1. A patient has arterial hypertension. What long-acting drug from the group of calcium channel blockers should be prescribed?

A. Atenolol
• **B.** Amlodipine
C. Pyrroxanum
D. Reserpine
E. Octadine

2. A drycleaner's worker has been found to have hepatic steatosis. This pathology can be caused by the disruption of synthesis of the following substance:

A. Cholic acid
B. Urea
C. Tristearin
• **D.** Phosphatidic acid
E. Phosphatidylcholine

3. What condition may develop 15–30 minutes after re-administration of the antigen as a result of the increased level of antibodies, mainly IgE, that are adsorbed on the surface of target cells, namely tissue basophils (mast cells) and blood basophils?

A. Antibody-dependent cytotoxicity
B. Serum sickness
C. Delayed-type hypersensitivity
D. Immune complex hyperresponsiveness
• **E.** Anaphylaxis

4. A patient underwent a course of treatment for atherosclerosis. Laboratory tests revealed an increase in the anti-atherogenic lipoprotein fraction in the blood plasma. The treatment efficacy is confirmed by the increase in:

A. VLDL
B. IDL
C. LDL
D. HDL
• **E.** Chylomicrons

5. A patient has been found to have a marked dilatation of saphenous veins in the region of anterior abdominal wall around the navel. This is a symptom of pressure increase in the following vessel:

A. *V. mesenterica superior*
B. *V. cava superior*
• **C.** *V. portae hepatis*
D. *V. cava inferior*
E. *V. mesenterica inferior*

6. An electron micrograph shows a cell-to-cell adhesion consisting, in each cell, of an attachment plaque. The intercellular space is filled with electron-dense substance including transmembrane fibrillar structures. Specify this adhesion:

A. Adherens junction
• **B.** Tight junction
C. Desmosome
D. Synapse
E. Nexus

7. A person with the fourth blood group (genotype IAIB) has in erythrocytes both antigen A controlled by allele IA and antigen B controlled by allele IB. This phenomenon is an example of the following gene interation:

A. Semidominance
B. Polymery
C. Epistasis
D. Complementarity
• **E.** Codominance

8. A specimen shows an organ covered with the connective tissue capsule with trabeculae radiating inward the organ. There is also cortex containing some lymph nodules, and medullary cords made of lymphoid cells. What organ is under study?

A. Thymus
• **B.** Lymph node
C. Tonsils
D. Red bone marrow
E. Spleen

9. One of the factors that cause obesity is the inhibition of fatty acids oxidation due to:

• **A.** Excessive consumption of fatty foods
B. Choline deficiency
C. Low level of carnitine
D. Lack of carbohydrates in the diet
E. Impaired phospholipid synthesis

10. The resuscitation unit has admitted a patient in grave condition. It is known that he had mistakenly taken sodium fluoride which blocks cytochrome oxidase. What type of hypoxia developed in the patient?

A. Hypoxic
• **B.** Tissue
C. Cardiovascular
D. Respiratory
E. Hemic

11. A 30-year-old patient has dyspnea fits, mostly at night. He has been diagnosed with bronchial asthma. What type of allergic reaction according to the Gell-Coombs classification is most likely in this case?

A. Delayed-type hypersensitivity
B. Stimulating
C. Immune complex
• **D.** Anaphylactic
E. Cytotoxic

12. Hepatitis B is diagnosed through laboratory tests that determine the presence of HBA-DNA in blood serum of the patient. What reference method is applied for this purpose?

A. Hybridization method
B. Ligase chain reaction method
C. Hybridization signal amplification method
D. ELISA diagnostic method
• **E.** Polymerase chain reaction

13. A 37-year-old female patient complains of headache, vertigo, troubled sleep, numbness of limbs. For the last 6 years she has been working at the gas-discharge lamp-producing factory in the lead-processing shop. Blood test findings: low hemoglobin and RBC level, serum iron concentration exceeds the norm by several times. Specify the type of anemia:

A. Minkowsky-Shauffard disease
B. Iron refractory anemia
C. Metaplastic anemia
• **D.** Iron-deficiency anemia
E. Hypoplastic anemia

14. A patient complains that at the bare mention of the tragic events that once occurred in his life he experiences tachycardia, dyspnea and an abrupt rise of blood pressure. What structures of the CNS are responsible for these cardiorespiratory reactions in this patient?

A. Quadrigemina of mesencephalon
B. Cerebellum
• **C.** Lateral hypothalamic nuclei
D. Cerebral cortex
E. Specific thalamic nuclei

15. A 49-year-old man complains of pain in his metatarsophalangeal joints and joint deformation. In blood hyperuricemy can be observed. X-ray has revealed metatarsophalangeal joint space narrowing, erosion, periarticular calcification of the both joints, osteoporosis. Microscopy has revealed inflammatory granulomatous reaction surrounding necrotizing masses in the area of the first metatarsophalangeal joint. Choose the most likely diagnosis:

A. Rheumatoid arthritis
B. Hyperparathyroidism
C. Urolithiasis
D. Pyrophosphate arthropathy
• **E.** Gout (podagra)

16. A young woman suddenly developed fever up to 39°C accompanied by a strong headache. Examination revealed marked nuchal rigidity. Spinal puncture was performed. Gram-stained smear of cerebrospinal fluid contained many neutrophils and Gram-positive diplococci. What bacteria could be the cause of this disease?

