

1. In the uterine cavity an embryo was found that was not attached to the endometrium. What stage of embryonal development is it?

- a. Zygote
- b. Gastrula
- c. Blastocyst**
- d. Neurula
- e. Mulberry body

2. What is caused by an absolute deficiency of vitamin K in the body?

- a. ---
- b. Hypercoagulation
- c. Hypocoagulation**
- d. Intestinal dysbiosis
- e. Disturbed platelet adhesion

3. Purulent exudate accumulates in the abdominal cavity of a patient with peritonitis. The exudate contains a large amount of neutrophils. What is the main function of neutrophil granulocytes in the inflammation focus?

- a. Secretion of prostaglandins
- b. Regulation of local blood circulation
- c. Degranulation
- d. Phagocytosis**
- e. Release of histamine

4. The bile, secreted in the duodenum, contains bile acids and participates in emulsification and digestion of lipids. What acid is a component of bile?

- a. Arachidonic acid
- b. Oleic acid
- c. Myristic acid
- d. Cholic acid**
- e. Linoleic acid

5. Histological microslide shows cells that form isogenic groups. The intercellular substance contains glycoproteins, proteoglycans, and collagen fibers. What tissue is it?

- a. White adipose tissue
- b. Bone tissue
- c. Brown adipose tissue
- d. Cartilaginous tissue**
- e. Mucous tissue

6. The parents of a newborn came for medical and genetic counseling. Their baby is suspected to have Edwards syndrome that manifests as micrognathia, microstomia, and a short upper lip. What testing methods are necessary to clarify the diagnosis?

- a. Immunogenetics
- b. Biochemistry
- c. Cytogenetics**
- d. Dermatoglyphics
- e. Clinical genealogy

7. During a fire, a person developed carbon monoxide poisoning. What changes occurred in the patient's blood as a result?

- a. Formation of carbhemoglobin
- b. Formation of methemoglobin
- c. Development of acidosis
- d. Formation of reduced hemoglobin
- e. Formation of carboxyhemoglobin**

8. What mineral substance is present in the dental hard tissues in the largest amount?

- a. Calcium phosphate $[Ca_10(PO_4)_6]$

- b. Chlorapatite [Ca₁₀(PO₄)₆Cl₂]
- c. Hydroxyapatite [Ca₁₀(PO₄)₆(OH)₂]
- d. Carbonate apatite [Ca₁₀(PO₄)₅CO₃]
- e. Fluorapatite [Ca₁₀(PO₄)₆F₂]

9. A 10-year-old Indian boy is brought by his parents to a dentist for a routine dental care. They want to remove the noticeable yellow discoloration of his teeth. His mother reports that they immigrated to Ukraine approximately 6 months ago and a lot of children in their state had the similar staining of their teeth. On intraoral examination there are isolated areas of brown staining, which is particularly severe on the incisors and canines. In addition, some areas have pits which expose the underlying dentin. Which of the following is the most likely diagnosis?

- a. Acid erosion
- b. Enamel hypoplasia
- c. Fluorosis
- d. Enamel erosion
- e. Demineralization stage of caries

10. When extracting a tooth, the dentist destroys the bonds between the cementum of the dental root and the tooth socket. What structure is it?

- a. Dentinum
- b. Gingiva
- c. Pulpal dentis
- d. Cementum
- e. Periodontium

11. When a newborn baby feeds, milk gets into the baby's nasal cavity. What is the most likely cause of this pathological condition?

- a. Right-sided nasal septum deviation
- b. Basilar skull fracture
- c. Left-sided nasal septum deviation
- d. Cleft palate
- e. Cleft lip

12. During examination of the patient's oral cavity, the dentist noticed the presence of a carious spot in the area of the linguodistal groove on the masticatory surface of the first upper right molar. This groove separates the following structure:

- a. Metacone
- b. Mesocone
- c. Protocone
- d. Paracone
- e. Hypocone

13. A 30-year-old patient was diagnosed with a tumor of the body of the mandible that appeared several months ago. Macroscopically, the tumor was represented by a dense whitish tissue that was destroying the patient's jawbone. After its removal, the tumor was examined microscopically. It was revealed that the tumor consisted of a network of odontogenic epithelial strands with various types of branching. What kind of tumor did the patient have in this case?

