1. A 40-year-old woman dies of intracerebral hemorrhage after the hypertensive emergency. During an autopsy, the pathologist reveals severe obesity, excess of body hair and wide purplish stria on the abdomen. Microscopic examination of pituitary gland reveals hyperplastic acini populated by a homogenous cluster of deeply basophilic cells. Which of the following was the most likely underlying disease?

a. ---
b. Cushing disease
c. Arterial hypertension
d. Sheehan's syndrome
e. Hyperthyroidism

2. In some diseases of the nervous system, damage with chromatolysis phenomena can be observed in the neurocytes. What intracellular metabolic processes become disturbed in the neurons?

a. Synthesis of carbohydrates
b. Synthesis of glycolipids
c. Synthesis of lipids
d. Keratohyalin folding
e. Synthesis of protein

3. A blood smear of an allergic person contains a large number of round cells with a segmented nucleus and large bright pink granules in the cytoplasm. Name these blood cells.

a. Neutrophilic granulocytes
b. Eosinophilic granulocytes
c. Lymphocytes
d. Basophilic granulocytes
e. Erythrocytes

4. Autopsy of the body of a 14-year-old child who died of pneumonia revealed the following: multiple punctate and spotty hemorrhages in the skin, mucosa, and serous membranes; an enlarged flaccid spleen that is red on section and yields only a small amount of material when scraped; enlarged pale gray mediastinal and retroperitoneal lymph nodes with a slightly pinkish tint on the cross-section; raspberry-red bone marrow in flat and tubular bones. What disease is indicated by the described changes?

a. Chronic lymphoid leukemia
b. Chronic myeloid leukemia
c. Acute lymphoblastic leukemia
d. Acute myeloblastic leukemia
e. Lymphogranulomatosis

5. During smoking, cigarette smoke exits out of the patient's auricle. What structure of the auditory organ is damaged?

a. Bone labyrinth
b. External acoustic meatus
c. Tympanic membrane
d. Organ of Corti
e. Membranous labyrinth

6. В яку анатомічну ділянку через решітчасту кістку відкривається отвір лобової пазухи?

a. Верхній носовий хід
b. Нижній носовий хід
c. Середній носовий хід
d. Підскронева ямка
e. Хоани

7. Autopsy of the body of a 40-year-old man, who died of odontogenic sepsis, revealed sharp thickening of poorly mobile semilunar aortic valves. The tissue of the valve is whitish and opaque. Its outer surface has thrombotic deposits 1x1.5 cm in size. What type of endocarditis is it?

a. Acute verrucous endocarditis

b. Recurrent verrucous endocarditis
c. Fibroplastic endocarditis
d. Diffuse endocarditis
e. Ulcerative polypoid endocarditis

8. In an experiment, the processes of energy production in the epithelium of the renal tubules were blocked, as a result of which the diuresis increased 4 times. What is the most likely cause of polyuria in this case?
a. Decrease of potassium ion secretion
b. Decrease of urea secretion
c. Decrease of renal blood flow
d. Decrease of glomerular filtration rate
e. Decrease of sodium ion reabsorption

9. In cases of fatty infiltration of the liver, the synthesis of phospholipids becomes disrupted. In such cases, the patients are advised to eat more cottage cheese, because it contains a certain substance that can promote the methylation process in the synthesis of phospholipids. Name this substance.
a. Ethanolamine
b. Cysteine
c. Methionine
d. Calcium
e. Glycerine

10. Karyotyping detected 47 chromosomes (3 copies of chromosome 13) in a newborn child with multiple defects of the skull, limbs, and internal organs. What diagnosis can be made in this case?
a. Edwards syndrome
b. Patau syndrome
c. Klinefelter syndrome
d. Down syndrome
e. Turner syndrome

11. The patient's ECG shows an increased duration of the QRS complex. What is the likely cause of this finding?
a. Increased atrial excitation time
b. Increased ventricular excitation time
c. Disturbed conduction in the atrioventricular nodes
d. Increased atrial excitability
e. Increased atrial and ventricular excitability

12. A patient complains of pain in the right lateral abdomen. Palpation revealed a dense, immobile, tumor-like formation. A tumor is likely to be found in the following part of the digestive tube:
a. Colon ascendens
b. Colon descendens
c. Colon sigmoideum
d. Colon transversum
e. Caecum

