Orenburg state medical university

**ASSESSMENT FUND**

**FOR ONGOING MONITORING OF STUDENTS` PERFORMANCE AND MIDTERM ATESTATION**

**IN PRACTICE**

**ANATOMY**

for

*31.05.01 General Medicine, Faculty of Foreign Students*

It is part of the main professional educational program of higher education *31.05.01. General Medicine, Faculty of Foreign Students* approved by the Academic Council of the Orenburg state medical university record No. 9 dated April 30th, 2021 and approved by the rector of the OrSMU of the Ministry of Health of Russia on 30.04.2021 .

Orenburg

1. **Assessment fund passport**

Assessment fund for practice contains standard control and assessment materials for monitoring learning performance formed in the process of passing the practice at intermediate attestation in the form of final test.

Control and assessment materials for intermediate attestation correspond to the form of intermediate certification for this type of practice, defined in the major professional academic program curriculum and are aimed at checking skills and experience in practical activities for each competence established in the practice program.

The list of formed elements of competencies:

CPC-1 - ability to implement moral and legal norms, ethical and deontological principles in professional activity.

CPC-5 - ability to evaluate morphofunctional, physiological states and pathological processes in the human body to solve professional tasks.

EC-1 - ability to carry out a critical analysis of clinical situations based on a systematic approach to develop a strategy of actions.

EC-4 - ability to apply modern communication technologies, including in a foreign language(s) for academic and professional interaction.

**Assessment materials for students` midterm attestation.**

**Module 1: Bones and their connections**

**Topic 1.**

**Introduction into human anatomy. Conversation on the topic: Axes and planes (CIW -1h).**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Axes used for studying of the Human anatomy.

2. Planes used for studying of the Human anatomy.

2. Basic latin terminology.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The human skeleton

3. Test of practical skills.

**The student should know:**

* + axes and the planes used for studying of Human Anatomy;
  + the basic Latin terminology;

Students independently in class with the textbook, atlas under the supervision of a teacher write down the following Latin and Greek terms in a notebook:

1. Anterior – anterior, s. abdominal, ventral – ventralis

2. Posterior – posterior, s. dorsal, dorsal – dorsalis

3. Upper – superior, s. cranial, cranial – cranialis

4. Lower – inferior, s. caudal, caudal, – candalis

5. Right – dexter

6. Left – sinister

7. Median – medianus

8. Medial - medialis

9. Lateral – lateralis

10. Intermediate – intermediate

11. External - externus

12. Internal – internus

13. Proximal – proximalis

14. Distal - distalis

15. Surface – superficialis

16. Deep – profundus

**Topic 2.**

**General characteristics of vertebrae. Structure of cervical , thoracic, lumbar vertebae, sacrum, coccyx, ribs and sternum**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. General plan of the bone structure
2. Classification of the bones.
3. General vertebral features.
4. Structure and functions of the vertebral column.
5. Departments of the vertebral column and number of vertebrae in each of them.
6. General elements of the vertebral structure.
7. Specific elements of the thoracic vertebrae.
8. Features of the I, X, XI and XII thoracic vertebrae.
9. Morphological features of the lumbar vertebrae.
10. Specific elements of the typical cervical vertebra.
11. Specific elements of the I, II, VI and VII cervical vertebrae.
12. Sacrum and coccyx, their structure.
13. Parts and elements of the ribs.
14. Specific features of the I, XI and XII ribs.
15. Types of the ribs and their characteristic.
16. Parts of the sternum, elements of their parts, its position in a thorax.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The human skeleton
2. The separate bones of the cervical, thoracic, lumbar vertebrae, sacrum, coccyx, sternum, ribs,
3. Set of the tables «Vertebral column»