- a. Basal cell ameloblastoma
- b. Granular cell ameloblastoma
- c. Acanthomatous ameloblastoma
- d. Follicular ameloblastoma
- e. Plexiform ameloblastoma

14. What factor results in maximal dilation of the gemomicrocirculatory pathway vessels and their increased permeability?

- a. Endothelin
- b. Vasopressin
- c. Noradrenaline

d. Serotonin

e. Histamine

15. The process of aging in humans is associated with decreased synthesis and secretion of pancreatic juice and its lower trypsin content. It results in disturbed breakdown of:

- a. Phospholipids
- b. Polysaccharides
- c. Lipids

d. Proteins

e. Nucleic acids

16. An 11-month-old child has delayed teething, misaligned teeth, dry oral mucosa, and cracks appearing in the corners of the mouth with subsequent suppuration. This condition is likely to be associated with a deficiency of vitamin:

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

17. To test teeth sensitivity, they are sprayed with cold or hot water. What structure of cerebral cortex provides subjective estimation of this thermal test?

- a. Precentral gyrus
- b. First temporal convolution
- c. Posterior central gyrus
- d. Central fissure
- e. Middle frontal gyrus

18. A patient was diagnosed with meningitis. A puncture of the subarachnoid space is necessary. This space can be located between the following structures:

- a. ---
- b. Periosteum and dura mater
- c. Periosteum and arachnoid mater
- d. Dura mater and arachnoid mater
- e. Arachnoid mater and pia mater

19. During the examination of a pregnant woman, a dentist detected 3 round formations on her oral mucosa. The formations appeared 3 days ago. They have a white-gray surface with a red rim and are up to 1 cm in diameter. What is the diagnosis in this case?

- a. Necrotizing ulcerative stomatitis
- b. Gangrenous stomatitis
- c. Catarrhal stomatitis
- d. Leukoplakia
- e. Aphthous stomatitis

20. Histologic examination of a biopsy specimen shows a structure of the oral cavity composed of the bone tissue, which is covered by stratified squamous non-keratinizing epithelium and lamina propria. The specimen has also minor mucous salivary glands. In all parts of the lamina propria the collagenous fibers form thick bundles that bind the mucosa to the periosteum. Based on these findings, which of the following is the most likely structure?

- a. Soft palate
- b. Hard palate
- c. Cheek
- d. Tongue
- e. Lip

21. Salivary α -amylase catalyzes the hydrolysis of α -1,4-glycosidic bonds of starch. What ions function as its activators?

- a. Copper ions

b. Sodium ions

c. Zinc ions

d. Potassium ions

e. Lead ions

22. In an experiment, an excitable cell was placed into a saline solution without sodium ions. How will it change the development of action potential in the cell?

a. Duration of the action potential decreases

b. Amplitude of the action potential increases

c. Duration of the action potential increases

d. Amplitude of the action potential decreases

e. Action potential does not develop

23. A patient, who was taking a highly effective anti-tuberculosis drug, has developed gynecomastia at the end of the treatment course. What drug has caused this side effect?

a. Ciprofloxacin

b. Rifampicin

c. Isoniazid

d. Ethambutol

e. Florimycin sulfate (Viomycin sulfate)

24. A patient with acute retention of urine has been brought to an admission room. During examination a doctor found out that the patient has urethral obturation caused by pathology of the surrounding organ. Name this organ:

a. Epididymis

b. Prostate

c. Seminal vesicle

d. Spermatic cord

e. Testicle

25. Microscopy of a fecal smear detected cysts with 4 nuclei. Which protozoan parasite do they belong to?

a. Trichomonas

b. Giardia

c. Toxoplasma

d. Entamoeba histolytica

e. Balantidium

26. When performing trepanation of the mastoid process of the temporal bone due to purulent otitis, the dental surgeon risks damaging the facial (fallopian) canal and causing bleeding as a result. What artery passes along with the facial nerve in the canal?

