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Federal State Budgetary Educational Institution of Higher Education «North-Ossetia State MedicalAcademy» of the Ministry of Healthcare of the Russian Federation

Department of biological chemistry*

APPROVED
by the protocol of the meeting of
the Central
coordinating educational and
methodological
council from 22 March, 2022, № 4

FUND OF ASSESSMENT TOOLS

by discipline CLINICAL BIOCHEMISTRY

the main professional educational program of higher education - specialty program in the specialty 3 1.05.01 General Medicine, approved in March 30, 2022

for 6th year students
by specialty 31.05.01 General Medicine

considered and approved at the meeting of the department
of biological chemistry from "14" March 2022year (protocol №8)

Head of department

A. E. Gurina

Vladikavkaz 2021

STRUCTURE OF FOS

1. Title page
2. Structure of the FOS
3. Review of FOS
4. Passport of the fund of appraisal funds
5. A set of evaluation tools:

- questions for the module
- questions to set off
- bank of situational tasks
- sample test items (with title page and table of contents)

FEDERAL STATE BUDGETARY EDUCATIONAL INSTITUTION OF HIGHER EDUCATION "NORTH OSSETIAN STATE MEDICAL ACADEMY" OF THE MINISTRY OF HEALTH OF THE RUSSIAN FEDERATION

REVIEW
to the appraisal fund
discipline: "Clinical biochemistry"
for 6th year students
by specialty 31.05.01 General Medicine (specialty)

The fund of evaluation funds was compiled at the Department of Biological Chemistry on the basis of the working program of the academic discipline Clinical Biochemistry of the main professional educational program of higher education - the specialist's program in the specialty 31.05.01 General Medicine, approved in March 30, 2022

and meet the requirements of the Federal State Educational Standard 3+

The appraisal fund includes:

- questions for the module,
- bank of situational tasks,
- sample test items (with title page and table of contents)
- questions to offset

The bank of test tasks includes the following elements: test tasks, variants of test tasks, answer templates. All tasks correspond to the work program of Clinical Biochemistry and cover all its sections. The difficulty of the tasks varies. The number of tasks for each section of the discipline is sufficient for knowledge control and excludes repeated repetition of the same question in different versions. The bank contains answers to all test tasks and tasks.

In addition to theoretical questions, a bank of situational tasks (analyzes, proteinograms, coagulograms) is proposed. Situational tasks make it possible to objectively assess the level of assimilation of theoretical material by a student during the current, intermediate and final control

There are no comments on the peer-reviewed fund of evaluation tools.

In general, the fund of assessment tools in Clinical Biochemistry contributes to a qualitative assessment of the level of students' mastery of general professional and professional competencies.

The peer-reviewed fund of assessment tools in Clinical Biochemistry can be recommended for use for current and intermediate certification at the Faculty of Medicine for 6th year students.

Reviewer:
Chairman of the CEMC for natural sciences
and mathematical disciplines, associate professor **Botsieva N.I.**

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PASSPORT OF THE FUND OF APPRAISAL FUNDS
IN THE DISCIPLINE "CLINICAL BIOCHEMISTRY"

No. p / p	Name of the controlled section (topic) of the discipline/module	Code of the formed competence (stage)	Name of the evaluation tool
1	2	3	4
View control	**Current / Intermediate control**		
1.	Biochemical diagnosis of liver diseases. hepatic syndromes. Differential diagnosis of jaundice	GPC-7 PC-21 PC-22 PC-7	test control, questions for the module, bank of situational tasks, questions for the test
2.	Biochemical diagnostics of kidney diseases: pyelonephritis, glomerulonephritis, urolithiasis, acute renal failure, chronic renal failure	GPC-7 PC-21 PC-22 PC-7	test control, questions for the module, bank of situational tasks, questions for the test
3.	Hemostasis system. Pathobiochemical mechanisms for the development of hemostasis disorders. Coagulological syndromes	GPC-7 PC-21 PC-22 PC-7	test control, questions for the module, bank of situational tasks, questions for the test
4.	Pathobiochemical mechanisms of carbohydrate metabolism disorders	GPC-7 PC-21 PC-22 PC-7	test control, questions for the module, bank of situational tasks, questions for the test
5.	Clinical and diagnostic significance of determining the protein spectrum of blood in pathological conditions. Blood plasma enzymes and their clinical and diagnostic significance. Specific plasma proteins	GPC-7 PC-21 PC-22 PC-7	test control, questions for the module, bank of situational tasks, questions for the test
6.	Pathobiochemical mechanisms of lipid metabolism disorders	GPC-7 PC-21 PC-22 PC-7	test control, questions for the module, bank of situational tasks, questions for the test

Questions for the module

1. Biochemical diagnosis of cytolysis syndrome
2. Clinical analysis of urine is normal
3. Electrophoretic separation of blood protein fractions, diagnostic value
4. Detoxification function of the liver
5. Renin-angiotensin-aldosterone system
6. Biochemical diagnosis of myocardial infarction
7. Biochemical diagnosis of suprahepatic jaundice
8. Proteinuria: types, characteristics, causes
9. Biochemical diagnosis of diabetes mellitus types 1 and 2
10. The role of the liver in pigment metabolism
11. Biochemical diagnosis of pyelonephritis
12. Biochemical diagnosis of hepatocellular jaundice
13. Glomerular filtration mechanism. Determination of glomerular filtration rate in the clinic
14. Blood plasma enzymes, their diagnostic value
15. Biochemical diagnosis of subhepatic jaundice
16. Hematuria: causes, characteristics, causes of development
17. Lipoprotein spectrum of blood plasma
18. Biochemical diagnosis of hepatocellular insufficiency syndrome
19. Chemical composition of primary urine
20. Biochemical diagnosis of myocardial infarction
21. The role of the liver in lipid metabolism
22. Biochemical diagnosis of urolithiasis
23. Changes in the protein composition of the blood in pathology
24. Biochemical diagnosis of cholestasis syndrome
25. Physical and chemical properties of urine
26. Acute phase proteins, representatives
27. Atherosclerosis (biochemical aspects)
28. Hereditary jaundice, clinical and biochemical diagnostics
29. Proteinograms and their clinical and diagnostic significance
30. Urea, formation and excretion, diagnostic value.
31. Creatinine, formation and excretion. Definition methods. Determination of clearance by endogenous creatinine (Rehberg's test)
32. The concept of azotemia. Types of azotemias.
33. Normal carbohydrate metabolism. Causes and types of hyper- and hypoglycemia. Glucose, methods of determination.
34. Classification of lipids. Violation of lipid metabolism. Indicators of lipid metabolism analyzed in the clinic. Diagnostic value in pathology.
35. Hemostasis. Indicators of primary and secondary hemostasis. Methods for determining PTI, APTT, thrombin time and fibrinogen.
36. Anticoagulants of direct and indirect action. Obtaining platelet rich and poor plasma
37. DIC-syndrome, biochemical diagnostics.
38. Antiphospholipid syndrome.

39. Fibrinolytic system
40. Anticoagulant link of hemostasis
41. Physical and chemical properties of urine (pH, protein, glucose, ketone bodies)
42. Microalbuminuria. Methods of determination
43. Organized urine sediment. Types of epithelium and its distinguishing features
44. Evaluation of the concentrating function of the kidneys
45. The concept of hyperstenuria, hypostenuria, isosthenuria, nocturia
46. Indicators of pigment metabolism analyzed in the clinic
47. Jaundice: types, changes in pigment metabolism in blood, urine, feces
48. The main indicators of protein metabolism, analyzed in the clinic
49. Protein fractions of blood, the role of individual proteins.
50. Concepts of hypoproteinemia, hyperproteinemia, dysproteinemia. Paraproteins
51. Insulin resistance syndrome
52. Natriuretic peptides
53. Main syndromes of the liver, differential diagnosis
54. Urinary syndromes
55. Vascular-platelet link of hemostasis
56. Coagulation link of hemostasis
57. Metabolic disorders in diabetes mellitus
58. Hyperlipoproteinemia, clinical and diagnostic significance
59. Proteins of the acute phase of inflammation, clinical and diagnostic significance
60. Nephrotic syndrome

Questions for offset

1. Biochemical changes in the body in violation of carbohydrate metabolism. Diabetes.
2. "Acute-phase" blood plasma proteins and their diagnostic value.
3. Lipoprotein spectrum of blood plasma. LDL and HDL.
4. Physical and chemical properties of urine
5. Biochemical diagnosis of myocardial infarction
6. Hemorenal tests. Reberg-Tareev test
7. Coagulation or plasma hemostasis
8. Blood plasma proteins. Hypo-, hyper-, dysproteinemias. Paraproteins and cryoglobulins
9. Biochemical diagnosis of cytolysis syndrome
10. Biochemical diagnosis of type II diabetes
11. The exchange of bilirubin is normal. Biochemical diagnosis of hemolytic jaundice
12. The main processes of urination. Reberg-Tareev test
13. Enzymatic and non-enzymatic markers of acute coronary syndrome
14. Hepatic syndromes: mesenchymal inflammatory syndrome, hepatodepression syndrome
15. "Acute-phase" blood plasma proteins and their diagnostic value
16. Lipoprotein spectrum of blood plasma: VLDL and LDL. Clinical and diagnostic value of determining the parameters of lipid metabolism in the human body
17. Basic systems of plasma hemostasis.
18. Components of the plasma coagulation system
19. Renin-angiotensin-aldosterone system
20. Specific blood plasma proteins and their diagnostic value
21. Characterization of blood coagulation factors. Primary or vascular-platelet hemostasis
22. Natriuretic peptide.
23. Blood plasma enzymes and their clinical and diagnostic significance
24. Physical and chemical properties of urine. OAM is normal
25. Biochemical diagnosis of obstructive jaundice
26. Clinical and diagnostic significance of determining indicators of lipid metabolism in the body
27. The role of the liver in carbohydrate, protein and lipid metabolism
28. External pathway of blood plasma coagulation. What factor activates it and what test controls it?
29. Blood plasma proteins: functions, separation methods, protein fractions. Albuminoglobulin coefficient Proteinograms and their diagnostic value
30. Clinical and biochemical characteristics of gamma globulins: interferons and Ig.
31. Internal pathway of blood plasma coagulation. By what factors is it activated and by what test is it controlled?

32. Glomerular filtration mechanism. Determination of glomerular filtration rate in the clinic

33. Methods for studying hemostasis. Coagulogram of a healthy person

34. The role of the liver in pigment metabolism. The clinical significance of the determination of bile pigments

35. Blood plasma enzymes and their clinical and diagnostic significance

36. Biochemical diagnosis of pyelonephritis: causes of development, classification. Biochemical mechanisms of kidney stone formation

37. Anticoagulant blood system

38. Violation of carbohydrate metabolism: hyper- and hypoglycemia. Types, clinical and biochemical manifestations

39. Residual blood nitrogen: definition, main components, their content in blood serum is normal

40. Diabetes mellitus type I, biochemical diagnostics. Glucose tolerance test.

41. Biochemical diagnosis of myocardial infarction

42. Azotemia: definition, classification, clinical and biochemical characteristics of retention and production hyperazotemia

43. Clinical and biochemical characteristics of metabolic complications of diabetes mellitus (ketoacidosis, lactic acidosis, hyperosmolar coma)

44. Cholesterol metabolism: biochemical criteria for hypercholesterolemia, causes and consequences. Role in the pathogenesis of atherosclerosis

45. Violation of pigment metabolism. Hemolytic jaundice, causes, clinical and biochemical characteristics

46. Methods for studying the functional state of the glomerular and tubular apparatus of the kidneys. Clinical and biochemical characteristics of acute renal failure (causes, diagnosis)

47. Transport forms of lipids (structure, classification, place of formation). Indicators of lipid metabolism in blood serum are normal and criteria for assessing dyslipidemia

48. Biochemical diagnosis of viral lesions of the liver (hepatitis A, B, C)

49. What components are included in the fibrinolytic system?

50. What tests control fibrinolysis?

51. Nephrotic syndrome. Biochemical diagnostics

52. Biochemical diagnosis of obstructive jaundice

53. Biochemical diagnosis of glomerulonephritis (causes of development, classification, diagnosis)

54. Diabetes mellitus type 1, diagnostic algorithm

55. Clinical and biochemical diagnosis of chronic renal failure (causes of development, classification, diagnosis)

56. What is hemorrhagic syndrome? What are the main causes of hypocoagulation?

57. Hereditary jaundice, causes of development, clinical and biochemical diagnostics.

58. Organized and unorganized urine sediment

59. Tell us about the internal pathway of blood plasma coagulation. By what factors is it activated and by what test is it controlled?

60. Biochemical diagnosis of myocardial infarction

61. Biochemical changes in the body in violation of carbohydrate metabolism. Glycogenoses

62. Basic systems of plasma hemostasis.

63. Components of the plasma coagulation system

64. "Acute-phase" blood plasma proteins and their diagnostic value

Bank of situational problems

Biochemical methods for diagnosing liver diseases

Case study 1.

1. Select biochemical markers of pathophysiological syndromes

A. Cholestasis 1. AST, ALT, LDH, MDH

B. Cytolysis 2. ALP, GGT, LAP

C. Insufficiency of synthetic processes in hepatocytes 3. BOF

D. Inflammatory syndrome 4. Hypoalbuminemia, ChE, fibrinogen

E. Decreased inactivation of toxic substances 5. Load tests (with galactose, etc.)

Case study 2.

Measurement of GDH activity cannot be used as a criterion for recovery because (select the correct answer):

A. The activity of GDH decreases to normal much earlier than the functional normalization of the hepatocyte occurs.

B. The activity of GDH is normalized in parallel with the functional normalization of the hepatocyte.

In the differential diagnosis of liver lesions helps: de Ritis coefficient (normally 1.33 ± 0.42)

AST/ALT<1.0 in hepatitis, cholestatic syndrome

AST/ALT>2.0 in alcoholic liver disease

Schmidt ratio: (AST+ALT) /GDG

In acute parenchymal hepatitis, intrahepatic cholestasis (Schmidt coefficient about 50) - a sharp increase in the activity of aminotransferases, a slight increase in GDH

With obstructive jaundice, cancer metastases to the liver (Schmidt coefficient 5-15) - a significant increase in GDH activity with a slight increase in aminotransferase activity

Case study 3.

Which of the following biochemical tests will make up the most effective combinations and may be useful in the course of laboratory confirmation of the diagnosis tests Chronic persistent hepatitis Viral

hepatitis Acute yellow liver atrophy (hepatic coma)

Albumin in the blood:

gamma globulins α2, β-globulins

ALT in the blood AST in the blood

AST/ALT GDH in the blood

Sorbitol DG

LDH in the blood

Thymol test

ALP in the blood

Bilirubin in the blood

Cholesterol in the blood

Ammonia in blood and urine

Protein in the urine

Tyrosine and leucine crystals in urine
Aminoaciduria
Potassium, chlorides
calcium in the blood
IgM, IgA
Case study 4.

Which of the following biochemical tests will make up the most effective combinations and may be useful in the course of laboratory confirmation of the diagnosis tests Liver cirrhosis
portal,
atrophic liver cirrhosis postnecrotic liver cirrhosis
primary biliary

Albumin in the blood
γ-globulins
ALP in the blood
Leucine aminopeptidase in the blood
fibrinogen in the blood
prothrombin time in blood
Bilirubin in the blood
Ammonia in blood and urine
Thymol test
Australian antigen
Urobilinogen in urine
Coproporphyrin in urine
IgM in the blood
Antibodies against mitochondrial membranes
Case study 5.

Note the direction of changes in the specified tests for these diseases.
Specify the direction of changes in the biochemical parameters of the connective tissue in the diagnosis of the initial stage of liver cirrhosis:
A. Decreased levels 1. Free hydroxyproline
2. Total cholesterol
3. Glycoproteins
B. Level increase 4. Glycosaminoglycans

5. Whey non-hymic iron

Case study 6.

11. Prognostic value of hyperbilirubinemia:
A. Level up 5 times

1. Rules out chronic hepatitis
B. Level increase by 10 times 2. More typical for intrahepatic cholestasis
14. What tests can be useful in the course of laboratory confirmation of the diagnosis:

A. Cholelithiasis 1. Bilirubin, alkaline phosphatase

B. Postcholecystectomy syndrome 2. AST, ALT, aldolase, cholesterol, fibrin, glucose, BOF, protein and protein fractions

C. Chronic cholecystitis 3. AST, ALT, GGT, amylase in the blood and urine, BOF

D. All of the above 4. GGT, bile acids, bile cholesterol

Topic Biochemical methods for diagnosing kidney diseases

Case study 1.

Patient A., 27 years old, was in a state of shock after a severe injury with crushed limbs, he excreted little urine. Residual blood nitrogen 142.7 mmol (200 mg%), potassium content in blood plasma 6 mmol/l. Inulin clearance 40 ml/min.

What type of renal failure did the patient have? Whether it is possible to consider the specified renal failure postrenal? What is the name of this variant of renal failure according to the classification of E.M. Tareeva? What do the indicated numbers of inulin clearance indicate? What is the reason for the increase in the content of potassium in the blood of this patient?

Case study 2.

Patient P., 45 years old, revealed hypertrophy of the left ventricle of the heart. Blood pressure 200/140 mm Hg. Art., the relative density of urine in all portions according to Zimnitsky 1008-1010. Daily diuresis is 4 liters, inulin clearance is 50 ml/min, residual blood nitrogen is 71.4 mmol/l (100 mg%).

What type of renal failure does the patient have? What is the pathogenesis of cardiac hypertrophy in this patient? How to explain the development of arterial hypertension? What do the indicated numbers of inulin clearance indicate? How to explain polyuria with the mentioned numbers of inulin clearance?

Case study 3.

Vitya suffered severe dyspepsia for 1.5 years. On the day the stool returned to normal, but edema appeared and urine output decreased sharply. On examination - massive swelling on the face, trunk and extremities. The skin is dry, cold to the touch. The boundaries of the heart are within the normal range, the tones are muffled. Pulse - 64 min-1, blood pressure - 90/70 mm Hg. Art. The protein content in the blood is reduced. Diuresis 300 ml per day. The relative density of urine is 1038. The urine contains 5% protein, a lot of hyaline, granular cylinders and epithelial cells.

What type of renal failure has developed in the child? Explain the pathogenesis of clinical and dysuric disorders identified in the patient?

Case study 4.

Patients B and C went to the doctor because they noticed an unusual bloody color of urine.

Urine test results

Characteristics of urine Patient B Patient C

Amount Delivered 180.0 ml 60.0 ml

Color bloody meat slops

reaction sour sour

Specific gravity

Clarity cloudy slightly cloudy

Protein 0.33‰ 1.84‰

Sediment microscopy Epithelial cells squamous 10 - 11 in the field of view renal, 1 - 2 in the field of view

Leukocytes no 2 - 3 in the field of view
Erythrocytes fresh 15 - 20 per field of view alkaline 30 - 60 per field of view
Hyaline casts no 1 – 2 in sight
Oxalate salts in large quantities No
What diseases can be thought of by these analyses? What signs indicate this?

Case study 5.

Calculate the clearance if it is known that 45 minutes after the administration of sodium hyposulfite, its concentration in plasma is 40 mg%, and in urine - 5800 mg%. In 30 minutes, 24 ml of urine was released. What conclusion about the function of nephrons can be made on the basis of the obtained data? Specify the substances whose clearance can be used to assess the same function of the nephron? Monitoring the state of what nephron function can be carried out by examining the clearance of para-aminohippuric acid (PAH) - why?

Case study 6.

Give a reasonable conclusion about the form of renal failure according to the following urinalysis results: daily diuresis 2200 ml, urine watery, sharply acidic, protein 0.9 g/l, relative density 1011-1010. There is little epithelium in the sediment, 0-2 leukocytes in the field of view, single fresh and altered erythrocytes, hyaline cylinders, single in the preparation.

