1. It is well known that liver produces bile, which does not contain digestive enzymes How does it participate in digestion

inhibits pancreatic lipase and peristalsis

**activates pancretic lipase and peristalsis**

slows down absorption processes and inibits peristals inactivates enzyme formation and enhances peristalsis promotes emulsification of fats and inhilis peristaksis

1. Female patient came for consultation with complain of bloting spasms,pain nausea, diarrhea. These symptoms occur every time after dairy products. Which enzyme deficiency causes such symptoms?

Deficiency of alanine aminotransferase Maltase deficiency

Maltose deficiency

**Lactase deficiency**

Lipoprotein lipase deficiencyLipoprotein lipase deficiency

1. The mutation resulted in the accumulation of a large number of misfolded proteins in the cell. Activation of which of the following cytoplasmic enzymes is most likely to occur?

Telomerase Glutathione peroxidase NADPH oxidase Ribonuclease **Caspase**

1. At one of the stages of preparing a sample for karyotype analysis it is necessary to treat the cell culture with colchicine, which disrupts the spindle fibers During which phase of cell division is this procedure performed?

interphase telophase **metaphase** prophase anaphase

1. Patient B., 9 years old presents with complaints of pain in the joints and bones, weakness. After examination sickle cell anemia was diagnosed. Red blood cells reduce oxygen transport and become sickle-shaped instead of the usual disc-shaped one. What preserves the shape of the red blood cells?

Ribosomes Lysosomes Mitochondria **Cytoskeleton** Peroxisomes

1. Cell cycle has 4 checkpoints at G1 period, at S-period, at G2 period, at metaphase of mitosis. Why would mitosis process stop at metaphase stage

Gaps in DNA

Destruction of microtubules Incompleteness of replication

**Improper assembly of mitotic division spindle**

Violation of chromosome segregation

1. Brachydactyly is inherited by an autosomal-dominant type of inheritance, In the homozygous condition it leads to the death of the embryo, in heterozygous conditions stands for shortening of the fingers. Determine the effect of the brachodactyly gene in a heterozygous person.

lethal **sublethal** regulatory suppressory modulatory

1. Patient B., 9 years old presents with complaints of pain in the joints and bones, weakness. After examination sickle cll anenia was diagnosed. This is an inherited blood disorder in which red blood cells reduce oxygen transport and become sickle shaped instead of the usual disc shaped one. What preserves the shape of the red blood cell

Ribosomes Lysosomes Mitochondria **Cytoskeleton** Peroxisomes

1. A child was born in a family with healthy parents. In the first days after birth, the child showed a lack of normal stool output and abdominal distention. Upon detailed examination, anorectal atresia was diagnosed. Determine which mechanism disruption caused the development of this defect?

proliferation **migration** adhesion apoptosis differentiation

1. All human chromosomes are divided into several types by structure. What type of chromosome is it if it has equal arms and centromere placed in the center of chromosome?

satellite acrocentric

telocentric **metacentric** submetacentric

1. Child N., 4 years old, has been suffering from atopic dermatitis since the age of 3 months. A year ago, the child started attending a preschool and the rashes and skin itching worsened. Upon objective examination, a vesiculopapular rash, erythema, and excoriations were observed on the skin of the shins, back, and wrists. What is the cause of the development of arterial hyperemia in inflammation?

impaired venous blood outflow

**reflex vasodilation** blood thickening compression of the vein Leukocyte migration

1. Patient K. 65 years old, presented to clinic with complains of pain and morning stiffness in the symmetrical joints of the hands From the medical history, it is known that patient has been suffering from rheumatoid arthritis for 7 years. Upon examination, swelling and local increase in temperature in the area of the wrist joints are detected What is the pathogenetic factor of local temperature elevation in the inflammatory reaction?

venous hyperemia ischemia

**arterial hyperemia**

stasis embolism

1. During ophthalmological examination, patient's eye revealed a pronounced inflammatory reaction: redness of the conjunctiva, dilation and hyperemia of the mucosal capillaries, swelling. The patient's visual function is impaired, with decreased vision and the presence of veils before the eyes. What contributes to the process of exudation in this case?

**decreased osmotic pressure at the site of inflammation**

decreased permeability of capillaries

decreased hydrodynamic pressure in the capillaries increased oncotic pressure of the blood hyperosmolarity at the site of inflammation

1. A 6-year-old child was admitted to emergency surgery unit with severe craniocerebral trauma. Due to the severity of the condition and the nature of the injury, the anesthesiologist decided to use neuroleptanalgesia as an anesthetic. What drugs are used for neuroleptanalgesia?

Morphine hydrochloride, haloperidol Trimetazidine, droperidol

**Fentanyl, droperidol**

Pentazocine, chlorpromazine

Fentanyl, haloperidol

1. The use of which drug is accompanied by the development of arterial hypotension, bradycardia and atrioventricular block?

carbamazepine clozapine **pergolide** bromocretin methysergide

1. The patient was admitted with complaints of squeezing chest pain during physical exertion, relieved by taking nitroglycerin. Objective examination: blood pressure 100/60 m g, frequent extrasystoles on ECG, sinus tachycardia. The prescribed medications are metoprolol, isosorbide mononitrate, and acetylsalicyllc acid. What side effects are possible with this combination of medications?

**Severe hypotension, dizziness** Epigastric pain, nausea, vomiting Shortness of breath, bronchospasm Dry cough

Atrioventricular block

1. As a result of frequent use of analgin for toothache, a 35-year-old man developed immune leukopenia. What is characteristic of the immunological stage of this type of allergic reactions.

Interaction of allergens with reagins on the surface of mast cells **Interaction of antibodies with altered components of cell membranes** Activation of CD8 T lymphocytes

Formation of lymphokines

Formation of immune complexes circulating in the blood

1. A patient visited the general practitioner with complaints of reduced appetite and pain while eating. During the oral examination, the doctor found a white-gray coating on the tongue and the inner cheek mucosa. Microscopic examination of the material from the mucous membrane of the mouth revealed large cells of round and oval shapes. Name the most likely pathogen.

spirochete staphylococcus streptococcus **candide** coccidioidomycosis

1. The patient has a fever, purulent nasal discharge, and a headache. The pathogens of bacterial infections differ in their morphological characteristics Choose the main morphological forms of bacteria.

bacilli, cocci, stellate bacilli, stellate, branched **bacilli, cocci, spiral** bacilli, cocci, square bacilli, vibrio, squares

1. The student was assigned to perform microscopy of a specimen using the immersion microscopy method. Choose the rules for performing immersion microscopy

Use of a phase contrast device

Use of strong lateral illumination and a 100x objective

**Use of a 100x objective and oil**

Use of a 40x objective and oil

Use of a lowered condenser and a 40x objective

1. The patient was admitted to the clinic with a preliminary diagnosis of "Typhoid fever. What microbiological method is the most reliable to confirm the diagnosis in the early stages of the disease

**blood culture** stool culture urine culture bile culture roseola culture

1. An example of group reactivity is that newborns under 1 month of age do not contract diseases such as mumps or scarlet fever. Why?