a. A stylomastoidea

b. A auricularis posterior

c. A meningea media

d. A facialis

e. A occipitalis

27. A patient was diagnosed with a malignant neoplasm of the tongue. What characteristics of this tumor make it possible to classify it as a malignant one?

a. Anaplasia

b. Positive Pasteur effect

c. Infiltrative growth

d. Increased number of mitotic cells

e. Expansive growth

28. Hyposalivation, observed in sialolithiasis, and both acute and chronic inflammations of the salivary glands, causes the development of:

a. Fluorosis

b. Pulpitis

- c. Stomatitis
- d. Gingivitis
- e. Caries**

29. Premature babies often develop respiratory distress syndrome. This pathology is caused by the deficiency of a certain component of the blood-air barrier. Name this component:

- a. Endothelial basement membrane
- b. Alveolocytes
- c. Alveolar basement membrane
- d. Surfactant**
- e. Capillary endothelium

30. A 25-year old woman is admitted to the hospital because of a 6-week history of double vision and difficulty to talk after prolonged speaking. Her husband reports fluctuating droopy eyelids in the morning and evening. An immunologic assay detects the presence of circulating autoantibodies against the certain receptors at the neuromuscular junction. Disturbed binding of which of the following neurotransmitters is the most likely cause of this patient's symptoms?

- a. Serotonin
- b. Dopamine
- c. γ -aminobutyric acid (GABA)
- d. Epinephrine
- e. Acetylcholine**

31. A child presents with dry cough. What non-narcotic antitussive drug can relieve the patient's condition?

- a. Morphine hydrochloride
- b. Potassium iodide
- c. Codeine phosphate
- d. Glaucine hydrochloride**
- e. Althaea officinalis roots

32. A second deciduous molar was extracted in a 13-year-old child. What permanent tooth will erupt in its place?

- a. Third molar
- b. First molar
- c. Second premolar**
- d. First premolar
- e. Second molar

33. A 53-year-old woman has height of 163 cm, body weight of 92 kg, uniform fat deposition, and puffy face. She is inactive and apathetic. Pressing the front surface of her lower leg leaves an indentation. What gland is dysfunctional in this woman, causing her pathological condition?

- a. Adrenal glands
- b. Pituitary gland
- c. Thyroid gland**
- d. Gonads
- e. Parathyroid glands

34. What is the secondary mediator in the mechanism of action of adrenaline?

- a. Cyclic guanosine monophosphate
- b. Cyclic adenosine monophosphate**
- c. Cyclic uridine monophosphate
- d. Cyclic cytidine monophosphate
- e. Cyclic thymidine monophosphate

35. Histology of the diaphysis of a tubular bone shows basophilic cells with developed organelles of synthesis located on its surface under a layer of fibers. These cells take part in regeneration of bone tissue. In what layer of the diaphysis are they located?

- a. Layer of osteons**

- b. Layer of internal general lamellae
- c. Layer of external general lamellae
- d. Bone proper

e. Periosteum

36. A 67-year-old man was delivered to a cardiology department with complaints of periodical pains in his heart, dyspnea caused by even slight exertion, cyanosis, and edemas. ECG shows additional excitations of heart ventricles. Name this type of rhythm disturbance:

- a. Flutter
- b. Bradycardia
- c. Tachycardia

d. Extrasystole

- e. Fibrillation

37. The tonsils of a 28-year-old patient are significantly enlarged, plethoric, and painful. On their surface, there are dense dirty-gray films that spread to the hard palate and are tightly attached to the underlying tissues. Attempts to remove the films provoke bleeding. What pathological process causes these morphological changes?