3. Test of practical skills.

**The student should know:**

* + anatomical parts of skeleton
  + a structure of a typical vertebra;
  + features of structure of cervical vertebrae;
  + features of structure of thoracic vertebrae;
  + features of structure of lumbar vertebrae;
  + anatomical structure of sacrum and coccyx;
  + sources, stages, age features and anomalies of development of vertebrae;
  + Latin terminology of the theme (the name of vertebrae and their anatomical structures).
  + bones of thorax;
  + classification of ribs;
  + characteristic of ribs: anatomical formations and their functions;
  + features of 1-st, 11-th, 12-th ribs structure;
  + anatomical structure of sternum;
  + thoracic cage as a whole: entrance and an outlet opening, a substernal angle, shapes of a thoracic cage;

**The student should be able to name and show*:***

1. On the skeleton

* + the direction through a human’s body of a sagittal, vertical and frontal axis
  + arrangement in relation to human’s body a of the sagittal, horizontal and frontal planes
  + departments and curvatures of a spine column, vertebral canal

2. On the typical vertebrae (thoracic vertebrae)

* + body, arch and its pedicles, superior and inferior vertebral notches
  + processes: spinous, transverse and articular
  + vertebral foramen
  + costal facets on a body of a vertebra and transverse processes

3. On the typical cervical vertebrae

* + the processus prominens
  + foramens of transverse processes
  + anterior and posterior tubercles of transverse processes
  + articular processes (in position between the frontal and horizontal planes)

4. On the I cervical vertebrae (Atlas)

* + lack of a body
  + lateral masses both their superior and inferior articular surfaces
  + anterior and posterior arches, anterior and posterior tubercles on them, a facet for dens on a posterior surface of a anterior arch, a groove for vertebral artery on the superior surface of a posterior arch

5. On the II cervical vertebra (Axis)

* dens (its anterior and posterior articular facets)
* articular facets of articular processes (superior, inferior)

6. On the VII cervical vertebra (Vertebra prominens)

* + not doubled and very long spinous process

7. On the sacrum

* + parts (basis, apex, lateral parts)
  + sacral canal (sacral hiatus, sacral horns)
  + pelvic surface (transverse ridges, anterior sacral foraminae)
  + dorsal surface (median, intermediate and lateral sacral crests, posterior sacral foraminae, sacral tuberosity)
  + auricular (articular) surfaces (on lateral parts)

8. On the coccyx

* coccygeal horns of the I coccygeal vertebrae

9. On a true rib

* + parts (head, crest of head rib, neck, body, angle, tubercle, crest of neck rib)
  + external and internal surfaces
  + superior and inferior margines (costal groove)
  + articular facets on a head and neck of rib

10. On the I-st rib

* + superior surface (scalene tubercle , grooves for subclavian artery and vein) and inferior surface
  + angle and tubercle of rib
  + lack of a crest on an articular facet of a head of an neck rib

11. On the XI, XII ribs

* + lack of a crest on articular facet of head rib
  + lack of tubercle
  + lack of angle

12. On the sternum

* + parts (manubrium, body, xiphoid process)
  + surfaces (anterior, posterior)
  + sternal angle
  + jugular notch on the manubrium of sternum
  + clavicular notches on the manubrium of sternum
  + costal notches

Students independently in class with the textbook, atlas under the supervision of a teacher write down the following Latin and Greek terms in a notebook:

1. Latin transcription of the spinal column: CI - CVII, ThI-ThXII, LI - LV, ScI – ScV, CoI-IV-V.
2. Vertebra – vertebra (Latin), spondylos (Greek).
3. Thoracic vertebrae – vertebrae thoracicae
4. Lumbar vertebrae – vertebrae lumbales
5. Body – corpus (Latin), soma (Greek).
6. Cervical vertebrae – vertebrae cervicales
7. Sacrum – os sacrum
8. Coccyx – os coccygis
9. 1st cervical vertebra – atlas
10. 2nd cervical vertebra – axis (Latin), epistropheus (Greek)
11. 7th cervical vertebra – vertebra prominens
12. Sternum – sternum
13. True ribs – costae verae (I-VII), false – costae spuriae (VIII-X), oscillating – costae fluctuantes (XI-XII).