Due to high metabolism in children

Due to imperfection of thermoregulation Due to vaccination made after birth

**Due to antibody presence, given from mother**

Due to high leukocyte concentration in a blood

1. What lymphoid organ has parenchyma located on the periphery of the organ, the centrally located medullary substance, and the T-dependent paracortical zone between the cortical and medullary substances:

red bone marrow thymus

spleen **lymph node** tonsils

1. The thymus is the central organ of cellular immunity, where antigen-independent differentiation of T lymphocytes occurs. Which lymphocytes undergo differentiation in the thymus?

**T lymphocytes**

B lymphocytes O-lymphocytes NK lymphocytes

nonT-nonB lymphocytes

1. A male patient consulted a doctor with complaints of fever and weight loss. Blood tests show lymphocytic leukocytosis. To determine the nature of pathological changes it is necessary to know the structural and functional characteristics of the blood and hematopoietic organs in normal conditions. Which lymphocytes are responsible for humoral immunity?

**B lymphocytes** T lymphocytes O-lymphocytes T-suppressors T helper cells

1. A 45-year-old woman visited the clinic with complaints of moderate pain in the joints of her hands and wrists, swelling, and a feeling of stiffness in the morning. Blood analysis showed leukocytosis, accelerated ESR, elevated C-reactive protein, and the presence of anti-citrullinated antibodies. What are the main types of immune damage underlying the development of this. disease?

reaginic

Cytotoxic and reaginic **Immunocomplex and cell-mediated** Receptor

Reagin and immunocomplex

1. Patient N works at a factory, extracting nickel-plated parts from an electrolytic bath. He complains of itchy skin rashes on his hands, irritability, and sleep disturbances. Symptoms appeared two months ago. Examination did not reveal any pathology of internal organs. The patch test with nickel sulfate was positive, and the macrophage migration inhibition test with a nickel preparation was also positive. What type of hypersensitivity does the patient's allergy belong to?

I type-reaginic

Il type- cytotoxic

Ill type- immune-complex

1. **type- delayed hyperresponsiveness**
2. type-stimulative
3. What is the fundamental difference between allergic and pseudoallergic reactions? Absence of pathochemical stage.

Absence of pathophysiological stage.

**The absence of an immunological stage.**

Different clinical manifestations.

Milder clinical manifestations.

1. During the blooming of ragweed, a 17-year-old young man developed itching, hyperemia, and eyelid swelling, tearing, profuse runny nose, and sneezing artacks: What a characteristic of the immunological stage of this type of allergic reaction?

The formation of allergen + IgA immune complexes IgG and IdM education

Neutrophil degranulation

Activation of complement components

**Formation of IgE**

1. An immunological study revealed a decrease in the population of T-lymphocytes and hormones regulating their number. Antigen-independent differentiation of T lymphocyles occurs in the following organ of hematopoiesis and immunological defense:

bone marrow **thymus** spleen lymph node

bone marrow and thymus

1. Patient K., 28 years old, with blood group II(A), Rh(+), was transfused with 150 ml of blood group II(A), Rh(+). However, after 40 minutes, the patient experienced blood transfusion reactions. To determine the nature of pathological changes, it is necessary to know the structural and functional characteristics of the blood and hematopoietic organs of a healthy person. What changes in a red blood cells are observed after transfusion of an incompatible blood group?

**hemolysis of red blood cells**

shrinkage of red blood cells

change in the shape of the erythrocyte membrane slowing down the erythrocyte sedimentation rate increasing the osmotic resistance of red blood cells

1. In a histological specimen, student needs to identify the spleen. One of the distinguishing features of the microscopic structure of the spleen is the characteristics of the organs capsule. The spleen capsule is represented by:

Stratified squamous epithelium

Smooth muscle tissue and mesothelium Dense connective tissue

**Connective tissue, smooth myocytes, mesothelium**

Mesothelium

1. Patient was diagnosed with severe B12-deficiency anemia with impaired hematopoiesis and the appearance of altered red blood cell in the blood. Anamnesis include total gastric reaction. Which cells in the peripheral blood can confirm the diagnosis?

Normocytes Microcytes Ovalocytes **Megalocytes** Anulocytes

1. A 46-year-old woman who suffers from chollitiasis developed jaundice. At the same time, her urine became dark yellow, and the feces were discolored. The concentration of which substance in the blood serum will increase to the greatest extent?

Mesobilirubin unconjugated bilirubin Biliverdin **Conjugated bilirubin** Urobilinogen

1. Which type of thrombus is commonly formed in the venous system? white

blue

mixed **red** yellow

1. A 3-day-old boy is in the perinatal center. According to his mother, the pregnancy went smoothly. Neurosonography data show an enlargement of the lateral and third ventricles of the brain indicating impaired cerebrospinal fluid outflow from the third ventricle. Name the connection between the third and fourth ventricles.

Interventricular foramina **Cerebral aqueduct (Sylvius)** Lateral holes

Median hole Central channel

1. The person exhibits an unsteady gait, disruption of body balance, and inability to accurately touch the tip of the nose with a finger. Which structure of the central nervous system is associated with the impairment of these functions?

thalamus **cerebellum** spinal cord striatum substantia nigra

1. A patient with history of polio has atrophy of the muscles of the lower extremities. Identify the neurons of the spinal cord nucle affected by the pollo virus:

Clarke nuclei Roland Cores **Motor nuclei**

Medial intermediate nuclei Lateral intermediate nuclei

1. How the inflammation of the soft membrane of the brain is called? pachymeningitis

meningitis

encephalitis panencephalitis **leptomeningitis**

1. The unconscious patient was taken by an ambulance team to the hospital. Objectively: there are no reflexes, seizures occur periodically, breathing is intermittent. After a laboratory examination, hepatic coma was diagnosed. The accumulation of which metabolite is essential for the appearance of disorders of the central nervous system?

