amino acid is carboxylated in these proteins?

a. Glutamic

b. Serine
c. Arginine
d. Phenylalanine
e. Valine

302. Pharmacological effects of antidepressants are connected with inhibition of an enzyme catalyzing biogenic amines noradrenaline and serotonine in the mitochondrions of cerebral neurons. What enzyme participates in this process?
a. Monoamine oxidase
b. Decarboxylase
c. Lyase
d. Peptidase
e. Transaminase

303. An oncological patient was prescribed methotrexate. With the lapse of time target cells of the tumour lost susceptibility to this drug. There is change of gene expression of the folowing enzyme:
a. Dehydrofolate reductase
b. Deaminase
c. Folate decarboxylase
d. Folate oxidase
e. Thiaminase

304. After consumption of rich food a patient has nausea and heartburn, steatorrhea. This condition might be caused by:
a. Bile acid deficiency
b. Disturbed tripsin synthesis
c. Disturbed phospholipase synthesis
d. Amylase deficiency
e. Increased lipase secretion

305. Galactosemia is revealed in the child. Concentration of glucose in the blood is not considerably changed. Deficiency of what enzyme caused this illness?
a. Galactose-1-phosphate uridyltransferase
b. Phosphoglucomutase
c. Hexokinase
d. Galactokinase
e. Amylo-1,6-glucosidase

306. Methotrexate (structural analogue of the folic acid which is competitive inhibitor of the dihydrofolatreductase) is prescribed for treatment of the malignant tumour. On which level does methotrexate inhibit synthesis of the nucleic acids?
a. Processing
b. Mononucleotide synthesis
c. Transcription
d. Replication
e. Reparation

307. RNA-polymeraseB(II) is blocked due to amanitine poisoning (poison of death-cup). It disturbes:
a. Synthesis of m-RNA
b. Reverse transcription
c. Maturation of m-RNA
d. Primers synthesis
e. Synthesis of t-RNA

308. Pain along large nervous stems and increased amount of pyruvate in the blood were revealed in the patient. Insufficiency of what vitamin can cause such change?
a. Pantothenic acid
b. Biotin

c. B2
d. PP
e. B1

309. Patient with encephalopathy was admitted to the neurological in-patient department. Correlation of increasing of encephalopathy and substances absorbed by the bloodstream from the intestines was revealed. What substances that are created in the intestines can cause endotoxemia?
a. Indole
b. Acetacetate
c. Ornithine
d. Biotin
e. Butyrate

310. Examination of a patient suffering from cancer of urinary bladder revealed high rate of serotonin and hydroxyanthranilic acid. It is caused by excess of the following amino acid in the organism:
a. Tyrosine
b. Tryptophan
c. Histidine
d. Alanine
e. Methionine

311. A 3 year old child with fever was given aspirin. It resulted in intensified erythrocyte haemolysis. Hemolytic anemia might have been caused by congenital insufficiency of the following enzyme:
a. Glycogen phosphorylase
b. Glucose 6-phosphatase
c. Glucose 6-phosphate dehydrogenase
d. Glycerol phosphate dehydrogenase
e. 1-glutamiltransferase

312. Blood of a 12 year old boy presents low concentration of uric acid and accumulation of xanthine and hypoxanthine. This child has genetic defect of the following enzyme:
a. Xanthine oxidase
b. Urease
c. Glycerylkinase
d. Ornithine carbamoyltransferase
e. Arginase

313. A 46-year-old female patient has a continuous history of progressive muscular (Duchennes) dystrophy. Which blood enzyme changes will be of diagnostic value in this case?
a. Pyruvate dehydrogenase
b. Lactate dehydrogenase
c. Creatine phosphokinase
d. Glutamate dehydrogenase
e. Adenylate cyclase

314. In case of enterobiasis acrihine - the structural analogue of vitamin B2 - is administered. The synthesis disorder of which enzymes does this medicine cause in microorganisms?
a. Aminotransferases
b. FAD-dependent dehydrogenases
c. Peptidases
d. Cytochromeoxidases
e. NAD-dependet dehydrogenases

315. A 10-year-old girl often experiences acute respiratory infections with multiple spotty haemorrages in the places of clothes friction. Hypovitaminosis of what vitamin is present at the girl?
a. B2
b. C
c. B1

d. B6
e. A

316. Hydroxylation of endogenous substrates and xenobiotics requires a donor of protons. Which of the following vitamins can play this role?
a. Vitamin C
b. Vitamin B6
c. Vitamin A
d. Vitamin E
e. Vitamin P

317. A 4 y.o. child with signs of durative proteinic starvation was admitted to the hospital. The signs were as follows: growth inhibition, anemia, edemata, mental deficiency. Choose a cause of edemata development:
a. Reduced synthesis of globulins
b. Reduced synthesis of lipoproteins
c. Reduced synthesis of glycoproteins
d. Reduced synthesis of albumins
e. Reduced synthesis of hemoglobin

318. Researchers isolated 5 isoenzymic forms of lactate dehydrogenase from the human blood serum and studied their properties. What property indicates that the isoenzymic forms were isolated from the same enzyme?
a. The same molecular weight
b. Tissue localization
c. The same electrophoretic mobility
d. Catalyzation of the same reaction
e. The same physicochemical properties

319. On some diseases it is observed aldosteronism with hypertension and edema due to sodium retention in the organism. What organ of the internal secretion is affected on aldosteronism?
a. Hypophysis
b. Adrenal glands
c. Ovaries
d. Testicle
e. Pancreas

320. An experiment proved that UV-radiated cells of patients with xeroderma pigmentosum restore the native DNA structure slower than cells of healthy individuals as a result of reparation enzyme defection. What enzyme helps this process?
a. Primase
b. RNA ligase
c. Endonuclease
d. DNA polymerase III
e. DNA gyirase

321. A patient with suspicion on epidemic typhus was admitted to the hospital. Some arachnids and insects have been found in his flat. Which of them may be a carrier of the pathogen of epidemic typhus?
a. Bed-bugs
b. Spiders
c. Lice
d. Cockroaches
e. Houseflies