**Topic 3:**

**Bony joints.Classification of the joints.basic and axiliary elements of the synovial joint.joints of the trunk bones.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Classification of the bony joints (synarthrosis, diarthrosis and hemiarthrosis).

2. Synarthrosis. General concept and classification (syndesmosis, synhondrosis, synostosis). Characteristic of each type.

3. Synovial joint. General concept. Joint structure. Characteristic of the basic elements of the joint. Auxiliary elements of the joint.

4. Classification of the joints by amount of the axises of movement (biomechanical classification).

5. Classification of the joints on the axes of rotation and the shape of the articular surfaces.

6. Classification of the joints by amount of the articular surfaces: simple, complex, combined and compound joints.

7. Types of the connections between the bodies of the vertebrae. Connections of the arches and processes of vertebrae.

8. Connection between the sacrum and the coccyx.

9. Connections between the skull and the 1st cervical vertebra (atlanto-occipital joints).

10. Connections between the 1st and the 2nd cervical vertebrae (median atlanto-axial joint, lateral atlanto-axial joint).

11. Vertebral column as a whole. Physiological and pathological curvatures of vertebral column: kyphoses, lordoses, scolioses.

12. Connections of the ribs with the sternum.

13. Connections of the ribs with the vertebrae.

14. Thorax as a whole. Structure of thoracic cage: the superior and inferior apertures, infrasternal angle, the form of thoracic cage in dependence on the structure.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The human skeleton
2. The separate bones
3. The models of a «Spine column», «Atlanto – occipital and atlanto-axis joints», «Connections ribs with vertebrae», «Connections of ribs with a sternum».

**The student should know:**

* anatomical formations of bones of the trunk and extremities;
* the general arthrosyndesmology:
* development of bones connections;
* classification of bones connection;
* types of bones connections;
* basic elements of joints;
* auxiliary elements of joints;
* biomechanics of joints;
* classification of joints and their characteristic;
* classification of joints on axes of movement and the form of articulation surfaces; on amount of articulation surfaces.
  + syndesmoses and synchondroses of vertebral column: their characteristic and structure;
  + joints of vertebral column: median atlanto-axial joint, lateral atlanto-axial joint, intervertebral joints, lumbosacral joint, sacrococcygeal joint - their structure;
  + the characteristic and structure of connections of thoracic cage: syndesmoses, synchondroses and diarthoses;
  + general characteristic of vertebral column, its flexures, thoracic cage as a whole (forms), age and gender features of thoracic cage structure;
  + to describe roentgenograms of vertebral column and thoracic cage;

3. Test of practical skills.

**The student should be able to name and show*:***

1. On a skeleton
   * places of connections of vertebrae among them, with an occipital bone, with a sacrum and a sacrum with a coccyx
   * physiological curvatures of a vertebral column (lordoses and kyphoses)
   * places of connections of ribs with vertebrae, with a sternum and together (VIII, IX and the X edges)
   * true, false and floating ribs
   * elements of a thorax structure as a whole (the thoracic inlet and thoracic outlet, a thoracic cavity, its anterior, posterior and lateral walls, intercostal space, a costal arch and ribs forming it, a subcostal angle and pulmonary grooves)

2 . On separate bones of a body and an occipital bone

* + connections of the Atlas with an occipital bone, combining them
  + connections of the Atlas with the Axis, combining them
  + connections of other vertebras among themselves, the V lumbar vertebra with a sacrum and a sacrum with a coccyx

3. On the model of a spine column

* + intervertebral disc (annulus fibrosus, nucleus pulposus)
  + anterior longitudinal ligament
  + posterior longitudinal ligament
  + ligament flava
  + interspinous ligaments
  + supraspinous ligament
  + nuchal ligament (in cervical department)
  + intertransverse ligaments
  + intervertebral joints

4. On the model «Atlanto – occipital and atlanto-axis joints»

* + occipital bone, its condyles
  + I and the II-nd cervical vertebrae (articular surfaces), dens of the II-nd
* cervical vertebra
  + atlanto-occipital, median and lateral atlanto-axial joints
  + tectorial membrane
  + anterior and posterior atlanto-occipital membranes
  + transverse ligament of the atlas
  + alar and cruciate ligaments of atlas