Urea **Ammonia** Glutamine Bilirubin Histamine

1. Patient N, 45 years old, is in the neurology department. Examination revealed scanning speech, horizontal nystagmus, an unsteady gait, and instability in the Romberg position.

There is a lack of coordinated movements of the limb muscles. Persistent tremors and swaying of the trunk and limbs are observed. What could these disorders be related to?

Parkinson's disease **Cerebellum damage** Alzheimer's disease Medulla oblongata damage Spinal cord damage

1. Examination of a 17-year-old young man who was injured in a car accident revealed decreased muscle tone, reduced movement amplitude, and sluggish reflexes in the right arm, reflexes in the right leg are increased, with a positive Babinski reflex. Reflexes in the left arm and leg remain unchanged. Where is the most likely location of the injury?

spinal ganglion peripheral nerves **spinal cord** brainstem

alpha motor neurons

1. In case of brain injury, glial cells are activated, which have a different developmental origin compared to all other elements of glia. Name these cells:

Fibrous astrogliocytes Lemmocytes Ependymocytes **Microgliocytes** Protoplasmic astrogliocytes

1. In purulent-inflammatory diseases of the middle ear, in the absence of medical care, the purulent process can spread to the pharynx. Through which anatomical structure does the purulent process move from the tympanic cavity to the pharynx?

**Auditory tube** Tympanic canaliculus Internal auditory meatus Facial canal

Carotid canal

1. The peripheral part of the auditory analyzer of a 63-year-old woman who previously received high doses of quinine for malaria treatment is damaged. Identify the inner ear cells which damage is associated with this pathology.

Ganglion epithelial cells **Sensory epithelial cells** Supporting epithelial cells Phalangeal epithelial cells Columnar epithelial cells

1. If rats are trained to find their way in a maze with numerous turns, then even after turning off their vision, the animal correctly finds all the turns. Which analyzer facilitates this orientation?

oral tactile olfactory

**vestibular**

somatosensory

1. In a 15-year-old adolescent, an examination revealed memory, speech, and thinking impairments. According to his mother, he performed very well in school until the 7th grade. From the 8th grade his behavior changed-he became disobedient and started being rude. Over the past year, he has abused alcohol. Examination revealed signs of neuron damage in the cerebral cortex: Damage to which part of the brain has led to these neurological disorders?

medulla oblongata; hippocampus;

**frontal lobe of the brain;** ventral striatum; cerebellum.

1. At a psychiatrist's appointment, patient N., 33 years old, complained of increased anxiety, sleep disturbances, and dyspepsic disorders, for which she was unsuccessfully treated by a gastroenterologist. Over the past six months, she has lost five kilograms. What is the leading pathogenetic factor underlying this mental health disorder in the patient?

Degeneration of cerebellar neurons

**Formation of pathologically enhanced excitation generator in brain neurons**

Deafferentation of spinal cord neurons Demyelination of nerve fibers Formation of pathotrophogens

1. During the examination of patient E., 18 years old, a lack of pigmentation on the hands was observed, appearing as distinct white (milky-toned) patches with clear borders. The diagnosis of virtiligo was confirmed. The causes of virtiligo include a deficiency in melanin production by melanocytes, leading to the development and progression of depigmentation: Name the embryonic origin of skin melanocytes.

**Neural crest** Ectoderm Mesoderm Mesenchyme Endoderm

1. Patient A., 15 years old, consulted a doctor with complaints of severe itching and skin rashes in the area between fingers and wrists, diagnosed with scabies. This disease is caused by the scabies mite, which lives and reproduces on human skin. This parasite lives inside the epidermis. The epidermis is represented by.

Stratified non-keratinizing epithelium **Stratified keratinized epithelium** Simple squamous epithelium

Simple cuboidal epithelium Simple columnar epithelium

1. "A female student felt unwell and, after measuring her temperature in the left axillary fossa, saw a reading of 36.9°C, while in the right axillary fossa it was 36.7°C. The instructor explained that she has temperature asymmetry. Which higher subcortical center regulates the maintenance of this indicator within the normal range?

medulla oblongata **hypothalamus** hippocampus thalamus cerebellum

1. A 70-year-old woman has developed a black-red plaque-like formation on the skin of her thigh. Name the morphological type of the tumor.

fibroma fibrosarcoma **melanoma** astrocytoma meningioma

1. In an experiment, tissue ischemia was modeled. The study revealed cell swelling and nuclear pyknosis. What is the most likely mechanism of call swelling?

**increased intracellular Na+**

increased activity of the Na+/K+-ATP increased activity of Ca2+-ATP increased intracellular K+

activation of superoxide dismutase

1. A 40-year-old woman has developed a papillary formation on the skin of her hand. Name the morphological type of the tumor.

adenoma **papilloma** hemangioma

lipoma synovioma

1. As a result of an occupational injury, patient complains of pain in the the posterior thigh surface muscles during sudden and strong contraction. What functional characteristics are typical for the skeletal muscles of the musculoskeletal system?

provide involuntary contractions **capable of voluntary contraction** have long lasting plastic tone contract in single mode

have automaticity

1. In a fetus, functional insufficiency of cardiomyocytes was diagnosed via ultrasound. This may be related to damage to the sources of myocardial development. Cardiac muscle tissue dereloas from:

Mesenchymes Endoderm

**Myopicardial plate of the visceral layer of the splanchnotome** Myopicardial plate of the parietal layer of the splanchnotome Myotomes and endoderm

1. Which fontanel may remain open in a two-year-old child?

fonticulus sphenoidalis fonticulus mastoideus **fonticulus anterior**

fonticulus posterior fonticulus ethmoidalis

1. A 72-year-old woman underwent femoral bone densitometry. The T-score was found to be -2.5. A biochemical analysis revealed an elevated calcium level. Excessive production of which hormone has caused a metabolic disorder in the patient's bone tissue?