322. A businessman came to India from South America. On examination the physician found that the patient was suffering from sleeping-sickness. What was the way of invasion?
a. As a result of bugs bites

b. With contaminated fruits and vegetables
c. After contact with a sick dogs
d. Through dirty hands
e. As a result of mosquitos bites

323. Tere is observed inhibited fibrillation in the patients with bile ducts obstruction, bleeding due to low level of absorbtion of some vitamin. What vitamin is in deficit?

a. K
b. D
c. Carotene
d. E
e. A

324. A 52 year-old patient with bronchial asthma was treated with glucocorticoids. Fever reaction appeared as a result of postinjective abscess. The patient had subfebrile temperature, which didn't correspond to latitude and severity of inflammatory process. Why did patient have low fever reaction?

a. Violation of heat loss through lungs
b. Violation of heat-producing mechanisms
c. Thermoregulation center inhibition
d. Inhibited endogen pyrogens production
e. Inflammatory barrier formation in injection place

325. A 35-year-old man under the treatment for pulmonary tuberculosis has acute-onset of right big toe pain, swelling, and low-grade fever. The gouty arthritis was diagnosed and high serum uric acid level was found. Which of the following antituberculosis drugs are known for causing high uric acid levels?

a. Thiacetazone
b. Cycloserine
c. Pyrazinamide
d. Rifampicin
e. Aminosalicylic acid

326. A patient presents high activity of LDH1,2, aspartate aminotransferase, creatine phosphokinase. In what organ (organs) is the development of a pathological process the most probable?

a. In liver and kidneys
b. In the heart muscle (initial stage of myocardium infarction)
c. In kidneys and adrenals
d. In skeletal muscles (dystrophy, atrophy)
e. In connective tissue

327. Buffer capacity of blood was decreased in the worker due to exhausting muscular work. Entry of what acid substance to the blood can this state be explained?

a. 1,3-bisphosphoglycerate
b. Pyruvate
c. Lactate
d. ?-ketoglutarate
e. 3-phosphoglycerate

328. While examining the child the doctor revealed symmetric cheeks roughness, diarrhea, disfunction of the nervous system. Lack of what food components caused it?

a. Phenylalanine, pangamic acid
b. Nicotinic acid, tryptophane
c. Threonine, pantothenic acid
d. Lysine, ascorbic acid
e. Methionine, lipoic acid

329. Increased breaking of vessels, enamel and dentine destruction in scurvy patients are caused by disorder of collagen maturing. What stage of modification of procollagen is disordered in this

avitaminosis?

a. Glycosylation of hydroxylysine residues
b. Formation of polypeptide chains
c. Hydroxylation of proline
d. Removal of C-ended peptide from procollagen
e. Detaching of N-ended peptide

330. A 62-year-old female patient has developed a cataract (lenticular opacity) secondary to the diabetes mellitus. What type of protein modification is observed in case of diabetic cataract?

a. Glycosylation
b. ADP-ribosylation
c. Limited proteolysis
d. Methylation
e. Phosphorylation

331. Aspirin has antiinflammatory effect due to inhibition of the cyclooxygenase activity. Level of what biological active acids will decrease?

a. Catecholamines
b. Leucotriens
c. Prostaglandins
d. Biogenic amines
e. Iodinethyronyns

332. At the laboratory experiment the leukocyte culture was mixed with staphylococci. Neutrophile leukocytes engulfed and digested bacterial cells. This processes are termed:

a. Diffusion
b. Pinocytosis
c. Phagocytosis
d. Facilitated diffusion
e. Osmosis

333. Examination of a patient revealed typical presentations of collagenosis. This pathology is characterized by increase of the following urine index:

a. Arginine
b. Mineral salts
c. Ammonium salts
d. Hydroxyproline
e. Glucose

334. Marked increase of activity of MB-forms of CPK (creatinephosphokinase) and LDH-1 were revealed on the examination of the patients blood. What is the most likely pathology?

a. Hepatitis
b. Pancreatitis
c. Cholecystitis
d. Miocardial infarction
e. Rheumatism

335. Untrained people often have muscle pain after sprints as a result of lactate accumulation. This might be caused by intensification of the following biochemical process:

a. Glycolysis
b. Pentose phosphate pathway
c. Glycogenesis
d. Lipogenesis
e. Gluconeogenesis

336. A 16-year-old boy was performed an appendectomy. He has been hospitalized for right lower quadrant abdominal pain within 18 hours. The surgical specimen is oedematous and erythematous. Infiltration by what of the following cells is the most typical for the process occuring here?

a. Neutrophils
b. Basophils
c. Monocytes
d. Limphocytes
e. Eosinophils

337. The concentration of albumins in human blood sample is lower than normal. This leads to oedema of tissues. What blood function is damaged?
a. Maintaining the blood sedimentation system
b. All answers are correct
c. Maintaining the Ph level
d. Maintaining the body temperature
e. Maintaining the oncotic blood pressure

338. Examination of a patient suffering from frequent haemorrhages in the inner organs and mucous membranes revealed proline and lysine being included in collagen fibers. Impairment of their hydroxylation is caused by lack of the following vitamin:
a. A
b. D
c. E
d. K
e. C

339. A 48 year old patient complained about intense pain, slight swelling and reddening of skin over the joints, temperature rise up to 38 degrees. Blood analysis revealed high concentration of urates. This condition might be caused by disturbed metabolism of:
a. Cholesterol
b. Collagen
c. Purines
d. Pyrimidines
e. Carbohydrates

340. A patient with high rate of obesity was advised to use carnitine as a food additive in order to enhance "fat burning". What is the role of carnitine in the process of fat oxidation?
a. Transport of FFA (free fatty acids) from cytosol to the mitochondria
b. It takes part in one of reactions of FFA beta-oxidation
c. Activation of intracellular lipolysis
d. FFA activation
e. Transport of FFA from fat depots to the tissues

341. An experimantal animal that was kept on protein-free diet developed fatty liver infiltration, in particular as a result of deficiency of methylating agents. This is caused by disturbed generation of the following metabolite:
a. Acetoacetate
b. Linoleic acid
c. DOPA
d. Cholesterol
e. Choline

