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## ASSESSMENT MATERIALS FOR INTERMEDIATE CERTIFICATION DISCIPLINE

### *HISTOLOGY, CYTOLOGY, EMBRYOLOGY*

Code, direction	31.05.01
preparation	Medicinal case
Focus(profile)	Medicinal case
Form training	full-time
Department-developer	pathophysiology and general pathology
Issuer department	internal diseases

### TYPICAL TASKS FOR CONTROL WORKS (2, 3 SEMESTER)

**List abstract messages:**

1. Jet changes mitochondria.
2. Biological meaning nuclear apparatus and his characteristic
3. Biological membranes and transfer molecules. Influence alcohol on permeability membranes
4. Regulation processes cellular divisions on sub- and supracellular level.
5. Cytological characteristic main cellular populations internal organs adultsanimals.
6. Nuclear plasma relationship How age Aspects cytologically changes.
7. Interaction between various processes in time mitosis (meiosis).
8. Pathological mitosis and role his V vital activity cells.
9. Karyocytometry – quantitative mathematical method morphological research.
10. Organ-specific peculiarities connecting fabrics.
11. Basic characteristics cells connecting fabrics V hearth aseptic inflammation.
12. Role connecting fabrics V healing wounds, staging process and connection With pathogenetically justified therapy wounds.
13. Possibilities physiological and reparative regeneration tendons.
14. Macrophages body. Kinds, sources development, functions.
15. Education intercellular substances cartilaginous fabrics By data electronic microscopy.
16. Modern ideas about the ultrastructure and histophysiology of striatedmuscular fibers.
17. Histophysiology wall digestion.
18. Endocrinocytes pancreas glands. Their micro- and ultrastructure, functions, place Vsystem hormone-producing gastrointestinal cells tract.
19. Histophysiology biliary ducts and gall bubble
20. Structural-functional characteristic hepatocytes V ontogenesis, their regenerativeopportunities in age aspect.
21. Ultrastructure elements walls sinusoidal capillaries liver. Peculiarities buildingswalls liver vessels.
22. Theoretical basics understanding embryogenesis.
23. Early stages embryogenesis person.
24. Histo- and organogenesis embryo person.

### TYPICAL QUESTIONS FOR THE CREDIT (2 semester)

1. Methods microscopic research cells, fabrics and organs. Basic stages production of a histological preparation.
2. Cell. Plasmolemma, core and cytoplasm. Characteristic hyaloplasm and organelles, their classification,

ultrastructure, functions. Inclusions cytoplasm.