Somatotropin Insulin

Erythropoietin vasopressin

# Cortisol

1. It is known that one of the ways to develop bone tissue is indirect osteogenesis. Identify the cells of the inner layer of the perichondrium involved in the formation of the perichondral bone cult during the development of tubular bones:

Chondroblasts **Osteoblasts** Chondroclasts Adventitial cells Fibroblasts

1. At a general practitioner's appointment, a 53-year-old man complains of progressively increasing acute pain in the joint of the big toe on his right foot. The joint is swollen and reddened. Pain reller medications have almost no effect. The specific biochemical marker in this patient will be:

increase in amylase in the blood

# increased uric acid in the blood

increase in direct bilirubin in the blood increased blood glucose increase in creatinine in the blood

1. Patient S., 29 years old, came for a dressing change at the hospital on the 7th day after the injury. Diagnosis: wound of the right forearm. During the dressing procedure, wound reduction and pink granulation tissue were observed. Fibroblasts play a major role in the formation of young connective tissue. Organelles of fibroblasts responsible for the synthesis of protein components:

**Ribosomes** Lysosomes Mitochondria Cytoskeleton Peroxisomes

1. What is the term for complete regeneration? substitution

# restitution

repair

metaplasia dysplasia

1. A 52-year-old woman, whose work involves prolonged standing, consulted a surgeon with complaints of varicose veins in the lower legs and fatigue while walking. Nodular dilations of the superficial veins were visually detected on both lower legs. Which of the listed vessels has the lowest blood pressure?

**veins** aorta arteries arterioles capillaries

1. During heart examination doctor found a deterioration of venous blood flow in the pool of the coronary sinus of the heart. Where is the coronary sinus of the heart located?

In the coronal sulcus

# In the posterior interventricular sulcus

In the anterior interventricular sulcus At the apex of the heart

On the sternocostal surface

1. One of the common causes of impotence is prostate disease and impaired blood supply. Branches of which artery supply blood to the prostate gland?

**Internal iliac** External iliac Superior mesenteric Inferior mesenteric Renal

1. As a result of an occupational injury, the patient suffered a laceration on the first finger of the hand, leading to damage to the artery located in the foveola radial (anatomical snuffbox). Which artery was damaged?

Brachial

Anterior interosseous

Ulnar

# Radial

Posterior interosseous

1. An ultrasound examination of the fetus of a pregnant woman with diabetes revealed a myocardial development abnormality. Name the embryonic rigin of the myocardium:

Pariental leaf of splanchnotome Mesenchyme

Segmental pedicle

# Visceral layer of splanchnotome

Endoderm

1. A patient sustained spleen damage with severe bleeding in a car accident. A splenectomy (spleen removal) was recommended. Which artery supplies blood to the spleen?

Superior mesenteric Inferior mesenteric Renal

Hepatic

# Coeliac trunk

1. A patient who suffered a myocardial infarction developed bradycardia with a heart rate of 40 beats per minute, accompanied by loss of consciousness and convulsions. To determine the nature of pathological changes in the heart, it is necessary to understand the

structural-functional characteristics of the cardiovascular system in a healthy person. What determines the rhythmic nature of heart's function?

**duration of absolute refractory period** presence of the hearts valve apparatus Starling's law

Poiseuille's law Anrep effect

1. A medical examination of football players after a match showed an increase in heart rate to 110 beats per minute. How will arterial blood pressure change as the heart rate increases?

# increase

decrease

fall sharply remain unchanged change in phases

1. In the preparation, in one of the vessels of the microcirculatory bed, the middle layer is formed by 1-2 layers of smooth myocytes, which are arranged singly and have a spiral orientation. The outer layer consists of a thin layer of loose fibrous connective tissue. Identify the type of vessel:

Arteriovenular anastomosis

**Arteriole** Venula Postcapillary Capillary

1. A 62 year-old woman complaints of increasing dyspnea, orthopnea. She states that she has had severe arterial hypertension for many years. What is the cause of heart falture of the patient?

volume overload (preload)

**pressure overload (afterload)** primary damage to cardiomyocytes damage to the pericardium

damage to the endocardium

1. An elderly patient was admitted to the emergency room with complaints of difficulty breathing, weakness, and chest pain. Blood pressure is 190/100 mm Hg, respiratory rate is 22/min, heart rate is 100/min. According to the ECG, there is a complete left bundle branch block and ST segment elevation. Auscultation reveals muffled heart sounds with numerous additional murmurs. According to the echocardiogram: ejection fraction is 40%, high

end-diastolic volume, low stroke volume. Plasma glucose is 7.3 mmol/L. General clinical tests are within normal limits. For what clinical condition are these changes characteristic?

# acute miocardial infarction

thromboembolia of pulmonary artery hypertensic crisis acute pericarditis

aortic aneurysm dissection

1. To eliminate an attack of bronchial asthma, a drug was administered to the patient. The bronchospasm was relieved, but tachycardia, pain in the heart area, and tremor appeared: What adrenergie agonist was prescribed to the patient?

**salbutamol** iprotropium bromide aminophylline prednisolone norepinephrine

1. A 69-year-old man experienced severe pressing and squeezing pain in the heart area, radiating to the left scapula, and weakness. The man died in the ambulance while being transported to the cardiology department. During the autopsy, the pathologist discovered an irregularly shaped, white lesion surrounded by a hemorrhagic rim in the heart. These structural changes in the heart are characteristic of:

pericarditis myocarditis endocarditis aneurysm

# Infarction

1. A 56-year-old man was admitted to the intensive care unit with complaints of pressing retrosternal pain lasting more than three hours. Nitroglycerin did not relieve the pain. ECG showed ST segment elevation in leads II, Ill, and V. Blood test: leukocytes 9.5x10%/L, ESR 20 mm/hr. Which of the following markers is the most specific for this condition?

Myoglobin

**Troponins CTnT and CTnl** Creatine kinase MM fraction Ratio LDH1/LDH2 Aspartate aminotransferase

1. All patients with chronic cardiac failure have high sensitivity to an exercise stress. Name the reactivity type:

personal species **group**

physiological specific

1. A 65-year-old man was diagnosed with a myocardial infarction due to thrombosis of the anterior descending coronary artery. The thrombus was removed, blood circulation was restored, but left ventricular contractility remained low. What changes in cardiomyocytes are most likely responsible for this phenomenon?

**increased ROS (reactive oxygen species) and Cat+** increased superoxidedismutase activity and Na+ accumulation of lactic acid

decreased creatin kinase activity activation of lysosomal ensymes

1. An elderly female patient was admitted to the emergency department with a hypertensive crisis. BP 200/100 mmg, HR 100 bpm. The patient has been under medical supervision by a cardiologist. During transport to the intensive care unit, her HR increased to 180-200 bpm. ECG showed regular F waves of sawtooth shape, equal R-R intervals, shortened QRST interval, bifurcated R waves in AVL, and T-wave inversion in V5-V6. BP 150/80 mmg. What type of heart rhythm disorder does the patient have?