342. A patient consulted a doctor about symmetric dermatitis of open skin areas. It was found out that the patient lived mostly on cereals and ate too little meat, milk and eggs. What vitamin deficiency is the most evident?
a. Biotin
b. Tocopherol
c. Calciferol
d. Folic acid
e. Nicotinamide

343. A 46 year old woman suffering from chololithiasis developed jaundice. Her urine became dark-yellow and feces became colourless. Blood serum will have the highest concentration of the following substance:

a. Mesobilirubin
b. Urobilinogen
c. Unconjugated bilirubin
d. Biliverdin
e. Conjugated bilirubin

344. A 46 year old patient applied to a doctor complaining about joint pain that becomes stronger the day before weather changes. Blood examination revealed strengthened concentration of uric acid. The most probable cause of the disease is the intensified disintegration of the following substance:

a. Cytidine monophosphate
b. Uridine monophosphate
c. Thymidine monophosphate
d. Adenosine monophosphate
e. Uridine triphosphate

345. A 42-year man suffering from gout has increased level of urinary acid in the blood. Allopurinol was prescribed to decrease the level of urinary acid. Competitive inhibitor of what enzyme is allopurinol?

a. Xanthinoxidase
b. Adeninephosphoribosiltransferase
c. Guaninedeaminase
d. Hypoxantinphosphoribosiltransferase
e. Adenosinedeaminase

346. Patient experienced increased susceptibility of the skin to the sunlight. His urine after some time became dark-red. What is the most likely cause of this?

a. Hemolytic jaundice
b. Pellagra
c. Alkaptonuria
d. Porphyria
e. Albinism

347. 12 hours after an accute attack of retrosternal pain a patient presented a jump of aspartate aminotransferase activity in blood serum. What pathology is this deviation typical for?

a. Diabetes mellitus
b. Diabetes insipidus
c. Viral hepatitis
d. Collagenosis
e. Myocardium infarction

348. A 30 y.o. woman had been ill for a year when she felt pain in the area of joints for the first time, they got swollen and skin above them became reddened. Provisional diagnosis is rheumatoid arthritis. One of the most probable causes of this disease is a structure alteration of a connective tissue protein:

a. Ovoalbumin
b. Troponin
c. Mucin
d. Myosin
e. Collagen

349. Autopsy of a 12-year-old girl revealed: multiple cutaneous hemmorhages (mostly into the skin of buttocks, lower extremities), serous and mucous memrane hemmorhages, cerebral hemmorhages. Adrenal glands show focal necrosis and massive hemmorhages; kidneys show necrotic nephrosis, suppurative arthritis, iridocyclitis, vasculitis. What is the most probable diagnosis?

a. Epidemic typhus

b. Systemic lupus erythematosus
c. Radiation sickness
d. Meningococcemia
e. Periarteritis nodosa

350. Examination of a 27-year-old patient revealed pathological changes in liver and brain. Blood plasma analysis revealed an abrupt decrease in the copper concentration, urine analysis revealed an increased copper concentration. The patient was diagnosed with Wilsons degeneration. To confirm the diagnosis it is necessary to study the activity of the following enzyme in blood serum:
a. Alcohol dehydrogenase
b. Ceruloplasmin
c. Xanthine oxidase
d. Carbonic anhydrase
e. Leucine aminopeptidase

351. Examination of a child who has not 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?
a. Calciferol and ascorbic acid
b. Ascorbic acid and rutin
c. Folic acid and cobalamin
d. Thiamine and pyridoxine
e. Riboflavin and nicotinamide

352. A 2-year-old child with mental and physical retardation has been delivered to a hospital. He presents with frequent vomiting after having meals. There is phenylpyruvic acid in urine. Which metabolism abnormality is the reason for this pathology?
a. Phosphoric calcium metabolism
b. Amino-acid metabolism
c. Carbohydrate metabolism
d. Lipidic metabolism
e. Water-salt metabolism

353. Nappies of a newborn have dark spots that witness of formation of homogentisic acid. Metabolic imbalance of which substance is it connected with?
a. Thyrosine
b. Methionine
c. Tryptophane
d. Cholesterine
e. Galactose

354. Parodontitis is treated with calcium preparations and a hormone that stimulates tooth mineralization and inhibits tissue resorption. What hormone is it?
a. Aldosterone
b. Thyroxine
c. Parathormone
d. Adrenalin
e. Calcitonin

355. A child has an acute renal failure. What biochemical factor found in saliva can confirm this diagnosis?
a. Increase in urea concentration
b. Decrease in glucose concentration
c. Decrease in nucleic acid concentration
d. Increase in concentration of higher fatty acids
e. Increase in glucose concentration

356. 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?
a. Haptoglobin
b. Creatin
c. Ceruloplasmin
d. Prothrombin
e. Heparin

357. After severe viral hepatitis a 4 year old boy presents with vommiting, occasional loss of consciousness, convulsions. Blood test revealed hyperammoniemia. Such condition is caused by a disorder of the following biochemical hepatic process:
a. Disorder of biogenic amines neutralization
b. Activation of amino acid decarboxylation
c. Inhibition of transamination enzymes
d. Disorder of ammonia neutralization
e. Protein synthesis inhibition

358. A 50-year-old patient complains about general weakness, appetite loss and cardiac arrhythmia. The patient presents with muscle hypotonia, flaccid paralyses, weakened peristaltic activity of the bowels. Such condition might be caused by:
a. Hypokaliemia
b. Hyperkaliemia
c. Hyponatremia
d. Hypophosphatemia
e. Hypoproteinemia

359. An 18-year-old patient has enlarged inguinal lymphnodes, they are painless, thickened on palpation. In the area of genital mucous membrane there is a small-sized ulcer with thickened edges and "laquer" bottom of greyish colour. What is the most probable diagnosis?
a. Lepra
b. Tuberculosis
c. Syphilis
d. Trophic ulcer
e. Gonorrhea

360. Concentration of pyruvate is increased in the patients blood, the most of which is excreted with urine. What avitaminosis is observed in the patient?
a. Avitaminosis E
b. Avitaminosis B6
c. Avitaminosis B2
d. Avitaminosis B1
e. Avitaminosis B3