Situational task 7. Give a reasonable conclusion about the form of renal failure according to the following results of urine analysis: daily amount of urine 300 ml, urine red-brown, cloudy, relative density 1028, sharply acidic, protein 4 g/l. There is a moderate amount of epithelium in the sediment, 4-6 leukocytes in the field of view, 100 or more erythrocytes in the field of view, hyaline casts are not in every field of view.

“Clinical and diagnostic significance of determining the protein spectrum of blood plasma. Enzymes. BOF inflammation, their clinical and diagnostic significance"

Case study 7

1. In order to distinguish an absolute change in the content of total protein from a relative one, it is necessary:
A. Set the plasma volume
B. Determine the hematocrit
C. A and B.
D. A or B.

Case study 2

2. Causes of hypoproteinemia: A. Absolute 1. Insufficient intake of protein from food
2. Lack of digestion and absorption of food proteins
3. Infusion of a large volume of blood-substituting saline solutions
B. Relative 4. Chronic kidney disease
5. Violation of the synthesis of liver proteins

Case study 8

What type of change in total protein content (hypo- or hyperproteinemia) is observed in peptic ulcer, pyloric stenosis, multiple myeloma, tumors of the esophagus, dysentery, gastroenteritis, portal cirrhosis, fatty degeneration of the liver, Waldenström macroglobulinemia, toxic hepatitis, febrile conditions, chronic bleeding, chronic polyarthritis, starvation

"Disorders of the hemostasis system"

Case study 1

The patient is 51 years old. nephrotic syndrome. Repeated PE. Heparin was canceled 2 days ago.

Parameter	Norm	Result
Platelets	150-350 x 109/l	300 x 109/l
Fri %	80-110	98%
APTT	28-40 s	23.9 s
Fibrinogen	2-4 g/l	4.1 g/l
HZF	4-12 min.	16 min

*Note: Pathological findings are underlined

Case study 2

Patient 43 g. Polyposis of the uterus.

Parameter	Norm	Result
TV	28-30 from	25 s
Fri %	80-110	87%
APTT	35-45 s	31 s
Fibrinogen	2-4 g/l	7.3 g/l
RFMC	Up to 5 mg/dl	11 mg/dl
Euglobulin fibrinolysis (FAK)	120-240 min	More than 250 min

Case study 3

The patient is 59 years old. Acute promelocytic leukemia (M3) Hematomas on the upper and lower extremities.

Parameter	Norm	Result
Platelets	150-350 x 109/l	Single
Fri %	80-110	38%
APTT	35-45 s	65 s
Fibrinogen	2-4 g/l	0.7 g/l
PDF	Neg.	40 mg/ml
Euglobulin fibrinolysis (FAK)	120-240 min.	75 min

Case study 4

Coagulogram: platelets 300x109/l,
PV 80.5 s (N 15-21c)
INR 8.5 (N 0.8-1.1)

Erythrocytes in urine 2-3 p/zr

Case study 5

The patient is 13 years old. In the evening I felt heaviness in my right leg.

Parameter Norm Result
Platelets 150-350 x 109/l 116 x 109/l
PV 15-20 s 16 s
APTT 28-40 s 45.9 s
Fibrinogen 2-4 g/l 4.5 g/l
Lupus AK Neg. Floor.

Topic "Biochemical diagnosis of carbohydrate metabolism disorders"

Case study 1
1. What are the differences in the structure and functioning of the extracellular and intracellular parts of the insulin receptor?
2. How do the properties of substrate 1 change as a result of its phosphorylation?
3. What could be the consequences of inheriting a defective insulin receptor substrate 1?
4. How does insulin activate phosphatidylinositol-3-kinase?
5. How is protein phosphatase stimulated by insulin via the Ras pathway involved in the regulation of glycogen metabolism?
6. How does the transmembrane transfer of glucose from intestinal cells to the blood differ from the transfer of glucose to muscle cells?
7. How does the transmembrane transfer of glucose from blood to adipocytes differ from the transfer of glucose from blood to hepatocytes?
8. What is the difference between the transmembrane transfer of glucose in the tubules of the kidneys and the transfer of glucose from the blood to adipocytes?
9. Why is interleukin-1 toxic to β-cells?
10. How does the metabolism of the main energy carriers change with insulin deficiency?
11. Why is the formation of ketone bodies increased in diabetes?
12. Diseases associated with various defects in liver phosphofructokinase are known.
A. Defect of the allosteric center, leading to disruption of its interaction with citrate; as a result, the inhibitory effect of citrate on enzyme activity is reduced.
B. Defect of the catalytic center and, as a result, a decrease in the activity of the enzyme.
In which of these cases will accumulation of glycogen be observed?

Case study 2
1. Why should whole blood glucose be tested immediately after collection?
2. To prevent glycolysis and stabilize glucose in whole blood, the following must be added to the sample:
A. Heparin

B. Sodium fluoride
B. Sodium citrate

Case study 3

3. How does protein glycation occur and what consequences does it lead to?

Case study 4
4. The procedure for determining glycated hemoglobin may interfere with:
A. Hemolysis
B. Uremia
B. Stressful influences
D. Pregnancy
The level of _____ is a "mirror" of glycemia
A. Blood glucose 1. Over the last 1-3 weeks
B. Fructosamine 2. At the time of sampling
B. Glycosylated hemoglobin 3. Last 2 months
6. How does the level of fructosamine in the blood change during pregnancy, uremia, myeloma, acute inflammatory diseases?
7. Upper Renal Threshold for Glucose:
A. 9.99 mmol/l B. 10.99 mmol/l C. 11.99 mmol/l

Case study 5
1. _____ before the determination of glucose, it is necessary to exclude the intake of ascorbic acid and tetracycline antibiotics by the subject.
A. One day B. Two days C. Three days
2. Is it possible to determine the concentration of glucose in the blood by the orthotoluidine method in patients during and immediately after surgery, as well as in patients in the early postoperative period, if they were transfused with rheopolyglucin?

Case study 6
1. A sick child with frequent diarrhea after taking milk food was admitted to the clinic. To make a diagnosis, a lactose tolerance test was performed. The concentration of glucose in the blood after 30, 60 and 90 minutes did not increase. Explain your results.

WHO Criteria for the Diagnosis of Diabetes Mellitus and Impaired Glucose Tolerance
Random glucose readings (mmol/l)
Diabetes mellitus probable Diabetes mellitus uncertain Diabetes mellitus unlikely
Venous plasma ≥11.1 5.5 - <11.1 <5.5
Venous blood ≥10.0 4.4 - < 10.0 < 4.4
Capillary plasma ≥12.2 5.5 - < 12.2 < 5.5
Capillary blood ≥11.1 4.4 - <11.1 <4.4

Case study 7
1. If the patient has a normal fasting blood glucose level and reaches the diabetic limits only after 2 hours, the test should be repeated after: A. 4 weeks B. 6 weeks C. 8 weeks
2. Does the detection of autoantibodies to insulin, islet cells in people without IDDM

symptoms, but with impaired tolerance, give grounds to start treatment in the preclinical period?

Case study 8
1. How does the nature of the glycemic curve in children depend on the type of carbohydrate used to perform the load (galactose, maltose, lactose, combined glucose and galactose)?
2. Can the nature of the glycemic curve reflect not only the state of carbohydrate metabolism, but also intestinal (cavity, membrane) digestion?

Case study 9
1. List the indications for the determination of C-peptide in serum and urine.
2. C-peptide in daily urine A. In healthy people ≥20 nmol/l
B. In patients with IDDM <10 nmol/l
B. In NIDDM patients with relative insulin deficiency <0.7 nmol/l
D. In obese NIDDM patients with insulin resistance ≥10 nmol/l
A. Upper blood glucose level 1. 2.8-3.2 mmol / l during the day in persons receiving a physiological diet
B. Fructosamine 2. 8.8-9.9 mmol/l

Topic "Biochemical diagnostics of lipid metabolism disorders"

Case study 1
A 22-year-old man was admitted to the clinic in connection with complaints of pain in the region of the heart. The patient reported that he was diagnosed with exertional angina 2 years ago. Examination revealed atherosclerotic plaques in subepicardial coronary arteries and large cerebral vessels. The content of cholesterol in the blood, LDL and LPP in the blood plasma exceeds the upper limit of the norm several times. The patient underwent a liver biopsy, which revealed a decrease in the number of receptors for LDL and LDL.
Questions:
1. What type of hyperlipoproteinemia does the patient have?
2. Does heredity matter in the occurrence and development of the detected pathology? If so, what is the mode of inheritance of this disease?
3. Is there a link between a decrease in the number of LDL receptors and hypercholesterolemia?
Case study 2
Patient K., 48 years old, has been suffering from chronic diffuse glomerulonephritis for 5 years. In recent weeks, there have been aching pains in the heart, palpitations, pronounced edema, especially of the lower extremities when walking. Urinalysis: daily diuresis - 1100 ml, density - 1.042, protein - 3.3%. Microscopy of urine sediment: granular and waxy casts - in large quantities, blood pressure - 170/95 mm Hg. Art. Blood test: residual nitrogen - 70 mg%, total protein - 4.8 g%, albumins - 1.5 g%, globulins - 2.8 g%, hyperlipidemia, hypernatremia.
Questions:
1. What forms of pathology are evidenced by the patient's symptoms?
2. What forms of lipid metabolism disorders can occur and what are the mechanisms of their development?
3. What are the possible consequences of hyperlipidemia given its long-term existence?
Case study 3

A 15-year-old boy N. complains of periodic pains in the region of the heart, aggravated by exertion. An angiographic examination revealed stenosis of the lumen of the coronary arteries in N.. On examination: along the tendons of the muscles of the hand there are small dense yellowish elevations (tendon xanthomas). The content of LDL in blood plasma is increased. An additional special study of lymphocytes revealed a decrease in the density of receptors for LDL on their plasmalemma.

1. What forms of pathology does N. have?
2. Do hereditary factors matter in the occurrence and development of the detected form of pathology? If so, which ones?
3. What is the pathogenetic role of a decrease in the number and/or activity of LDL receptors in the development of pathology in patient N.?

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Case study 40

Male M., 68 years old, complains of fatigue and pain in the calf muscles when walking fast. These sensations stop shortly after stopping (symptom of "intermittent claudication"). In addition, M. complains of sensations of chilliness in the legs, a feeling of numbness, "crawling crawling" and tingling (paresthesia) at rest. The patient smokes a lot (since adolescence), his profession is associated with periods of prolonged cooling (outdoor work in autumn and winter). On examination: the feet are pale, the skin on them is dry, cold. The pulse on the dorsal artery of the foot and on the posterior tibial artery on both limbs is not palpable. In the blood test, the cholesterol concentration is 6.2 mmol/l. Preliminary diagnosis of the doctor "Obliterating endarteritis".

1. Can we assume that the cause of ischemia in patient M. is an atherosclerotic lesion of the arteries of the lower extremities, if the level of total serum cholesterol is normal (250 mg/dL)? Give a rationale for your version.
2. What risk factors for the accelerated development of atherosclerosis are revealed in patient M.? List other possible risk factors

Case study 5

Patient N., aged 38, an accountant by profession, complains of progressive obesity, shortness of breath, palpitations, lethargy, drowsiness, headaches, and menstrual disorders. Appetite is good. Eats a lot of flour and sweet dishes. Does not do physical labor. Objectively: hypersthenic constitution, height 160 cm, body weight - 105 kg. Subcutaneous fatty tissue is distributed throughout the body relatively evenly, the boundaries of the heart are somewhat expanded. Heart sounds are weakened and muffled. Pulse 90 beats per minute. BP 150/100 mm Hg The liver protrudes from under the costal margin by 3 cm. An increased content of fats, low and very low density lipoproteins was found in the blood. Basal metabolism is at the lower limits of the norm.

1. What is the possible pathogenesis of obesity in the patient?
2. name the main links in the pathogenesis of AS

ЛД-16 ИН

Federal State Budgetary Educational Institution of Higher Education «North-Ossetia State Medical Academy» of the Ministry of Healthcare of the Russian Federation

Department of biological chemistry

APPROVED

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Standard of test tasks

by discipline CLINICAL BIOCHEMISTRY

the main professional educational program of higher education - specialty program in the specialty 31.05.01 General Medicine, approved in March 30, 2022

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Table of contents

ENTRANCE CONTROL OF STUDENTS' TRAINING LEVEL

"CHEMISTRY OF COMPLEX AND SIMPLE PROTEINS"
OPTION 1

1. specify the functions of proteins:

1. hemoglobin;
2. collagen;
3. elastin;
4. mucin;
5. insulin;
6. actin;
7. immunoglobulin;
8. amelogenins;
9. beta globulins;
10. ldh; a. structural;
b. catalytic;
b. protective;
g. transport;
d. contractile;
e. regulatory.

2. choose the correct definition of the protein structure:
1. primary structure;
2. secondary structure;
3. tertiary structure;
4. quaternary structure. a. a polypeptide chain whose amino acid sequence is genetically determined and formed by peptide bonds between amino acid residues.
b. conformation of the polypeptide chain, fixed by interradical bonds;
b. the sequence of amino acids in the polypeptide chain;
d. the spatial arrangement of the polypeptide chain, fixed by hydrogen bonds between certain peptide groups;
e. spatial arrangement, quantity and nature of the interaction of polypeptide chains in an oligomeric protein.

3. specify proteins with a quaternary structure:
1. hemoglobin
2. myoglobin
3. immunoglobulins
4. ldh
5. correct answers 1,3,4

4. the solubility of protein in water is determined by:

i. ionization of protein molecules;
2. hydration of protein molecules;
3. the shape of the protein molecule;
4. ionic strength of the solvent;
5. that's right.

5. protein denaturation is accompanied by:
1. change in non-covalent bonds;
2. decreased protein solubility;
3. change in the primary structure of the protein;
4. true: 1.2

6. antibodies in blood plasma are found mainly in the fraction:
1. albumin;
2. α1-globulins;
3. αg-globulins;
4. β-globulins;
5. γ-globulins.

7. hemoglobin of erythrocytes of the mother or fetus under physiological conditions has a higher affinity for oxygen:

1. hb a
2. hb f

8. indicate the reason for the increase in the affinity of hb for o2 during oxygenation of hb.
1. change in the tertiary structure of protomers;
2. changing connections in the quaternary structure;
3. change in the position of protomers;
4. cooperative interactions of protomers;
5. change in the location of the heme in hb.

9. myoglobin refers to:
1. metalloproteins;
2. hemoproteins;
3. lipoproteins;
4. glycoproteins;
5. flavoproteins.

10. specify the carbohydrates that are part of the nucleoproteins:
1. pentoses;
2. chondroitin sulfates;
3. hyaluronic acid;
4. true 2.3.
5. all answers are correct.

OPTION 2

1. MAKE THE RIGHT PAIRS:

1 albumin;
2. globulins;
3. histones;
4. collagens;
5. elastins;
a. nuclear proteins;
b. well soluble in water
proteins that regulate oncoti
blood pressure;
b. connective tissue proteins
nor, rich gli and pro;
d. heterogeneous fraction of proteins
blood, one of the functions of
swarm - protective;
d. connective tissue proteins,
rich gli and val.

2. the presence of proline in the polypeptide chain prevents the formation of an α-helix, since proline:
1. promotes electrostatic repulsion of amino acid residues;
2. the nitrogen atom is part of a rigid ring, which excludes the possibility of rotation around the c-n bond;
3. has a large radical size;
4. there is no hydrogen atom in the peptide bond formed by proline.

3. during protein denaturation, the following occurs:
1. change in non-covalent bonds;
2. decreased protein solubility;
3. change in the primary structure of the protein;
4. true: 1.2
5. there is no right answer.

4. what ensures the structural and functional diversity of natural proteins? choose one most correct and complete answer from the five given below:
1. differences in amino acid composition;
2. different length of the polypeptide chain;
3. differences in molecular weight;
4. differences in the sequence of amino acids in the polypeptide chain;
5. differences in the number of polypeptide chains in an oligomeric protein.

5. choose the definition of the tertiary structure of the protein:
1. the spatial structure of the protein, fixed by hydrogen bonds between the atoms of the peptide composition;
2. the spatial arrangement of the polypeptide chain in a certain volume, fixed by bonds between the amk radicals, which are far apart in a linear sequence;

3. the order of alternation of amino acids in the polypeptide chain;
4. spatial arrangement of the polypeptide chain, fixed by peptide bonds;
5. method for stacking protomers in an oligomeric protein.
5. the addition of o2 to hb is accompanied by:
1. change in the valency of fe2+ to fe3+;
2. change in the location of the heme in hb;
3. the appearance of an additional coordination bond between fe2+ and the rest of the proximal hys;
4. all answers are correct;
5. there is no right answer.

6. the release of o2 from oxygenated hb in peripheral tissues is enhanced:
    1. increasing the concentration of h +;
    2. increasing the concentration of co2;
    3. increasing the concentration of 2,3-diphosphoglycerate (dpg).
    4. all answers are correct.
    5. there is no right answer.

7. myoglobin refers to:
1. metalloproteins;
2. hemoproteins;
3. lipoproteins;
4. glycoproteins;
5. flavoproteins.
8. myoglobin and hemoglobin:
1. participate in the delivery of o2 from the lungs to the tissues;
2. provide intracellular o2 transport;
3. have an identical primary structure;
4. attach 4 o2 molecules;
5. they are complex proteins.
9. hemoglobin:
1. has one o2 binding site.
2. in tissue capillaries, it attaches co2 to the active center.
3. consists of 4 heme-containing protomers;
4. is a simple protein;
5. built from 4 α-subunits.

10. what ensures the structural and functional diversity of natural proteins? choose one most correct and complete answer from the five given below:
1. differences in amino acid composition;
2. different length of the polypeptide chain;
3. differences in molecular weight;
4. differences in the sequence of amino acids in the polypeptide chain;
5. differences in the number of polypeptide chains in an oligomeric protein.

ENZYMES

1. Specify the correct definition of enzymes:

1. Catalysts - metals;

2. Biological catalysts of protein nature;

3. Catalysts - acids;

4. Catalysts - alkalis;

5. All answers are correct.

2. What is the name of the protein part of the enzyme:

1. Apoenzyme;

2. Holoenzyme;

3. Coenzyme;

4. Protomer.

3. What is the name of the site of the active site of the enzyme, to which the substrate is attached:

1. catalytic;

2. Hydrophobic;

3. Allosteric;

4. Hydrophilic;

5. Contact.

4. The active center of complex enzymes is formed from:

1. One amino acid;

2. Residues of several amino acids;

3. Residues of several amino acids and non-protein components;

4. Non-protein components.

5. The Michaelis constant is numerically equal to the substrate concentration at which the reaction rate is:

1. Maximum;

2. ½ maximum;

3. 1/5 max;

4. 1/10 max.