13. Найважливішим медіатором центральної нервової системи є гамма-аміномасляна кислота. При декарбоксилуванні якої з амінокислот утворюється цей біогенний амін?
a. Гістидин
b. Тирозин
c. Триптофан
d. Лізин
e. Глутамат

14. During a blood transfusion, intravascular hemolysis of erythrocytes started developing in the patient. What type of hypersensitivity has developed in this patient?
a. Type II hypersensitivity (antibody-dependent)
b. Type IV hypersensitivity (cell-mediated cytotoxicity)

c. Type I hypersensitivity (anaphylactic)
d. Type III hypersensitivity (immune complex)
e. Type V hypersensitivity (granulomatosis)

15. A 54-year-old woman has a total thyroidectomy for papillary thyroid carcinoma. 11 hours after operation she complains of tingling around her mouth. On physical examination, the Trousseau's sign and Chvostek's sign are present. Her condition rapidly deteriorates with laryngospasm and focal seizures. The surgeon suggests surgical destruction of parathyroid glands. Which of the following is the most likely cause of this patient's neurologic abnormality?

a. Hypophosphatemia
b. Hypocalcemia
c. Hyperkalemia
d. Hyperchloremia
e. Hyponatremia

16. A histological specimen of an eyeball shows a biconvex structure, connected to the ciliary body with the fibrous strands of the ciliary zonule and covered on top with a transparent capsule. What structure is it?

a. Vitreous body
b. Sclera
c. Crystalline lens
d. Cornea
e. Ciliary body

17. A man has convergent strabismus. What muscle of the eyeball is damaged in this case?

a. Musculus rectus oculi superior
b. Musculus rectus oculi inferior
c. Musculus rectus oculi lateralis
d. Musculus rectus oculi medialis
e. Musculus obliqus oculi superior

18. Яка група організмів має нуклеоїди - кільцеві молекули ДНК, що формують хромосоми простої будови (відсутні гістони)?

a. Бактерії
b. Гриби
c. Бактеріофаги
d. Віруси
e. Найпростіші

19. A patient has an angina pectoris attack. What myotropic drug with resorptive action can be used to stop the attack?

a. Anaprilin (Propranolol)
b. Nitrosorbide (Isosorbide dinitrate)
c. Validol (Menthyl isovalerate)
d. Nitroglycerin
e. Menthol

20. Six hours have passed since the development of an acute myocardial infarction in the patient. During autopsy of the body, staining was used to identify the area of infarction. What was used to detect the area of necrosis?

a. Picrofuchsin
b. Toluidine blue
c. Congo red
d. Methyl violet
e. Tetrazolium salts

21. За умов дії якого ферменту арахідонова кислота (джерело синтезу ейкозаноїдів) вивільняється з фосфоліпідного бішару клітинних мембран?

a. Ліпоксигенази

b. Циклооксигенази
c. Фосфоліпази А2
d. Фосфоліпази С
e. Фосфоліпази D

22. What happens, when blood pressure and stimulation of baroreceptors and atrial volume receptors are decreased?
a. Increased production of atrial natriuretic peptide
b. Reduced production of renin in juxtaglomerular cells
c. Vasodilation of the systemic resistance vessels
d. Reduced production of aldosterone
e. Activation of the hypothalamic supraoptic nuclei and production of vasopressin

23. A 65-year-old woman presents to the emergency department because of shortness of breath and chest pain that started a few hours ago. She did not have a fever, expectoration, or any accompanying symptoms. She has a history of right leg deep vein thrombosis that occurred 5 years ago. Some time later, she dies of severe respiratory distress. A pulmonary autopsy specimen reveals red loose mass that is lodged in the bifurcation of the pulmonary trunk with extensions into both the left and right main pulmonary arteries. Which of the following is the most likely diagnosis?
a. Pneumothorax
b. ---
c. Thromboembolism
d. Pneumonia
e. Myocardial infarction