361. Carnitine including drug was recomended to the sportsman for improving results. What process is activated most of all with help of carnitine?
a. Tissue respiration
b. Transport of fatty acids to the mitochondria
c. Synthesis of ketone bodies
d. Synthesis of steroid hormones
e. Synthesis of lipids

362. A patient with suspected diphtheria went through bacterioscopic examination. Examination of throat swab revealed rod-shaped bacteria with volutin granules. What etiotropic preparation should be chosen in this case?
a. Diphtheria antitoxin
b. Bacteriophage
c. Antidiphtheric antitoxic serum
d. Eubiotic
e. Interferon

363. A woman who has been keeping to a clean-rice diet for a long time was diagnosed with polyneuritis (beriberi). What vitamin deficit results in development of this disease?

a. Pyridoxine
b. Ascorbic acid
c. Thiamine
d. Folic acid
e. Riboflavin

364. Removal of gall bladder of a patient has disturbed processes of Ca absorption through the intestinal wall. What vitamin will stimulate this process?

a. D3
b. C
c. K
d. B12
e. PP

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

a. Xanthinuria
b. Phenylketonuria
c. Tyrosinosis
d. Alkaptonuria
e. Albinism

366. A patient complains of frequent diarrheas, especially after consumption of fattening food, and of body weight loss. Laboratory examination revealed steatorrhea; hypocholic feces. What can be the cause of this condition?

a. Mucous membrane inflammation of small intestine
b. Lack of pancreatic phospholipase
c. Unbalanced diet
d. Obturation of biliary tracts
e. Lack of pancreatic lipase

367. On the empty stomach in the patients blood glucose level was 5,65 mmol/L, in an hour after usage of sugar it was 8,55 mmol/L, in a 2 hours - 4,95 mmol/L. Such indicators are typical for:

a. Healthy person
b. Patient with insulin-dependent diabetes mellitus
c. Patient with tireotoxicosis
d. Patient with non-insulin dependent diabetes mellitus
e. Patient with hidden diabetes mellitus

368. A child is languid, apathetic. Liver is enlarged and liver biopsy revealed a significant excess of glycogene. Glucose concentration in the blood stream is below normal. What is the cause of low glucose concentration?

a. Low (absent) activity of glucose 6-phosphatase
b. Deficit of a gene that is responsible for synthesis of glucose 1-phosphaturidine transferase
c. Low (absent) activity of hexokinase
d. High activity of glycogen synthetase
e. Low (absent) activity of glycogene phosphorylase in liver

369. A 65 year old man suffering from gout complains of kidney pain. Ultrasound examination revealed renal calculi. The most probable cause of calculi formation is the strengthened concentration of the following substance:

a. Cholesterol
b. Urea
c. Cystine

d. Uric acid
e. Bilirubin

370. A 65-year-old suffering from the gout man complains of the pain in the kidneys region. On ultrasonic examination the renal calculi were revealed. As a result of what process were they formed?
a. Heme decay
b. Restoration of cysteine
c. Protein catabolism
d. Ornithine cycle
e. Decay of purine nucleotides

371. The greater amount of nitrogen is excreted from the organism in form of urea. Inhibition of urea synthesis and accumulation of ammonia in blood and tissues are induced by the decreased activity of the following liver enzyme:
a. Amylase
b. Pepsin
c. Aspartate aminotransferase
d. Urease
e. Carbamoyl phosphate synthetase

372. A 35 years old patient who often consumes alcohol was treated with diuretics. There appeared serious muscle and heart weakness, vomiting, diarrhea, BP- 100/60 mm Hg, depression. This condition is caused by intensified excretion with urine of:
a. Calcium
b. Phosphates
c. Sodium
d. Chlorine
e. Potassium

373. After intake of rich food a patient feels nausea and sluggishness; with time there appeared signs of steatorrhea. Blood cholesterine concentration is 9,2 micromole/l. This condition was caused by lack of:
a. Bile acids
b. Fatty acids
c. Chylomicrons
d. Phospholipids
e. Triglycerides

374. An experimental animal has been given excessive amount of carbon-labeled glucose for a week. What compound can the label be found in?
a. Methionine
b. Choline
c. Arachidonic acid
d. Palmitic acid
e. Vitamin A

375. A 36-year-old female patient has a history of collagen disease. Urine analysis is likely to reveal an increased concentration of the following metabolite:
a. Indican
b. Urea
c. Urobilinogen
d. Oxyproline
e. Creatinine

376. Albinos can not be under the sunlight - they do not acquire sun-tan but get sunburns. Disturbed metabolism of what aminoacid underlies this phenomenon?
a. Histidine
b. Phenilalanine

c. Tryptophan
d. Methionine
e. Glutamic acid

377. A nurse accidentally injected a nearly double dose of insulin to a patient with diabetes mellitus. The patient lapsed into a hypoglycemic coma. What drug should be injected in order to help him out of coma?

a. Glucose
b. Insulin
c. Noradrenaline
d. Somatotropin
e. Lidase

378. A patient with continious bronchopneumonia was admitted to the therapeutic department. Antibiotic therapy didnt give much effect. What medication for improvement of immune state should be added to the complex treatment of this patient?

a. Timaline
b. Sulfocamphocaine
c. Paracetamol
d. Benadryl
e. Analgin

379. A patient suffers from hepatic cirrhosis. Examination of which of the following substances excreted by urine can characterize the state of antitoxic function of liver?

a. Ammonium salts
b. Uric acid
c. Aminoacids
d. Hippuric acid
e. Kreatinine

380. Vitamin A together with specific cytoreceptors penetrates through the nuclear membranes, induces transcription processes that stimulate growth and differentiation of cells. This biological function is realized by the following form of vitamin A:

a. Retinol
b. Carotin
c. Trans-retinal enzim
d. Cis-retinal
e. Trans-retinoic acid