6. What part of the enzyme protein molecule ensures the attachment of the substrate to the enzyme and its further transformation:

1. Allosteric cent;

2. Catalytic center;

3. Active center;

4. Anchor area;

5. Coenzyme.

7. The author of the theory of induced fit in enzymatic catalysis is:

1. L. Michaelis;

2. D. Koshland;

3. J. Briggs;

4. E. Fisher.

8. The nature of the curve of the rate of the enzymatic reaction from pH is determined by:

1. Enzyme concentration;

2. Substrate concentration;

3. Ionization of the functional groups of the active site

enzyme;

4. Ionization of the chemical groups of the substrate.

10. What temperature is optimal for the action of most enzymes:

1. 50-600C;

2. 15-200C;

3. 80-1000C;

4. 35-400C;

11. Indicate what determines the property of specificity of enzymes.

1. Chemical correspondence of the active site (AC) of the enzyme

substrate;

2. Spatial correspondence of the enzyme AC to the substrate;

3. A set of AMK radicals in AC;

4. The presence of a coenzyme;

5. Complementarity of the AC enzyme to the substrate.

12. Acid-base catalysis is realized in the presence of:

1.Acid groups in the active center of the enzyme;

2. Acid groups in the substrate;

3. Major groups in the active site of the enzyme;

4. Acid and basic groups in the active site of the enzyme;

5. Acid and basic groups in the substrate.

13. Competitive enzyme inhibitors are:

1. Metals;

2. Amino acids;

3. Substances similar in structure to the substrate;

4. Substances similar in structure to the active center of the enzyme;

5. Polypeptides.

14. Multienzyme complexes are:

1. A set of enzymes of the same class;

2. Enzymes that catalyze similar reactions;

3. Polyenzymatic systems that perform a certain function;

4. Enzymes associated with the cell membrane.

15. Specify the amino acids that form the active center of chymotrypsin.

1. Serine;

2. Histidine;

3. Asparagine;

4. That's right;

5. Everything is wrong.

16. The decrease in enzyme activity in case of violation of the optimum pH of the medium is due to:

1. Change in the ionization of functional groups of AC enzymes.

2. Change in the ionization of the substrate;

3. Violation of complementarity of E and S;

4. That's right;

5. Everything is wrong.

17. Indicate an incorrectly labeled enzyme among those that are used to diagnose damage to the heart muscle

1. KFK (MV);

2. LDH1;

3. ASAT;

4. ALT;

5. Histidase.

18. What reaction is catalyzed by esterases:

1. Non-hydrolytic reactions of decomposition of organic compounds by carbon-oxygen bond;

2. Action on ester bonds;

3. Oxidation of organic compounds by molecular oxygen with the formation of a hydroxyl group.

19. Diagnostic test for prostate cancer is:

1. Aldolase;

2. Acid phosphatase;

3. Malate dehydrogenase;

4. Alcohol dehydrogenase.

20. Digestion results in:

1. Hydrolysis of food biopolymers to monomers.
2. Formation of products devoid of species specificity.
3. Absorption of products devoid of species specificity.
4. That's right.
5. Everything is wrong.

OPTION 2

1. Specify the correct definition of the active site (AC) of the enzyme.

1. Association of AMK radicals in space;

2. A section of the polypeptide chain in the tertiary structure of the enzyme;

2. Association of protomers into an oligomeric protein-enzyme;

3. The combination of several AMK radicals located in different places of the polypeptide (s) chain (s);

4. True 1.4.

2. What is the name of the site of the active site of the enzyme, to which the substrate is attached:

1.Catalytic;

2. Hydrophobic;

3. Allosteric;

4.Hydrophilic;

5. Contact.

3. Similarities between enzymes and non-enzymatic catalysts are:

1. Catalysis of only energetically possible reactions;

2. Interaction with one of the components of the reaction medium;

3. The invariance of the direction of the reaction;

4. Reversibility of the catalytic reaction;

5. Direct proportional dependence of the reaction rate on

temperature.

4. Coenzymes include:

1. Pyruvate;

2. OVER;

3. Heme;

4. Vitamin B1;

5. Tyrosine.

5. The class of enzymes indicates:

1. Enzyme conformation;

2. Type of coenzyme;

3. Type of chemical reaction catalyzed by the enzyme;

4. The structure of the active site of the enzyme.

6. Indicate what determines the property of specificity of enzymes.

1. Chemical correspondence of the active site (AC) of the enzyme

substrate;

2. Spatial correspondence of the enzyme AC to the substrate;

3. A set of AMK radicals in AC;

4. The presence of a coenzyme;

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1. Non-hydrolytic reactions of decomposition of organic compounds by carbon-oxygen bond;

2. Action on ester bonds;

3. Oxidation of organic compounds by molecular oxygen with the formation of a hydroxyl group.

9. Before the interaction of the enzyme with the substrate, the spatial structures of the enzyme and substrate:

1. Completely match each other;

2. Approximately correspond to each other;

3. Do not match.

10. What happens to the enzyme under the action of high temperature:

1. Hydrolysis;

2. Denaturation;

3. Formation of a substrate-enzyme complex;

4. Blocking of the active center;

5. Violation of the primary structure.

11. Indicate the correct definition of the Michaelis constant (Km).

3. Substrate concentration at which the reaction rate increases linearly;

4. Substrate concentration at which the reaction rate became maximum;

5. Substrate concentration at which the reaction rate is half the maximum;

6. That's right;

7. Everything is wrong.

12. Make pairs between the names of enzymes and the designations of the optimum pH for their activity.

1. Trypsin;

2. Amylase of saliva;

3. Rennin (gastrixin); A B C D E

4. Pepsin;

5. Arginase;

1 2 3 4 5 6 7 8 9

pH

13. Pair between LDH isoforms and subunit composition

I. LDH1;

2. LDH2;

3. LDH3;

4. LDH4

5. LDG5 A. MMMM

B. MMMN

V. MMNN

G. INN

D.

14. What type of inhibition is observed under the action of an inhibitor that has a structural similarity with the substrate:

1. Competitive;

2. Non-competitive;

3. Allosteric;

4. Non-specific;

5. Irreversible.

15. What substance is a pepsin activator:

1. Hydrochloric acid;

2. Sodium chloride;

3. Copper sulphate;

4. Potassium chloride;

5. Copper oxide hydrate.

16. For the diagnosis of pancreatic lesions, the activity of enzymes is determined:

I. Alpha-amylases;

2. Lipases;

3. Proteinase;

4. That's right;

5. Everything is wrong.

17. Which coenzymes are associated with the class of oxidoreductase enzymes:

1. Thiamine pyrophosphate;

2. NAD+ and NADP+;

3. FMN and FAD;

4. biotin;

5.2, 3

18. What are the names of enzymes that catalyze the intramolecular transfer of groups:

1. Kinases;

2. Mutazy;

3. Racemases;

4. Oxygenases;

5. Transferases.

19. In liver diseases, the determination of enzyme activity is of clinical importance:

1. Cholinesterase;

2. α-amylases;

3. Phosphorylases;

4. Aspartate aminotransferase;

5. Peroxidases.

20. For gastrointestinal diseases, enzyme replacement therapy is used:

1. Chymotrypsin;

2. Endopeptidase;

3. Trypsin;

4. Catalase;

5. Ribonuclease

Carbohydrate metabolism
OPTION 1

1. Indicate the wrong position in the carbohydrate function:
I. Energy source.
2. Reserve energy substance.
3. Protective.
4. Transport.
5. Construction of membranes.
6. Construction of nucleotides.
7. Building connective tissue.
8. Construction of mineralized tissues.
9. Formation of endogenous water.
10. Regulatory.

2. Polysaccharides glycogen and starch are built from:
1. Disaccharide links;
2. Glucose;
3. Fructose;
4. Galactose;
5. Sucrose.

3. The rest of the fructose is part of:
1. Glycogen;
2. Starch;
3. Inulin;
4. Cellulose.
4. Linear polysaccharides include:
1. Glycogen;
2. Amylose;
3. Amylopectin.

5. Set match:
Glycolysis:
1. Aerobic
2. Anaerobic ATP Synthesis Pathway
A. Oxidative phosphorylation
B. Substrate phosphorylation
B. Both ways
6. Indicate the wrong position in the role of MAC (malate-aspartate shuttle)
1. Occurs during glycolysis.
2. Occurs during ATP aerobic dichotomous breakdown of glucose.
3. Transports H+ from NADH+H+ (in the cytosol) to CTE (in mitochondria).
4. Provides oxidative phosphorylation.
5. Provides the relationship between carbohydrate metabolism and AMC metabolism.

7. Enzymes are involved in the reactions of glycogen breakdown and the formation of glucose-6-phosphate:
1. glucokinase
2. glycogen phosphorylase;

3. Phosphoglucamutase
4. Phosphofructolginase

8. NAD is a coenzyme:
1. Glycogen phosphorylase;
2. Aldolases;
3. Enolase
4. Glyceraldehyde phosphate dehydrogenase;
5. Pyruvate kinases.

9. For the conversion of fructose-6-phosphate to fructose-1,6-diphosphate under the influence of phosphofructokinase, it is necessary:
1. NADPH
2. Coenzyme A;
3. ADP;
4. OVER;
5. NADNN;
6. ATP.
10. Oxidative decarboxylation from pyruvate produces:
1. Citrate;
2. α-ketoglutarate;
3. Acetyl phosphate;
4. Acetyl-CoA;
5. Propionate.

11. Energy value of anaerobic glycolysis:
1. 2 ATP molecules;
2. 4 ATP molecules;
3. 12 ATP molecules;
4. 36 (38) ATP molecules;
5. 130 ATP molecules.
12. The restoration of pyruvate to lactate is carried out using the enzyme:
1. Pyruvate dehydrogenase;
2. Pyruvate kinase;
3. Glyceraldehyde phosphate dehydrogenase;
4. Lactate dehydrogenase;
5. Phosphofructokinase
13. The role of the apotomic pathway of glucose breakdown:
1. Important for ATP synthesis.
2. Obtaining NADPH+H+, which is a hydrogen donor
for synthesis processes.
3. Obtaining NADPH+H+ for hydrogen transfer to CFC.
4. Formation of pentoses for the synthesis of nucleotides.
5. True 2, 4.

14. The largest amount of ATP is formed in the process:
1. Oxidative decarboxylation of pyruvate;
2. Anaerobic glycolysis;
3. Cycle of tricarboxylic acids;

4. Pentose phosphate pathway.

15. The following enzyme is involved in gluconeogenesis and glycolysis:
1. Hexokinase;
2. Pyruvate kinase;
3. Aldolase;
4. Phosphofructokinase;
5. Pyruvate carboxylase.

16. For the indicated enzymes of glucose metabolism, select the appropriate coenzyme:

1. Glucose-6-p-t-dehydrogenase A. NAD+
2. Transaldolase B. NADP+
3. Glyceraldehyde phosphate dehydrogenase B. FMN
4. Lactate dehydrogenase G. FAD
5. Pyruvate dehydrogenase complex D. Lipoic acid
6. Transketolase E. HSKoA
7. Succinate dehydrogenase G. TBP
8. Pyruvate carboxylase Z. Biotin

17. Mobilization of glycogen occurs in:
1. Skeletal muscles;
2. Liver;
3. Kidney;
4. True 2.3;
5. That's right.

18. Glycogen phosphorylase catalyzes the reaction:
1. Formation of free glucose;
2. Cleavage of the 1-6-glycosidic bond;
3. Formation of glucose-1-phosphate;
4. formation of glucose-6-phosphate.
19. The content of glucose in the blood (in mmol / l):
1. 2.5-3.5; 2. 3.5-6.0; 3.4.0-7.0;
4. 8.0 - 10.0; 5. That's right.

20. Regulatory enzyme of glycogen synthesis is:
1. Phosphoglucomutase;
2. Glucose-1-phosphate uridine transferase;
3. Glycogen synthetase;
4. Glycogen phosphorylase;
5. α-1,6-glycosidase.

OPTION 2

1. Choose a definition for the name of the process.

1. Glycolysis
2. Glycogenolysis
3. Dichotomous breakdown of glucose.
4. Apotomic pathway of glucose breakdown
5. Gluconeogenesis
6. Mobilization of glycogen
A. Synthesis of glucose from neur
left metabolites.
B. The breakdown of glucose from the image
2 molecules of phos-
photriosis.
C. The breakdown of glycogen to lactose
tata;
G. The breakdown of glycogen
free glue
goats
D. The breakdown of glucose to lactate
that
E. The breakdown of glucose with decare
boxylation of 1 atom
With and formation of pentoses.

2. Carbohydrates are not included in:
1. Glycoproteins;
2. Phospholipids;
3. Glycolipoproteins;
4. Nucleoproteins.
3. Structural polysaccharides do not include:
1. Keratan sulfate;
2. Hyaluronic acid;
3. Glycogen;
4. Chondroitin sulfate.
4. During the hydrolysis of lactose, the following are formed:
1. Two glucose residues;
2. Glucose and galactose;
3. Glucose and fructose;
4. Glucose and mannose;

5. Linear polysaccharides include:
1. Glycog

6.Set match:

Amino acid

1. Histidine;

2. Tyrosine;

3. Ornithine;

4. Glutamine acid;

5. 5-hydroxytryptophan Product of its decarboxylation

A. tyramine;

B. γ-aminobutyric acid;

V. Putrescin;

G. Histamine;

D. Serotonin.

7. The role of methionine:

1. Donor of the methyl group for the neutralization of hormones.

2. Donor of methyl groups for synthesis - choline, adrenaline, creatine.

3. It is the first AMK in the synthesis of a polypeptide chain during translation.

4. Source for the formation of cysteine.

5. That's right.

8. Synthesis of urea occurs:

1. In nervous tissue.

2. In the retina.

3. In the liver.

4. In the kidneys.

2. That's right.

9. Hepatic coma in liver damage is due to toxic effects on brain cells:

1. Urea.

2. Carbamoyl phosphate.

3. Ammonia.

4. Citrulline.

5. That's right.

10. Nitrogen of what substances makes up the bulk of the residual nitrogen?

1. Urea nitrogen.

2. AMK nitrogen.

3. Creatine nitrogen.

4. Creatinine nitrogen.

5. Nitrogen of uric acid.

6. Bilirubin nitrogen.

7. That's right.

11. The main end metabolites of nitrogen metabolism removed from the body are:

1. Urea.

2. Ammonium salts.

3. Creatinine.

4. Uric acid.

5. That's right.

12. The high need for phenylalanine in mammals is due to its use in the synthesis:

1. Adrenaline;

2. tryptophan;

3. histidine;

4. Methionine;

5. Tyrosine.

13. In the synthesis of cysteine are involved:

1. Methionine;

2. Homocysteine;

3. Arginine;

4. Tryptophan;

5. Serine.

14. For the treatment of hyperuricemia, the drug allopurinol is used, which is a competitive inhibitor of the enzyme:

1. Adenosine deaminase;

2. Xanthine oxidase;

3. Cytidine deaminase;

4. Dihydroorotate dehydrogenase.

15. Nucleotides are cleaved by enzymes:

1. Nucleases;

2. Nucleotidases;

3. Nucleosidases;

4. Nucleoside phosphorylases.

16. Deamination of guanine produces:

1. Guanine;

2. Hypoxanthin;

3. Xanthine;

4. Uric acid;

5. Uracil.

17. With a genetic defect of glucuronyl transferase in the blood, the content of:

1. Indirect bilirubin;

2. bilirubin monoglucuronide;

3. Urobilin;

4. Urobilinogen;

5. Bilirubindiglucuronide.

18. The conversion of biliverdin to bilirubin is catalyzed by the enzyme:

1. Bilirubin reductase;

2. Biliverdin reductase;

3. Heme oxygenase.

19. Set match:

Blood bilirubin

1. Straight;

2. Indirect Characteristic

A. Forms a complex with blood albumin;

B. Gives a direct reaction with a diazo reagent;

B. Condensation product with glucuronic acid.

20. Transport of iron by blood to hemosynthetic cells occurs in combination with protein:

1. Ferritin;

2. Ceruloplasmin;

3. Transferrin;

4. Hemosiderin.

Option 5

1. Pepsin and trypsin:

1. Produced in the pancreas;

2. Activated by protein-protein interactions;

3. Synthesized by the cells of the stomach;

4. They are exopeptidases;

5. Participate in the digestion of proteins.

2. Chymotrypsin hydrolyzes peptide bonds formed with the participation of:

1. Carboxyl groups of aliphatic amino acids;

2. Carboxyl groups of aromatic amino acids;

3. Amino groups of aromatic amino acids;

4. Amno groups of aliphatic amino acids.

3. During the decarboxylation of some AMA and their derivatives, substances are formed that are:

1. Energy sources.

2. Substrates for gluconeogenesis.

3. Substrates for ketogenesis.

4. Sources of ammonia for the synthesis of urea.

5. Neurotransmitters or tissue hormones.

6. True 2.3.

4. Transamination - the process of intermolecular transfer of amino groups from:

1. α-amino acids to α-keto acid;

2. α-amino acids to α-hydroxy acid;

3. Amine to α-amino acid;

4. Amine to α-hydroxy acid;

5. Aminotransferases play a role:

1. In the synthesis of non-essential amino acids;

2. In the transmembrane transfer of amino acids;

3. In the synthesis of essential amino acids;

4. In the deamination of amino acids.

6. Set match:

Transamination reactions

1. Pyruvate and glutamate;

2. Pyruvate and aspartate;

3. Oxaloacetate and glutamate Reaction products

A. Aspartate and α-ketoglutarate;

B. Alanine and α-ketoglutarate;

B. Alanine and oxaloacetate.

7. Violation of the metabolic pathway: thyr → Dopa → .... → Melanin leads to:

1. Phenylketonuria;

2. Albinism;

3. Tyrosinemia;

4. Parkinson's disease;

5. Alkaptonuria.

8. The process in the body, accompanied by the formation of NH3:

1. Inactivation of biogenic amines using S-AM;

2. The formation of adrenaline;

3. Conversion of α-ketoglutarate to glutamate;

4. Catabolism of amino acids;

5. Synthesis of dopamine.

9. The share of urea in residual nitrogen accounts for:

1. 70%

2. 50%

3. 25%

4.12%

10. A common metabolite in the synthesis of methionine and threonine is:

1. Serine;

2. Homoserine;

3. Homocysteine;

4. Cysteine;

5. Cystation.

11. The high need for phenylalanine in mammals is due to its use in the synthesis:

1. Adrenaline;

2. tryptophan;

3. histidine;

4. Methionine;

5. Tyrosine.

12. Reactions of the ornithine cycle of urea synthesis occurring in the cytosol are catalyzed by enzymes:

1. Carbamoyl phosphate synthetase;

2. Argininosuccinate synthetase;

3. Ornithinecarbamoylphospha

Heme metabolism and iron metabolism

Option 1

1. Arrange the heme synthesis reactions in the order in which they occur in the body:
1. formation of porphobillinogen;
2. formation of δ-aminolevulinic acid;
3. formation of protoporphyrin IX;
4. addition of iron.

2. The key reaction of heme synthesis is the formation of δ-aminolevulinic acid, the reaction is catalyzed by the enzyme δ-aminolevulinate synthetase, which is inhibited
1.heme
2.hemoglobin
3.1,2

3. How many glycine molecules are used for the synthesis of one heme molecule?
1-8 molecules,
2-9 molecules,
3-10 molecules,
4-11 molecules.

4. Diseases caused by a hereditary defect in heme synthesis enzymes are called:
1. porphyria,
2.hemoglobinosis
3. thalassemia

5. Hemoglobin transports through the blood:
1. nitrogen;
2. carbon dioxide;
3. oxygen;
4. ammonia.

6. Hemoglobin belongs to the class:
1. nucleoproteins;
2. phosphoproteins;
3. chromoproteins;
4. flavoproteins.

7. Select compounds that are used for heme synthesis:
1. glycine;
2. acetyl-CoA;
3. iron;
4. guanidinoacetate;
5. succinyl-CoA;

6. malate.

8. The key reaction in heme synthesis, according to which the process is regulated, is:
1. formation of porphobillinogen;
2. formation of δ-aminolevulinic acid;
3. formation of protoporphyrin IX;
4. addition of iron to form heme.

9. The non-protein component of aminolevulinate synthetase is:
1. FAD
2. OVER
3. NADP
4. TPF
5. PF

10. Where does the destruction of heme and the formation of bilirubin occur:
1. In the lungs.
2. In the small intestine.
3. In the liver.
4. In RES cells of the spleen, bone marrow, Kupffer cells.
5. True 1.2.

Option 2

1. What is the state of bilirubin in the blood?
1. Forms a complex with albumins.
2. Forms a complex with globulins.
3. Forms a complex with fibrinogen.
4. Does not form complexes.
5. True 1.2.

2. Complexing of bilirubin with albumin provides bilirubin with:
1. Solubility.
2. Neutralizes its toxic properties.
3. Promotes transport to the liver.
4. That's right.
5. Everything is wrong.