5. On the model of connections ribs with vertebrae

* + joints of heads of ribs and costal facet of vertebral body, radiate ligament of heads of ribs and intra-articular ligament of heads of ribs (with II on the X joints)
  + joints costal tubercle with costal facets of transverse processes

6. On the model of connections of ribs with a sternum

* + synchondrosis between the first rib and a sternum
  + sternocostal joints
  + interchondral joints
  + radiatesternocostal ligaments and sternal membrane

**Topic 4**

**Bones and joints of the shoulder girdle and free upper limb.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions:**

1. Classification of the shoulder girdle bones.

2. Structure of the clavicle: its parts, anatomical structures and their functions.

3. Structure of the scapula: surfaces, edges, angles, structures and their functions.

4. Main parts of the long tubular bone (diaphysis, metaphysis, epiphysis, apophysis).

5. Parts of the skeleton of the upper limb (arm, forearm, hand) and their arrangement on the relation to each other and to the skeleton.

6. Structure of the humerus: its parts, formations of diaphysis, proximal and distal epiphysises, their functions.

7. Structure of the radius: its parts, anatomic structures, their function.

8. Structure of the ulna: its parts, anatomic structures, their function.

9. Structure of the hand: its parts, the forming bones, their functions.

10. Structure of the carpal bones of the proximal and distal rows.

11. Structure of the metacarpal bones.

12. Structure of the phalanges and their quantity on the thumb and other fingers.

13. Joints of the pectoral girdle: sternoclavicular and acromioclavicular joints, their structure. Own ligaments of the scapula.

14. Structure of the shoulder joint.

15. Structure of the elbow joint.

16. Connections of the bones of the forearm: proximal and distal radio-ulnar joints (the combined joint). Features of the movements of the forearm bones (supination and pronation). Connections of the diaphyses of the forearm bones.

17. Structure of the wrist joint.

18 Structure of the joints of the hand.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The human skeleton

2. clavicle, scapula

3. separate bones of upper limb

4. joints of upper limb

**The student should know:**

* + anatomical parts of upper limb, bones of shoulder girdle;
  + a structure of a clavicle: its parts, anatomic formations and their functions;
  + a structure of a scapula: surfaces, edges, angles, formations and their functions;
  + sources of development (ossification points), age features, anomalies of development of bones of thorax and shoulder girdle.
  + parts of upper limb;
  + parts free of upper limb;
  + a structure of a humerus: its parts, formations of diaphysis, proximal and distal epiphysises their functions;
  + a structure of an ulna: its parts, anatomic formations, their function;
  + a structure of a radius: its parts, anatomic formations, their function;
  + a structure of the hand: its parts, the forming bones, a structure, their functions;
  + anomalies and variants of development of bones of upper limbs;
  + ossification points of bones of upper limb;
  + interpreting functional methods of bones of the upper limb examination.
  + structure of acromioclavicular, sternoclavicular, glenohumeral, ulnar, radiocarpal joints and joints of the wrist according to the plan of description of joints. Obligate and non obligate elements of joints;
  + what joints of shoulder girdle and free upper limb work in a combination with each other and what movements are performed as a result of it?
  + forms of joints and features of their functioning (elements of biomechanics);
  + the X-ray image of these joints in norm. Difference of X-ray articular fissure from anatomical.