381. In patients with the biliary tract obstruction the blood coagulation is inhibited; the patients have frequent haemorrhages caused by the subnormal assimilation of the following vitamin:

a. E
b. C
c. A
d. D
e. K

382. To prevent postoperative bleeding a 6 year old child was administered vicasol that is a synthetic analogue of vitamin K. Name post-translational changes of blood coagulation factors that will be activated by vicasol:

a. Polymerization
b. Glycosylation
c. Phosphorylation of serine radicals
d. Partial proteolysis
e. Carboxylation of glutamin acid

383. A 4 y.o. boy has had recently serious viral hepatitis. Now there are such clinical presentations as vomiting, loss of consciousness, convulsions. Blood analysis revealed hyperammoniemia. Disturbunce

of which biochemical process caused such pathological condition of the patient?

a. Disturbed neutralization of ammonia in liver
b. Increased putrefaction of proteins in bowels
c. Inhibition of transamination enzyms
d. Activation of aminoacid decarboxylation
e. Disturbed neutralization of biogenic amines

384. Examination of a patient suffering from chronic hepatitis revealed a significant decrease in the synthesis and secretion of bile acids. What process will be mainly disturbed in the patient's bowels?

a. Fat emulsification
b. Carbohydrate digestion
c. Amino acid absorption
d. Glycerin absorption
e. Protein digestion

385. The energy inputs of a healthy man have been measured. In what position was the patient if his energy inputs were less than the main exchange?

a. Easy work
b. Rest
c. Sleep
d. Nervous exertion
e. Calmness

386. After a sprint an untrained person develops muscle hypoxia. This leads to the accumulation of the following metabolite in muscles:

a. Lactate
b. Acetyl CoA
c. Oxaloacetate
d. Glucose 6-phosphate
e. Ketone bodies

387. Myocyte cytoplasm contains a big number of dissolved metabolites of glucose oxidation. Name one of them that turns directly into a lactate:

a. Glycerophosphate
b. Oxaloacetate
c. Pyruvate
d. Glucose 6-phosphate
e. Fructose 6-phosphate

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

a. Homogentisic acid oxidase
b. Glutamate dehydrogenase
c. Dioxyphenylalanine decarboxylase
d. Pyruvate dehydrogenase
e. Phenylalanine hydroxylase

389. A patient diagnosed with carcinoid of bowels was admitted to the hospital. Analysis revealed high production of serotonin. It is known that this substance is formed of tryptophane aminooacid. What biochemical mechanism underlies this process?

a. Microsomal oxydation
b. Desamination
c. Decarboxylation
d. Transamination
e. Formation of paired compounds

390. A genetics specialist analyzed the genealogy of a family and found that both males and females may have the illness, not across all the generations, and that healthy parents may have ill children.

What is the type of illness inheritance?

a. Y-linked

b. Autosomal recessive

c. X-linked dominant

d. Autosomal dominant

e. X-linked recessive

391. Analysis of amniotic fluid that was obtained as a result of amniocentesis (puncture of amniotic sac) revealed cells the nuclei of which contain sex chromatin (Barrs body). What can it be evidence of?

a. Development of male fetus

b. Trisomy

c. Polyploidy

d. Development of female fetus

e. Genetic disorders of fetus development

392. Vitamin B1 deficiency results in disturbance of oxidative decarboxylation of alpha-ketoglutaric acid. This will disturb synthesis of the following coenzyme:

a. Lipoic acid

b. Coenzyme A

c. Nicotinamide adenine dinucleotide (NAD)

d. Flavine adenine dinucleotide (FAD)

e. Thiamine pyrophosphate

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

a. Fructosemia

b. Galactosemia

c. Lactosemia

d. Diabetes mellitus

e. Steroid diabetes

394. According to clinical indications a patient was administered pyridoxal phosphate. What processes is this medication intended to correct?

a. Desamination of purine nucleotide

b. Oxidative decarboxylation of ketonic acids

c. Transamination and decarboxylation of aminoacids

d. Synthesis of purine and pyrimidine bases

e. Protein synthesis

395. A 45 y.o. woman suffers from Cushings syndrome - steroid diabetes. Biochemical examination revealed: hyperglycemia, hypochloremia. Which of the under-mentioned processes is the first to be activated?

a. Glucose transport to the cell

b. Glycolysis

c. Glycogenolysis

d. Glucose reabsorption

e. Gluconeogenesis

396. Autopsy of a 46-year-old man revealed multiple brown-and-green layers and hemmorhages on the mucous membrane of rectum and sigmoid colon; slime and some blood in colon lumen; histologically - fibrinous colitis. In course of bacteriological analysis of colon contents S.Sonne were found. What is the most probable diagnosis?

a. Cholera

b. Yersiniosis

c. Crohns disease

d. Dysentery

e. Salmonellosis

397. A patient had been ill with bronchial asthma for many years and died from asthmatic fit. Histologic lung examination revealed: lumen of bronchioles and small bronches contain a lot of mucus with some eosinophils, there is sclerosis of alveolar septums, dilatation of alveole lumen. What mechanism of development of hypersensibility reaction took place?

a. Cytotoxic reaction
b. Cytolysis determined by lymphocytes
c. Granulomatosis
d. Reagin reaction
e. Immunocomplex reaction

398. Desulfiram is widely used in medical practice to prevent alcocholism. It inhibits aldehyde dehydrogenase. Increased level of what metabolite causes aversion to alcochol?

a. Propionic aldehyde
b. Methanol
c. Ethanol
d. Malonyl aldehyde
e. Acetaldehyde

399. The patient with complaints of permanent thirst applied to the doctor. Hyperglycemia, polyuria and increased concentration of 17-ketosteroids in the urine were revealed. What disease is the most likely?

a. Steroid diabetes
b. Myxoedema
c. Addisons disease
d. Type I glycogenosis
e. Insulin-dependent diabetes mellitus

400. A man got poisoned with mushrooms. They contain muscarine that stimulates muscarinic cholinoreceptors. What symptom is typical for poisoning with inedible mushrooms?

a. Mydriasis
b. Heart rate rise
c. Arterial pressure rise
d. Miosis
e. Bronchi dilation

401. A 38-year-old patient died during intractable attack of bronchial asthma. Histologic examination revealed mucus accumulation in bronchial lumen, a lot of fat cells (labrocytes) in the wall of bronches, many of them are in the state of degranulation, there are also a lot of eosinophils. What pathogenesis of bronchial changes is it?