3. In hepatocytes, bilirubin is formed:
1. Biliverdin
2. Bilirubin is a monoglucuronide.
3. Bilirubin - diglucuronide.

4. Mesobilirubin.
5. True 2.3.
6. True 1.4.

4. Hemoglobin transports through the blood:
1. nitrogen;
2. carbon dioxide;
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5. Hemoglobin belongs to the class:
1. nucleoproteins;
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6. Select compounds that are used for heme synthesis:
1. glycine;
2. acetyl-CoA;
3. iron;
4. guanidinoacetate;
5. succinyl-CoA;
6. malate.

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1. formation of porphobillinogen;
2. formation of δ-aminolevulinic acid;
3. formation of protoporphyrin IX;
4. addition of iron to form heme.

8. The non-protein component of aminolevulinate synthetase is:
1. FAD
2. OVER
3. NADP
4. TPF
5. PF

9. Where does the destruction of heme and the formation of bilirubin occur:
1. In the lungs.
2. In the small intestine.
3. In the liver.
4. In RES cells of the spleen, bone marrow, Kupffer cells.
5. True 1.2.

10. What substances improve the absorption of iron in the intestines?
1. Vitamin C,
2. Hydrochloric acid,
3. Fatty acids
4. Pepsin
5. True 1.2
6. True 3.4

Option 3
1. Name the protein that transports iron in the blood:
1. Ferritin,
2. Transferrin,
3. Albumin

2. Name the protein that is the depot of iron in the body
1. Albumin
2. Ferritin
3. Fibrinogen

3. What is the state of bilirubin in the blood?
1. Forms a complex with albumins.
2. Forms a complex with globulins.
3. Forms a complex with fibrinogen.
4. Does not form complexes.
5. True 1.2.

4. In hepatocytes, bilirubin is formed:
1. Biliverdin
2. Bilirubin is a monoglucuronide.
3. Bilirubin - diglucuronide.
4. Mesobilirubin.
5. True 2.3.
6. True 1.4.

5. Hemoglobin transports through the blood:
1. nitrogen;
2. carbon dioxide;
3. oxygen;
4. ammonia.

6. Arrange the heme synthesis reactions in the order in which they occur in the body:
1. formation of porphobillinogen;

2. formation of δ-aminolevulinic acid;
3. formation of protoporphyrin IX;
4. addition of iron.

7. The key reaction of heme synthesis is the formation of δ-aminolevulinic acid, the reaction is catalyzed by the enzyme δ-aminolevulinate synthetase, which is inhibited
1.heme
2.hemoglobin
3.1,2

8. How many glycine molecules are used for the synthesis of one heme molecule?
1-8 molecules,
2-9 molecules,
3-10 molecules,
4-11 molecules.
9. Diseases caused by a hereditary defect in heme synthesis enzymes are called:
1. porphyria,
2.hemoglobinosis
3. thalassemia

10. Hemoglobin transports through the blood:
1. nitrogen;
2. carbon dioxide;
3. oxygen;
4. ammonia.

Variant 4
1. Hemoglobin belongs to the class:
1. nucleoproteins;
2. phosphoproteins;
3. chromoproteins;
4. flavoproteins.

2. Select compounds that are used for heme synthesis:
1. glycine;
2. acetyl-CoA;
3. iron;
4. guanidinoacetate;
5. succinyl-CoA;
6. malate.

3. The non-protein component of aminolevulinate synthetase is:
1. F HELL

2. OVER
3. NADP
4. TPF
5. PF

4. Where does the destruction of heme and the formation of bilirubin occur:
1. In the lungs.
2. In the small intestine.
3. In the liver.
4. In RES cells of the spleen, bone marrow, Kupffer cells.
5. True 1.2.

5. What substances improve the absorption of iron in the intestines?
1. Vitamin C,
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4. Pepsin
5. True 1.2
6. True 3.4

6. What is the state of bilirubin in the blood?
1. Forms a complex with albumins.
2. Forms a complex with globulins.
3. Forms a complex with fibrinogen.
4. Does not form complexes.
5. True 1.2.

7. Complexing of bilirubin with albumin provides bilirubin with:
1. Solubility.
1. Neutralizes its toxic properties.
2. Promotes transport to the liver.
3. That's right.
4. Everything is wrong.

8. In hepatocytes from bilirubin is formed:
1. Biliverdin
2. Bilirubin is a monoglucuronide.
3. Bilirubin - diglucuronide.
4. Mesobilirubin.
5. True 2.3.
6. True 1.4.

9. What properties are characteristic of direct bilirubin:

1. Hydrophobic,
2. Hydrophilic,
3. Free,
4. Bound,
5. Lipophilic,
6. Threshold,
7. Toxic

10. What properties are characteristic of indirect bilirubin:
1. Hydrophobic,
2. Hydrophilic,
3. Free,
4. Bound,
5. Lipophilic,
6. Threshold,
7. Toxic

Option 5
1. In hepatocytes from bilirubin is formed:
1. Biliverdin
2. Bilirubin is a monoglucuronide.
3. Bilirubin - diglucuronide.
4. Mesobilirubin.
5. True 2.3.
6. True 1.4.

2. What properties are characteristic of direct bilirubin:
1. Hydrophobic,
2. Hydrophilic,
3. Free,
4. Bound,
5. Lipophilic,
6. Threshold,
7. Toxic

3. What properties are characteristic of indirect bilirubin:
1. Hydrophobic,
2. Hydrophilic,
3. Free,
4. Bound,
5. Lipophilic,

6. Threshold,
7. Toxic

4. At the stage of hemoglobin oxidation, it is formed:
1. Biliverdin
2. Verdoglobin
3. Bilirubin

5. Arrange the heme synthesis reactions in the order in which they occur in the body:
5. formation of porphobillinogen;
6. formation of δ-aminolevulinic acid;
7. formation of protoporphyrin IX;
8. addition of iron.

6. The key reaction of heme synthesis is the formation of δ-aminolevulinic acid, the reaction is catalyzed by the enzyme δ-aminolevulinate synthetase, which is inhibited
1.heme
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7. Hemoglobin belongs to the class:
1. nucleoproteins;
2. phosphoproteins;
3. chromoproteins;
4. flavoproteins.

8. Select compounds that are used for heme synthesis:
1. glycine;
2. acetyl-CoA;
3. iron;
4. guanidinoacetate;
5. succinyl-CoA;
6. malate.

9. The non-protein component of aminolevulinate synthetase is:
1. FAD
2. OVER
3. NADP
4. TPF
5. PF

10. Where does the destruction of heme and the formation of bilirubin occur:
1. In the lungs.

2. In the small intestine.
3. In the liver.
4. In RES cells of the spleen, bone marrow, Kupffer cells.
5. True 1.2.

"BIOCHEMISTRY OF BLOOD"

OPTION 1

1. Which of the following functions is performed by serum albumin:
1. Binds and transports endogenous metabolites;
2. Participates in maintaining the osmotic pressure of the blood;
3. Participates in immune processes;
4. Transports many xenobiotics, including a number of drugs.
2. The main cations and anions of the extracellular space are:
1. Sodium;
2. Chlorine;
3. Calcium;
4. Bicarbonate;
5. All listed ions.
3. Acidosis is characterized by:
1. Increasing the pH of the blood;
2. Increasing the concentration of OH-;
3. Decreased blood pH;
4. Decreased H+ concentration in blood plasma;
5. Decreased lactate in the blood.
4. The content of total protein in plasma is (g / l):
1. 30 - 40. 2. 40 - 60. 3. 65 - 85. 4. 80 - 120.
5. Indicate the sites of synthesis of plasma protein fractions.
1. Albumins. A. Liver.
2. alpha-1 globulins. B. Intestine.
3. alpha-2 globulins. B. Lungs.
4. beta globulins. D. Cells of lymphoid tissue.
5. gamma globulins.
6. Fibrinogen.

6. 50% of the residual nitrogen in the blood is nitrogen:
1. AMK.
2. Creatine.
3. Urea.
4. Uric acid.
5. Bilirubin.

6. Squirrel.
7. The content of creatinine in the blood increases with:
1. Fasting.
2. Strengthened muscular work.
3. Insufficiency of kidney function.
4. True 1.2.
5. That's right.
8. The level of sodium in the blood is regulated:
a. Aldosterone;
b. parathormone;
c. Adrenaline;
d. prostaglandins;
e. Calcitonin.
9. The content of serum protein proteinase inhibitors in inflammatory diseases:
1. Rising.
2. Does not change.
3. Decreases.
10. Enzymatic diagnosis of myocardial infarction is recommended to be carried out by changes in serum:
1. AST;
2. ALT;
3. Cretinkinase MB;
4. LDH-1.
11. For the diagnosis of latent diabetes mellitus, the following is carried out:
1. Determination of fasting glucose.
2. Determination of glucose content in urine.
3. Determination of glucose in the blood after the "sugar" load.
4. Determination of blood glucose during the day - daily glucose profile.
5. True 1.2.
6. True 3.4.
12. The advantage of determining creatinfos
phokinase in acute myocardial infarction in relation to the definition of other enzymes is:
1. Stable long-term increase;
2. Organ specificity;
3. Rapid increase in serum enzyme activity, high sensitivity and specificity.
4. Simplicity in setting up the test.
13. Where is the destruction of heme and the formation of bilirubin:
1. In the lungs.
2. In the small intestine.
3. In the liver.
4. In RES cells of the spleen, bone marrow, Kupffer cells.
5. True 1.2.
14. Indicate the plasma protein that is absent in healthy subjects.

1. Transferrin.
2. Ceruloplasmin.
3. Fibrinogen.
4. Alpha - 1 - antitrypsin.
5. Alpha - 2 - macroglobulin.
6. C-reactive protein (CRP).
15. The content of urea in the blood decreases with:
1. Damage to the kidneys.
2. Damage to the lungs.
3. Damage to the liver.
4. True 1,3,5.
5. That's right.
16. Determination of the relative density of urine gives an idea of:
1. Excretory function of the kidneys;
2. The concentration function of the kidneys;
3. Filtration function of the kidneys;
4. All listed functions;
5. None of the above.
17. Ketone bodies in the urine are detected when:
1. Diabetes;
2. Fasting;
3. Urolithiasis;
4. Chronic renal failure;
5. Cyst.
18. What hormones regulate the process of urine formation:
1. Glucagon;
2. Adrenaline;
3. Vasopressin;
4. Thyroxine;
5. Aldosterone.
19. At what jaundice is urobilin determined in the urine:
1. Hemolytic;
2. Parenchymal;
3. Obstructive,
20. Effect of aldosterone on water-mineral metabolism:
1. Water retention in the body;
2. Increased renal reabsorption of sodium;
3. Increased renal excretion of potassium;
4. All of the above is true;
5. All of the above is incorrect.
OPTION 2
1. In blood serum, unlike plasma, there are no:
1. Fibrinogen;

2. Albumins;
3. Complement;
4. Kallikrein;
5. Antithrombin.
2. Albumins are involved in:
1. Activation of lipoprotein lipase;
2. Regulation of the concentration of free calcium in blood plasma;
3. Transport of fatty acids;
4. Regulation of the concentration of free hormones;
5. Maintaining the constancy of homeostasis.
3. The value of the oncotic pressure of the serum is determined by:
1. Ions;
2. Carbohydrates;
3. Lipids;
4. Proteins;
5. Low molecular nitrogen compounds.
4. Causes of hyponatremia:
1. Water retention in the body;
2. Increased sweating;
3. Atrophy of the adrenal glands;
4. All of the above.
5. The level of calcium in the blood regulates the hormone:
1. Calcitonin;
2. Parathyroid hormone;
3. Calcitriol;
4. All of the above.
6. Creatine kinase presents in active form:
1. Monomer;
2. Dimer;
3. Tetramer;
4. Polymer;
5. A mixture of isomers.
7. The content of cholesterol in plasma increases with: (specify incorrect position)
1. Atherosclerosis.
2. Damage to the kidneys.
3. Diabetes.
4. Gallstone disease.
5. Acute infections.
8. What is the state of bilirubin in the blood?
2. Forms a complex with albumins.
3. Forms a complex with globulins.
4. Forms a complex with fibrinogen.
5. Does not form complexes.

6. True 1.2.
9. Alkalosis is characterized by:
1. Decreased blood pH;
2. Increasing the concentration of OH-;
3. An increase in lactate in the blood;
4. Increased blood pH;
5. Decreased lactate in the blood.
10. Residual blood nitrogen is the nitrogen of the following compounds:
1. Protein, Hb, bilirubin, uric acid, urea,
BUN, vitamins, creatine, creatinine.
2. HB, bilirubin, uric acid, urea, AUA,
vitamins, creatine, creatinine.
3. Bilirubin, uric acid, urea, BUN,
vitamins, creatine, creatinine.
4. True 1.2.
5. True 2.3.
11. Hypoalbuminemia occurs when:
1. Fasting.
2. Damage to the liver.
3. Damage to the kidneys.
4. Inadequate protein nutrition.
5. Violation of protein digestibility.
6. True 2.3.
7. True 1,4,5.
8. That's right.
12. The content of urea in the blood of healthy people is (mmol / l):
1. 3.0 - 8.3. 2. 7.0 - 14.0. 3. 2.0 - 6.5. 4. 5.0 - 10.0.
13. QUESTION: The coefficient of atherogenicity (CA) is calculated by the formula:
one.
2.
3.
4.
five.
14. Correlate the increase in the activity of enzymes in the blood and the change in the value of the De Ritis coefficient with the corresponding pathological conditions:
1. Alpha ─amylase
2. ALT.
3. ASAT.
4.Histidase.
5. K De Ritis > 1.5
6. K De Ritis < 0.7
7. Creatine phosphokinase (CPK) MB.
8. KFK BB.

9. LDH1.
10. LDH5
11. Lipase.
12. Trypsin.
13. Alkaline phosphatase. A. Damage to the heart (heart attack myocardium).
B. Liver damage (hepatitis).
B. Damage to the pancreas glands (pancreatitis).
D. Damage to bone tissue (osteoprosis, rickets).
D. Damage to the nervous system.

15. The content of urea in the blood decreases with:
6. Damage to the kidneys.
7. Damage to the lungs.
8. Liver damage.
9. True 1,3,5.
10. That's right.
16. Where is the destruction of heme and the formation of bilirubin:
6. In the lungs.
7. In the small intestine.
8. In the liver.
9. In RES cells of the spleen, bone marrow, Kupffer cells.
10. True 1.2.
17. When kidneys are damaged, pathological components appear in the urine:
1. Protein > 70 mg/day.
2. Glucose
but.
3. Blood.
4. Creatine.
5. True 1,2,3.
6. That's right.
18. An increase in nocturnal diuresis is called:
1. Polyuria;
2. Oliguria;
3. Anuria;
4. Polakiuria;
5. Nocturia.
19. The relative density of the morning portion of urine is normally:
1. 1,000;
2. 1.004;

3. 1.010;
4. 1.015;
5. 1,040.
20. At what jaundice is bilirubin determined in the urine:
4. Hemolytic;
5. Parenchymal;
6. Obstructive,

OPTION 3
1. Blood plasma proteins include:
1. Prostaglandins;
2. Tryptophan;
3. Globulins;
4. Scleroproteins;
5. Collagen.
2. The activity of a number of enzymes is higher in serum than in blood plasma, because:
1. Enzymes are released from platelets during formation
clot;
2. In plasma, enzymes are sorbed on fibrinogen;
3. In plasma, polymerization of enzymes occurs with the loss of their
activity;
4. The synthesis of enzymes is activated in the blood serum;
5. there are enzyme inhibitors in the plasma.

3. The pH of human arterial blood is normal:
1.0-1.0;
2. 6.0-7.0
3.7.1-7.3
4. 7.37-7.43
5.7.0-10.0
4. Hypokalemia can be with:
1. Vomiting, diarrhea;
2. Acute and chronic renal failure;
3. Sepsis;
4. Crush syndrome;
5. All listed conditions.
5. Enzymatic diagnosis of myocardial infarction is recommended to be carried out by changes in serum:
5. AST;
6. ALT;
7. Cretinkinase MB;
8. LDH-1.
6. If the liver is damaged in the blood, the following is detected: (indicate the wrong

position).
1. Hypoalbuminemia.
2. Decreased urea content.
3. Hyperammonemia.
4. Increasing the concentration of indirect bilirubin.
5. Increasing the concentration of direct bilirubin.
6. Hypoglucosemia.
7. Increasing the content of total protein.
7. The content of urea in the blood decreases with:
11. Damage to the kidneys.
12. Damage to the lungs.
13. Liver damage.
14. True 1,3,5.
15. That's right.
8. Indicative for acute myocardial infarction is:
1. Dynamics of creatine phosphokinase in the first 3 hours of an attack;
2. Dynamics of creatine phosphokinase in terms of 3-6 hours of an attack with a level above the norm;
3. Dynamics of creatine phosphokinase in terms of 8-24 hours after the onset of a pain attack with a level 1.5 times higher norms;
4. stable level of creatine phosphokinase at values in 1.5 times higher than normal;
5. Stable increase in creatine phosphokinase for 2 days.
9. Serum protein proteinase inhibitors perform the following functions:
1. Bind proteinases and protect plasma proteins from hydrolysis.
2. Regulate blood clotting.
3. Regulates fibrinolysis.
4. True 2.3.
5. That's right.
10. The De Ritis coefficient is:
1. AsAT + AlAT.
2.
3.
4.
11. Complexing of bilirubin with albumin provides bilirubin with:
6. Solubility.
7. Neutralizes its toxic properties.
8. Promotes transport to the liver.
9. That's right.
10. Everything is wrong.

12. The content of serum protein inhibitors of proteinases in inflammatory diseases:
4. Rising.
5. Does not change.
6. Decreases.
13. The content of cholesterol in plasma increases with: (indicate incorrect position)
6. Diseases of the cardiovascular system.
7. Atherosclerosis.
8. Damage to the kidneys.
9. Diabetes.
10. Hypothyroidism.
11. Gallstone disease.
12. Acute infections.
14. In hepatocytes, bilirubin is formed:
1. Biliverdin
2. Bilirubin is a monoglucuronide.
3. Bilirubin - diglucuronide.
4. Mesobilirubin.
5. True 2.3.
6. True 1.4.
15. Residual blood nitrogen is the nitrogen of the following compounds:
6. Protein, Hb, bilirubin, uric acid, urea, BUN, vitamins, creatine, creatinine.
7. Hb, bilirubin, uric acid, urea, BUN, vitamins, creatine, creatinine.
8. Bilirubin, uric acid, urea, BUN, vitamins, creatine, creatinine.
9. True 1.2.
10. True 2.3.
16. For the diagnosis of latent diabetes mellitus, the following is carried out:
7. Determination of fasting glucose.
8. Determination of glucose content in urine.
9. Determination of the content of glucose in the blood after the "sugar" load.
10. Determination of blood glucose during the day - daily glucose profile.
11. True 1.2.
12. True 3.4.
17. Indicate the pattern of C-RP changes in the following pathological conditions:
1. Myocardial infarction A. Increases.
2. Angina. B. None
3. Acute infections. B. Decreases.
4. Acute phase of rheumatism.
5. Croupous pneumonia.
18. In diabetes mellitus, pathological components appear in the urine:
1. Glucose.
2. Ketone bodies.
3. Creatine.
4. Urea.

5. True 1.2.
6. True 3.4.
7. True 1,2,3.
8. That's right.
19. An increase in daily diuresis is called:
1. Polyuria;
2. Oliguria;
3. Anuria;
4. Polakiuria;
5. Nocturia.
20. With intensive decay of proteins in the intestines, the following appears in the urine:
1. Bilirubin;
2. Indican;
3. Urobilin;
4. Albumin;
5. Stercobilin.