3. Organelles cytoplasm, hyaloplasm. Classification organelles, functions. Ultrastructural characteristic cytoplasmic membranes, kernels.
4. Morphological changes cells V process life cycle. Stem cells. Methods reproductions and regeneration somatic cells. Morphology of an aging cell. Necrosis, apoptosis their morphofunctional characteristic and distinctive signs.
5. Jet properties cells, their meaning. Representation O compensation and decompensation at the cellular and subcellular levels. Sensitivity of cells to damaging factors depending on degrees differentiation and functional activity.
6. Embryonic membranes, their development, structure and transformation among vertebrates (fish, birds, mammals). Basic mechanisms regulation embryogenesis. Concept and examples ooplasmic segregation intercellular interactions, embryonic induction, neuroendocrine regulation.
7. Placentas of mammals. Principle of structure. Types of placentas by structure and character trophism. Functions.
8. Ultrastructural characteristic men's and women's sexual cells person. Progenesis. Stages. Chronology process. Spermatogenesis and ovogenesis.
9. Early embryogenesis person. Fertilization, splitting up, gastrulation.
10. Characteristic stages embryogenesis person. Biological processes, lying V basis stages. Chronology processes. Implantation, features of gastrulation and germ formations shells, their structure and role in development fetus
11. Embryogenesis person. Are common patterns and cenogenetic peculiarities embryogenesis. Extraembryonic organs: education, structure and functions.
12. Placenta person. Umbilical cord. Development, structure, functions. System mother-placenta and factors influencing on her physiology.
13. Critical periods embryogenesis Human. Influence damaging factors for the fruit.
14. Epithelia. Classifications (morphofunctional and histogenetic). Characteristic epithelium. Role glandular epithelium.
15. Glandular epithelium. Sources development. Phases secretory cycle. Types secretion. Concept about endocrine and exocrine glands. Concept O stroma and parenchyma iron Principle buildings exocrine glands. Classification of exocrine glands. Peculiarities epithelial lining of gland structures of various origins. Possibilities regeneration stroma and parenchyma.
16. Connective textile. Classification. Cytophysiological characteristics of cells and intercellular substance. Concept of stroma. Cellular basics inflammatory reactions and process healing wound Age changes.
17. Blood. Plasma and formed elements of blood, their classification, characteristics and functions. Concept of hemogram and leukocyte formula their meaning for the clinic.
18. Cytophysiology of blood leukocytes and their role in protective reactions body. System macrophage mononuclear cells. Cellular basics inflammatory reactions and process wound healing.
19. Loose unformed fibrous connecting textile. Cytophysiological characteristic cells and intercellular substances. Concept O stroma. Cellular basics inflammatory reactions and process healing wound Age changes.
20. Connective tissues with specific properties. Structure, location V body and functions. Regeneration. Development. Mesenchyme, her origin, structure, functions.
21. Cartilaginous textile. Source development. Principle buildings. Classification. Histophysiology species cartilaginous fabrics and their distinctive peculiarities. Trophic, growth, regeneration.
22. Bone fabrics. Origin. Principle buildings. Classification. Histophysiology. Structure tubular bones How organ. Structure compact and spongy substances bones. Trophic. Regeneration.
23. Development bone fabrics. Straight and indirect osteogenesis.
24. Muscular fabrics. Sources development. Classification. Histophysiology of muscle tissue. Physiological and reparative regeneration.
25. Cross-striped muscular textile. Source development. Histophysiology. Structure myofibrils Structural basics muscular abbreviations. Regeneration.
26. Nervous textile. Origin. Principle buildings. Morphofunctional characteristic neurons and neuroglia. Blood-brain barrier. Regeneration neurons and glia.
27. Nervous fibers. Structure and morphofunctional peculiarities unmyelinated and myelin nervous fibers Regeneration. Structure peripheral nerve. Nervous graduation V epithelia, connecting and muscular tissues. Synapses. Definition. Classification By structure and functions.
28. Peripheral nervous system. Spinal node Nerve. Histophysiology. Regeneration. Vegetative nervous system.
29. Cerebellum. Structure and functions. Cyto- and myeloarchitecture bark cerebellum. Neural compound afferent and efferent reflex arc.
30. Bark large hemispheres head brain Development. Cyto- and myeloarchitecture of the cortex.
31. Modular organization. Blood-brain barrier. Shells brain
32. Embryonic hematopoiesis. Subsequence shifts organs hematopoiesis. Features of hematopoiesis in each organ. Concept O myelopoiesis, myeloid fabrics, lymphopoiesis, lymphoid fabrics.
33. Characteristic postembryonic hematopoiesis. General characteristic compartments. Erythropoiesis. Stages. Regulation erythropoiesis. Thrombocytopoiesis.
34. Hematopoiesis V red bone brain. Granulocytopoiesis, monocytopoiesis, lymphopoiesis.