a. Cellular cytolysis
b. Granulomatosis
c. Cytotoxic, cytolytic action of antibodies
d. Immunocomplex mechanism
e. Atopy

402. Diabetes mellitus causes ketosis as a result of activated oxidation of fatty acids. What disorders of acid-base equilibrium may be caused by excessive accumulation of ketone bodies in blood?

a. Any changes wount happen
b. Metabolic alcalosis
c. Metabolic acidosis
d. Respiratory acidosis
e. Respiratory alcalosis

403. A woman with 0 (I) blood group has born a child with AB blood group. This womans husband has A blood group. What genetic interaction explains this phenomenon?

a. Polymery
b. Codominance
c. Recessive epistasis

d. Incomplete dominance
e. Complementation

404. Osteolaterism is characterized by a decrease in collagen strength caused by much less intensive formation of cross-links in collagen fibrils. This phenomenon is caused by the low activity of the following enzyme:
a. Collagenase
b. Lysyl oxidase
c. Prolyl hydroxylase
d. Monoamino-oxidase
e. Lysyl hydroxylase

405. Depressions and emotional insanities result from the deficit of noradrenalin, serotonin and other biogenic amines in the brain. Their concentration in the synapses can be increased by means of the antidepressants that inhibit the following enzyme:
a. D-amino-acid oxidase
b. Phenylalanine-4-monooxygenase
c. Diamine oxidase
d. L-amino-acid oxidase
e. Monoamine oxidase

406. A 3 year old child with symptoms of stomatitis, gingivitis and dermatitis of open skin areas was delivered to a hospital. Examination revealed inherited disturbance of neutral amino acid transporting in the bowels. These symptoms were caused by the deficiency of the following vitamin:
a. Niacin
b. Vitamin A
c. Biotin
d. Cobalamin
e. Pantothenic acid

407. A 5-month-old boy was hospitalized for tonic convulsions. He has a life-time history of this disease. Examination revealed coarse hair, thinned and fragile nails, pale and dry skin. In blood: calcium - 1,5 millimole/l, phosphor - 1,9 millimole/l. These changes are associated with:
a. Hyperaldosteronism
b. Hyperparathyroidism
c. Hypoparathyroidism
d. Hypoaldosteronism
e. Hypothyroidism

408. During hypersensitivity test a patient got subcutaneous injection of an antigen which caused reddening of skin, oedema, pain as a result of histamine action. This biogenic amine is generated as a result of transformation of the following histidine amino acid:
a. Deaminization
b. Decarboxylation
c. Phosphorylation
d. Methylation
e. Isomerization

409. Cytogenetic examination of a patient with dysfunction of the reproductive system revealed normal karyotype 46,XУ in some cells, but most cells have Klinefelters syndrome karyotype - 47,XXУ. Such phenomenon of cell inhomogeneity is called:
a. Mosaicism
b. Transposition
c. Heterogeneity
d. Duplication
e. Inversion

410. 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:

a. Pholate decarboxylase
b. Dehydropholate reductase
c. Deaminase
d. Thiaminase
e. Pholate oxidase

411. A patient complained about dizziness, memory impairment, periodical convulsions. It was revealed that these changes were caused by a product of decarboxylation of glutamic acid. Name this product:

a. GABA
b. TDP
c. THFA
d. ATP
e. Pyridoxal phosphate

412. A sportsman needs to improve his sporting results. He was recommended to take a preparation that contains carnitine. What process is activated the most by this compound?

a. Glucose transporting
b. Vitamin K transporting
c. Amino acids transporting
d. Calcium ions transporting
e. Fatty acids transporting

413. Laboratory examination of a child revealed increased concentration of leucine, valine, isoleucine and their ketoderivatives in blood and urine. Urine smelt of maple syrup. This disease is characterized by the deficit of the following enzyme:

a. Dehydrogenase of branched amino acids
b. Glucose-6-phosphatase
c. Phosphofructomutase
d. Phosphofructokinase
e. Aminotransferase

414. A 9-month-old infant is fed with artificial formulas with unbalanced vitamin B6 concentration. The infant presents with pellagral dermatitis, convulsions, anaemia. Convulsion development might be caused by the disturbed formation of:

a. Dopamine
b. GABA
c. Serotonin
d. Histamine
e. DOPA

415. It was found out that some compounds, for instance fungi toxins and some antibiotics can inhibit activity of RNA-polymerase. What process will be disturbed in a cell in case of inhibition of this enzyme?

a. Replication
b. Processing
c. Transcription
d. Translation
e. Reparation

416. When blood circulation in the damaged tissue is restored, then lactate accumulation comes to a stop and glucose consumption decelerates. These metabolic changes are caused by activation of the following process:

a. Glycogen biosynthesis
b. Aerobic glycolysis
c. Lipolysis

d. Anaerobic glycolysis
e. Gluconeogenesis

417. During starvation muscle proteins break up into free amino acids. These compounds will be the most probably involved into the following process:
a. Gluconeogenesis in muscles
b. Glycogenolysis
c. Decarboxylation
d. Gluconeogenesis in liver
e. Synthesis of higher fatty acids

418. Examination of a patient revealed II grade obesity. It is known that he consumes a lot of sweets and fat food, has sedentary way of life. Thats why anabolic metabolism has the priority in his organism. Which of the following pathways is amphibolic?
a. Fatty acids oxidation
b. Cycle of tricarboxylic acids
c. Lipolysis
d. Glyconeogenesis
e. Glycolysis

419. Surgical removal of a part of stomach resulted in disturbed absorption of vitamin B12, it is excreted with feces. The patient was diagnosed with anemia. What factor is necessary for absorption of this vitamin?
a. Pepsin
b. Folic acid
c. Gastrin
d. Hydrochloric acid
e. Gastromucoprotein

420. A newborn develops dyspepsia after the milk feeding. When the milk is substituted by the glucose solution the dyspepsia symptoms disappear. The newborn has the subnormal activity of the following enzyme:
a. Amylase
b. Isomaltase
c. Invertase
d. Maltase
e. Lactase