OPTION 4
1. Blood plasma proteins have the following functions:
1. Maintaining the constancy of colloid osmotic pressure;
2. Hemostatic;
3. Participation in the immune response;
4. Transport;
5. Receptor.
2. Transferrin is a globulin compound with:
1.Zinc;
2. iron;
3. Sodium;
4. Cobalt;
5. Potassium.
3. The level of calcium in the blood regulates the hormone:
1. Calcitonin;
2. Parathyroid hormone;
3. Calcitriol;
4. All of the above.
4. Acidosis is characterized by:
6. Increasing blood pH;
7. Increasing the concentration of OH-;
8. Decreased blood pH;
9. Decreased H+ concentration in blood plasma;
10. Decrease in lactate in the blood.
5. An increase in the serum activity of enzymes in pathology may be a consequence of:
1. Increase its synthesis;

2. Increasing the permeability of cell membranes and destruction
cells that synthesize the enzyme;
3. Strengthening of organ blood flow;
4. Cellular edema;
5. All of the above factors.
6. The content of total protein in plasma is (g / l):
1. 30 - 40. 2. 40 - 60. 3. 65 - 85. 4. 80 - 120.
7. In hepatocytes, bilirubin is formed:
7. Biliverdin
8. Bilirubin is a monoglucuronide.
9. Bilirubin - diglucuronide.
10. Mesobilirubin.
11. True 2.3.
12. True 1.4.
8. The relative content of the LDH-1 isoenzyme is the highest in:
1. Liver and spleen;
2. Skeletal muscles;
3. Myocardium and kidneys;
4. Leukocytes and lymph nodes;
9. The content of cholesterol in plasma increases with: (specify incorrect position)
13. Diseases of the cardiovascular system.
14. Atherosclerosis.
15. Damage to the kidneys.
16. Diabetes.
17. Hypothyroidism.
18. Gallstone disease.
19. Acute infections.
10. The content of urea in the blood increases with:
1. Damage to the liver.
2. Damage to the kidneys.
3. Enhanced protein breakdown.
4. Diabetes.
5. Thyrotoxicosis.
6. True 1,2,3.
7. True 2,3,4,5.
11. The main cations and anions of the extracellular space are:
6. sodium;
7. Chlorine;
8. Calcium;
9. Bicarbonate;
10. All listed ions.
12. What is the state of bilirubin in the blood?
7. Forms a complex with albumins.

8. Forms a complex with globulins.
9. Forms a complex with fibrinogen.
10. Does not form complexes.
11. True 1.2.
13. Hypoalbuminemia occurs when:
9. Fasting.
10. Liver damage.
11. Damage to the kidneys.
12. Inadequate protein nutrition.
13. violation of protein digestibility.
14. True 2.3.
15. True 1,4,5.
16. That's right.
14. Indicate the sites of synthesis of plasma protein fractions.
7. Albumins. A. Liver.
8. alpha-1 globulins. B. Intestine.
9. alpha-2 globulins. B. Lungs.
10. beta globulins. D. Cells of lymphoid tissue.
11. gamma globulins.
12. Fibrinogen.
15. In case of kidney damage:
1. The content of urea and creatine in the blood. A. Increasing.
2. Excretion of urea and creatine in the urine. B. Does not change.
B. Decreases.
16. Indicate the pattern of changes in the blood of the following biochemical parameters in case of bone tissue damage:
1. Calcium content. A. Increasing.
2. Phosphate content. B. Does not change.
3. Alkaline phosphatase activity. B. Decreases
4. Content about-pro.
5. Content glu.
6. Contents of the o-lease.
17. The term anuria means:
1.complete cessation of urine output;
2. Reducing the daily amount of urine;
3. Increase in the daily amount of urine;
4. Frequent urination;
5. Rare urination.
18. The urine of a healthy person contains:
1. Biliverdin;
2. Stercobilinogen;
3. Mesobilirubin;
4. bilirubin;

5. all listed substances.
19. In diabetes mellitus, the following can be found in the urine:
1. Bilirubin;
2. Glucose;
3. Creatine;
4. Acetone;
5. Albumin.
20. Effect of vasopressin on water-mineral metabolism:
1. Increased reabsorption of sodium and water in the kidneys;
2. Decreased osmolarity of blood serum;
3. Increased extracellular fluid;
4. All of the above is true;
5. All of the above is incorrect.

OPTION 5
1. Albumins are involved in:
6. Activation of lipoprotein lipase;
7. Regulation of the concentration of free calcium in blood plasma;
8. Transport of fatty acids;
9. Regulation of the concentration of free hormones;
10. Maintaining the constancy of homeostasis.

2. Dysproteinemia is:
1. Increase in total protein;
2. Decreased total protein;
3. Decreased fibrinogen;
4. Violation of the ratio of plasma protein fractions;
5. All of the above.
3. Indicate the ratio between albumins and globulins.
1. A/G = 1.0. 4. A / G \u003d 1.2 - 2.0.
2. A / G \u003d 0.5 - 0.8. 5. A / G \u003d 1.7 - 2.3
3. A / G \u003d 0.8 - 1.2.
4. The level of sodium in the blood is regulated:
f. Aldosterone;
g. parathormone;
h. Adrenaline;
i. prostaglandins;
j. Calcitonin.
5. The content of cholesterol in plasma in healthy people is (mmol / l).
1. 1.5 - 3.9. 2. 3.5 - 6.5. 3. 3.0 - 6.5. 4. 4.0 - 7.0.
k. Correlate the values of the coefficient of atherogenicity with the corresponding diseases.
1. Disease of the cardiovascular system, A. < 3.0.
including atherosclerosis. B. = 3.0.

2. Diabetes
. V. > 3.0.
3. Diabetes insipidus.
4. Hypofunction of the thyroid gland.
5. Hyperthyroidism.
6. Mechanical jaundice.
7. Gallstone disease.
8. Obesity.
7. Correlate the increase in the activity of enzymes in the blood and the change values of the De Ritis coefficient with the corresponding
pathological conditions:
1. Alpha ─amylase
2. ALT.
3. ASAT.
4.Histidase.
5. K De Ritis > 1.5
6. K De Ritis < 0.7
7. Creatine phosphokinase (CPK) MB.
8. KFK BB.
9. LDH1.
10. LDH5
11. Lipase.
12. Trypsin.
13. Alkaline phosphatase.
A. Damage to the heart (heart attack myocardium).
B. Liver damage (hepatitis).
B. Damage to the pancreas glands (pancreatitis).
D. Damage to bone tissue (osteoprosis, rickets).
D. Damage to the nervous system.

8. The content of urea in the blood decreases with:
16. Damage to the kidneys.
17. Damage to the lungs.
18. Damage to the liver.
19. True 1,3,5.
20. That's right.
9. Indicate the sites of synthesis of plasma protein fractions.
13. Albumins. A. Liver.
14. alpha-1 globulins. B. Intestine.
15. alpha-2 globulins. B. Lungs.

16. beta globulins. D. Cells of lymphoid tissue.
17. gamma globulins.
18. Fibrinogen.
10. The content of cholesterol in plasma increases with: (indicate incorrect position)
20. Atherosclerosis.
21. Damage to the kidneys.
22. Diabetes.
23. Gallstone disease.
24. Acute infections
11. Indicate the plasma protein that is absent in healthy subjects.
7. Transferrin.
8. Ceruloplasmin.
9. Fibrinogen.
10. Alpha - 1 - antitrypsin.
11. Alpha - 2 - macroglobulin.
12. C-reactive protein (CRP).
12. Residual blood nitrogen is the nitrogen of the following compounds:
11. Proteins, Hb, bilirubin, uric acid, urea, BUN, vitamins, creatine, creatinine.
12. Hb, bilirubin, uric acid, urea, BUN, vitamins, creatine, creatinine.
13. Bilirubin, uric acid, urea, BUN, vitamins, creatine, creatinine.
14. True 1.2.
15. True 2.3.
13. Enzymatic diagnosis of myocardial infarction is recommended to be carried out by changes in serum:
9. AST;
10. ALT;
11. Cretinkinase MB;
12. LDH-1.
14. The De Ritis coefficient is:
5. AsAT + AlAT.
6.
7.
8.
15. LDH isoenzymes in serum are characterized normally:
1. The highest content of LDH-1;
2. The presence of all isoforms;
3. Lack of LDH-1;
4. Circulation in the form of proenzymes due to polymerization;
5. Low activity.
16. Indicate the pattern of CRP changes in the following pathological conditions:
2. Myocardial infarction A. Increases.
2. Angina. B. None
3. Acute infections. B. Decreases.

4. Acute phase of rheumatism.
6. Croupous pneumonia.
17. Effect of vasopressin on water-mineral metabolism:
6. Increased reabsorption of sodium and water in the kidneys;
7. Reducing the osmolarity of blood serum;
8. Increased extracellular fluid;
9. All of the above is true;
10. All of the above is incorrect.
18. Ketone bodies in the urine are detected when:
6. Diabetes;
7. Fasting;
8. Urolithiasis;
9. Chronic renal failure;
10. Cyst.
19. Reduction of daily diuresis is called:
1. Polyuria;
2. Oliguria;
3. Anuria;
4. Polakiuria;
5. Nocturia.
20. At what jaundice is bilirubin determined in the urine:
1. Subhepatic;
2. suprahepatic;
3. Hepatic.
hemostasis system.

1. In the process of converting fibrinogen into an insoluble fibrin gel:
a) thrombin hydrolyzes peptide bonds in fibrinogen;
b) fibrin molecules aggregate as a result of the formation of non-covalent bonds;
c) transglutamidase catalyses the formation of amide bonds;
d) retraction of the fibrin gel occurs;
e) prothrombin is converted to thrombin.

2. The formation of a fibrin thrombus includes:
a) conversion of fibrinogen to fibrin;
b) the formation of an insoluble fibrin gel;
c) activation of prothrombin;
d) stabilization of the fibrin gel;
e) retraction of the fibin clot.

3. Blood clotting enzymes are activated by:
a) phosphorylation-dephosphorylation;

b) partial proteolysis;
c) interactions with activator proteins;
d) allosteric regulation according to the principle of positive feedback;
e) allosteric regulation according to the principle of negative feedback.

4. Vitamin K:
a) a fat soluble vitamin
b) synthesized by the intestinal flora;
c) a precursor of the coenzyme glutamate carboxylase;
d) activates prothrombin;
e) participates in the post-translational modification of glutamate.

5. The procoagulant pathway of blood coagulation includes the following proteolytic reactions:
a) activation of factors IX and X by the membrane complex VIIa—Tf—Ca2+;
b) conversion of plasminogen to plasmin;
c) activation of factor X by the membrane complex IXa-VIIa-Ca2+;
d) conversion of prothrombin to thrombin under the action of factor Xa;
e) polymerization of fibrin monomers.

6. The following are involved in the formation of the prothrombinase membrane complex:
a) Xa factor;
b) Ca2+;
c) Va factor;
d) prothrombin;
e) phospholipids of the modified cell membrane.

7. Prot diamond:
a) consists of two polypeptide chains;
b) factor Xa substrate;
c) is activated by partial proteolysis;
d) contains a disulfide bond;
e) synthesized in the liver.

8. Thrombin:
a) is part of the prothrombinase complex;
b) activates protein C;
c) is formed in the liver;
d) belongs to the class of hydrolases;
e) complex protein.

9. Thrombin:
a) forms a complex with thrombomodulin;
b) consists of one polypeptide chain;
c) activates factors V and VIII;
d) converts fibrinogen into fibrin;
e) synthesized in the liver.

10.Fibrinogen:
a) is synthesized in the liver;
b) forms a fibrin clot;
c) consists of three domains;
d) thrombin substrate;
e) contains negatively charged sections A and B.

11.Fibrin molecules:
a) are formed in the blood;
b) contain negatively charged sections A and B;
c) form an insoluble fibrin gel;
d) thrombin substrate;
e) are linked by amide bonds

13. In the cascade of reactions of the anticoagulant phase, activator proteins are:
a) thrombin;
b) plasmin;
c) thrombomodulin;
d) protein C;
e) protein S.

14. Thrombin activates according to the principle of positive feedback:
a) protein C;
b) thrombomodulin;
c) transglutamidase;
d) factor V;
e) factor VIII.

15.Activated Protein C:
a) formed in the blood;
b) thrombin substrate;
c) interacts with the activator protein S;
d) refers to serine proteases;
e) as part of the membrane complex, it inactivates factors Va and VIIa.

16. Thrombin substrate:

a) factor V;
b) factor VIII;
c) fibrinogen;
d) thrombomodulin;
e) protein C.

17. A decrease in fibrinolytic activity of the blood is observed with:
a) a genetic defect in the primary structure of plasmin;
b) a decrease in the rate of plasminogen synthesis in the liver;
c) a decrease in the content of tissue plasmin activator in the blood;
d) increase in the concentration of prothrombin in the blood;
e) an increase in the concentration of u-TAP-1 and u-TAP-2 in the blood.

18.Inducer of platelet aggregation:
a) prostacyclin;
b) thrombin;
c) calmodulin;
d) collagen;
e) ADP.

19. Prothrombin:
a) consists of two polypeptide chains;
b) factor Xa substrate;
c) is activated by partial proteolysis;
d) contains a disulfide bond;
e) synthesized in the liver.

20. Thrombin:
a) is part of the prothrombinase complex;
b) activates protein C;
c) is formed in the liver;
d) belongs to the class of hydrolases;
e) complex protein.

21. Thrombin:
a) forms a complex with thrombomodulin;
b) consists of one polypeptide chain;
c) activates factors V and VIII;
d) converts fibrinogen into fibrin;
e) synthesized in the liver.

22.Fibrinogen:
a) synthesized in the liver;
b) forms a fibrin clot;
c) consists of three domains;
d) thrombin substrate;
e) contains negatively charged sections A and B.

23.Fibrin molecules:
a) are formed in the blood;
b) contain negatively charged sections A and B;
c) form an insoluble fibrin gel;
d) thrombin substrate;
e) are linked to each other by amide bonds.

24. Thrombin:
a) is part of the prothrombinase complex;
b) a component of a fibrin thrombus;
c) contains carboxyglutamate residues;
d) belongs to the class of hydrolases;
e) activates tissue factor.

25. The initiating membrane complex of the cascade of blood coagulation reactions includes a proteolytic enzyme:
a) tissue factor;
b) transglutamidase;
c) thrombin;
d) factor VIIa;
e) protein S.

CURRENT / INTERMEDIATE CONTROL OF STUDENTS' TRAINING LEVEL

Tests on the topic: "BIOCHEMISTRY AND PATOBIOCHEMISTRY OF THE LIVER"

Exercise 1
The structural and functional unit of the liver is:
1. Hepatocyte
2. Kupffer cage
3. Liver lobule
4. Vascular endothelium

Task 2
Does not form in the liver
1. Albumin
2. Clotting factors
3. Myoglobin
4. Bile acids

Task 3
The precursor of bilirubin is
1. Myoglobin
2. Hemoglobin
3. Porphyrin
4. Cytochrome
5. All of the above

Task 4
Where does the metabolic breakdown of hemoglobin mainly take place:
1. Reticuloendothelial system
2. Red blood cells
3. Liver cells
4. Renal tubules
5. All of the above

Task 5
What value should not exceed the concentration of total bilirubin in the blood serum in the norm:
1. 8.5 μmol/l
2. 20.5 μmol/l
3. 30.5 μmol/l
4. 35.5 μmol/l
5. 58.5 μmol/l

Task 6
Normal conjugated bilirubin in the blood is up to:
15%
2. 25%
3. 50%

4. 75%
5. 100%

Task 7
What is used to synthesize conjugated bilirubin:
1. UDP-glucose
2. UDP-glucuronate
3. Glucose
4. Glucuronic acid
5. Mannosamine

Task 8
In the differential diagnosis of parenchymal and hemolytic jaundice, the following tests are informative:
1. Fractions of bilirubin
2. LDH isoenzymes
3. Aminotransferases
4. Reticulocytes
5. All of the above are true

Task 9
The urine of a healthy person contains:
1. Biliverdin
2. Stercobilinogen
3. Mesobilirubin
4. Bilirubin
5. All of the above

Task 10
The appearance of urobilin in the urine with obstructive jaundice may indicate:
1. Restoring the patency of the biliary tract
2. Blockage of the biliary tract
3. Damage to the gallbladder
4. Restoration of liver function
5. Increase in unconjugated bilirubin

Task 11
The absence of urobilin in the urine indicates:
1. Hemolytic jaundice
2. Obstructive jaundice
3. Parenchymal jaundice during the prodrome
4. Gilbert's disease
5. All diseases

Task 12
Choose a characteristic that is not related to indirect bilirubin:
1. Formed in the liver from direct bilirubin
2. It is found in the blood in a complex with albumin protein
3. Poorly soluble in water and not filtered into urine

4. Toxic, passing through the blood-brain barrier, causing encephalopathy
5. Reacts slowly with Ehrlich's diazo reagent

Task 13
Check the characteristic that is not related to hemolytic jaundice:
1. Occurs due to massive destruction of red blood cells
2. Total blood bilirubin increases due to indirect bilirubin
3. Bilirubin in the urine is not detected, the content of urobilinogen is increased
4. Feces are colored normally
5. Reduced activity of the enzyme UDP-glucuronyltransferase

Task 14
Mark the characteristic that is not related to obstructive jaundice:
1. Occurs due to a violation of the normal outflow of bile into the intestines
2. The content of both direct and indirect bilirubin in the blood is increased
3. The content of total bilirubin does not exceed 20 μmol/l
4. Feces are weakly colored, up to discoloration
5. The content of bilirubin in the urine is sharply increased, there is no urobilinogen

Task 15
Name one of the distinguishing features of hemolytic (suprahepatic) jaundice from mechanical (subhepatic) and hepatocellular (hepatic) jaundice:
1. Icteric staining of the sclera and skin
2. Dark urine
3. Increase in blood levels of both unconjugated (indirect) and conjugated (direct) bilirubin
4. Increasing the content of conjugated (direct) bilirubin in the blood
5. Increasing the content of unconjugated (indirect) bilirubin in the blood

Task 16
Hepatocellular jaundice is caused by damage to hepatocytes and bile capillaries, for example, in acute viral infections, chronic and toxic hepatitis. Name one of the main distinguishing features of hepatocellular jaundice from hemolytic and obstructive jaundice:
1. Icteric staining of the sclera and skin
2. Darkening of feces
3. Increase in blood levels of unconjugated and conjugated bilirubin
4. Increasing the content of unconjugated (indirect) bilirubin in the blood

Task 17
A sign of obstructive jaundice is the presence in the urine:
1. Conjugated bilirubin
2. Indicana
3. Proteinuria
4. Cylinders
5. Laktosuria

Task 18
The color of feces is affected by:
1. Admixture of blood

2. Bilirubin
3. Green parts of vegetables
4. Stercobilin
5. All of the above

Task 19
Normal stool color is determined by:
1. Carbohydrate food
2. Fats
3. Protein food
4. Stercobilin

Task 20
The appearance of bilirubin in the feces is a sign of:
1. Gastritis
2. Acute enteritis
3. Duodenitis
4. Pancreatitis
5. Dysbacteriosis

Tests on the topic: "BIOCHEMISTRY AND PATOBIOCHEMISTRY OF THE KIDNEYS"

Task 1. The main structural and functional unit of the kidneys:
A Glomerulus
B tubule
in the collecting duct
G Nephron
D All of the above are correct.