- a. Croupous exudative inflammation
- b. Hemorrhagic exudative inflammation

c. Diphtheritic exudative inflammation

- d. Catarrhal exudative inflammation
- e. Purulent exudative inflammation

38. A 34-year-old male comes to the dentist because of a 1-year history of swelling in the right upper jaw. On intraoral examination, a single diffuse 2x1.5 cm swelling is seen on the right side of anterior maxilla. A biopsy specimen of the lesion shows numerous thin-walled sinusoids in the connective tissue, hemosiderin deposition, and numerous giant cells in a hemorrhagic background. Which of the following is the most likely diagnosis?

- a. Gingival fibromatosis
- b. ---

c. Giant cell epulis

- d. Granular cell ameloblastoma
- e. Cavernous hemangioma

39. A 34-year-old woman goes into labor at 38 weeks. After several hours of labor a male infant is born with fever, hydrocephalus, hepatosplenomegaly, jaundice, bilateral chorioretinitis and cerebral calcifications. Which of the following protozoan infections is the most likely cause of the infant's condition?

- a. Amebiasis
- b. Trichomoniasis
- c. Giardiasis
- d. Balantidiasis

e. Toxoplasmosis

40. Examination of the oral cavity shows marked edema and hyperemia of the gums, supragingival and subgingival calculus, and formation of pocket-like cavities filled with structureless masses and food debris in the area of the dentogingival junction. These pockets produce purulent discharge, when pressed. X-ray shows resorption of the bone tissue in the tooth sockets. What is the diagnosis in this case?

- a. Fluorosis
- b. Hypertrophic gingivitis

c. Periodontitis

- d. Periodontosis
- e. Acute purulent periostitis

41. For caries prevention, dentists recommend limiting the intake of simple carbohydrates. What is the role of a cariogenic diet in the pathogenesis of defects of hard dental tissues?

- a. Decrease of pH in the oral cavity
- b. Formation of chelating substances
- c. Activation of remineralization process
- d. Saturation of dental enamel with fluorine
- e. Disorders of calcium and phosphorus metabolism

42. Histologic examination of an eye specimen shows multilayer structure. The outermost layer is represented by special pigment epithelium, which is composed of cuboidal melanin-containing cells that absorb light. The photoreceptor layer contains photosensitive outer segments of rods and cones. Which of the following eye structures is mentioned?

- a. Choroid
- b. Retina
- c. Iris
- d. Sclera
- e. Ciliary body

43. A 38-year-old woman has developed a bronchial asthma attack. What broncholytic that is a β_2 -adrenergic agonist would be effective for providing emergency aid in this case?

- a. Ipratropium bromide
- b. Salbutamol
- c. Atropine
- d. Platiphyllinum
- e. Adrenaline

44. A 43-year-old woman against the background of septic shock presents with thrombocytopenia, low fibrinogen levels, fibrin degradation products in the blood, and development of petechial hemorrhages. What is the cause of these pathological signs?

- a. DIC syndrome
- b. Impaired platelet production
- c. Hemorrhagic diathesis
- d. Autoimmune thrombocytopenia
- e. Exogenous intoxication

45. A patient was diagnosed with acute glomerulonephritis. What substance in the urine indicates a damage to the basement membrane of the renal glomerular capillaries in case of this pathology?

- a. Fructose
- b. Creatine
- c. Indican
- d. Protein
- e. 17-ketosteroids

46. A patient was diagnosed with a monogenic hereditary disease. Name this disease:

- a. Hymenolepisis
- b. Peptic ulcer disease of the stomach
- c. Hypertension
- d. Hemophilia
- e. Poliomyelitis

47. During an accident on a nuclear submarine, a conscript soldier received a radiation dose of 5 Gy. He complains of headache, nausea, and dizziness. What changes in the leukocyte count can be expected after such irradiation?