35. Red bone marrow. Development. Histophysiology. Interaction stromal and hematopoietic elements. General characteristic compartments hematopoiesis.
36. Sensitivity to damaging factors its elements. Age-related changes.
37. Thymus. Development. Histophysiology. Interaction stromal and hematopoietic elements. Blood-thymic barrier. Age and accidental involution. Role thymus in immunogenesis.
38. Spleen. Functions. Development. Histophysiology. Her hematopoietic function and participation in the body's protective immunological reactions. Features of blood supply spleen.
39. Lymphatic nodes. Histophysiology. Participation lymphatic nodes in processes lymphopoiesis and protective reactions. Regeneration.
40. Structural basics cellular and humoral immunity. Characteristics of immunocompetent cells and their interaction in immune answer.
41. Skin. Principle buildings. Sources development fabrics skin. Histophysiology layers. Regeneration. Regional, age and sexual characteristics of the skin. Sweat skin glands. Location. Structure. Compound secret and type of secretion. Functions.
42. Derivatives skin. Hair. Development. Classification. Histophysiology. Height, regeneration, change hair. Greasy glands. Compound secret and type secretion. Functions.
43. Respiratory system. Development. Morphofunctional characteristic pneumatic ways. Trachea. Bronchi. Histophysiology. Regeneration.
44. Lung. Pleura. Histophysiology lung Structure respiratory department - acinus, functions. Features of the interstitium. Aerogenic barrier. Peculiarities blood supply lung Airborne ways. Classification. Principle buildings walls and distinctive features of different departments pneumatic ways.
45. Vessels microcirculatory beds. Classification. Histophysiology. Capillaries. Peculiarities buildings and functions. Arteriovenular anastomoses. Regeneration.
46. Blood vessels and lymphatic vessels. Classification. General principle buildings walls vessel. Relationship buildings walls arteries, veins and hemodynamic conditions. Organ-specific features arteries and veins
47. Heart. Development. Structure walls, tissue compound shells. Regeneration. Conduction system of the heart.
48. Organs of the oral cavity. The principle of the structure of the mucous membrane oral cavity. Fabric composition. Language. Histophysiology of the dorsal surfaces language. Regeneration.
49. Salivary glands. Sources of development. Histophysiology. Types and structure secretory departments, intralobular and interlobular ducts Peculiarities parotid, submandibular and sublingual iron Regeneration and age peculiarities.
50. Teeth. Anatomical and histological structure solid and soft parts tooth Peculiarity tissue composition. Regenerative features of dental tissues Age-related changes. Tooth development. Change generations teeth, causes.
51. Pharynx and esophagus. Development. Histophysiology. Regeneration.
52. Stomach. Development. Peculiarities histophysiology various departments Structure and cytochemical characteristic glands in various departments stomach. Regeneration. Age characteristics.
53. Intestines. Departments intestines. Development. Principle buildings walls. Fabric and cellular compound shells. Morphofunctional peculiarities buildings shells intestines thin and thick departments Regeneration, blood supply, innervation. Immune defense organs intestines. General morphofunctional characteristics and specific peculiarities. Age changes.
54. Pancreas. Development. Histophysiology of exocrine and endocrine departments. Regeneration. Blood supply. Age changes.
55. Liver. Development. Functions. General principle buildings. Morphofunctional characteristics of the hepatic lobules. Concept of portal lobule and acini, triad. Ultrastructure of hepatocytes and cells, lining sinusoidal capillaries. Hepatic barrier, its role. Regeneration.
56. Structural basics bile formation. Biliary ways. Gallbladder. Histophysiology. Regeneration.
57. Pituitary. Development. Histophysiology adeno- and neurohypophysis. Hypothalamic-pituitary connection. Regeneration. Age changes.
58. Thyroid and parathyroid glands. Sources development. Histological structure thyroid and parathyroid iron Vascularization. Functions hormones glands in regulation general and mineral exchanges. Regulation activities. Regeneration.  
Age changes and sensitivity to unfavorable factors.
59. Adrenal. Development. Functions. Histophysiology cortical and brain substances. Regulation synthesis hormones. Age changes.
60. Kidney. Development. The structure of the nephron. Histophysiology of cortical and brain substances. Stages and regulation urination. Peculiarities blood supply cortical and juxtamedullary nephrons. Endocrine kidney apparatus. Regeneration.
61. Urinary tract. Development. Ureters, bladder. Histophysiology. Regeneration.
62. Testicle. Development. Histophysiology. Reproductive function (spermatogenesis). Blood-testis barrier. Endocrine functions. Regulation. Age changes.
63. Additional glands male sexual systems. Structure. Prostate gland. Histophysiology secretory departments and excretory ducts. Features of the stroma. Exocrine and endocrine functions. Deferens ways. Principle structure