24. A 7-week-old infant is brought to the pediatrician due to feeding difficulty for the last 4 days. She has been drinking very little breast milk and stops feeding as if she is tired, only to start sucking again after a few minutes. On chest auscultation, bilateral wheezing is present. A cardiac murmur starts immediately after the onset of the first heart sound (S1), reaching its maximal intensity at the end of systole, and waning during late diastole. The murmur is best heard over the second intercostal space and radiates to the left clavicle. The first heart sound (S1) is normal, while the second heart sound (S2) is obscured by the murmur. The pediatrician suspects a patent ductus arteriosus. Communication between which of the following arteries is the most likely cause of hemodynamic instability?
a. Superior vena cava and aorta
b. Pulmonary artery and aorta
c. Superior vena cava and pulmonary artery
d. Aorta and pulmonary veins
e. Pulmonary artery and pulmonary veins

25. A patient was prescribed an adrenomimetic drug to stop an attack of bronchial asthma. Select this drug from the list.
a. Asparcam (Potassium and magnesium aspartate)
b. Nitrosorbide (Isosorbide dinitrate)
c. Cerucal (Metoclopramide)
d. Salbutamol
e. Rheopolyglucin (Dextran)

26. If a certain part of the conductive path of the visual analyzer is damaged, it causes the loss of light sensitivity in the medial half of the retinas on the both sides. Name this part of the conductive path:
a. Left optic tract
b. Left optic nerve
c. Right optic nerve
d. Optic chiasm
e. Right optic tract

27. A 45-year-old woman comes to her physician with complaints of excessive fatigue and weakness. She says that these symptoms have been present for the past month. On further questioning, she

admits having lost 3 kilograms in the last 2 weeks. On physical examination, she is a tired-appearing thin woman. Hyperpigmentation is present over many areas of her body, most prominently over the face, neck and back of hands (areas exposed to light). Increased production of which of the following hormones is the most likely cause of hyperpigmentation in this patient?

a. Thyroid-stimulating hormone (TSH)
b. β-Lipotropin
c. Melanocyte-stimulating hormone (MSH)
d. Gonadotropins
e. Growth hormone (GH)

28. Autopsy of a 47-year-old miner's body, who worked down in the shaft for 10 years, reveales bands of a whitish fibrous tissue and nodules 0.2-0.3 cm in diameter in his lungs. Histology detects in the nodules a small amount of brownish dust and concentric proliferation of a cell-poor connective tissue with marked hyalinosis. What type of pneumoconiosis can be suspected in this case?

a. Berylliosis
b. Talcosis
c. Silicosis
d. Asbestosis
e. Siderosis

29. A patient with suspected dysentery was admitted to the infectious diseases department. What diagnostic method can confirm this diagnosis?

a. Biological method
b. Allergy testing
c. Serological method
d. Microscopy
e. Bacteriological method

30. After 10 days of treatment with an antibiotic, a patient developed signs of dysbosis: dyspepsia, candidiasis, jaundice, and photosensitization, which indicates that this antibiotic belongs to the following group:

a. Tetracycline group
b. Aminoglycoside group
c. Rifampicin group
d. Penicillin group
e. Cephalosporin group

31. During a surgery for a splenic injury, the surgeon must identify the artery that supplies the spleen with blood. This artery is a branch of:

a. A) hepatica communis
b. A) gastroduodenalis
c. Truncus coeliacus
d. A) gastrica sinistra
e. A) hepatica propria

32. A patient complains of palpitation after stress. The pulse is 104 bpm, P-Q=0,12 seconds, there are no changes of QRS complex. What type of arrhythmia does the patient have?

a. Sinus arrhythmia
b. Ciliary arrhythmia
c. Sinus bradycardia
d. Sinus tachycardia
e. Extrasystole

33. Examination of a patient with signs of hypertension shows that it would be most advisable to prescribe him a medicine that changes the blood pressure via the renin-angiotensin system. Name this medicine:

a. Apressin (Hydralazine)
b. Anaprilin (Propranolol)

c. Dibazol (Bendazol)
d. Octadine (Guanethidine)
e. Lisinopril

34. Examination of a patient revealed a reduced immunoglobulin count. What cells of the patient's immune system are likely to have an impaired function, causing this condition?
a. T-killers
b. Plasmablasts
c. Plasma cells
d. T-helpers
e. T-suppressors

35. Examination of a patient with a hearing impairment shows that the pathological process is localized at the level of the lateral lemniscus formation. At what level does is it normally form in the brain?
a. Thoracic spinal cord
b. Mesencephalon
c. Cervical spinal cord
d. Medulla oblongata
e. Metencephalon (pons)