- a. Neutrophilic leukocytosis
- b. Lymphocytosis
- c. Leukopenia
- d. Agranulocytosis
- e. Anemia

48. An enzyme that binds with the substrate uses only a part of its molecule to interact with it. Name this part of the enzyme molecule:

- a. Active site
- b. Coenzyme
- c. Allosteric site
- d. Cofactor
- e. Segment of a polypeptide chain

49. A 58-year-old male patient visited his dentist with the chief complaint of itching and burning sensation in his mouth. On intraoral examination, diffuse white patches were seen on his tongue, right and left buccal mucosa, as well as on his hard palate and soft palatal region. The potassium hydroxide (KOH) preparation of the specimen revealed non-pigmented septate hyphae. Administration of which of the following is the most appropriate initial step in treatment of this patient?

- a. Gentamicin
- b. Nystatin
- c. ---
- d. Tetracycline
- e. Penicillin

50. A patient developed hypersalivation during dental manipulations. What group of medicines reduces this phenomenon?

- a. Astringents
- b. Cholinergic agonists
- c. Adrenergic antagonists
- d. Cholinergic antagonists
- e. Adrenergic agonists

51. A 58-year-old man presents with the clinical picture of acute pancreatitis. This diagnosis can be confirmed by high levels of a certain substance in the patient's urine. Name this substance:

- a. Residual nitrogen
- b. Albumin
- c. Uric acid
- d. Amylase
- e. Urea

52. A 58-year-old woman comes to her dentist complaining of a <<strange mass>> in her mouth. On intraoral examination of the oral mucosa the dentist reveals a vegetative lesion with a pedunculated base observed at the soft palate level lateral to the base of the uvula. An excisional biopsy is performed and histopathological examination shows proliferations of stratified keratinized squamous epithelium with fibrovascular connective tissue stroma and many papillary infoldings of the epithelium. Which of the following is the most likely pathology revealed by the dentist?

- a. Basal-cell carcinoma
- b. Fibrolipoma
- c. Epithelial hyperplasia
- d. Fibroma
- e. Papilloma

53. A patient being treated for viral B hepatitis developed signs of hepatic failure. What changes in the blood test that indicate a protein metabolism disorder will most likely be observed in this case?

- a. Absolute hypoalbuminemia
- b. Absolute hyperalbuminemia
- c. Absolute hyperfibrinogenemia
- d. Blood protein composition is \ unchanged
- e. Absolute hyperglobulinemia

54. Calcification of dental tissues is significantly influenced by osteocalcin protein which has an ability to bind calcium ions due to the presence of the following modified amino acid residues in the polypeptide chain:

- a. Carboxy asparagine
- b. Alanine

- c. γ -aminopropionic
- d. γ -carbon glutamine
- e. γ -aminobutyric

55. During examination, a 7-year-old child was diagnosed with multiple caries by the dentist. What medicine should be recommended for caries prevention in this case?

- a. Calcium gluconate
- b. Calcium chloride
- c. Calmecin
- d. Calcium glycerophosphate
- e. Calcium hydroxide

56. A patient was diagnosed with multiple myeloma. Total blood protein is 180 g/L. What proteins, present in the body, are the cause of such total protein value?

- a. Transferrin
- b. Bence-Jones protein
- c. Albumins
- d. Immunoglobulins
- e. Haptoglobin

57. During histologic examination of the skeletal muscle specimen, the investigator discovers an organelle that has 2 membranes: smooth outer membrane and internal, that forms multiple ridges of visible folds (crysts). Which of the following is the most likely function of this structure?

- a. ---
- b. Formation of mitotic spindle
- c. Intracellular digestion of macromolecules
- d. Synthesis of carbohydrates
- e. Synthesis and energy accumulation in the form of ATP

58. Cells of sensory spinal ganglions are a part of reflex arches. What type of neurons are these cells?

- a. Pseudounipolar
- b. ---
- c. Multipolar
- d. Bipolar
- e. Unipolar

59. A 40-year-old male comes to the physician because of recurrent painful flares and swelling of the metatarsal-phalangeal joint of the great toe. Laboratory study of urine sample shows extremely low pH and pink discoloration. Which of the following metabolic intermediates is the most likely cause of changes in this patient's urine?