**Re-entry arrhythmia** Rhythm from the AV node Atrial fibrillation

Torsade de pointes Ventricular trigemination

1. What general pathogenesis term is used to describe the following sequence of changes: increased vascular tone → increased blood pressure → baroreceptor para-biosis - decreased inhibitory control of vasomotor center neurons → increased vascular tone?

the relationship of general and local

# vicious circle

leading links of pathogenesis

negative feedback between links of pathogenesis secondary damage

1. What is the mechanism of development of brief loss of consciousness during voluntary shallow and infrequent breathing in a healthy person?

Hypocapnia. Hypoxemia. Hypercapnia. Cerebral vasoplegia **Hypocapnia. Cerebral vasospasm** Hypocapnia. Cerebral vasoplegia

Hypercapnia. Decrease in activity of the center of respiration

1. A radiological examination of a patient with pleuritis revealed fluid in the pleural cavity. In which deepest sinus of the pleural cavity is it possible for the fluid to accumulate?

Posterior costal-mediastinal Posterior diaphragmatic-mediastinal **Costal-diaphragmatic**

Anterior costal-mediastinal Anterior diaphragmatic-mediastinal

1. A patient with lung pathology is in the hospital. Additional tests for visualization have been prescribed. Determine the structure from which the pulmonary acinus begins.

Terminal bronchiole **Respiratory bronchiole** Alveolar sacs

Small caliber bronchus Alveolar duct

1. Explain the mechanism of forced breathing stimulation in a healthy conscious woman breathing through an oxygen mask with additional carbon dioxide supply.

High level of N2 in the inspired air is a signal for exhalation **High PaCO2 in the blood is a signal for hyperventilation** High Pa02 in the blood is a signal for hypoventilation

Decreased Pa02 level in the blood is a signal for hyperventilation Low level of N2 in the inspired air is a signal for exhalation

1. Using spirometry, the vital lung capacity (VLC) of the subject was determined to be 3900 ml. The reserve inspiratory volume was 1800 ml, and the reserve expiratory volume was 1600 ml What is the minute ventilation of this person if they make 18 breaths per minute?

6000 ml

7000 ml

8000 ml

# 9000 ml

10000 ml

1. A patient with respiratory system pathology was admitted to the hospital. To clarify the diagnosis, it is necessary to know the condition of the cells that produce surfactant in the lung alvel:

Surfactant is produced by:

Alveolar macrophages Alveolocytes type I

**Alveolocytes type lI** Interstitial fibroblasts Alveolar cells of types I and Il

1. In a patient with pneumonia, a bacteriological study of sputum revealed a staphylococcus strain that produces beta-lactamase. The patient was prescribed a broad spectrum combined antbiote from the penicillin group, resistant to beta-lactamase. Name the drug.

**Amoxiclav.** Carbenicillin Ampicillin Tienam.

Oxacillin

1. A 3-year-old child with bilateral community-acquired pneumonia was treated with amoxicillin for 10 days. Positive dynamics of pneumonia was overshadowed by complaints of frequent loose stools, abdominal pain and an admixture of blood in the stool (on day 15). What kind of undesirable drug reaction has the patient developed?

# Pseudomembranous colitis

Peptic ulcer Pancreatitis Gastritis

Hepatitis

1. The patient died from chronic left-sided heart failure. Describe the macroscopic preparation of the lung.

encapsulation

**brown induration** petrification mummification ossification

1. An elderly patient consulted a doctor with complaints of breathing difficulties occurring with exertion and a feeling of shortness of breath. He has suffered from ischemic heart disease and high blood pressure for many years. Acid-base balance tests reveal hypoxemia and hypercapnia. Objectively, tachycardia, tachypnea, and facial acrocyanosis are observed. What type of respiratory failure predominates in this patient?

thorax-diaphragm neuromuscular obstructive **perfusion**

central

1. Champions in diving dive to a depth of up to 100 meters without scuba gear and return to the surface in 4-5 minutes. Why don't they develop decompression sickness?

The diver's body is well adapted to great depths, so decompression sickness does not occur. 100 meters depth is too shallow for decompression sickness to develop.

# The diver does not breathe while diving, so nitrogen does not dissolve in the blood, and decompression sickness does not occur.

During the 4-5 minutes spent underwater, all excess nitrogen is removed from the body, so decompression sickness does not occur

Decompression sickness does occur, but its symptoms are mild due to the shallow depth of the dive and the short time spent underwater

1. Male, 45 years old. He was admitted in severe condition with fever and intense intoxication. The photo shows the macroscopic preparation of one of the organs What disease caused the patents death?

hepatitis nephritis meningitis

myocarditis

# pneumonia

1. The main pathogenic factor in the development of mountain sickness is hypoxia, but the oxygen content in the atmosphere at the level of Everest is no different from is content at sea level. What is the cause of hypoxia development?

Due to the high altitude, tissues require more oxygen.

Due to the violation of the pH of the blood, the connection of hemoglobin with oxygen becomes difficult.

# Due to low atmospheric pressure, the saturation of hemoglobin with oxygen decreases.

Due to a violation of the permeability of the alveolar wall due to pulmonary edema. Due to a violation of the functions of the respiratory center, bradypnea develops.

1. After hyperventilation, an athlete experiences a brief cessation of breathing. What blood changes does this condition cause?

pH reduction

**CO2 voltage reduction** Increase in CO2 voltage 02 voltage reduction

Increase in CO2 and 02 voltage

1. The patient was found to have anemia. The medical history includes a surgery 6 months ago to resect the stomach due to severe ulcer disease and bleeding. What is the cause of the anemia in the patient?

# B12-deficiency anemia due to a decrease in the synthesis of gastromucoprotein.

Iron-deficiency anemia due to the effects of peptic ulcer disease Iron deficiency anemia due to operational blood loss.

Iron deficiency anemia due to decreased absorption of iron in the stomach.

B12-deficiency anemia, due to decreased absorption of vitamin B12 in the stomach.