3. Test of practical skills.

**The student should be able to name and show*:***

1. On the skeleton

* + tubular bones (long, short)
  + spongy (long short, sesamoid bones)
  + flat (bones of a roof of a skull, bones of girdle)
  + the mixed bones

2. On the clavicle

* + sternal end (sternal facet and impression for costoclavicular ligament)
  + acromial end (acromial facet, conoid tubercle and trapezoid line)
  + body (the superior and inferior surfaces)

3. On the scapula

* + borders (superior, medial, lateral), surfaces (costal and dorsal), angles (superior, inferior, lateral)
  + glenoid cavity, supraglenoid and infraglenoid tubercles, neck of scapule
  + processes: аcromion (its articular facet) and coracoid process, spine of scapula
  + fossae (supraspinous, infraspinous and subscapular)

4. On the humerus

* + head (proximal epiphisis)
  + surgical and anatomic (metaphysical) necks
  + greater and lesser tubercles– apophisis
  + crests of tubercles
  + body of a humerus, diaphysis (anteromedial, anterolateral and posterior surfaces)
  + deltoid tuberosity of a humerus
  + condyle of a humerus (distal epiphisis): trochlea, coronoid fossa, olecranon fossa, capitulum, radial fossa
  + medial and lateral epicondyles – apophisis

5. On the radius

* + head (proximal epiphisis), an articular facet and an articular circumference
  + neck
  + radial tuberosity – apophysis
  + body – the diaphysis (anterior, posterior and lateral surfaces)
  + borders (anterior, posterior and interosseous)
  + distal end (distal epiphysis ), ulnar notch, radial styloid process and carpal articular surface

6. On the ulna

* + olecranon and coronoid process, radial and trochlear notches, tuberosity of ulna(proximal epiphisis)
  + body (diaphysis), its surfaces (anterior, posterior and medial), borders (anterior, posterior and interosseous)
  + head (distal epiphisis ), an articular circumference and ulnar styloid process

7. On the hand skeleton on the tablet

* Proximal number of bones of a wrist
  + the scaphoid
  + the lunate
  + the triquetrum
  + the pisiform
* Distal number of bones of a wrist
  + trapezium
  + the trapezoid
  + capitate
  + hamate
* On the metacarpals
  + the bases (at the I metacarpals proximal epiphysis)
  + bodies (diaphysis)
  + heads (at the II-V metacarpals distal epiphyses)
* On the phalanges
  + phalanges of the II-V fingers (proximal, middle and distal)
  + bases of phalanges (epiphises)
  + bodies of phalanges (diaphyses)
  + heads of phalanges

8 . On the skeleton

* + sternoclavicular joint and its articular facets
  + acromioclavicular joint and its articular facets
  + locations of own ligaments of a scapula: coraco-acromial ligament, superior and inferior transverse scapular ligaments

9 . On the preparation of the sternoclavicular joint (whole and opened)

* + articular facets on a sternum and a clavicle
  + articular disc
  + anterior and posterior sternoclavicular ligaments
  + costoclavicular ligament
  + interclavicular ligament

10 . On the preparation of the acromioclavicular joint with ligaments of a scapula

* + articular facets аcromion and clavicles
  + acromioclavicular ligament
  + coracoclavicular ligament and its parts: trapezoid and conoid ligaments
  + coraco-acromial ligament
  + superior and inferior transverse scapular ligaments

11 . On the preparation of the shoulder joint (whole and opened)

* + articular facets of a scapula and humerus
  + glenoid labrum
  + line of an attachment of an joint capsule
  + coracohumeral ligament and place of its attachment on a humerus
  + tendon of the longhead of the biceps brachii muscle into a joint cavity

12. On the preparation of the elbow joint

* + humero-ulnar joint
  + humeroradial joint
  + proximal radio-ulnar joint
  + line of an attachment of a capsule of an elbow joint
  + ulnar collateral ligament
  + radial collateral ligament
  + anular ligament of a radius
  + proximal department of an interosseous membrane of a forearm

13 .On the preparation of the wrist joint

* + carpal articular surface of a radius
  + the bones forming a head of a joint (scaphoid, lunate, triquetrum)
  + articular disc between an ulna and lunate and triquetrum of a wrist
  + radial and ulnar collateral ligaments of a wrist
  + palmar and dorsal radiocarpal ligaments
  + distal department of an interosseous membrane of a forearm