421. Patients who suffer from severe diabetes and dont receive insulin have metabolic acidosis. This is caused by increased concentration of the following metabolites:
a. Ketone bodies
b. Unsaturated fatty acids
c. Cholesterol
d. Triacylglycerols
e. Fatty acids

422. A 4 year old child with hereditary renal lesion has signs of rickets, vitamin D concentration in blood is normal. What is the most probable cause of rickets development?
a. Hypofunction of parathyroid glands
b. Lack of calcium in food
c. Increased excretion of calcium
d. Hyperfunction of parathyroid glands
e. Impaired synthesis of calcitriol

423. A patient presents with dysfunction of cerebral cortex accompanied by epileptic seizures. He has been administered a biogenic amine synthetized from glutamate and responsible for central inhibition. What substance is it?
a. Acetylcholine

b. Histamine
c. Serotonin
d. Dopamine
e. Gamma-amino butyric acid

424. Toxic affection of liver results in dysfunction of protein synthesis. It is usually accompanied by the following kind of dysproteinemia:
a. Paraproteinemia
b. Absolute hypoproteinemia
c. Absolute hyperproteinemia
d. Relative hypoproteinemia
e. Relative hyperproteinemia

425. A 6 year old child was delivered to a hospital. Examination revealed that the child couldnt fix his eyes, didnt keep his eyes on toys, eye ground had the cherry-red spot sign. Laboratory analyses showed that brain, liver and spleen had high rate of ganglioside glycometide. What congenital disease is the child ill with?
a. Turners syndrome
b. Wilsons syndrome
c. Tay-Sachs disease
d. Niemann-Pick disease
e. MacArdle disease

426. In clinical practice tuberculosis is treated with izoniazid preparation - that is an antivitamin able to penetrate into the tuberculosis bacillus. Tuberculostatic effect is induced by the interference with replication processes and oxidation-reduction reactions due to the buildup of pseudo-coenzyme:
a. NAD
b. FMN
c. CoQ
d. TDP
e. FAD

427. A newborn child was found to have reduced intensity of sucking, frequent vomiting, hypotonia. Urine and blood exhibit increased concentration of citrulline. What metabolic process is disturbed?
a. Cori cycle
b. Ornithinic cycle
c. Glycolysis
d. Tricarboxylic acid cycle
e. Glyconeogenesis

428. A male patient has been diagnosed with acute radiation disease. Laboratory examination revealed a considerable reduction of platelet serotonin level. The likely cause of platelet serotonin reduction is the disturbed metabolism of the following substance:
a. 5-oxytryptofane
b. Histidine
c. Serine
d. Phenylalanine
e. Tyrosine

429. Dietary intake of a 30 year old nursing woman contains 1000 mg of calcium, 1300 mg of phosphorus and 20 mg of iron per day. It is necessary to change content of these mineral substances in the following way:
a. To increase calcium content
b. To increase iron content
c. To reduce iron content
d. To increase phosphorus content
e. To reduce fluorine content

430. Cardinal symptoms of primary hyperparathyroidism are osteoporosis and renal lesion along with development of urolithiasis. What substance makes up the basis of these calculi in this disease?

a. Calcium phosphate
b. Cystine
c. Cholesterol
d. Bilirubin
e. Uric acid

431. Study of conversion of a food colouring agent revealed that neutralization of this xenobiotic takes place only in one phase - microsomal oxydation. Name a component of this phase:

a. Cytochrome C
b. Cytochrome B
c. Cytochrome p-450
d. Cytochrome A
e. Cytochrome oxidase

432. A patient had hemorrhagic stroke. Blood examination revealed strengthened kinin concentration.The patient was prescribed contrical. It was administered in order to inhibit the following proteinase:

a. Kallikrein
b. Trypsin
c. Collagenase
d. Chemotrypsin
e. Pepsin

433. A 49-year-old driver complains about unbearable constricting pain behind the breastbone irradiating to the neck. The pain arose 2 hours ago. Objectively: the patient’s condition is grave, he is pale, heart tones are decreased. Laboratory studies revealed high activity of creatine kinase and LDH1. What disease are these symptoms typical for?

a. Acute myocardial infarction
b. Stenocardia
c. Diabetes mellitus
d. Cholelithiasis
e. Acute pancreatitis

434. Plasmic factors of blood coagulation are exposed to post-translational modification with the participation of vitamin K. It is necessary as a cofactor in the enzyme system of gamma-carboxylation of protein factors of blood coagulation due to the increased affinity of their molecules with calcium ions. What amino acid is carboxylated in these proteins?

a. Arginine
b. Glutamic
c. Serine
d. Valine
e. Phenylalanine

435. Pharmacological effects of antidepressants are connected with inhibition of an enzyme catalyzing biogenic amines noradrenaline and serotonine in the mitochondrions of cerebral neurons. What enzyme participates in this process?

a. Peptidase
b. Lyase
c. Transaminase
d. Decarboxylase
e. Monoamine oxidase

436. An oncological patient was prescribed methotrexate. With the lapse of time target cells of the tumour lost susceptibility to this drug. There is change of gene expression of the folowing enzyme:

a. Deaminase
b. Thiaminase

c. Dehydrofolate reductase
d. Folate oxidase
e. Folate decarboxylase

437. A 3-year-old child with elevated body temperature has taken aspirin and developed increased hemolysis of erythrocytes. In this case hemolytic anemia can be caused by congenital deficiency of the following enzyme:
a. Glycogen phosphorylase
b. Glucose 6-phosphatase
c. Glucose 6-phosphate dehydrogenase
d. Glycerol-phosphate dehydrogenase
e. Gamma-glutamyl transferase

438. Collagenosis patients typically present with the processes of connective tissue destruction. The presence of these processes can be confirmed by the increase in:
a. LDH-isoenzyme activity in the blood
b. Blood creatine and creatinine
c. Blood oxyproline and oxylysine
d. Transaminase activity in the blood
e. Blood urates

439. During diabetes mellitus and starvation, the number of acetone bodies in blood increases. These bodies are used as a source of energy and are synthesized from the following substance:
a. Malate
b. Ketoglutarate
c. Succinyl-CoA
d. Citrate
e. Acetyl-CoA