Task 2. Nephron consists of:
A Renal glomerulus and tubules
B Juxtaglomerular apparatus
The glomerulus and collecting ducts
D Papillary canal and juxtaglomerular apparatus
D All items listed

Task 3. Cellular elements of the glomerulus
kidney:
A capillary endothelium
B Podocyte
B Mesenchymal cells
D All of the above

Task 4. The mucous membrane of the urinary tract is lined with:
A Stratified squamous epithelium
B Transitional epithelium
in columnar epithelium
D All of the listed species
D None of the above

Task 5. Renal proteinuria is caused by:
A Violation of protein filtration and reabsorption
B Dysproteinemia
In contact with exudate with inflammation of the ureters
D Kidney stones
D All of the above factors

Task 6. Postrenal proteinuria is caused by:
A Passage of low molecular weight proteins through an intact renal filter
B Filtration of normal plasma proteins through a damaged renal filter
In violation of protein reabsorption in the proximal tubules
D Entry of inflammatory exudate into the urine in case of urinary tract disease
D All of the above factors

Task 7. The presence of nephrotic syndrome is evidenced by the daily loss of protein in the urine, equal to:
A 0.5-1 g
B 1-3 g
At 3-3.5 g
G More than 3.5 g
D In any amount

Task 8. The spectrum of urine proteins is identical to the spectrum of blood serum proteins with:
A Highly selective proteinuria
B Moderately selective proteinuria
In low selective proteinuria
D Any of the named proteinuria
D No correct answer

Task 9. Proteinuria can be an indicator of damage:
A The glomeruli of the kidneys
B tubules of the kidneys
In the urinary tract

G Organism
D All of the above

Task 10. Unified method for the qualitative determination of protein in urine:
A Sample with sulfosalicylic acid
B Sample with nitric acid
B Boiling test
G Thymol test
D All methods listed

Task 11. The normal number of red blood cells in 1 ml of urine according to the Nechiporenko method is up to:
And 1 thousand
B 4 thousand
At 6 thousand
G 10 thousand
D 40 thousand

Task 12. The normal number of leukocytes in 1 ml of urine according to the Nechiporenko method is up to:
And 1 thousand
B 2 thousand
At 4 thousand
G 8 thousand
D 10 thousand

Task 13. The elements of urine sediment of only renal origin include:
A Erythrocytes
B Leukocytes
To Cylinders
D Squamous epithelium
D All of the above

Task 14. Determination of the relative density of urine gives an idea of:
A Excretory function of the kidneys
B Concentration function
In the filtering function
- All functions listed
D None of the above

Task 15. In diseases of the kidneys with a primary lesion of the glomeruli, the following is noted:
A violation of the concentration ability of the kidneys

B Reduced filtration
B Violation of reabsorption
D Violation of secretion
D Violation of all listed functions

Task 16. The presence of cylinders and their number in the urine:
A Corresponds to the protein content in the urine
B Does not correspond to the protein content in the urine
Corresponding to the degree of kidney damage
D Depends on the type of proteinuria
D No correct answer

Task 17. Diagnostic values are not single in the preparation:
A Granular cylinders
B Waxy cylinders
In hyaline cylinders
D Erythrocyte cylinders
D Leukocyte casts

Task 18. Cylinders are not formed and are quickly destroyed at urine pH:
A Sour (pH 5.5-6.5)
B Acid (pH 4.5-5)
In Alkaline (pH 8-10)
G Neutral (pH 7)
D Dissolution does not depend on acidity

Task 19. The absence of urobilin in the urine indicates:
A Hemolytic jaundice
B Obstructive jaundice
In Parenchymal jaundice during the prodrome
D Gilbert's disease
D All diseases

Task 20. The appearance of urobilin in the urine with obstructive jaundice may indicate:
Restoration of the patency of the biliary tract
B blockage of the bile ducts
In gallbladder disease
D Restoration of liver function
D Increase in unconjugated bilirubin
Task 21. The cause of renal glucosuria is a violation of:
A Reabsorption of glucose in the proximal tubule
B Filtration of glucose through an intact renal filter
B Glucose reabsorption in the distal tubule

D Secretion of glucose by the renal epithelium
D All of the above

Task 22. Renal threshold for renal glucosuria:
A Upgraded
B Reduced
B Not changed
D Significantly increased
D No correct answer

Task 23. Urine of the color of "meat slops" is noted when:
Acute diffuse glomerulonephritis
B Pyelonephritis
In diabetes
D Amyloidosis of the kidneys
D All of the above diseases

Task 24. The term "polakisuria" means:
Complete cessation of urine output
B Decreased daily urine output
B Increased daily urine output
D Frequent urination
D Infrequent urination

Task 25. Acute renal failure is characterized by:
A Increase in daily diuresis
B Decreased or complete cessation of urine output
B Predominance of nocturnal diuresis
D Frequent urination
D Painful urination

Task 26. Pink or red urine indicates the presence of:
A Erythrocytes
B Hemoglobin
The uroporphyrins
G Myoglobin
D All of the above

Task 27. The relative density of urine in children in the first year of life is:
A 1002-1017
B 1011-1025
In 1012-1020
G 1025-1030

D 1002-1030

Task 28. The shape of the erythrocyte
The substances found in urine depend on:
A Kidney disease
B Relative density of urine
The saturation of erythrocytes with oxygen
D Saturation of erythrocytes with hemoglobin
D All of the above factors

Task 29. In the urine of patients with acute glomerulonephritis, there is:
A Leukocyturia
B Transitional epithelium
A lot of salts of uric acid
G Glucosuria
D Hematuria

Task 30. Pyuria is typical for:
A Chronic nephritis
B Pyelonephritis
In Nephrotic Syndrome
D Acute renal failure
D Chronic renal failure

Task 31. The reaction of urine is acidic in the following diseases, except:
A Cystitis
B Acute nephritis
In a diabetic coma
D Congestive kidney
D Acute renal failure

Task 32. The term "isostenuria" means:
A Infrequent urination
B Increased daily diuresis
C Complete cessation of urine output
D Isolation during the day of urine with a constant relative density equal to the relative density protein-free blood plasma
E Isolation during the day of urine with a constant relative density above the relative density protein-free blood plasma

Task 33. Based on the Zimnitsky test, one can judge:
A Clearance of endogenous creatinine
B Potassium reabsorption
In insulin clearance

D The concentration ability of the kidneys
D Synthesis of renin

Task 34. Low concentration ability of the kidneys is noted in all portions of urine during the Zimnitsky test in the case of:
A Tumors of the kidneys
B Kidney stone disease
in chronic renal failure
D With tuberculosis
D With pyelitis

Task 35. A sign of obstructive jaundice is the presence in the urine:
A Conjugated bilirubin
B indicana
In Cylindruria
D Proteinuria
D Lactosuria

Task 36. Tuberculosis of the bladder can be suspected if the urine contains:
A Leukocytes
B Red blood cells
in the transitional epithelium
D Acid reaction (pH 5-6)
D All of the above are correct.

Task 37. When screening for kidney disease, it is desirable to determine in the urine all of the following parameters, except:
A Belka
B Myoglobin
in erythrocytes
G Cylinder
D Leukocytes

Task 38. Glomerular proteinuria can be observed with:
A Glomerulonephritis
B systemic lupus erythematosus
In amyloidosis
G hypertension
All of the listed diseases

Task 39. Tubular (tubular) proteinuria is associated with:
And structural changes in the glomeruli
B increased formation of low molecular weight proteins in plasma

In insufficient reabsorption of low molecular weight proteins from primary urine
All of the above reasons
D

Task 40. A progressive increase in serum urea and creatinine is the result of:
A exudative inflammation in parenchymal organs
B acute hepatitis
In disorders of the secretory function of the kidneys
G decrease in glomerular filtration
D activation of reabsorption in the renal tubules

Tests on the topic: "Clinical and diagnostic significance of changes in the protein spectrum of blood plasma and the activity of enzyme systems in pathology. Determination of acute-phase proteins in connective tissue pathology and their clinical and diagnostic significance (rheumatism, systemic lupus erythematosus, etc.)

Exercise 1.

PROTEIN ELECTROPHORESIS IS CARRIED OUT ON:
A polyacrylamide gel
B Agar gel
in paper
D Cellulose acetate films
D All listed media

Task 2.

DIALYSIS IS CARRIED OUT FOR THE PURPOSE OF:
A Identify the reactive groups of proteins
B Get isoenzymes
Separate proteins from low molecular weight salts
D Activation of coenzymes
D Control and standardization of proteins

Task 3.

BLOOD SERUM, UNLIKE PLASMA, DOES NOT HAVE:
A Fibrinogen
B Albumin
To Complement
G Kallikrein
D Antithrombin

Task 4.

IN ISOLATION AND PURIFICATION OF PROTEINS USE:

A adsorption chromatography
B Partition chromatography
To Ion Exchange Chromatography
D Affinity chromatography
D All of the above

Task 5.

THE METHODS OF URGENT LABORATORY DIAGNOSIS SHOULD BE ASSOCIATED WITH THE DEFINITION:
A acid phosphatase activity
B Protein fractions
In tumor markers
G total cholesterol
D Bilirubin in newborns

Task 6.

CITRATE AND OXALATE STABILIZE PLASMA BY:
A Binding of calcium ions
B Activation of antithrombin
Hageman Factor Activation Warnings
D Inhibition of thromboplastin
D Accelerator inhibition

Task 7.

THE BASIS OF PROTEIN STRUCTURE IS:
A polypeptide chain
B Nucleic acid chain
B Compounds of amino acids with carbohydrates
D Keto acid compounds
D Subunits

Task 8.

PROTEIN CHARGE IN SOLUTION DEPENDS ON:
A Temperature
B Solution pH
At the isoelectric point of a protein
D Number of peptide bonds
D Number of hydrogen bonds

Task 9.

PROTEIN SALTING OUT CAUSES:
A Excess proteins in solution

B Influence of low temperature
B Exposure to high concentrations of neutral salts
D Action of strong electrolytes
D Action of organic solvents

Task 10.

LOSS OF PROTEIN BIOLOGICAL ACTIVITY OCCURS WHEN:
A Dehydration
B Chromatography on natural media
In Electrophoresis
G Denatur
ation
D Lyophilization

Task 11.

ALBUMIN DOES NOT PARTICIPATE IN:
Activation of lipoprotein lipase
B Regulation of free calcium concentration in plasma
In the transport of fatty acids
D Regulation of the concentration of free hormones
D Preservation of the constancy of the internal environment

Task 12.

FIBRINOGEN DECREASES IN THE BLOOD WHEN:
A myocardial infarction
B Cirrhosis of the liver
In Rheumatism
G Uremia
D Acute inflammation

Task 13.

PARAPROTEINS APPEAR IN THE BLOOD WHEN:
A Waldenström's disease
B Myeloma
In Heavy chain diseases
D Light chain diseases
D All of the above diseases

Task 14.

DETERMINATION OF THE CONTENT OF AMINO ACIDS IN THE BLOOD SERUM IS A VALUABLE DIAGNOSTIC TEST FOR:
A Hereditary pathology of amino acid metabolism
B Neoplastic processes

in hepatitis, cirrhosis
D Cardiovascular pathology
D Infectious diseases

Task 15.

IN PLASMA, BY METHOD OF ELECTROPHORESIS ON CELLULOSE ACETATE, PROTEIN FRACTIONS CAN BE SEPARATED:
A 3 B 5 C 10 D 39 E 100

Task 16.

FRACTION α1 AND α2-GLOBULIN DOES NOT INCLUDE:
A Fibrinogen
B Haptoglobin
B α2-macroglobulin
G α-fetoprotein
D Alkaline phosphatase

Task 17.

THE FRACTION OF β-GLOBULIN DOES NOT INCLUDE:
A Fibrinogen
B Lipoproteins
B Immunoglobulin G
G Transferrin
D β2-microglobulin

Task 18.

DETERMINATION OF A-FETOPROTEIN HAS A DIAGNOSTIC VALUE WHEN:
Echinococcosis of the liver
B Primary liver cancer
in infectious hepatitis
G Cancer of the stomach
D Complicated myocardial infarction

Task 19.

IN THE COMPOSITION OF GAMMA-GLOBULINS THE MOST OF ALL IS REPRESENTED:

A IgM B IgG C IgA D IgE E IgD

Task 20.

THE REASON FOR INCREASING TOTAL WHEY PROTEIN CANNOT BE:
A multiple myeloma

B Acute infection
B Dehydration
D Overhydration
D Paraproteinemic hemoblastosis

Task 21.

WHEN THE ELECTROPORETIC SEPARATION OF PROTEINS ARE DETECTED
A Hypogammaglobulinemia
B Increased fibrinogen
in cirrhosis of the liver
D α1-antitrypsin deficiency
D All of the above are correct.

Task 22.

MAIN PHYSIOLOGICAL ROLE OF HAPTOGLOBIN:
And the binding of hemoglobin
B antiproteolytic activity
Involved in the immune response
D Participation in blood coagulation
D all of the above are correct.

Task 23.

MAIN PHYSIOLOGICAL ROLE OF CERULOPLASMIN:
Participation in blood clotting
B creation of oxidase activity
B activation of hematopoiesis
G copper transport
All of the above features

Task 24.

HEREDITARY INSUFFICIENCY OF □ - 1 ANTITRYPSIN LEADS TO:
Emphysema in young people
B Emphysema smokers
In neonatal hepatitis
D Infectious - inflammatory diseases of the lungs and respiratory failure
D All of the above conditions

Task 25.

FOR THE PURPOSE OF DIAGNOSIS, ENZYME ACTIVITY IS DETERMINED IN:
A blood serum
B Leukoconcentrates
In Biopsy
G Likvore
D All of the above are correct.

Task 26.

IRREVERSIBLE LOSS OF ENZYME ACTIVITY IS CAUSED BY:
A Denaturation
B Conformational changes
In Cooling the enzyme solution
D An increase in the concentration of the substrate
D All of the above factors

Task 27.

INCREASED SERUM ACTIVITY OF ORGAN-SPECIFIC ENZYMES IN PATHOLOGY IS A CONSEQUENCE OF:
A Increase in protein synthesis
B Increased cell membrane permeability and cell destruction
B Enhancement of proteolysis
G Cell edema
D Activation of immunocompetent cells

Task 28.

INCREASED GGTP ACTIVITY IN SERUM IS DETERMINED WHEN:
A Prostatite
B encephalitis
In Pancreatitis
G Cholestasis
D Pyelonephritis

Task 29.

IRREVERSIBLE DAMAGE TO CARDIOMYOCYTES IS ACCOMPANIED BY INCREASE IN SERUM:

A alkaline phosphatase
B ALT
In GGTP
G Histidases
D MV - KK

Task 30.

HEPATOCYTES MAJORLY CONTAIN THE ISOENZYME:
A LDH - 1 B LDH - 2 C LDH - 3 D LDH - 4 D LDH - 5

Task 31.

THE MICHAELIS-MENTEN CONSTANT IS:

A Substrate concentration at which the rate of an enzymatic reaction is half the maximum
B Optimum substrate concentration for enzymatic reaction
The extinction coefficient
Γ Coefficient reflecting the dependence of the reaction rate on temperature
D All of the above

Task 32.

WHEN BLOOD IS DELIVERED FOR STUDY, ENZYME ACTIVITY CAN CHANGES AS A RESULT OF:
A Activation of plasma proteolytic systems
B Destruction of the quaternary structure of enzymes
B Changes in blood pH
D Partial hemolysis of erythrocytes
D All of the above

Task 33.

THE DETERMINATION OF SERUM ACTIVITY HAS THE GREATEST DIAGNOSTIC VALUE FOR PANCREATIC DISEASES:
A Cholinesterase
B Alpha-amylase
in QC
G LDH
D GGTP

Task 34.

IN PROSTATE CANCER, THE SERUM ACTIVITY IS MOSTLY INCREASED:
And alpha-amylase
B Creatine kinase
in alkaline phosphatase
D acid phosphatase
D ALT

Task 35.

ISOZYZYMES ARE SEPARATED BY METHODS:
A Immunologically using specific antisera
B Using the different affinity of isoenzymes to the substrate
In electrophoresis
D Ion exchange chromatography
D All of the above methods

Task 36.

MAIN PHYSIOLOGICAL ROLE OF HAPTOGLOBIN:
A Binding of hemoglobin

B Antiproteolytic activity
Involved in immune response but
D Participation in blood coagulation
D All of the above are correct.

Task 37.

MOVEMENT OF WATER IN THE BODY IS DETERMINED:
A osmotic pressure
B Oncotic pressure
The hydrostatic pressure
D Permeability of the vessel wall
D All of the above factors

Task 38.

NORMAL PLASMA OSMOTIC PRESSURE IS ABOUT:
A 140 mosm/l
B 300 mosm/l
At 600 mosm/l
D 30 mm Hg
D 100 mm Hg

Task 39.

DIFFUSION IS:
A The transfer of a substance from a higher concentration to a lower one
B Transport of a solvent through a semi-permeable membrane
B Movement of matter under the influence of hydrostatic pressure
D Transport of a substance against a concentration gradient due to the consumption of ATP energy
D All of the above are correct.

Task 40.

OSMOTIC PROPERTIES OF BIOLOGICAL FLUIDS ARE DETERMINED:
A The amount of electrolytes
B The amount of non-electrolytes
In Molecular (atomic) mass of particles
D The total number of dissolved particles
D The chemical nature of dissolved compounds

Task 41.

THE VALUE OF SERUM ONCOTIC PRESSURE IS DETERMINED:
A ionami
B Carbohydrates
In lipids

G Proteins
D Low molecular nitrogen compounds

Task 42.

DETERMINATION OF MYOGLOBIN IN BLOOD SERUM IS USED FOR EARLY DIAGNOSIS:
A Myocardial infarction
B Viral hepatitis
In hemolytic anemia
G Myositis
D All of the above

Task 43.

THE MOST IMPORTANT LYSOSOMAL ENZYMES ARE:
A Cathepsins
B ATPase
In Cyclooxygenase
D Transaminases
D Lactate dehydrogenase

Task 44.

PROTEIN OF THE ACUTE PHASE OF INFLAMMATORY IS:
A Collagen
B Fibrinogen
To Protein C
G Myoglobin
D Angiotensin

Task 45.

THE MAIN REACTANTS OF THE ACUTE PHASE OF INFLAMMATION, THE CONCENTRATION OF WHICH INCREASES 100-1000 TIMES DURING 6-12 HOURS, ARE:
A C-reactive protein, serum amyloid protein A
B Orosomucoid, α1-antitrepsin, haptoglobin, fibrinogen
B Ceruloplasmin, C3-, C4-components of complement
D IgG, IgA, IgM, α2-macroglobulin
D Albumin, transferrin, prealbumin

Task 46.

C-REACTIVE PROTEIN:
A Normally present, but decreases with inflammation
B The greatest increase is observed in bacterial inflammation

The greatest increase is observed in viral inflammation
D Appears with viral inflammation
D Disappears with complications in the postoperative period (wound abscess, thrombophlebitis, pneumonia)

Task 47.