**Topic 5**

**Bones of the pelvic girdle and free lower limb.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions:**

1. Bones of the pelvic girdle. Structure of the hip bone.

2. Structure of the ilium, its parts, functions of its anatomic structures.

3. Structure of the ischium, its parts, functions of its anatomic structures.

4. Structure of the pubis, its parts, functions of its anatomic structures.

5. Parts of the free lower limb.

6. Structure of the femur, its parts, functions of its anatomic structures.

7. Structure of the fibula, its parts, functions of its anatomic structures.

8. Structure of the tibia, its parts, functions of its anatomic structures.

9. Foot, its parts, bones.

10. Proximal and distal rows of the tarsus. Structure of the calcaneus and talus.

11. Structure of the metatarsals and phalanges.

12. Sesamoid bones. Structure of the patella.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The skeleton.

2. Pelvic bones (right and left).

3. The skeleton of the free lower limb (femoral, tibial, fibular bones).

4. The bones of the foot on the tablet.

5. Individual bones of the foot (tarsus, metatarsal and toe bones).

6. Sagittal cutting of the bone pelvis.

7. The skeleton of the foot on the tablet.

**The student should know:**

* + the parts of a pelvic bone;
  + the structure of an ilium and functions of its anatomic formations;
  + the structure of ischium and functions of its anatomic formations;
  + the structure of pubic bone and functions of its anatomic formations;
  + the structure of a femur and functions of its anatomic formations;
  + the structure of patella;
  + the structure of a tibia bone and functions of its formations;
  + the structure of a fibula and functions of its formation;
  + the structure of the foot: parts, bones;

3. Test of practical skills.

**The student should be able to name and show*:***

1. On the pelvic bone

* components of a pelvic bone (ilium, pubis and ischium)
* acetabulum
* acetabular notch
* acetabular fossa
* obturator foramen

2. On the ilium

* + body
  + crest (outer, inner lips and intermediate zone)
  + wing of ilium
  + spines (anterior superior and anterior inferior, posterior superior and posterior inferior)

3. On the external surface of a wing of a ilium

* + anterior, posterior, inferior gluteal lines.

4. On the internal surface of a wing of a ilium

* + iliac fossa
  + arcuate line
  + auricular surface
  + iliac tuberosity

5 . On the pubis

* + body
  + ramuses (superior and inferior)
  + iliopubic eminence
  + symphysial surface
  + pubic tubercle
  + pecten pubis
  + obturator groove

6 . On the ischium

* + body
  + ramus
  + ischial tuberosity
  + ischial spine
  + greater and lesser sciatic notch

7 . On the femur

* On the proximal end of a femur
  + head (proximal epiphysis)
  + fovea for ligament of head
  + neck
  + greater and lesser trochanter - apophysis
  + intertrochanteric line
  + intertrochanteric crest
  + trochanteric fossa
* On the femur diaphysis
  + linea aspera (medial and lateral lips)
  + gluteal tuberosity
  + pectineal line
  + popliteal surface
* On the distal epiphysis of femur
  + condyles (medial and lateral)
  + intercondylar fossa
  + patellar surface
  + epicondyles (medial and lateral).
* On the patella
  + basis
  + apex
  + articular surface

8 . On the tibia

* On proximal epiphysis of tibia
  + condyles (medial, lateral)
  + intercondylar eminence ( lateral and medial intercondylar tubercles)
  + anterior and posterior intercondylar area
  + superior articular surface
  + fibular articular surface
* On the diaphysis of a tibia
  + surfaces (medial, lateral and posterior)
  + borders (anterior, medial and lateral or interosseous)
  + soleal line
  + tibial tuberosity – apophysis
* On the distal epiphysis of tibia
* medial malleolus
* fibular notch
* articular facet
* inferior articular surface

9. On the fibula

* On the proximal epiphysis of a fibula
  + head
  + apex of head
  + articular facet of head
* On the diaphysis of a fibula
  + surfaces (medial, lateral and posterior)
  + borders (anterior, posterior and medial or interosseous)
* On the distal epiphysis of a fibula
  + lateral malleolus
  + articular facet of a malleolus