1. How will the motility of an isolated section of the small intestine change if acetylcholine is added to it?

Will disappear

It will initially decrease, then increase

Will not change **Will intensify** Will weaken

1. The patient has inflammation of the sublingual papilla. Which salivary glands will have dificulty secreting saliva?

Parotid and buccal Parotid and palatine Lingual and parotid

# Sublingual and submandibular

Sublingual and buccal

1. Patient T., 45 years old, consulted a doctor with complaints of abdominal pain, blood and pus in the stool, diarrhea, false urges to defecate, weakness, and less of appetite. The diagnosis is ulcerative colitis. During colonoscopy, it was found that ulcers were visible on the mucosa of the large intestine. Name the type of epithelium lining the mucosa of the large intestine:

Stratified non-keratinized squamous Stratified keratinized squamous Single-layer squamous

Single-layer cuboidal

# Single-layer columnar

1. During duodenal intubation, the doctor could not penetrate from the stomach into the duodenal cavity due to a tumor. In which part of the stomach is the tumor localized)

# Pyloric

Cardiac

Areas of minor curvature Areas of great curvature In the body area

1. A patient has been treating chronic constipation with bisacodyl for a long time. However, after several weeks, the laxative effect of the drug decreased. What might this be related to?

# Tolerance

Drug dependence Material accumulation Functional cumulation Sensitization

1. A 50-year-old woman complains of bloating and diarrhea after consuming dairy products. Upon examination, reduced lactase activity was identified. The diarrhea in this patient is most likely

Neurogenic Secretory Exudative Hyperkinetic **Osmotic**

1. Why do patients with diseases such as chronic pancreatitis or gallstone disease, which are accompanied by malabsorption syndrome, often have concomitant anemia?

The process of bilirubin synthesis is disrupted **Absorption of iron and vitamin B12 is impaired** Absorption of glucose is impaired

Absorption of amino acids is impaired Absorption of fats is impaired

1. A patient with peptic ulcer was prescribed famotidine. The acidity of the gastric juice significantly decreased. What is the mechanism underlying the action of this drug? Blockade of M1-cholinergic receptors

Blockade of H1-histamine receptors

# Blockade of H2-histamine receptors

Inhibition of H+, K+-ATPASE activity

Blockade of N-cholinergic receptors of sympathetic ganglia

1. A 35-year-old man was admitted with severe girdling pain in the upper abdomen and vomiting after excessive alcohol consumption. Acute pancreatitis is suspected. Increased activity is which enzymes have the greatest diagnostic significance for confirming the diagnosis?

AST, ALT LDH

Alkaline phosphatase, gamma-glutamyl transpeptidase

# Lipase, amylase

Elastase, chymotrypsin

1. A 47-year-old man. Upon examination, a large amount of free fluid is found in the abdominal cavity: Name this condition:

hemoperitoneum hydrothorax

**ascites** flatulence peritonitis

1. A 60-year-old patient was admitted to the clinic complaining of pain in the upper abdomen, frequent abundant stools, pronounced bloating, and weight loss. Microscopy of the stool revealed a large number of poorly digested muscle fibers, a lot of neutral fat, a moderate amount of fiber, and a small amount of starch. What disease is characterized by this picture? stomach ulcer

acute pancreatitis

**chronic pancreatitis** gallstone diseases chronic hepatitis

1. A patient undergoing a course of radiotherapy in an oncology inpatient unit started complaining of nausea, vomiting, and loss of appetite during treatment. The doctor prescribed metoclopramide. Indicate the mechanism of action of the drug:

Blocks Central H1-histamine receptors Blocking peripheral serotonin 5-HT3 - receptors **Blocks Central D2 - dopamine receptors** Blocks opioid receptors in the trigger zone Blocks the Central M-cholinergic receptors

1. What is the name of the pigment that stains the bottom of erosions and ulcers black? hemosiderin

porphyrin **hematin** biliverdin bilirubin

1. The mucosa of the stomach is smoothed, there are few folds, and it appears pale. What type of gastritis is described?

**atrophic** hypertrophic catarrhal hemorrhagic erosive

1. A newborn boy, immediately after birth in a perinatal center, is examined and found to have no skin below the navel, with the mucosa of the bladder visible, moderately hyperemic,

and ureteral orifices are visualized. What structure is located in front of the bladder according to its syntopy?

# Pubic symphysis

Rectum Prostate gland

Seminal vesicles Vas deferens

1. A 6-month-old girl was admitted to the clinic with a history of prenatal diagnosis of pyeloectasia (expansion of the left kidney's calyceal-pelvic complex). What anatomical structures are located in the renal sinus?

Bertinian columns Malpighian corpuscles Renal pyramids

# Minor and major calyces, renal pelvis

Loops of Henle

1. In an embryo, damage to cells of certain germ layers is identified. To prevent future pathology related to the epithelium of the nephron, determine its developmental source Ectoderm

Mesenchyme Endoderm

Mesenchyme and endoderm

# Mesoderm

1. A 47-year-old woman underwent surgery to remove a nonfunctioning kidney. Macroscopically, the organ is enlarged, unevenly dense, and deformed. Upon incision, the pelvic cavity and the lumen of some calyces are filled with a bizarre-shaped stone branching into the calyces of the pelvis, matte yellow in color. The renal parenchyma is less than 3 mm

thick in some areas. What clinical condition is characterized by these changes?

Urolithiasis, round stone

**Urolithiasis, staghorn stone** Urolithiasis, pearl stone Urolithiasis, flat stone Urolithiasis, faceted stone.

1. The patient is receiving treatment with an antibacterial agent in the nephrology department. During treatment, the following symptoms appeared: elevated levels of creatinine and urea in the blood, hearing loss, dizziness, phlebitis, thrombocytopenia, 'red neck" syndrome. Which antibiotic is associated with these side effects?

**Vancomycin** Amikacin Amoxicillin Ceftriaxone Chloramphenicol

1. Patient N. was admitted to the hospital with complaints of headaches, nausea, and vomiting. He has suffered from chronic pyelonephritis for 30 years. Objectively: edema on the legs and face. Persistent high blood pressure -220/130 mmHg. Indicate the main pathogenetic factor of increased blood pressure:

renoprival mechanism

**activation of the renin-angiotensin-aldesterone system** increased filtration in the glomeruli of the kidneys increased production of catecholamines

increased production of kinins

1. The patient underwent inpatient treatment for a fungal infection. The drug was administered intravenously via infusion. After 3 weeks, the patient's condition slightly improved, however, elevated liver transaminase activity and hyperbilirubinemia were detected in the blood. Which drug could have caused these complications?