PROTEIN FRACTIONS OF BLOOD SERUM, POSSIBLE
SEPARATE BY ALL OF THE FOLLOWING METHODS EXCEPT:
A salting out
B Electrophoresis
In Chromatography
D Immunoprecipitation
D Titration

Task 48.
THE LEVEL OF ALBUMIN IN THE BLOOD IS REDUCED:
A In acute liver disease
B Chronic liver disease
B When dehydrated
D With primary hepatoma
D In all of the above cases

Tests on the topic: “Patobiochemical basis for the development and diagnosis of atherosclerosis. Biochemical diagnosis of myocardial infarction"

Exercise 1
PLASMA LIPIDS ARE:
1. Cholesterol
2. Triglycerides
3. Glycogen
4. Fatty acids

Task 2
RESERVE LIPIDS OF THE BODY ARE:
1. Triglycerides
2. Cholesterol
3. Phospholipids
4. Sphingophospholipids

Task 3
TO THE GROUP OF PROTOPLASMATIC LIPIDS
RELATE:
1. Phospholipids
2. Cholesterol
3. Triglycerides
4. Sphingophospholipids

Task 4
KETONE BODIES ARE FORMED IN THE ORGANISM:
1. In the heart
2. In the liver
3. In muscle tissue
4. In adipose tissue

Task 5
SYNTHESIS OF FATTY ACIDS IS CARRIED OUT:
1. In mitochondria
2. In lysosomes
3. In the Golgi complex
4. In the cytoplasm

Task 6
IN THE PROCESS OF FORMATION OF FATTY ACIDS PARTICIPATE:
1. Acetyl CoA
2. Glucose
3. Chylomicrons
4. NADPH
5. Lipase

Task 7
CHOLESTEROL PERFORMS THE ROLE OF A PRECURSOR FOR:
1. Vitamin A
2. Vitamin D3
3. Fatty acids
4. Bile acids

Task 8
THE FUNCTIONS OF BILLE ACIDS ARE:
1. Participation in the formation of ketone bodies
2. Stimulation of intestinal peristalsis
3. They are part of chylomicrons
4. Activation of pancreatic lipase

Task 9
THE RECOMMENDED SERUM CHOLESTEROL LEVEL IS:
1. <6.5 mmol/l
2. <6.2 mmol/l
3. <7.0 mmol/l
4. <5.2 mmol/l
5. <7.6 mmol/l

Task 10
BLOOD CHOLESTEROL CONCENTRATION IS AFFECTED BY:
1. Gender
2. Age

3. Glycemic level
4. The nature of nutrition

Task 11
THE MAIN FACTORS CONTRIBUTING TO THE DEVELOPMENT OF ATHEROSCLEROSIS,
ARE:
1. High serum HDL and low LDL
2. High serum LDL and low HDL
3. Presence of modified lipoproteins
4. High levels of chylomicrons in the blood

Task 12
THE MAIN REASONS FOR THE FORMATION OF CHOLESTEROL STONES ARE:
1. Hypocholesterolemia
2. Hypercholesterolemia
3. Cholestasis
4. Excess bile acids in the gallbladder

Task 13
UNDER STEATOREIA IS UNDERSTANDING:
1. Formation of stones in the gallbladder
2. Fatty liver
3. Excess lipids in feces
4. Increased concentration of lipoproteins in the blood

Task 14
A REDUCTION IN THE LEVEL OF TOTAL LIPIDS IN THE SERUM IS OBSERVED WHEN:
1. Physical activity
2. Fasting
3. Malabsorption syndrome
4. Hypoglycemia

Task 15
INCREASING THE CONCENTRATION OF TOTAL LIPIDS IN SERUM NOB GOOD WHEN:
1. Obesity
2. Diabetes
3. Iron deficiency anemia
4. Overeating

Task 16
THE NORMAL CONTENT OF LIPID IN THE BODY OF ADULT HUMANS IS:
1. More than 40%
2. About 15%
3. 25-30%
4. Less than 5%

Task 17
NORMAL LEVEL OF CHOLESTEROL IN THE BODY OF ADULT IS:
1. 20 -30 g
2. 70-100 g
3. 140-150 g
4. 180-200 g
5. 200-220 g

Task 18
WHAT AMOUNT OF CHOLESTEROL IS SYNTHESIZED IN THE BODY OF ADULT HUMAN
PER DAY?
1. 0.2-0.4 g
2. 0.8-1.0 g
3. 3-5 g
4. 8-10 g

Task 19
THE FOLLOWING AMOUNT DOES GO TO THE BODY WITH FOOD CHOLESTEROL:
1. Less than 0.1g
2. 0.3-0.5g
3. 1-2 g
4. 2-4 g
5. 4-6 g

Task 20
THE MAIN SITES OF CHOLESTEROL SYNTHESIS IN THE BODY ARE:
1. Spleen
2. Liver
3. Light
4. Intestinal mucosa
5. Skin

Task 21
WHEN STUDYING LIPID PROFILE INDICATORS, IT IS NECESSARY TO OBSERVE THE FOLLOWING CONDITIONS:
1. Take blood on an empty stomach
2. Store samples only as heparinized plasma
3. Degrease and dehydrate dishes
4. Switch to a diet without cholesterol 2-3 days before blood sampling

Task 22
SCREENING INDICATORS OF PLASMA LIPID PROFILE ARE:
1. Total cholesterol
2. Phospholipids
3. Apoprotein A
4. Triglycerides
5. Fatty acids

Task 23
CAUSES OF HYPOCHOLESTEROLEMIA CAN BE:
1. Nephrotic syndrome
2. Glomerulonephritis
3. Heavy physical activity
4. Insulin deficiency
5. Pheochromocytoma

Task 24
STEATORHEA IS ACCOMPANIED WITH ALL PATHOLOGICAL CONDITIONS EXCEPT:
1. Pancreatitis
2. Malabsorption syndrome
3. Gallstone disease
4. Meningitis
5. Increased intestinal motility

Task 25
TO DETERMINE THE TYPE OF HYPERLIPOPROTEIDEMIA, IT IS ENOUGH TO STUDY IN THE SERUM:
1. Level of α-cholesterol
2. Level of total cholesterol
3. Main classes of lipoproteins
4. LDL level
5. Triglycerides

Task 26
GLYCOLIPIDS ARE THE FOLLOWING COMPOUNDS:
1. Cerebrosides
2. Cholesterol esters
3. Lecithins
4. Sphingomyelins
5. Phospholipids

Task 27
PROSTAGLANDINS ARE DERIVATIVES:
1. Arachidonic acid
2. Cholesterol
3. Palmitic acid
4. Stearic acid
5. Oleic acid

Task 28
APOLYPOPROTEIN CONTENT MAY BE CHANGED WHEN:
1. Ischemic heart disease
2. Diabetes
3. Familial hyperlipidemia
4. Pneumonia

Task 29
INCREASED SERUM TRIGLYCERIDES MAY BE OBSERVED WHEN:
1. Obesity
2. Alcoholism
3. Diabetes
4. Diabetes insipidus

Task 30
THE MAIN FUNCTIONS OF PHOSPHOLIPIDS ARE:
1. Structural
2. Participation in protein synthesis
3. Transport of bilirubin
4. Stabilization of lipoproteins

Task 31
TRANSPORT FORMS FOR LIPIDS ARE:
1. Enzymes
2. Apoproteins
3. Lipoproteins
4. Hormones
5. Glycosaminoglycans

Task 32
THE FOLLOWING CLASSES OF LIPOPROTEIDES ARE NORMALLY DEFINED IN THE BLOOD SERUM:
1. LDL
2. Cholesterol
3. HM
4. VLDL

Task 33
ALL ARE RISK FACTORS FOR CHD EXCEPT:
1. Hypercholesterolemia
2. Diabetes
3. Hypertension
4. Smoking
5. Hyperazotemia

Task 34
IHD
1. I
2.II
3.IV
4. V

Task 35
LIPOPROTEIN LIPASE ACTIVITY IS REDUCED IN THE FOLLOWING TYPES HYPERLIPIDEMIA:

1. 1
2.II
3.III
4.YY

Task 36
REDUCTION OF SERUM ESTERIFIED CHOLESTEROL
OBSERVED WHEN:
1. Cirrhosis of the liver
2. Gallstone disease
3. Hypothyroidism
4. Atherosclerosis
5. Glomerulonephritis

Task 37
CAUSES OF FATTY HEPATOSIS CAN BE:
1. Alcoholism
2. Diabetes
3. Overweight
4. Pneumonia

Task 38
THE LEVEL OF FREE FATTY ACIDS IN THE BLOOD INCREASES WHEN:
1. Insulin administration
2. Diabetes
3. Atherosclerosis
4. IHD
5. Hepatitis

Task 39
HYPERTRIGLYCERIDEMIA CAN DEVELOP WHEN:
1. Pancreatitis
2. Diabetes
3. Hepatitis
4. Thyrotoxicosis
5. Fasting

Task 40
ATHEROGENIC EFFECT HAVE:
1. LDL
2. VLDL
3. Phospholipids
4. Polyunsaturated fatty acids
5. HDL

Task 41
ANTIATHEROGENIC EFFECT HAVE:
1. Triglycerides
2. Cholesterol

3. Pre-β-lipoproteins
4. β-lipoproteins
5. α-lipoproteins

Task 42
ENZYMATIC METHOD FOR THE DETERMINATION OF CHOLESTEROL IS BASED ON THE ACTION:
1. Lipases
2. Cholesterol oxidase
3. Lipoprotein lipases
4. Phospholipases
5. Hexokinase

Task 43
APOLIPOPROTEIN IS:
1. Protein that forms a protein-lipid complex
2. A protein that determines the functional properties of protein-lipid complex
3. Protein that causes hyperlipoproteinemia in genetic defect or lack of apoprotein synthesis
4. Protein, which is part of fructosamine

Task 44
TOTAL CHOLESTEROL IN LDL:
15 %
2. 10%
3. 40%
4. 60%

Task 45
CONTENT OF TOTAL CHOLESTEROL IN HDL:
16 %
2. 16%
3. 26%
4. 36%

Task 46
THE NORMAL LEVEL OF SERUM LIPOPROTEINS IN ADULTS IS:
1. 0.3-0.8 g/l
2. 1.2-3.5 g/l
3. 3.5-7.5 g/l
4. 8.5-11.5 g/l

Task 47
PROTEIN LEVEL IN HDL IS:
1. 10%
2. 20%
3. 50%
4. 70%

5. 75%

Task 48
THE PLACE OF FORMATION OF CHYLOMICRONS IN THE ORGANISM ARE:
1. Heart
2. Adipose tissue
3. Intestinal mucosa
4. kidneys

Task 49
THE PLACE OF FORMATION IN THE BODY OF VLDL ARE:
1. Muscle tissue
2. Adipose tissue
3. Hepatocytes
4. Light

Task 50
THE PLACE OF FORMATION IN THE ORGANISM OF LDL IS:
1. Kidneys
2. Adipose tissue
3. Blood plasma
4. Connective tissue

Task 51
APO-A-PROTEIN INCLUDED IN:
1. HM
2. VLDL
3. LPP
4. LDL
5. HDL

Task 52
APO-B-PROTEIN IS FOUND IN EVERYTHING EXCEPT:
1. VLDL
2. BOB
3. LDL
4. HDL

Task 53
SERUM PHOSPHOLIPIDS INCREASES WHEN:
1. Pregnancy
2. Pneumonia
3. Rhinite
4. Diabetes

Task 54
43 YEARS OLD PATIENT, CLEAR PLASMA, CHOLESTEROL-5.2 MMOLE/L, α-CHOLESTEROL-0.94
MMOL/L, ATHEROGENITY INDEX - 4.5. THE STATE OF LIPID METABOLISM CAN

BE
CONSIDER AS:
1. Norma
2. Hyperlipidemia
3. Hypocholesterolemia
4. Atherogenic spectrum

Task 55
13 YEARS OLD BOY WITH OBESITY, CHILLESIC PLASMA, HYPERTRIGLYCERIDEMIA. CAN
SUSPECT HYPERLIPOPROTEIDEMIA:
1. Type I
2. II type
3. Type III
4. IV type
5.V type

Task 56
A 49 YEARS OLD PATIENT ENTERED THE CLINIC WITH COMPLAINTS OF FREQUENT SEIZURES
ANGINA. Seizures were stopped by NITROGLYCERIN. LABORATORY
THE STUDY SHOULD INCLUDE A SERUM MEASUREMENT:
1. Cholesterol, triglycerides, α-cholesterol
2. Cholesterol, cholesterol esters, total lipids
3. Cholesterol, total lipids, phospholipids
4. Cholesterol, ketone bodies, non-esterified fatty
acids

Task 57
THE CONCENTRATION OF CHOLESTEROL IN THE BLOOD 5.0 MMOL/L, □-CHOLESTEROL - 1.83 MMOL/L,
TRIGLYCERIDES - 1.25 mmol/L, ATHEROGENITY INDEX 1.56. PROBABILITY OF DEVELOPMENT
IHD:
1. Very high
2. High
3. Moderate
4. Minor

Task 58
TO REGULATE LIPID PEROXIDATION USE:
1. Antidepressants
2. Antioxidants
3. Calcium antagonists
4. Antibiotics

Task 59
KETONE BODIES ARE:
1. Acetone

2. Acetoacetate
3. Cholesterol
4. Pyruvate

Task 60
LIPURIA CAN DEVELOP WITH:
1. Fracture of tubular bones
2. Trauma to large areas of adipose tissue
3. Primary hyperlipidemia
4. Gastritis

Tests on the topic: "Pathobiochemical characteristics and biochemical diagnosis of diabetes mellitus. Metabolic disorders of diabetes mellitus

Exercise 1.
CARBOHYDRATES PERFORM THE FOLLOWING FUNCTIONS IN THE HUMAN BODY:
1. Excretory
2. Transport
3. Structural
4. Energy

Task 2.
THE QUANTITY OF CARBOHYDRATES IN THE BODY IS (IN % OF DRY WEIGHT):
1.7%
2.2%
3.9%
4.15%
5. 60%

Task 3.
THE ENERGY FUNCTION IS PREFERREDLY PERFORMED BY THE FOLLOWING CARBOHYDRATES:
1. Glucose
2.Glycogen
3. Starch
4. Galactose

Task 4
THE STRUCTURAL FUNCTION IS PREFERREDLY PERFORMED BY THE FOLLOWING CARBOHYDRATES:
1. Glycogen
2. Glucose
3. Maltose

4.Glycoproteins

Task 5
WHAT ENZYMES ARE INVOLVED IN THE DIGESTION OF CARBOHYDRATES:
1. Amylase
2.Alkaline phosphatase
3. Trypsin
4.Amylo-1,6-glycosidase

Task 6
THE CENTRAL ROLE OF GLUCOSE IN THE METABOLIC PROCESSES OF THE BODY IS DUE TO:
1.High solubility
2. The stability of the pyranose ring
3.Amphoteric
4.Thermal stability

Task 7
THE MAIN SOURCES OF GLUCOSE IN THE BODY ARE:
1. Food carbohydrates
2. Pentose phosphate pathway
3.Glycogen breakdown
4.Glycolysis
Task 8
THE PRECURSOR IN THE PROCESS OF GLYCOGEN SYNTHESIS IN THE ORGANISM IS:
1. Fructose
2.Galactose
3.Pulp
4. Glucose

Task 9
THE DESTRUCTION OF GLYCOGEN IN THE BODY IS CATALYSED BY THE FOLLOWING ENZYME:
1. Glucokinase
2.Phosphorylase
3. Transketolase
4. Amylase

Task 10

FACTORS THAT ACTIVATE GLYCOGEN DESTRUCTION ARE:
1. Adrenaline
2. Glucagon
3. Fasting
4.Insulin

Task 11
THE MAIN BIOLOGICAL FUNCTION OF GLYCOGEN IN THE ORGANISM IS:
1. Structural
2. Anti-toxic
3. Fructose depot
4. Glucose depot

Task 12
THE CONTENT OF PYRUVATE INCREASES IN THE BLOOD WHEN:
1. Diabetes
2. Hypovitaminosis B1
3.Obesity
4.Hepatitis

Task 13
THE REFERENCE VALUES OF GLUCOSE IN PLASMA ARE:
1.3.3-5.5 mmol/l
2.4.0-6.1 mmol/l
3.5.6-7.8 mmol/l
4.5.6-6.7 mmol/l
5.7.8-10.0 mmol/l

Task 14
WHOLE BLOOD GLUCOSE REFERENCE VALUES ARE:
1.3.3-5.5 mmol/l
2.3.9-6.4 mmol/l
3.5.6-7.8 mmol/l
4.5.6-6.7 mmol/l
5.7.8-10.0 mmol/l

Task 15
FOR WHAT PURPOSE IS SODIUM FLUORIDE USED IN BIOCHEMICAL STUDIES OF THE LEVEL OF GLYCEMIA?
1. Glycolysis stimulation
2. Prevent glycolysis

3. Anticoagulant
4. Bindings of HbA1
5. Has no practical value

Task 16
URINAL GLUCOSE OUTPUT DEPENDS ON EVERYTHING EXCEPT:
1. Glomerular filtration rate
2. Intensity of glucose absorption in the intestine
3. Tubular reabsorption
4. Rates of glycolysis

Task 17
HYPOGLYCHEMIC EFFECT IS PROVIDED BY:
1. Adrenaline
2. Glucocorticoids
3. Insulin
4. Somatotropic hormone

Task 18
ALL HORMONES HAVE A HYPERGLYCEMIC EFFECT EXCEPT:
1. Insulin
2. Parathyroid hormones
3. Androgens
4. Glucocorticoids

Task 19
GLUCOSE HOMEOSTASIS DURING PROLONGED FASTING IS ACHIEVED BY:
1. Increases glycogenolysis
2. Activation of gluconeogenesis
3. Increasing glycogenogenesis
4. Increases glycolysis
5. Reinforcements pentose phosphate pathway

Task 20
HYPOGLYCEMIA CAN DEVELOP WHEN:
1. Hyperparathyroidism
2. Insulome
3. Pheochromocytosis
4. Hyperthyroidism
5. Itsenko-Cushing syndrome

Task 21

HYPERGLYCEMIA AND GLUCOSURIA CAN BE OBSERVED AT:
1. Pheochromocytosis
2. Itsenko-Cushing syndrome
3. Acromegaly
4. Thyrotoxicosis
5. Peptic ulcer of the stomach

Task 22
IF DIABETES MELLITUS IS SUSPECTED, IT IS NECESSARY TO DEFINE:
1. Glycemic level
2. Glucose in the urine
3. Glycosylated hemoglobin
4. Cholesterol
5. Triglycerides

Task 23
THE LEVEL OF GLYCEMIA CAN BE DETERMINED:
1. Glucose oxidase method
2. Orthotoluidine method
3. Hexokinase method
4. Biuret method

Task 24
GLUCOSURIA CAN BE DETECTED:
1. Polarimetry
2. Orthotoluidine method
3. Using diagnostic test strips
4. Biuret method

Task 25
THE PATIENT HAS A GLYCEMIA LEVEL WITHIN THE NORM, NO GLUCOSURIA. SHOULD EXCLUDED:
1. Manifest diabetes mellitus
2. Impaired glucose tolerance
3. Diabetes insipidus
4. Itsenko-Cushing's disease

Task 26
EVERYTHING IS CHARACTERISTIC FOR HYPEROSMOLAR NON-KETONE COMA, EXCEPT:
1. Hyperglycemia
2. Ketoacidosis
3. Hyperosmolarity

4. Glucosuria

Task 27
THE PATIENT HAS GLYCOSURIA BUT THE TOLERANCE TEST RESULTS ARE NOT ALTERED. YOU MAY SUSPECT:
1. Impaired glucose tolerance
2. Diabetes
3. Thyrotoxicosis
4. Non-diabetes

Task 28
GLUCOSE CONTENT IN ERYTHROCYTES:
1. Significantly lower than in plasma
2. Almost the same as in plasma
3. Significantly higher than plasma
4. Glucose is absent in red blood cells

Task 30
FOR GLYCOSYLATED HEMOGLOBIN THE FOLLOWING IS TRUE:
1. Present in Type II Diabetes
2. Absent in type I diabetes
3. Present in the blood of practically healthy individuals
4. Decreases in the blood of diabetic patients

Task 31
THE TERM "FRUCTOSAMIN" DESIGNATES:
1. The connection of fructose with proteins
2. Mucopolysaccharides
3. Glycosylated albumin
4. Glycolipids

Task 32
NAME THE REFERENCE METHOD FOR STUDYING THE LEVEL OF GLYCEMIA:
1. Hexokinase
2. Orthotoluidine
3. Copper conversion method according to Benedict
4. Glucose oxidase
5. Glucose dehydrogenase

Task 33

WHAT IS "POSTPRANDIAL GLYCEMIA":
1. Blood glucose level 1 hour after eating
2. Blood glucose level 6 hours after eating
3. Blood glucose level 3 hours after eating
4. Blood glucose level 2 hours after eating

Task 34
RENAL THRESHOLD FOR GLUCOSE IS:
1.6.0-7.0 mmol/l
2. 7.0-8.0 mmol/l
3. 8.8-10.0 mmol/l
4. 11.0-12.0 mmol/l
5. 12.0-13.0 mmol/l

Task 35
THE DIAGNOSTIC CRITERION OF DIABETES MELLITUS IS THE LEVEL OF GLUCOSE IN THE PLASMA OF NATOSCHAK:
1. >6.7 mmol/l
2. >5.6 mmol/l
3. >7.0 mmol/l
4. >5.5 mmol/l
5. >8.7 mmol/l

Task 36
THE DIAGNOSTIC CRITERION OF DIABETES MELLITUS IS THE LEVEL OF GLUCOSE IN THE WHOLE BLOOD-FASTING BODY:
1.>6.1 mmol/l
2.>5.6mmol/L
3.>7.8 mmol/l
4.>5.5mmol/L
5.>8.7mmol/L

Task 37
NORMAL MAXIMUM HYPERGLYCEMIA WHEN CARRYING OUT THE ORAL GLUCOSE TOLERANCE TEST IS OBSERVED AFTER GLUCOSE INTAKE THROUGH:
1.40 min
2.1 hour
3.4 hours
4.5 hours

Task 38

NORMALIZATION OF THE LEVEL OF GLYCEMIA DURING THE ORAL GLUCOSE TOLERANCE TEST IS OBSERVED AFTER THE ADMINISTRATION OF GLUCOSE IN A HEALTHY PERSON THROUGH:
1. 1 hour
2. 2 hours
3. 4 hours
4.5 hours

Task 39
THE DIABETIC TYPE OF THE GLYCEMIC CURVE DURING THE ORAL GLUCOSE TOLERANCE TEST IS OBSERVED AT:
1. Rheumatoid arthritis
2. Hepatitis
3. Hyperthyroidism
4. Hypothyroidism

Task 40
A FLAT TYPE OF THE GLYCEMIC CURVE DURING THE SUGAR LOAD IS OBSERVED WHEN:
1. Addison's disease
2. Hypothyroidism
3. Pyelonephritis
4. Pneumonia

Task 41
THE FOLLOWING OF THE FOLLOWING COMPOUNDS PERFORMS THE ROLE OF GLUCOSE DEPOSIT IN THE BODY:
1.Lactose
2.Starch
3.Glycogen
4. Fiber

Task 42
WHAT AMOUNT OF GLUCOSE DOES A PATIENT TAKE IN AN ORAL GLUCOSE TOLERANCE TEST?
1.0.5 g/kg
2.1 g/kg
3.5 g/kg
4.15 g/kg
5.17 g/kg

Task 43
FUNCTIONING OF THE FOLLOWING METABOLIC PATHWAYS LEADS TO HYPERGLYCEMIA:

1.Synthesis of glycogen
2.Glycogen breakdown
3. Pentose phosphate pathway
4. Gluconeogenesis

Task 44

DETERMINATION OF THE CONTENT OF WHAT SUBSTRATES OF CARBOHYDRATE METABOLISM IS USED FOR DIAGNOSTIC PURPOSE?