- walls. Peculiarities buildings departments and functions.
64. Ovary. Development. Histophysiology cortical and brainsubstances. Ovarian cycle. Development of the corpus luteum. Regulating them activities. Atresia follicles. Age changes.
  65. Uterus, oviducts, vagina. Histophysiology. Ovarian- menstrual cycle. Age changes.
  66. Dairy gland. Sources development. Histophysiology. Characteristics of the stroma and parenchyma of lactating and non-lactating glands. Addition buildings and functioning from neuroendocrine regulation of the mammary glands. Changes in dairy glands during the ovarian-menstrual cycle and during pregnancy. Age changes.
  67. Eye. Development. Histophysiology shells ocular appleRegeneration.
  68. Accommodative apparatus eyes. Lens, ciliary body, iris. Development, structure, functions.
  69. Organ hearing Development. External, average, internal ear. Histophysiology bone and membranous labyrinth internal ear. Structure receptor zones. Theory sound perception.
  70. Organ balance. Internal ear. Bone and membranous labyrinths. Histophysiology. Structure sensory scallops and sensory spots, their role.

## TYPICAL QUESTIONS TO EXAM (3 semester)

1. Mesothelium oil seal (borders cells, kernels cells, dentists).
2. Smear blood (erythrocytes, neutrophils, eosinophils, monocytes, lymphocytes).
3. Loose unformed connecting textile (fibroblasts, fibrocytes, histiocytes, collagen fibers, elastic fibers).
4. Tendon in cross section (bundles of the first order - one collagen fiber; tendon cells; endotenonium; peritenonium).
5. Fibrous cartilage (bundles collagen fibers between them small; isogenic groups; hyaline cartilage – By periphery).
6. Elastic cartilage (perichondrium; chondroblast layer; isogenic groups chondrocytes; intercellular substance: elastic fibers, amorphous substance).
7. Lamellar bone textile on example transverse cut tubularbones (periosteum; outer layer general records; concentric records (osteons); insertion records; osteocytes; Volkmanov vessel; osteon vessel).
8. Hyaline cartilage trachea: perichondrium, isogenic groups, chondromucoid.
9. Development bones from mesenchyme – direct osteogenesis. Define bone records: osteoblasts, osteocytes, osteoclasts, osteoid, osteomucoid. Mesenchyme: process cells, vessels.
10. Cross-striped muscular textile language (transverse; longitudinal slices muscular fibers (symplasts); simplast: sarcolemma, transverse striation, kernels; endomysium; peremysium: vessels, nerves; multilayered epithelium).
11. Unmyelinated nervous fibers: axial cylinder and cytoplasm lemmocytes; nuclei of Schwann cells.
12. Myelinated nerve fibers: nodes of Ranvier; axial cylinder; myelin sheath.
13. Neurovascular bunch (mixed nerve: nervous fibers, epineurium; artery muscular type; vein average caliber).
14. Spinal ganglion (rear spine dorsal brain; connecting capsule; sensory nerve cells; cell nuclei satellites; nervous fibers: axial cylinders, kernels Schwannian cells; front spinal root).
15. Spinal cord (central canal; white matter, nerve fibers; gray matter: anterior, posterior horns of gray matter, multipolarneurons).
16. Cerebellum (gray matter: molecular layer; ganglion layer: Purkinje cells; granular layer: nuclei of association cells; white substance - in center of the gyrus).
17. Bark large hemispheres head brain (white substance: nervousfibers; gray substance: molecular layer, layer giant Betz pyramidal cells, polymorphic layer. White matter: nerve fibers. Microvessels).
18. Longitudinal incision internal ear (snail: axis snails: spiral scallop, spiral ganglion; membranous labyrinth: vestibular membrane, spiral bunch, vascular strip, tympanic membrane, organ of Corti, integumentary plate; bone maze, drum staircase, vestibular ladder).
19. Cornea eyes (multilayer flat non-keratinizing epithelium, Bowman's membrane, stroma corneas, Descemet's membrane, Descemets single-layer flat epithelium - endothelium).
20. Rear wall eyes (sclera, vascular shell, retina: pigmentary layer, layer chopsticks and cones, external border membrane, outer grainy layer, outer reticulate layer, interior grainy layer, interior reticulate layer, layer ganglionic cells, layer nervous fibers internal bordermembrane).
21. Arterioles, venules, capillaries soft cerebral shell (arteriole: kernels endothelium, kernels smooth muscular cells; venule, capillary).
22. Elastic type artery - aorta (middle shell: elastic membranes; outer shell).
23. Wall hearts (endocardium, myocardium, fibers Purkinje).
24. Lymphatic node (capsule, trabeculae, cortical substance: secondary nodules, reactive center; cerebral substance: brain cords; sinuses: regional, intermediate cortical, intermediate cerebral).
25. Spleen (capsule, mesothelium, trabeculae: trabecular artery, vein, bundles of smooth muscle cells; white pulp – splenic (Malpighians) Taurus, central artery; red pulp).
26. Red bone marrow smear (myeloid tissue, developing blood cells: blast, metamyelocyte, myelocyte, erythrocyte