A. Pseudomonas aeruginosa
B. Staphylococcus aureus
C. Haemophilus influenzae
D. Streptococcus pneumonia
• **E.** Neisseria meningitidis

17. During ventricular systole, the cardiac muscle does not respond to additional stimulation because it is in the phase of:

A. Relational refractoriness
B. Subnormal excitability
C. Hyperexcitability
D. Absolute refractoriness
E. There is no correct answer

18. Histologic specimen of a kidney demonstrates cells closely adjoined to the renal corpuscle in the distal convoluted tubule. Their basement membrane is extremely thin and has no folds. These cells sense the changes in sodium content of urine and influence renin secretion occurring in juxtaglomerular cells. Name these cells:

A. Mesangial cells
B. Juxtaglomerular cells
C. Macula densa cells
D. Podocytes
E. Glomerular capillary endothelial cells

19. As a result of a continuous chronic encephalopathy, a patient has developed spontaneous motions and a disorder of torso muscle tone. These are the symptoms of the disorder of the following conduction tract:

A. *Tractus spinothalamicus*
B. *Tractus corticospinalis*
C. *Tractus rubrospinalis*
D. *Tractus corticonuclearis*
E. *Tractus tectospinalis*

20. Work in a mine is known to cause inhalation of large amounts of coal dust. Inhaled coal dust can be detected in the following pulmonary cells:

A. Alveolar macrophages
B. Capillary endothelial cells
C. Respiratory epithelial cells
D. Pericapillary cells
E. Secretory epithelial cells

21. Inherited diseases, such as mucopolysaccharidoses, are manifested in metabolic disorders of connective tissue, bone and joint pathologies. The sign of this disease is the excessive urinary excretion of the following substance:

A. Lipids
B. Urea
C. Glycosaminoglycans
D. Glucose
E. Amino acids

22. A patient consulted a physician about chest pain, cough, fever. Roentgenography of lungs revealed eosinophilic infiltrates which were found to contain the larvae. What kind of helminthiasis are these presentations typical for?

A. Fascioliasis
B. Trichinosis
C. Ascariasis
D. Cysticercosis
E. Echinococcosis

23. A patient underwent surgical removal of a cavitary liver lesion 2 cm in diameter. It was revealed that the cavity wall was formed by dense fibrous connective tissue; the cavity contained muddy, thick, yellowish-greenish fluid with an unpleasant odor. Microscopically, the fluid consisted mainly of polymorphonuclear leukocytes. What pathological process are these morphological changes typical for?

A. Empyema
B. Chronic abscess
C. Acute abscess
D. Phlegmon
E. –

24. Due to the use of poor-quality measles vaccine for preventive vaccination, a 1-year-old child developed an autoimmune renal injury. The urine was found to contain macromolecular proteins. What process of urine formation was disturbed?

A. Reabsorption
B. Filtration
C. Reabsorption and secretion
D. Secretion
E. Secretion and filtration

25. A 41-year-old male patient

has a history of recurrent attacks of heartbeats (paroxysms), profuse sweating, headaches. Examination revealed hypertension, hyperglycemia, increased basal metabolic rate, and tachycardia. These clinical presentations are typical for the following adrenal pathology:

A. Hypofunction of the adrenal cortex
• **B.** Hyperfunction of the medulla
C. Hypofunction of the medulla
D. Hyperfunction of the adrenal cortex
E. Primary aldosteronism

26. A 12-year-old child has a viral infection complicated by obstructive bronchitis. Bronchospasm can be eliminated by inhalations of a drug from the following pharmacological group:

A. *N*-cholinomimetics
B. β_2-adrenergic blockers
C. Analeptics
D. *M*-anticholinergics
E. β_2-agonists

27. Prolonged treatment of hypothyroidism has caused general dystrophy, dental caries, tachycardia, tremor of extremities. What drug is the cause of these side effects?

• **A.** L-thyroxin
B. Parathyreoidinum
C. Prednisolone
D. Thyrocalcitonin
E. Humulin (Human insulin)

28. During pathomorphological kidney investigation of a patient, who for a long time had been suffering from osteomyelitis and died from progressing renal failure, the following was revealed: deposits of homogeneous eosinophilic masses in glomerular mesangium, arterial and arteriolar walls, and stroma, which became red when stained with Congo red. What pathological process is this?

A. Hyalinosis
B. Carbohydrate degeneration
C. Calcinosis
• **D.** Amyloidosis
E. Mucoid swelling

29. During cell division, DNA replication occurs by a signal from the cytoplasm, and a certain portion of the DNA helix unwinds and splits into two individual strains. What enzyme facilitates this process?

A. Helicase
B. Restrictase
C. Ligase
• **D.** DNA polymerase
E. RNA polymerase

30. During appendectomy a patient had the *a. appendicularis* ligated. This vessel branches from the following artery:

A. *A. ileocolica*
B. *A. mesenterica inferior*
C. *A. sigmoidea*
D. *A. colica media*
• **E.** *A. colica dextra*