10. On the foot skeleton on the tablet

* + departments of foot
  + bones of a proximal number of a tarsus (talus and calcaneus)
  + bones of a distal number of a tarsus (cuboid, navicular and cuneiforms)
  + metatarsals
* phalanges of foot
* On the talus
  + body and lateral tubercle
  + trochlea and its articulate surfaces (superior facet, medial and lateral malleolar facets)
  + sulcus tali and facets of calcaneus
  + head and navicular articular surface (boatshaped), neck.
* On the calcaneus bone
  + body
  + calcaneal tuberosity
  + calcaneal sulcus
  + suspentaculum tali
  + articular surface for cuboid and anterior, middle and posterior talar articulate surfaces.
* On the metatarsals
  + the bases (at the I metacarpals proximal epiphysis);
  + bodies (diaphysis);
  + heads (at the II-V metacarpals distal epiphyses).

11. On the phalanges of foot

* + phalanges of the II-V fingers (proximal, middle and distal)
  + bases of phalanges (epiphyses)
  + bodies of phalanges (diaphyses)
  + heads of phalanges
  + tuberosity of phalanxes

**Topic 6**

**Joints of the pelvic girdle. The pelvis as a whole, sizes of the fe-male pelvis. Joints of the lower limb bones**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions:**

1.Using the example of pelvic bone joints to find and characterize all types of bone joints: syndesmosis, synostosis, hemiarthrosis, diarthrosis.

2. Sacroiliac joint. The shape of the joint, the volume and types of movement along the axes. Ligamentous apparatus.

3. Connection of pubic bones, type of connection, its peculiarity, ligamentous apparatus.

4. Name and show your own pelvic ligaments, holes, a locking membrane and a channel of the same name.

5. The bones forming the pelvis, the division of the pelvis into large and small, the boundary line of the plane of the pelvis, the upper and lower apertures of the pelvis.

6. The size of the large pelvis.

7. Dimensions of the pelvis in planes: straight, transverse and oblique.

8. Pelvic conjugates: anatomical, true, diagonal and external. Their clinical significance.

9. Sexual differences of the pelvis.

10. Hip joint: articular surfaces, joint shape, number of axes and types of movements, intra- and extra-articular auxiliary elements (ligaments, cartilaginous lip).

11. Knee joint: articular surfaces, joint shape, number of axes and types of movements. Intra- and extra-articular auxiliary elements (ligaments, synovial folds, menisci). The main synovial bags of the joint.

12. The tibial joint: articular surfaces, the shape of the joint, the number of axes and the volume of movements. Auxiliary elements (bundles).

13. The interosseous membrane of the lower leg.

14. Interbertial syndesmosis (formation and ligaments).

15. Ankle joint: articular surfaces, joint shape, number of axes and types of movements. Ligaments of the joint.

16. The joints of the tarsus are: tarsal, tarsal-calcaneal-lyadevidny, calcaneal-cuboid and wedge-navicular. Articular surfaces and joint shapes, the number of axes, types and volume of movements in each of them. Ligamentous apparatus of joints.

17. Tarsal-metatarsal and interplatarsal joints: articular surfaces, the shape of joints, the number of axes and the volume of movements. Ligamentous apparatus.

18. Metatarsal-phalangeal and interphalangeal joints: articular surfaces, joint shapes, number of axes, types of movements and ligamentous apparatus.

19. Surgical joints of the foot (used for economical exarticulation of the foot sections if necessary):

20. a) the Chopard joint: articulating surfaces, the "key" of the joint - the bifurcated ligament and its parts;

21. b) Lisfranc joint: articulating surfaces, the "key" of the joint is the medial interosseous cuneiform ligament (its fixation points).

22. The foot as a whole: solid foot base, support points, longitudinal and transverse arches of the foot, passive (ligaments) and active (muscles) "tightening" of the arches of the foot.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The skeleton.