- a. Chloride
- b. Magnesium sulfate
- c. Tricalcium phosphate
- d. Ammonia
- e. Uric acid

60. A 32-year-old woman presents with increased facial hair growth, headache and decreased libido. She is also currently concerned about sweating excessively even at room temperature. Neurological examination shows loss of visual acuity in both temporal fields of views. A skull X-ray shows sella turcica enlargement and deformity. Which of the following anatomic structures would you most likely expect to be abnormal in this patient?

- a. ---
- b. Pineal gland
- c. Hypothalamus
- d. Thalamus
- e. Pituitary gland

61. A glucocorticoid ointment has been prescribed to a patient for periodontitis treatment. Name this medicine:

- a. Tetracycline
- b. Decamin (Dequalinium)
- c. Erythromycin
- d. Prednisolone
- e. Ampicillin

62. The prisoner, who went on a hunger strike, developed edemas. What is the mechanism of edema development in this case?

- a. Increased oncotic tissue pressure
- b. Decreased oncotic blood pressure
- c. Increased hydrostatic venous pressure
- d. Reduction in circulating blood volume
- e. Decreased hydrostatic tissue pressure

63. In histogenesis of bone tissue, two ways of its development are possible. What stages are not characteristic of membranous osteogenesis?

- a. Formation of epiphyseal centers of ossification
- b. Formation of reticulofibrous bone
- c. Osteoid stage
- d. Formation of osteogenic buds within mesenchyme
- e. Replacement of reticulofibrous bone tissue with lamellar bone tissue

64. A section of a multi-rooted tooth shows a tissue located at the apices of the dental roots and in the place of their branching. This tissue contains cells with processes located in the lacunae, and numerous collagen fibers arranged radially or longitudinally. Name this tissue:

- a. Dense connective tissue
- b. Reticulofibrous bone tissue
- c. Cellular cement
- d. Dentin
- e. Enamel

65. A skin injury with damage to the reticular layer of the dermis was received. The regeneration of this layer will occur because of the activity of certain cells. Name these cells.

- a. Tissue basophils
- b. Lymphoblasts
- c. Plasma cells
- d. Fibroblasts
- e. Macrophages

66. Cytogenetic analysis allowed to determine the patient's karyotype --- 47, XY, +21/46, XY. Name this condition:

- a. Translocation
- b. Deletion
- c. Genocopy
- d. Mosaicism
- e. Phenocopy

67. In the peripheral zone of the pulp, the cell activity is temporarily inhibited for certain reasons. What dental tissue is at risk of developing a deficiency of its physiological regeneration in this case?

- a. Dentin
- b. Acellular cementum
- c. Pulp
- d. Cellular cementum
- e. Enamel

68. Microscopy of dental plaque revealed unicellular organisms. Their cytoplasm had two distinct layers, barely visible core, wide pseudopodia. The patient is most likely to have:

- a. Entamoeba histolytica
- b. Trichomonas tenax

- c. *Lamblia*
- d. *Entamoeba gingivalis*
- e. *Entamoeba coli*

69. A group of dental students is studying bacteria and their pathogenesis. They have identified that a substantial number of bacteria cause human diseases by producing a poisonous substance. This substance is typically a protein, that has different mechanisms of action and acts at different sites. It is secreted by anaerobic bacteria and leads to a potentially life threatening symptoms which can be prevented by administration of specific antibodies. Which of the following is the most likely substance?

- a. Toxoid
- b. Enterotoxin
- c. Antitoxin
- d. ---
- e. Exotoxin

70. Experimental studies of membrane ionic currents in the dynamics of action potential development have shown that the ionic current that causes the repolarization phase can be classified as:

- a. Passive potassium current
- b. Passive sodium current
- c. Active potassium current
- d. Active chlorine current
- e. Active sodium current

71. During laboratory testing of the blood of a deceased person, the forensic pathologist diagnosed cyanide poisoning. What was the cause of death in this case?

- a. Production of reduced hemoglobin
- b. Carboxyhemoglobin production
- c. Carbhemoglobin production
- d. A change in blood pH
- e. Methemoglobin production