1. Glucose-6-phosphate
2.6-phosphogluconolactone
3. Glucose
4.Phosphoenolpyruvate

Task 45

DIAGNOSTIC CRITERIA FOR DIABETES MELLITUS 2 HOURS AFTER PLASMA GLUCOSE LOAD ARE THE VALUES:

1.>6.4 mmol/L
2.>6.7mmol/L
3.>7.0 mmol/L
4.>10.0 mmol/l
5.>11.1mmol/l

Task 46

THE DIAGNOSTIC CRITERIA FOR DIABETES MELLITUS 2 HOURS AFTER THE GLUCOSE LOAD IN WHOLE VENOUS BLOOD ARE THE VALUES:

1.>6.4 mmol/L
2.>6.1mmol/L
3.>7.8 mmol/l
4.>10.0 mmol/l
5.>11.1mmol/l

Task 47

THE DIAGNOSTIC CRITERIA OF DIABETES MELLITUS IN 2 HOURS AFTER THE LOAD OF GLUCOSE IN THE WHOLE CAPILLARY BLOOD ARE THE VALUES:

1.A. >6.4 mmol/l
2.B. >6.7 mmol/l
3.B. >7.8 mmol/l
4.G. >10.0 mmol/l
5.D. >11, 1 mmol/l

Task 48

GLYCOSYLATED HEMOGLOBIN IS:

1.Complex of glucose with COHb
2. Complex of glucose with HbA
3. Glucose complex cHbF
4.Combining fructose with HbA

Task 49
WHAT IS THE DIAGNOSTIC VALUE OF HBA1C BLOOD DETECTION?
1. Diagnosis of diabetic nephropathy
2. Determining the duration of hyperglycemia
3. Diagnosis of diabetic ketoacidosis
4. Diagnosis of macroangiopathies
5. Diagnosis of diabetic retinopathy

Task 50
WHAT REQUIRED STUDIES SHOULD BE DIAGNOSED FOR DIABETIC KETOACIDOSIS?
1. Tests for detection of ketone bodies in urine
2. Study of indicators of acid-base balance
3. Urinalysis for proteinuria
4. Study of plasma osmolality
Task 51
MANAGEMENT TREATMENT OF DIABETIC KETOACIDOSIS INCLUDES:
1. Control over indicators of acid-base balance
2. Controlling the level of ketone bodies
3. Diuresis control
4. Plasma osmolality control

Task 52
AT WHAT VALUES OF GLYCEMIA CAN WE TALK ABOUT THE DEVELOPMENT OF HYPEROSMOLAR NON-KETONE COMA?
1. > 50.0 mmol/l
2. > 40.0 mmol/l
3. > 30.0 mmol/l
4. > 20.0 mmol/l
5. > 25.0 mmol/l

Task 53
ONE OF THE MAIN LABORATORY CRITERIA FOR DEVELOPED DIABETIC NEPHROPATHY IS:
1. Microalbuminuria
2. Proteinuria > 0.5 g/day.
3. Proteinuria > 1.0 g/day.
4. Proteinuria > 3.0 g/day.
5. Proteinuria > 2.0 g/day.

Task 54
MICROALBUMINURIA IS:
1. Isolation of albumin with urine in the amount of 500-600 mg / day.

2. Isolation of albumin in the urine in the amount of 600-800 mg / day.
3. Isolation of albumin in the urine in the amount of 300-500 mg / day.
4. Isolation of albumin in the urine in the amount of 30-300 mg / day.

Task 55
EARLY COMPLICATIONS OF DIABETES ARE:
1. Diabetic neuropathy
2. Diabetic nephropathy
3. Diabetic ketoacidosis
4. Diabetic retinopathy
5. Occlusion of the femoral artery

Task 56
THE CRITERION FOR THE COMPENSATED COURSE OF DIABETES MELLITUS TYPE IS THE FOLLOWING HBA1C LEVEL:
1. 8.0-9.0%
2. 6.0-7.0%
3. 7.1-7.5%
4. 8.0-8.5%

Task 57
THE CRITERION OF THE COMPENSATED COURSE OF TYPE I DIABETES IS THE FOLLOWING LEVEL OF GLYCEMIA NATO BUTTERFLY:
1. 5.0-6.0 mmol/l
2. 6.1-6.5 mmol/l
3. 6.5-6.9 mmol/l
4. 7.0-7.5 mmol/l
5. 7.5-7.8 mmol/l

Task 58
HOW FREQUENCY SHOULD THE HBA1CY CONCENTRATION BE DETECTED IN PATIENTS WITH TYPE I DIABETES MELLITUS?
1. 1 time per month
2. 1 time per year
3. 1 time in six months
4. 1 time in 3 months
5. 1 time in 2 weeks

Task 59
HOW FREQUENCY SHOULD THE HBA1CY CONCENTRATION BE DETECTED IN PATIENTS WITH TYPE II DIABETES MELLITUS?
1.1 times a month
2.1 times a year
3.1 every six months
4.1 every 3 months

5.1 every 2 weeks

Task 60
THE FREQUENCY OF URINE STUDIES FOR DETECTION OF MICROALBUMINURIA IN PATIENTS WITH TYPE I DIABETES MELLITUS IS:
1.1 times a year, after 5 years from the onset of the disease
2.2 times a year, after 5 years from the onset of the disease
3.2 times a year, after 3 years from the onset of the disease
4.1 once a year, after 3 years from the onset of the disease
5.Monthly

Tests on the topic: "HEMOSTASIS SYSTEM. COAGULOLOGICAL SYNDROMES»

Exercise 1.
The hemostasis system includes:
A. fibrinolysis factors B. anticoagulants E. all of the above
B. plasma factors D. platelets

Task 2.
Hemostatic potential have:
A. plasma B. platelets E. all of the above
B. erythrocytes D. vascular endothelium

Task 3.
The initiator of blood clotting is:
A. factor I B. factor XII D. prothrombin
B. factor X D. prekallikrein

Task 4.
Released from platelets takes part in prothrombinase formation:
A. factor 3 B. actomyosin D. all of the above are correct
B. factor 4 D. thromboxane

Task 5.
The inducer of platelet aggregation is:
A. aspirin B. AMP C. ADP D. urea D. prothrombin

Task 6.
Platelet activator is not:
A. thrombin B. ADP C. collagen D. ATP D. thromboxane

Task 7.
The liver does not take part in the synthesis of:
A. factor III B. fibrinogen D. factor IX
B. factor VII D. prothrombin

Task 8.
Vitamin "K" affects the synthesis of:
A. prothrombin B. factor III D. prekallikrein
B. fibrinogen G. factor XII

Task 9.
The external mechanism of hemostasis includes the activation of:
A factor VII B. factor IX D. macromolecular
B factor VIII D. factor XII kininogen

Task 10.
The formation of thrombin occurs by proteolysis of the P factor:
A. factor I B. factor VII C. factor IXa D. factor Xa E. factor XIII

Task 11.
Platelet-vascular hemostasis belongs to the function:
A. proteolysis B. hydrolysis D. fibrinolysis
B. adhesive-aggregative G. lysis of euglobulins

Task 12.
Kefalin in the APTT technique plays the role of:
A fibrinogen B. thrombin C. factor 3 D. factor XII D. kallikrein

Task 13.
Synthesized in platelets:
A. prostacyclip B. protein "C" D. prothrombin
B. thromboxane D. factor VII

Task 14.
The anticoagulant is:
A. plasminogen B. factor III C. antithrombin III D. streptokinase E. ADP

Task 15.
Fibrin degradation products cause:
A. proteolysis B. blockade of fibrin formation D. activation of fibrinolysis

B. synthesis of factor III D. activation of factor XII

Task 16.
The retraction of a blood clot is determined by the function:
A. plasma factors B. kinin system D. proteolytic system
B. platelets D. complement systems

Task 17.
Thrombin formation is prevented by:
A. calcium ions B. Willibrand factor D. fibrinogen
B. high molecular weight kininogen D. anticoagulants

Task 18.
Prothrombin formation via the external pathway should be monitored:
A. platelet aggregation B. activated partial D. prothrombin time
B. determination of fibrinogen by thromboplastin time E. bleeding time

Task 19.
Thrombin time determination is used for:
A. control of heparin therapy B. assessment of antithrombin activity E. all of the above
B. monitoring of PDF D. diagnosis of dysfibrinogenemia

Task 20.
Determination of antithrombin III in plasma is used for:
A. diagnosis of consumption coagulopathy in DIC D. diagnosis of hypercoagulability in
B. detection of resistance to heparin while taking oral contraceptives
C. detection of hereditary thrombophilia E. all of the above

Task 21.
The stage of formation of fibrin from fibrinogen is not:
A. formation of prothrombinase D. polymerization of fibrin monomers to fibrin-
B. cleavage of fibrinopeptides "A" and "B" of the polymer
C. formation of fibrin monomers E. stabilization of fibrin by fibrinase

Task 22.
The Hageman factor activator is not:
A. glass B. silicone D. leather
B. kaolin D. coarse collagen

Task 23.
Activation of plasma factors occurs on:

A. platelet factor 3 (phospholipid) B. factor VIII E. factor XI
B. Factor V D. Factor IX

Task 24
Consumption coagulopathy is not accompanied by consumption of:
A. factor I B. platelets D. calcium ions
B. factor V D. factor VIII

Task 25
Glanzman's disease affects:
A. liver B. absorption of vitamin K D. kallikrein-kinin system
B. vascular endothelium D. platelets

Task 26
von Willebrand disease is associated with:
A. a defect in the V1H-B antigen B. a liver pathology D. a defect in platelet granules
B. a defect in factor V1N-K D. a decrease in fibrinogen

Task 27
In hemophilia, there is a deficiency of factors:
A. plasma B. leukocytes D. fibrinolysis
B. platelets D. vascular endothelium

Task 28
Has an anticoagulant effect:
A. collagen B. protein C D. ascorbic acid
B. thrombin D. tissue plasminogen activator

Task 29
The vascular endothelium synthesizes:
A. prothrombin B. thromboxane D. vitamin K
B. prostacyclin D. factor IX

Task 30
Fibronectin is characterized by the following:
A. is involved in the formation of the fibrin matrix
B. activates clotting factors
V. decreases with DIC
G. forms complexes with complement components
D. all of the above are correct

Task 31
Diagnostic value of protein C determination:
A. identifying the risk of thrombosis
B. criterion for increasing or decreasing the dose of indirect anticoagulants
B. control of heparin therapy
D. assessment of fibrinolysis

D. all of the above are correct

Task 32
Factor XIII deficiency is observed:
A. radiation sickness D. with liver pathology
B. DIC D. all of the above are true
B. after surgical interventions

Task 33
Diagnostic value of fibrinogen determination:
A. coagulation factor, blood viscosity B. acute phase protein
B. Independent risk factor for myocardial infarction and D. Platelet aggregation cofactor
stroke D. all of the above are correct

Task 34
Platelet activation is indicated by an increase in plasma:
A. fibrinogen G. complement
B. antithrombin III E. all of the above are correct
B. beta thromboglobulin

Task 35
APTT is prolonged in the following cases, except:
A. hemophilia A, B, C D. the presence of blood clotting inhibitors
B. overdose of indirect anticoagulants (heparin, fibrinogen degradation products)
C. Factor VII deficiency E. Decreased fibrinogen concentration

Task 36
Prothrombin time is prolonged in the following cases:
A. congenital deficiency of factors II, V, VII, X D. hypofibrinogenemia
B. chronic liver disease E. all of the above are correct
B. vitamin K deficiency

Task 37
Prolongation of bleeding time is typical for:
A. thrombocytopenia of various origins D. DIC syndrome
B. thrombocytopathy E. all of the above are correct
B. treatment with antiplatelet agents, aspirin, heparin

Task 38
Prolongation of clotting time is observed in the following cases, except:
A. significant deficiency of plasma factors B. absence of antithrombin III
(II, V, VIIIIX, X) D. Heparin treatment

B. severe deficiency of platelet factor 3 D. in patients with circulating anticoagulants

Task 39
Fibrinolsh activation (euglobulin lysis time is reduced) is observed in the following cases:
A. DIC D. shock
B. massive thrombosis E. all of the above cases
B. surgery on the prostate, lung tissue

Task 40
A test for fibrin degradation products (PDF) is positive when:
A. DIC-sicdrome B. treatment with fibrinolytic agents D. all of the above are incorrect
B. massive thrombosis D. all of the above are correct

Task 41
Blood from a patient with mitral valve stenosis, the patient goes to a planned operation. The coagulogram showed: platelet count - normal, bleeding time - prolonged, ABP, APTT - prolonged, PT (LI), fibrinogen concentration, fibrinolytic activity, ethanol test, antithrombin III - normal. Violations are probably in the link of hemostasis:
A. thrombocyte-vascular and plasma G. anticoagulant
B. external plasma D. equally probable in any of the listed links
B. fibrinolysis

Task 42
The patient presented in task 41 must additionally:

Task 43
A patient with impaired vascular-platelet hemostasis has a factor VIII antigen deficiency and reduced platelet adhesion and aggregation to ristomycin. The patient is most likely to:
A. hemophilia A D. chronic recurrent DIC in the phase
B. von Willebrand's disease hypocoagulation
C. Werlhof's disease D. All of the above are possible

Task 44
Antiphospholipid syndrome manifests itself:
A. formation of antibodies to phospholipids D. miscarriage
B. repeated thromboses E. all of the above are correct
B. the presence of lupus anticoagulant

Task 45
Plasminogen in plasma is reduced with:
A. treatment with fibrinolytics D. all of the above are correct

B. severe liver pathology E. all of the above are incorrect
B. DIC

Task 46
High molecular weight kininogen in plasma is reduced with:
A. chronic renal failure D. all of the above are correct
B. cirrhosis of the liver E. all of the above are incorrect
B. DIC

Task 47
Thrombophilia is:
A. tendency to thrombogenesis D. decrease in anticoagulant potential
B. increased blood viscosity E. all of the above are correct
B. increased platelet aggregation

Task 48
A coagulogram is called:
A. referral to the study of the hemostasis system
B. determination of prothrombin time
B. study of platelet aggregation properties
D. a set of hemocoagulological tests that respond to the task set by the clinician
E. conducting studies of hemostasis on a coagulometer

Task 49
A comprehensive assessment of hemostasis should include:
A. study of the platelet-vascular link D. study of anticoagulant potential
B. Plasma link study E. All of the above are correct
B. study of the fibrinolytic system

Task 50
APTT reflects:
A. state of the platelet link of hemostasis D. state of the anticoagulant link
B. state of the fibrinolytic system D. rheological properties of blood
B. intrinsic pathway of prothromb activation inase

Task 51
International requirements for the control of anticoagulants of indirect action is the definition of:
A. prothrombin ratio G. prothrombin according to Quick
B. prothrombin time E. international normalized ratio
B. prothrombin index

Task 52
Hemorrhagic diseases (syndromes) are:
A. diseases accompanied by bleeding
B. diseases accompanied by an increase in the aggregation properties of platelets
B. decrease in fibrinolytic activity
D. decrease in anticoagulant potential
D. increased production of von Willebrand factor

Task 53
If recurrent thrombotic complications (thrombosis) occur at a young age, one should think about:
A. hereditary deficiency of antithrombin III D. factor V resistance to activated
B. antiphospholipid syndrome protein C
C. protein deficiency C D. all of the above are correct

Task 54
When examining patients with hemorrhagic diseases, it is necessary to carry out:
A. study of platelet aggregation D. determination of fibrinogen
B. fibrinolysis study E. all of the above are correct
B. determination of APTT, PV
Task 55
In a patient with hemorrhagic syndrome with a prolongation of APTT (activated partial thromboplastin time) and normal PT (prothrombin time), the following should be performed:
A. Corrective tests. B. Determination of CP-dependent fibrinolysis. D. definition
B. determination of antithrombin III D. study of platelet aggregation and blood viscosity

Task 56
Diagnosis of antiphospholipid syndrome includes:
A. determination of APTT D. corrective tests
B. determination of prothrombin time E. all of the above are correct
B. determination of lupus anticoagulant

Task 57
Methods used in coagulology:
A. using chromogenic substrates B. coagulometric E. all of the above
B. nephelometry and turbidimetry D. latex agglutination

Task 58
Coagulometers can work according to the principle:
A. Elegance to mechanical B. Determining the time to reach D. All of the above are correct
K. photometric fixed absorbance D. all of the above are incorrect

Task 59
Syncopated (imitating silicone) dishes should be used when:
A. storage and centrifugation of blood D. determination of platelet aggregation and adhesion
B. storage of lean and platelet-rich plasma E. all of the above are correct
B. storage of thrombin solution

Task 60
In the direction for a coagulological study, it is necessary to indicate:
A Full name, age of the patient C. Presence of hemorrhagic or G. ongoing treatment
K. clinical diagnosis of thrombotic manifestations D. all of the above are correct

Task 61
An error in the study of hemostasis may occur due to:
A. hemolysis C. abnormal ratio D. unstable temperature
B. Presence of heparin, anticoagulant and blood E. All of the above are correct