36. The molecule of immature mRNA (pro-mRNA) contains more triplets than there are amino acids in the synthesized protein, because translation is normally preceded by:
a. Mutation
b. Initiation
c. Repair
d. Processing
e. Replication

37. A 2-year-old boy is diagnosed with Down syndrome. What chromosomal changes may be the cause of this disease?
a. Monosomy X
b. Trisomy X
c. Trisomy 18
d. Trisomy 21
e. Trisomy 13

38. During a pathological childbirth, separation of the pubic bones occurred in the woman. What type of bone junction was damaged in this case?
a. Symphysis
b. Synchondrosis
c. Syndesmosis
d. Synostosis
e. Diarthrosis

39. A male neonate born to a 24-year-old, who was pregnant for the fist time, had jaundice at 8 hours of life. The neonate's red blood cell type was A+, while the mothers RBC type was O+. Laboratory studies revealed elevated titer of mother's anti-A antibody, normal erythrocyte glucose-6-phosphate and negative sickle cell test. The infant's hemoglobin was 106 g/L. Which of the following is the most likely cause of infant's jaundice?
a. Glucose-6-phosphate dehydrogenase (G6PD) deficiency
b. Rh incompatibility
c. Hyperbilirubinemia
d. Decrease in hemoglobin level
e. Sickle cell disease

40. До лікарні надійшов чоловік віком 32 роки із травмою лівої кисті. Під час огляду виявлено різану рану в ділянці підвищення великого пальця й утруднене його згинання. Який м’яз пошкоджено?

a. M. opponens pollicis brevis
b. M. abductor pollicis brevis
c. M. adductor pollicis brevis
d. M. flexor pollicis brevis
e. M. flexor pollicis longus

41. Дефіцит якого фактора згортання крові спричиняє захворювання гемофілію В?
a. VII
b. VIII
c. IX
d. V
e. XI

42. A 36-year-old man developed angina pectoris attacks after a case of staphylococcal sepsis. In the left coronary artery, coronary angiography revealed parietal thrombosis without signs of atherosclerosis. In this case, the thrombus formation started because of the damage to the vascular endothelium and the release of:
a. Adenosine diphosphate
b. Serotonin
c. Phospholipase A2
d. Adenosine triphosphate
e. Platelet-activating factor

43. A patient complains of drooping eyelid (ptosis) that appeared recently. What nerve is affected in this case?
a. Trochlear
b. Optic
c. Ophthalmic
d. Oculomotor
e. Abducens

44. Blood testing of a patient with jaundice revealed an increase in total bilirubin due to its indirect fraction. Patient's urine and feces have a saturated color. What is the most likely mechanism of these disorders?
a. Impaired bile outflow from the liver
b. Damaged liver parenchyma
c. Increased hemolysis of erythrocytes
d. Disturbed urobilinogen conversion in the liver
e. Disturbed formation of direct bilirubin

45. У п`ятирічної дитини зі спадковим ураженням нирок під час огляду виявлено ознаки рахіту, в лабораторних показниках концентрація вітаміну D в нормі. Яка найімовірніша причина розвитку рахіту?
a. Недостатність кальцію в їжі
b. Порушення синтезу кальцитріолу
c. Підвищена екскреція кальцію
d. Гіперфункція паращитовидних залоз
e. Гіпофункція паращитовидних залоз

46. A woman came to a medical and genetic consultancy requesting to assess the risk of hemophilia in her children. Her husband has hemophilia. History-taking revealed that the woman's family had no cases of hemophilia. What is the risk of this couple giving birth to a child with this disease?
a. 75%
b. 100%
c. Absent
d. 25%
e. 50%

47. In Tay-Sachs amaurotic idiocy that has an autosomal recessive pattern of inheritance, irreversible

severe disorders of the central nervous system develop, leading to death in early childhood. In this disease, disturbed metabolism of certain substances is observed. Name these substances.

a. Carbohydrates
b. Lipids
c. Amino acids
d. Minerals
e. Nucleic acids

48. In the hematology unit a patient with leukemia was prescribed 5-Fluorouracil. What is the mechanism of action of this drug?

a. Catalyzes replication
b. Inhibits transcription
c. Inhibits translation
d. Inhibits DNA synthesis
e. Stimulates DNase

49. A patient diagnosed with chronic bronchitis underwent a biopsy of the main bronchus. The patient has a 30-year-long history of smoking. Histology of the biopsy material revealed stratified squamous epithelium. What pathological process in the main bronchus does it indicate?