cells row, progenitor cells.

27. Histosection red bone brain V bone cavities flat bones (By drug pituitary gland) (sinusoidal capillaries, kernels reticular and hematopoietic cells, megakaryocytes, fatty cells).
28. Thyroid gland (lobule: follicles, wall epithelium, colloid, interstitium, interfollicular islets, interlobular connecting textile).
29. Pituitary (adenohypophysis – front share: epithelial cords, capillaries; average share: pseudofollicles; epithelial cords; remainder of Rathke's pocket; neurohypophysis - posterior lobe). red bone brain in the bone cavities of the flat bone (sinusoidal capillaries, nuclei reticular and hematopoietic cells, megakaryocytes, fatty cells).
30. Adrenal: Connective tissue capsule, trabeculae. Cork substance: zona glomerulosa, zona sudanophobic, zona fasciculata, reticulariszone; cerebral substance: vessels, chromaffin cells - endocrinocytes.
31. Thymus: basement membrane of lobules, in lobule: cortex, kernels lymphocytes and reticular cells; cerebral substance: lymphocytes, Hassalt bodies, capillaries. Interlobular connective textile.
32. Leather finger Epidermis: basal membrane, sprout layer (stratum basale and layers of spinous cells), stratum granulosum, lucidum layer, horny layer. Dermis: papillary layer, reticulate layer: secretory sections of sweat glands, vessels, nerves, lamellar body; subcutaneous fiber, lobules of fat cells, layers of loose connective tissue fabrics.
33. Leather Withhair Longitudinal slice: root hair: bulb, hair papilla, matrix. Actually hair. Internal epithelial vagina; external epithelial vagina, cuticle. Connective tissue bag follicle hair; muscle, elevating hair. Greasy gland.
34. Lactating dairy gland. Interlobular connecting tissue, interlobular excretory ducts, vessels. Lobules: secretory departments, interstitium.
35. Lip (cutaneous, transitional, mucous part of the lip, muscle, connecting tissue, vessels, glands).
36. Leaf-shaped papillae language (secondary connective tissue papillae, taste bulbs, salivary glands Abner, transverse striped tongue muscle).
37. Filiform papillae language (cone keratinization). Mushroom papillae. Muscle fibers.
38. Tooth development. Multilayer epithelium of the gums; dental plate. The tooth germ is an enamel organ. Early stage. Structures enamel organ: from the lateral surfaces - flat epithelial cells, pulpenamel organ – processional epithelial cells, mesenchymal papilla, prismatic epithelial cells - adamantoblasts on basal membrane mesenchymal papilla. Outdoor convex surface histological preparation: developing leather; multilayer epithelium - epidermis, hair follicles, connective tissue. IN average parts cut: bone beams - development bones from mesenchyme, mesenchyme.
39. Development tooth rudiment tooth Late stage (pulp tooth, odontoblasts, dentin, enamel, emeloblasts - adamantoblasts).
40. Palatine tonsil: crypt, stratified epithelium, lymphoid follicles in the lamina propria, connective tissue capsule, submucosa shell, mixed salivary glands.
41. Protein parotid salivary gland. Slice: protein secretory departments, salivary tubes. Interlobular connective tissue
42. layers, interlobular output ducts, vessels.
43. Transverse incision esophagus. Shells. Mucous shell: multilayer epithelium, connective tissue plate. Submucosa the basis, own glands esophagus. Muscular sheath: striated muscle fibers (layer circular; longitudinal layer). Adventitia.
44. Fundus of the stomach (mucous membrane: gastric pits, fundus glands, lining cells, muscular plate mucous membrane; submucosa shell, muscular shell – three layer; serous shell).
45. Pyloric Department stomach (mucous shell: gastric pits, pyloric glands, muscular plate mucous membrane; submucosa; muscular layer: pronounced circular layer, longitudinal layer; serous membrane).
46. Duodenum (mucosa: villi, crypts, muscular plate of the mucosa; submucosa: Brunner's glands; muscular shell – two layer, serous shell).
47. Skinny intestine (mucous shell; high villi, and their cross sections, crypts, goblet cells, muscle plate mucous membrane; submucosa shell; muscular shell; serous shell).
48. Large intestine (mucosa; crypts, goblet cells, solitary follicle, muscular plate mucous membrane; submucosa shell, muscular shell; serous shell).
49. Porcine liver (hepatic lobule: central vein; hepatocytes beams; interlobular connecting textile; triad; artery, vein, gall duct, collective vein).
50. Human liver (complex lobules: central veins, insertion veins, hepatic beams, sinusoidal capillaries, triad, collective vein).
51. Pancreas gland Exocrine Part: slices: secretory departments; interlobular connective tissue, interlobular outlet duct, vessels. Endocrine Part V lobules: islands Langerhans.
52. Cross section of a decalcified tooth (for symbols, see notebooks).
53. Trachea (mucous shell: single-layer multi-row ciliated epithelium, connective tissue of the lamina propria mucous membrane; submucosa shell, mixed glands; hyaline cartilage fibrocartilaginous shells: isogenic groups, intercellular substance, perichondrium; adventitia).
54. Lung (bronchus average caliber: mucous membrane shell, muscular plate mucous membrane shells; submucosa shell, mixed glands; islets cartilage fibrocartilaginous shells; adventitia, pulmonary arteries and veins; bronchial vessels among the alveoli; bronchus small caliber: muscular plate; alveoli, interstitial textile).