# Fluconazole

Nystatin Amoxicillin

Griseofulfin Miconazole

1. Patient I., 45 years old, complains of severe facial swelling, dull lower back pain, reduced urine output, and elevated blood pressure up to 175/110 mmHg. These complaints have been ongoing for 15 years. What is the most likely mechanism for increased blood pressure in this patient?

# activation of the renin-angiotensin-aldosterone system

increased production of prostaglandins increased production of kinins hyperproteinemia

decreased production of catecholamines

1. A histological specimen from a lobule of an organ in the male reproductive system is presented. The lobule consists of alveolar-tubular glands, bundles of smooth muscle cells and loose fibrous connective tissue. Determine which organ this description corresponds to: Epididymis

Corpus cavernosum of the penis Prostatic utricle

# Prostate

Bulbo-urethral glands

1. In purulent material from a patient's urethra stained using the Gram method, paired bacteria of red color were detected. What conclusion will the laboratory physician write when completing the microscopic study?

**Neisseria gonorrhoeae** Neisseria meningitidis Streptococcus pneumonia Staphyloccocus epidermidis Bacillus cereus

1. In an experiment, the process of cell migration through the primitive streak was blocked in an embryo at the gastrula stage. What developmental abnormalities will occur?

Impaired ectoderm development Impaired neural tube development Impaired endoderm development Impaired mesenchyme development **Impaired mesoderm development**

1. An 8-year-old boy was admitted to the endocrinology department with early development of secondary sexual characteristics (developed musculature, facial and pubic hair). Which gland's function is disrupted?

# Pineal gland

Anterior pituitary lobe Thymus gland Posterior pituitary lobe Thyroid gland

1. An 11-year-old boy was admitted to the pediatric neurology department due to developmental delay. Upon examination, a female body type, pronounced gynecomastia, underdeveloped testicles, and penis are noted. Which hormone's physiological effect can explain this underdevelopment of sexual organs?

somatotropin **testosterone** progesterone estradiol thyroxine

1. A 30-year-old man was diagnosed with infertility. Examination revealed impaired sperm production. Name the structures in the testicles where spermatogenesis occurs:

# In convoluted seminiferous tubules

In the epididymis

In straight seminiferous tubules In the efferent ducts

In the sinus of the testicle

1. During examination of a 15-year-old boy, the physician diagnosed hypofunction of the gonads. Analyses revealed reduced testosterone levels. What is the function of this hormone? inhibits spermatogenesis

regulates water-salt metabolism

# has anabolic activity

characterized by catabolic activity

promotes the deposition of subcutaneous fat according to the female type

1. When exposed to ionizing radiation, which cells in the convoluted seminiferous tubules are primarily affected?

differentiated spermatogenic cells

# spermatogonia

light-colored supporting cells dark supporting cells

myoid cells of the convoluted tubule

1. A 9-month-old girl was admitted to the clinic with a history of prenatal diagnosis of uterine anomaly--bicornuate uterus. Name the parts of the uterus:

# Fundus, body, isthmus, cervix

Fundus, body, tail, cervix Head, isthmus, cervix, body Fundus, cervix, body, tall Head, cervix, body, tail

1. A 28-year-old woman consulted a gynecologist due to infertility. Pathological changes in the reproductive system were identified, disrupting the fertilization process. Indicate the location of normal fertilization of the oocyte by sperm:

uterus ovaries vagina

# fallopian tubes

abdominal cavity

1. A 15-year-old girl was brought to the gynecologist. Upon examination, the gynecologist suspected the presence of a cervical tumor. Through which organ should the uterus be palpated in the girl, considering the syntopy of the pelvic organs?

# Rectum

Vagina

Posterior wall of the abdominal cavity Anterior wall of the abdominal cavity Urethra

1. A patient was admitted to the hospital with convulsive syndrome and loss of consciousness; pregnancy at 32 weeks. Resuscitation efforts were unsuccessful, and the patient died. During autopsy hepatomegaly with hemorrhages, enlarged kidneys, brain edema with ischemic foci, foam-like gray-pink fluid flowing from the lung surface upon incision. What pathology developed in this case?

**Eclampsia** Ischemic stroke Hypertensive crisis Hemorrhagic stroke

Myocardial infarction

1. Patient J., 38 years old, consulted a doctor with complaints of frequent, irregular, excessively heavy uterine bleeding. Upon examination, thickening of the mucous membrane was morphologically determined. Describe the microscopic changes in the endometrium:

**endometrial atrophy**. вроде endometrial stroma fibrosis. flattening of the epithelium of glands.

epithelium glands have an elongated form of sawtooth. sclerosis of the stroma of the endometrium.

1. During a regular check-up, a 27-year-old patient was examined by an endocrinologist, as he is on regular medical monitoring. The patient's height is 227 cm, and he reports that his growth has not stopped since childhood. He complains of severe headaches, joint pain in major joints, and increasing mobility difficulties in the knees and hips each year. The proportions of his body and limbs are normal, but his facial features are somewhat enlarged. Radiographs of his extremities show thin, unossified metaphyseal plates, bone deformation, and signs of osteoporosis. Based on this data what is the mechanism of action of the hormone whose secretion anomaly caused this clinical picture?

# Metabolic effect through activation of cyclic AMP

Regulatory effect through activation of responsive elements Accumulation of inositol-3-phosphate and calcium ions in the cell Anabolic effect through activation of tyrosine Kinases

Changes in the activity of phosphodiesterases and regulatory enzymes

1. In embryogenesis, the migration of neuroblasts from ganglionic plates is experimentally disrupted. How will this affect adrenal gland structure?

The adrenal cortex will not develop

# The adrenal medulla will not develop

The zona glomerulosa of the adrenal cortex will not develop The zona reticularis of the adrenal cortex will not develop The zona fasciculata of the adrenal cortex will not develop

1. A 9-month-old girl with frequent colds was found to have congenital thymomegaly during examination. Where is the thymus located?

# In the anterior mediastinum

In the posterior mediastinum

In the lower-middle mediastinum In the lower-posterior mediastinum In the pleural cavity

1. Prolonged vomiting in a patient led to dehydration. Increased secretion of which hormone primarily ensures water retention under these conditions?