a. Physiological regeneration
b. Dysplasia
c. Metaplasia
d. Hyperplasia
e. Reparative regeneration

50. Під час мікроскопічного дослідження: клітини овальної форми, розміром 150 мкм, цитоплазма з включеннями жовтка, але не виявлено центріолей. Укажіть цю клітину.

a. Макрофаг
b. Овоцит
c. Лейкоцит
d. Фібробласт
e. Міоцит

51. Під час мікроскопічного дослідження препарату, виготовленного з периферійної ділянки легені, виявлено поперечний переріз трубчастого утворення, стінка якого складається зі слизової та адвентиційної оболонок. Поверхня слизової оболонки має численні складки, а м’язова пластинка утворена суцільним шаром гладких міоцитів. Який це елемент повітроносних шляхів?

a. Середній бронх
b. Термінальна бронхіола
c. Малий бронх
d. Великий бронх
e. Альвеолярний хід

52. During the treatment of ciliary arrhythmia, a patient developed bronchoobstructive syndrome --- problematic breathing and cough. What antiarrhythmic drug can cause such a complication?

a. Ajmaline
b. Novocainamide (Procainamide)
c. Verapamil
d. Anaprilin (Propranolol)
e. Nifedipine

53. When stimulation frequency of an isolated heart of a rabbit increases, incomplete relaxation of the ventricles of the heart can be observed because of:

a. Increased potassium levels in the interstitium
b. Increased potassium levels in cardiomyocytes
c. Inhibition of the sodium–potassium pump
d. Increased sodium levels in cardiomyocytes

e. Accumulation of calcium in cardiomyocytes

54. A 59-year-old man, a business manager, developed intense burning retrosternal pain with irradiation into the left arm. The pain occurred in the evening after the tax audit. 15 minutes later the patient's condition normalized. What mechanism of angina pectoris development is leading in this patient?

a. Coronary artery thrombosis
b. Increased level of blood \\ catecholamines
c. Coronary atherosclerosis
d. Functional cardiac overload
e. Intravascular aggregation of blood cells

55. During an exam, the student's absolute pain threshold is higher than when the student is at rest. What system activates in the body, causing this phenomenon?

a. Parasympathetic nervous system
b. Pituitary-adrenal system
c. Sympathetic nervous system
d. Sympathoadrenal system
e. Antinociceptive system

56. A mother of a 4-month-old male infant brought him to pediatrician with complaints of food rejection and weight loss. He started having trouble latching onto his bottle. He has also become extremely lethargic. Examination reveals diminished muscle tone in all four limbs, and hepatosplenomegaly. An ophthalmoscopic exam reveals macular cherry red spots. During the next few weeks, hepatosplenomegaly progresses, the boy fails to thrive, and he continues to reject food. Chest X-ray shows a reticulonodular pattern and calcified nodules. Biopsy of the liver shows foamy histiocytes. A Niemann-Pick disease is suspected. Which of the following is the most likely deficient enzyme in this patient?

a. Sphingomyelinase
b. Phenylalanine-hydroxylase
c. Galactocerebrosidase
d. Glucocerebrosidase
e. Glucose-6-phosphatase

57. In course of an experiment there has been an increase in the nerve conduction velocity. This may be caused by an increase in the concentration of the following ions that are present in the solution around the cell:

a. Na^+
b. K^+ and Cl^-
c. Ca^{2+ and Cl^-
d. K^+ and Na^+
e. Ca^{2+

58. Чоловік віком 38 років скаржиться на швидку стомлюваність, у положенні стоячи із закритими очима він похитується, втрачає рівновагу. Тонус скелетних м’язів знижений. Яка з нижченаведених структур мозку, найбільш імовірно, вражена у пацієнта?

a. Прецентральна звивина кори великих півкуль
b. Базальні ганглії
c. Мозочок
d. Гіпоталамус
e. Таламус

59. Histology of the red bone marrow biopsy material detected cells of the granulocytic series. What changes occur in the nucleus during the differentiation of these cells?

a. Pyknosis
b. Enlargement
c. Polyploidization
d. Segmentation

e. Enucleation

60. Gastroscopy has detected a tumor-like formation 1.5 cm in diameter, attached to a pedicle, in the area of the lesser curvature. What is the character of the tumor growth in this case?
a. Exophytic
b. Infiltrating
c. Appositional
d. Expansive
e. Endophytic