55. Epiglottis (elastic cartilage, anterior oral surface, back - aboral surface, mucous glands, mixed).
  56. Bud rats. Capsule. Cork substance: renal corpuscle: vascular glomerulus, kernels mesangial cells, podocytes intravenous leaf capsules, cavity capsules, outer leaf capsules; proximal convoluted nephron, distal convoluted nephron section). The medulla: straight tubules. Border between cortical and cerebral substance: arc vessels, renal corpuscles juxtamedullary nephrons.
  57. Ureter (mucous shell: transitional epithelium, connective tissue plate; submucosa shell; muscular shell-two myocyte layer; adventitial shell).
  58. Bladder (the mucous membrane is folded: transitional epithelium, connective tissue plate; submucosa shell; bundles of myocytes of the three-layer muscular membrane, layers connecting fabrics; serous membrane, mesothelial nuclei
  59. Testis (protein shell, transverse slices crimped tubule, kernels cells Sertoli, define sexual cells on different stages differentiation, connective tissue interstitium, Leydig cells, circulatory capillaries
  60. Epididymis (sections of the epididymal canal: double-row epithelium, cluster sperm; deferens tubules: scalloped epithelium
  60. Prostate gland. Capsule, interlobular interlayers connective tissue, myocyte bundles, interlobular ducts. Urethra: transition epithelium. Slice: end secretory departments, stellateshapes, interstitium, myocyte bundles
  61. Ovary (rudimentary epithelium - mesothelium protein shells; cortical substance: primordial, growing, dense, mature follicles: V mature follicle define shell follicle: grainy shell, connective tissue theca, cavity follicle, oviparous tubercle, oocyte 1st order, radiant crown oocyte. Atretic body. Remains of the corpus luteum at the stage of reverse development. Brain substance: connecting textile, vessels.
  62. Oviduct: mucous membrane shell: villi mucous membrane shell (epithelium, connecting textile); muscular shell (two layer); serous shell.
- Corpus luteum (capsule, luteal cells, connective tissue interlayers).
63. Uterus mammal: endometrium (epithelium, connecting textile, uterine glands); myometrium (three layer, define vascular layer myometrium); perimetry (connective textile, mesothelium).