440. Blood test of the patient revealed albumine content of 20 g/L and increased activity of lactate dehydrogenase isoenzyme 5 (LDH5). These results indicate disorder of the following organ:
a. Heart
b. Kidneys
c. Liver
d. Lungs
e. Spleen

441. A patient presents with an acute attack of cholelithiasis. Laboratory examination of the patient’s feces will show the following in this case:
a. Negative reaction to stercobilin
b. Connective tissue
c. Starch granules
d. Partially digested cellulose
e. Positive reaction to stercobilin

442. A patient with diabetes mellitus after an insulin injection lost his consciousness and developed convulsions. What will be the result of a biochemical test for blood glucose level in this case?
a. 8.0 mmol/L
b. 3.3 mmol/L
c. 2.5 mmol/L
d. 10 mmol/L
e. 5.5 mmol/L

443. A 27-year-old patient presents with pathologic changes in the liver and brain. Blood plasma exhibits acute decrease in copper levels, while urine copper levels are elevated. The patient is diagnosed with Wilson disease. To confirm this diagnosis it is necessary to measure activity of the following enzyme in the patient’s blood serum:
a. Xanthine oxidase

b. Carbonic anhydrase
c. Ceruloplasmin
d. Leucine aminopeptidase
e. Alcohol dehydrogenase

444. The Gerontology Institute recommends older people to take vitamin complexes that contain vitamin E. What is the main function of this vitamin?
a. Antineuritic
b. Antidermatitic
c. Antihemorrhagic
d. Antiscorbutic
e. Antioxidant

445. Ammonia is extremely toxic for human CNS. What is the main way of ammonia neutralization in the nervous tissue?
a. Ammonium salts synthesis
b. Transamination
c. Formation of paired compounds
d. Glutamine synthesis
e. Urea synthesis

446. People, who for a long time remained in hypodynamic state, develop intense pain in the muscles after a physical exertion. What is the most likely cause of this pain?
a. Accumulation of lactic acid in muscles
b. Accumulation of creatinine in muscles
c. Increased content of ADP in muscles
d. Decreased content of lipids in muscles
e. Intensive breakdown of muscle proteins

447. Human genetic apparatus consists of approximately 30 thousand of genes, while the number of antibody variants can be as high as millions. What mechanism leads to formation of new genes that ensure the synthesis of such a number of antibodies?
a. DNA replication
b. Gene amplification
c. Genetic recombination
d. DNA repair
e. Formation of Okazaki fragments

448. Chronic overdose of glucocorticoids leads to the development of hyperglycemia in a patient. Name the process of carbohydrate metabolism that results in elevated blood glucose levels:
a. Glycogenolysis
b. Pentose-phosphate pathway
c. Glycogenesis
d. Gluconeogenesis
e. Aerobic glycolysis

449. A patient for a long time was on an imbalanced diet low in proteins, which resulted in hepatic fatty infiltration. This condition is likely to develop if a certain substance is absent in a person’s diet. Name this substance:
a. Cholesterol
b. Alanine
c. Methionine
d. Acetic acid
e. Biotin

450. A patient, who has been subsisting exclusively on polished rice, has developed polyneuritis due to thiamine deficiency. What substance is an indicator of such avitaminosis, when it is excreted with urine?

a. Phenyl pyruvate
b. Pyruvic acid
c. Methylmalonic acid
d. Malate
e. Uric acid

451. A 40-year-old man with pulmonary tuberculosis was prescribed isoniazid. Prolonged taking of this drug can result in development of the following vitamin deficiency:
a. Biotin
b. Folic acid
c. Thiamine
d. Cobalamin
e. Pyridoxine

452. Disturbed activity of trypsin and chymotrypsin leads to disturbed protein breakup in the small intestine. Activity of these enzymes depends on the presence of the following factor:
a. Enterokinase
b. Bile acids
c. N a+ salts
d. Hydrochloric acid
e. Pepsin

453. A newborn presents with weak suckling, frequent vomiting, and hypotonia. Blood and urine citrulline are very high. What metabolic process is disturbed?
a. Glycolysis
b. Tricarboxylic acid cycle
c. Ornithine cycle
d. Gluconeogenesis
e. Cori cycle

454. Patients with ischemic heart disease are usually prescribed small doses of aspirin. This drug inhibits synthesis of platelet aggregation activator, thromboxane A2. What substance is this activator synthesized from?
a. Arachidonic acid
b. Acetic acid
c. Glutamic acid
d. Homogentisic acid
e. Malonic acid

455. A patient with myocardial infarction in the acute phase has been hospitalized into the cardiology unit. To induce platelet lysis in the patient’s coronary vessels during the early hours of infarction, the following enzyme should be used:
a. Streptokinase
b. Trypsin
c. Lysozyme
d. Chymotrypsin
e. Hyaluronidase

456. In the hematology unit a patient with leukemia was prescribed 5-Fluorouracil. This drug:
a. Inhibits transcription
b. Catalyzes replication
c. Stimulates DNase
d. Inhibits translation
e. Inhibits DNA synthesis

457. A 7-year-old boy is diagnosed with anemia. Laboratory analysis detects pyruvate kinase deficiency in his erythrocytes. What process is disturbed in this boy, playing the main role in anemia development in this case?

a. Decarboxylation of amino acids
b. Deaminization of amino acids
c. Anaerobic glycolysis
d. Gluconeogenesis
e. Anaerobic glycogenolysis

458. Examination of a patient shows decreased leukocyte and erythrocyte count and low hemoglobin levels in peripheric blood, as well as appearance of large cells (megaloblasts). What vitamin deficiency can cause these clinical presentations?
a. Ascorbic acid
b. Niacin
c. Folic acid
d. Riboflavin
e. Biotin

459. Wernicke-Korsakoff syndrome often develops in chronic alcoholics, who have a low-vitamin diet. Decreased transketolase activity can be observed in the course of this disease. What vitamin deficiency causes this development?
a. Retinol
b. Cobalamin
c. Riboflavin
d. Thiamine
e. Niacin