61. A 64-year-old man presents with a tremor in his legs and arms. He says he has had the tremor for <<many years>>, but it has worsened in the last year. The tremor is more prominent at rest and nearly disappears on movement. His daughter mentions that his movements have become slower. The patient is afebrile and vital signs are within normal limits. On physical examination, the patient is hunched over and his face is expressionless throughout examination. There is a <<pill-rolling>> resting tremor that is accentuated when the patient is asked to clench the contralateral hand and alleviated by finger-nose testing. When asked to walk across the room, the patient has difficulty taking the first step, has a stooped posture and takes short rapid shuffling steps. A doctor initiates pharmacotherapy and the drug of first line, levodopa, is prescribed. Which of the following is the most likely mechanism of action of this drug?
a. Stimulation of dopamine production
b. Cholinesterase inhibition
c. ---
d. Activation of M2-cholinergic receptors
e. Inhibition of M2-cholinergic receptors

62. Який із нижченаведених препаратів під час закрапування в очі викликає розширення зіниці та параліч акомодації?
a. Фурацилін
b. Атропіну сульфату
c. Галантаміну гідробромід
d. Пілокарпіну гідрохлориду
e. Прозерін

63. In the body of a 37-year-old woman, who died with signs of pulmonary edema, there was detected an acute deformation of the aortic valve: it is shortened, thickened, ulcerated, has areas of stone-like density. On its external surface there are large, up to 2 cm in diameter, thrombotic plaques. The left ventricle wall is 2.2 cm thick. The cardiac muscle is dull, matt, and flaccid. What type of endocarditis corresponds with the described changes in the aortic valve?
a. Acute verrucous endocarditis
b. Diffuse endocarditis
c. Fibroplastic endocarditis
d. Recurrent verrucous endocarditis
e. Ulcerative polypoid endocarditis

64. A patient is diagnosed with acute morphine hydrochloride intoxication. Prescribe an oxidizing agent for gastric lavage:
a. Chlorhexidine (bi)gluconate
b. Cerigel
c. Chloramine
d. Sulfocamphocainum (Procaine + Sulfocamphoric acid)
e. Potassium permanganate

65. A patient needs to be prescribed a wide-spectrum fluoroquinolone agent. Select this drug from the list.
a. Azlocillin
b. Amoxicillin
c. Ciprofloxacin

d. Carbenicillin
e. Chinoxydin

66. An 11-year-old girl is brought to the doctor's office by her mother who states her daughter has been weak with swollen face for 3 days. The mother states her daughter had always been healthy and active until the initiation of symptoms. Upon inquiry, the girl describes a foamy appearance of her urine but denies blood in urine, urinary frequency at night, or pain during urination. Physical examination reveals generalized swelling of the face and pitting edema on the lower limbs. Laboratory study shows proteinuria and microscopic hematuria. Which of the following is the most likely cause of findings in the laboratory study of urine?
a. Increased permeability across the glomerular capillary wall
b. Increased plasma oncotic pressure
c. ---
d. Increased hydrostatic pressure in Bowman's capsule
e. Increased glomerular hydrostatic pressure

67. A 37-year-old woman presents to the emergency department complaining of palpitations, dry cough, and shortness of breath. She is a nonsmoker. Her blood pressure 100/65 mm Hg, pulse --- 76/min., respiratory rate --- 23/min. Her physical exam is significant for bibasilar lung crackles and a low-pitched, mid-diastolic rumbling murmur best heard at the apical region without radiation. She has jugular vein distention and bilateral pitting edema in her lower extremities. Despite considerable efforts in the emergency department, she dies from sudden cardiac death at night. The family requests an autopsy to determine her cause of death. The patient's heart shows a mitral stenosis. Histologic examination reveals increased connective tissue in the myocardium and Ashoff-Talalaev's granulomas. Which of the following is the most likely diagnosis?
a. Rheumatic heart disease
b. Dermatomyositis
c. Systemic scleroderma
d. Polyarteritis nodosa
e. Systemic lupus erythematosus