Adrenaline Aldosterone Natriuretic **Vasopressin** Calcitonin

1. A 24-year-old woman regularly took hormonal contraceptives (an estrogen-progestin complex). She has a history of autoimmune thyroiditis. After some time, she developed arterial hypertension, skin lesions, hemolytic anemia, and an increased risk of thrombosis. Which component of the drug caused these multisystem disorders?

# Estrogens

Gestagens

Combination of estrogens and gestagens Auxiliary component of tablets

Enteric coating

1. What will happen to the fetal thyroid gland's physiological functions if the mother is diagnosed with diffuse toxic goiter?

It will not change, due to placental barrier (it cannot be penetrated by hormones)

# It will increase, as a result of maternal hyperthyroidism

It will decrease, as a result of maternal hyperthyroidism

It will not change, due to embryo's different hormone structure

It will not change, because the amount of hormones do not depend on mother

1. In a healthy person, abdominal spasms and loss of appetite often occur during stress. This phenomenon results from a physiological mechanism of humoral factor reaction to stress This agent causes intestinal vascular spasm and releases large amounts of glucose from the liver. Which factor is responsible for these sensations?

Acetylcholine **Adrenaline** Cortisol Thyroxine Prolactin

1. A patient complained of palpitations, sweating, irritability, and weight loss. Objectively, heart rate is 92 beats per minute, limb tremors, and exophthalmos are observed. The doctor prescribed methimazole. Indicate its mechanism of action:

Disrupts the capture of iodine from the blood by thyroid follicles

It causes destruction of the follicle of the thyroid gland

Disrupts the production of thyroid-stimulating hormones of the anterior pituitary gland

# Inhibits the function of the follicle by inhibiting peroxidase and iodination of thyroid hormones

Disrupts iodine absorption in the gastrointestinal tract

1. A 28-year-old patient has a fistula of the small intestine, leading to prolonged loss of intestinal fluid. The patient was admitted for surgical treatment. Acid-base homeostasis indicators pH=7,29, PCO2 - 35 mmHg. What type of acid-base imbalance developed in the patient?

excretory alkalosis **excretory acidosis** gas acidosis

gas alkalosis exogenous alkalosis

1. During a major intraoperative blood loss (a previously undiagnosed bleeding disorder-von Willebrand syndrome) in a 6-year-old patient, cardiac arrest in the form of asystole occurred. Through emergency measures, including whole blood transfusion and administration of cardiotonic agents, cardiac activity was restored. Three days

postoperatively the child complained of severe retrosternal pain, a feeling of breathlessness, shortness of breath, and sudden pallor. Laboratory tests revealed elevated troponin I, AST, and calcium levels. Which of the following changes is most characteristic of the described developing condition in the child?

# Sharp decrease of cytoplasmic glycogen in cardiomyocytes

Atrophic changes of cardiomyocytes, reduction of their size Compensatory hypertrophy of all layers of myocardium and its thickening Formation of lvmphoplasmacvtic infiltrates in myocardium

Increased production and accumulation of collagen fibers in the myocardium

1. A 12-year-old patient was admitted to the ICU due to severe acute hypotension (systolic blood pressure - 65 mmHg, diastolic blood pressure - 30 mmHg), loss of consciousness (coma grade 2). and high temperature (39.7°C). This condition developed after prolonged chronic tonsillopharyngitis, which exacerbated into follicular tonsillitis. The patient also had pronounced tachypnea and tachycardia. Blood tests showed respiratory alkalosis transitioning into metabolic acidosis, hypercalcemia, hyperkalemia, and bacteremia. Indicate the characteristic acute-phase indicator.

Bradykinin

Liver aminotransferases Albumin

# C-reactive protein

Fibrinogen

1. A patient with kidney disease exhibits facial and leg swelling and high blood pressure. Which hormone increases sodium reabsorption in the nephron tubules?

**aldosterone** vasopressin parathyroid hormone insulin

renin

1. During abdominal surgery with controlled ventilation in a 35-year-old patient, arrhythmia, increased blood pressure, and respiratory acidosis occurred. The main compensatory mechanism maintaining acid-base balance in respiratory acidosis is: **binding of excess hydrogen ions by a hemoglobin buffer**

reduced reabsorption of bicarbonate

reduced excretion of free organic acids in urine inhibition of pulmonary ventilation

inhibition of kidney ammoniogenesis

1. A child with an open fracture of the tibia was brought to the emergency room. The parents noted that before the ambulance's arrival, they tried to stop the bleeding, but blood loss was significant (estimated at 1500-1700 ml). Objectively: the child has pale, cold skin, responds to speech but is disoriented in the environment. Tachycardia, hypotension, and hyperpnea are observed. What compensatory mechanism will act in this case?

Increased angiotensinogen degradation Decrease in ACE activity

Conversion of angiotensin I to bradykinin

# Increase in angiotensin I

Decrease in renin production

1. A patient with kidney disease exhibits facial and leg swelling and high blood pressure. Which hormone increases water reabsorption in the collecting ducts?

aldosterone

**vasopressin** parathyroid hormone insulin

renin

1. During a conversation with a nervous patient, the doctor acknowledges the patient's anxiety, clarifies the nuances of the condition, empathizes with the concern about an upcoming surgery, promises that the patient will improve soon, and reassures them that there's no need to worry about a modern, simple procedure. In doing so, the doctor violates the principles of which element of the N.U.R.S.E. mnemonic scheme?

Name or mirror the emotion Understand the emotion **Support**

Clarify emotions Show respect

1. Classify the stages of reaction to breaking bad news in the correct order.

**Denial, anger, bargaining, depression, acceptance** Denial, bargaining, anger, depression, acceptance Acceptance, anger, denial, depression, bargaining Anger, bargaining, denial, acceptance, depression Depression, acceptance, anger, bargaining, denial

1. Your physician colleague has become withdrawn and irritable. He prefers solitude, often has a low mood, and frequently conflicts with patients. How can this state, reducing communicative competence, be explained?

# Emotional burnout

Euphoria Amnesia Dystrophy Introversion

1. The verbal component of empathy includes:

Touch

Eye contact Nodding

The phrase "Don't worry!"

# The phrase " sympathize with you"

1. At the end of the conversation, the doctor listens to the patient's last questions about treatment details and schedules the next appointment. This still is called

# Summarizing the interview and collecting feedback

Applying empathy Active listening phase Commenting Informing