68. A 24-year-old man undergoes surgery and during the operation, an organ is excised and sent for histological evaluation. A light microscopic examination reveals the organ encased by thin connective tissue capsule that enters the substance of the lobes to further subdivide the organ into irregular lobular units. Each lobule contains a cluster of follicles filled with colloid. Follicular epithelium consists of low columnar, cuboidal or squamous cells depending on the level of activity of the follicle. Which of the following organs does this tissue most likely belong to?
a. Parathyroid gland
b. Thymus
c. Pancreas
d. Parotid gland
e. Thyroid gland

69. The patient's ECG shows that the ST segment is displaced above the isoelectric line by 1 mm and the T wave duration is increased to 0.25 seconds. What process is disturbed in the patient, causing these changes on the ECG?
a. Atrial repolarization
b. Atrial depolarization
c. Ventricular depolarization
d. Ventricular repolarization
e. Atrioventricular conduction

70. A worker was hospitalized with the bleeding, caused by an injury to the shoulder. Five days later, an increased concentration of certain blood cells will be observed in the patient's blood. Name these cells.
a. Reticulocytes
b. Megaloblasts
c. Lymphoblasts

d. Erythroblasts
e. Megalocytes

71. Brain MRI shows a local dilation (aneurysm) of an artery in the lateral sulcus. What vessel has pathological changes in this case?
a. A. communicans posterior
b. A) cerebri posterior
c. A) cerebri media
d. A) cerebri anterior
e. A. communicans anterior

72. A 48-year-old woman has been diagnosed with Raynaud syndrome (a spasm of peripheral blood vessels) and prescribed an adrenotropic agent. What group does this drug belong to?
a. Alpha/beta-adrenergic agonists
b. Alpha-blockers
c. Beta-1-adrenergic agonists
d. Beta-2-blockers
e. Beta-1-blockers

73. A mutation has occurred in a cell in the first exon of the structural gene. The number of nucleotide pairs changed from 290 to 250. Name this type of mutation:
a. Deletion
b. Translocation
c. Nullisomy
d. Inversion
e. Duplication

74. One of the tunics of a hollow organ contains nucleated anastomosing fibers. The fibers consist of cells that form intercalated discs in the contact areas. What tissue forms this tunic of an organ?
a. Dense irregular connective tissue
b. Cross-striated cardiac muscle
c. Loose fibrous connective tissue
d. Cross-striated skeletal muscle
e. Smooth muscle

75. A 50-year-old man presents to the office with the complaint of pain in his left great toe. The pain started 2 days ago and has been progressively getting worse to the point that it is difficult to walk even a few steps. He adds that his left big toe is swollen and hot to the touch. He normally drinks 2--3 glasses of red wine each day. Physical examination is notable for an overweight gentleman (BMI of 35) in moderate pain, with an erythematous, swollen, and exquisitely tender left great toe. A complete blood count shows: hemoglobin --- 120 g/L, hematocrit --- 0.45, platelets --- $160 · 10^9$/L, leukocytes --- $8.0 · 10^9$/L, segmented neutrophils --- 65%, lymphocytes --- 25%, eosinophils --- 3%, and monocytes --- 7%. Synovial fluid analysis shows cell count of 15,000 cells/mm³ (80% neutrophils), negatively birefringent crystals present. Elevated concentration of which of the following compounds is the most common laboratory finding in these patients?
a. Uric acid
b. Cystine
c. Urea
d. Bilirubin
e. Cholesterol

76. A 42-year-old man died of acute anemia due to pulmonary hemorrhage. An irregularly-shaped round cavity 5--6 cm in size was detected in the second segment of the right lung. The cavity communicates with the bronchial lumen. The inner surface of the cavity is uneven and covered with a flabby, structureless, yellowish tissue. Its wall is thin and consists of compacted lung tissue with inflammatory alterations. Histology shows that the inner layer of the cavity consists of molten caseous masses with a large number of segmented leukocytes. What is indicated by the changes detected in the lungs of the deceased man?

a. Disintegrating pulmonary carcinoma
b. Lung abscess
c. Pulmonary infarction with septic disintegration
d. Bronchoectatic cavern
e. Acute cavernous tuberculosis

77. Examination shows that the patient's sternocleidomastoid muscle and the upper edge of the trapezius muscle suffer from atrophy. Turning the head into the opposite direction is problematic. What nerve is affected in this case?

a. Intercostal nerve
b. Vagus nerve
c. Brachial plexus
d. Hypoglossal nerve
e. Accessory nerve