2. Pelvic bones (right and left).

3. The skeleton of the free lower limb (femoral, tibial, fibular bones).

4. The bones of the foot on the tablet.

5. Separate bones of the foot (tarsus, metatarsal and toe bones).

6. The pelvis as a whole (bone).

7. Sagittal cutting of the bone pelvis.

8. The skeleton of the foot on the tablet.

9. The human skeleton.

10. Sagittal cutting of the pelvis with prepared ligaments and joints.

**The student should know:**

* + the structure of sacroiliac joint;
  + the structure of pubic symphysis;
  + proper ligaments of pelvis;
  + 2 parts of pelvis: the greater pelvis and lesser pelvis, boundary between them;
  + distances of greater and lesser pelvis;
  + longitudinal axis of the pelvis, inclination angle of the pelvis;
  + gender features of pelvis;
  + structure of hip joint;
  + the radiological image of pelvis and hip joint;
  + structure of bones of the leg and foot;
  + the characteristics of knee joint: name, articulation surfaces, the classification characteristic, ligaments, features of structure;
  + the characteristics of ankle joint: name, articulation surfaces, the classification characteristic, ligaments, feature of structure;
  + the characteristics of bones connections of the foot: name of joints, articulating surfaces, the classification characteristic, ligaments, feature of structure;
  + longitudinal and transversal vaults of foot, their functional value;

3. Test of practical skills.

**The student should be able to name and show*:***

1. On the skeleton

* a pelvis and the bones forming it
* linea terminalis, greater and lesser pelvis
* pelvic inlet, pelvic outlet and cavity of lesser pelvis
* sizes of a greater and lesser pelvis

2. On the sagittal section of the pelvis

* + sacro-iliac joint
  + interosseous sacro-iliac ligament
  + anterior and posterior sacro-iliac ligaments
  + iliolumbar ligament
  + pubic symphysis
  + interpubic disc
  + superior pubic ligament and curved ligament
  + saсrospinous ligament
  + sacrotuberous ligament
  + greater sciatic foramen
  + lesser sciatic foramen
  + obturator membrane
  + obturator canal

3. On the preparation of the pelvis as a whole

* + greater pelvis
  + lesser pelvis
  + linea terminale
  + pelvic inlet
  + cavity of a lesser pelvis
  + pelvic outlet
* sizes of greater pelvis
  + between anterior superior iliac spines
  + between iliac crests
  + between greater trochanters
  + the sizes of a lesser pelvis on the planes: straight, transverse, oblique diameters
  + conjugates of a lesser pelvis (anatomic, true, gynecologic and diagonal)

4 . On the saggital section of the bone pelvis

* + direct sizes of a pelvis
  + conjugates of a pelvis

5 On the preparations of the hip joint (opened and whole)

* + head
  + acetabulum
  + acetabular labrium
  + transverse acetabular ligament
  + ligament of a head of a femur
  + line of an attachment of an joint capsule
  + iliofemoral ligament
  + pubofemoral ligament
  + ischiofemoral ligament
  + circular zone

6. On the preparations of the knee joint (opened and whole)

* + femur condyles (medial and lateral)
  + articular facets of a tibia
  + patella (articular facet)
  + meniscuses (lateral and medial)
  + transverse ligament of a knee
  + anterior and posterior cruciate ligaments
  + line of an attachment of an joint capsule
  + tibial and fibular collateral ligaments
  + arcuate and oblique popliteal ligaments
  + patellar ligament
  + locations prepattellar and infrapatellar bursae

7. On the preparation of connection of bones of the leg

* + Superior tibiofibular joint
  + ligaments of fibular head
  + interosseous membrane of a leg
  + intertibial syndesmosis
  + anterior and posterior intertibial ligaments

8. On the preparation of the ankle joint

* + inferior articular surface of a tibia
  + articular surfaces of medial and lateral malleoluses
  + articulate surfaces of the block of a collision bone
  + line of an attachment of an articulate bag
  + medial ligament (deltoid)
  + anterior and posterior talofibular ligaments, calcaneofibular ligaments

9. On preparations of joints of foot

* + a transverse joint of a tarsus (Shopar), the bifurcate ligament and its parts – calcaneonavicular and calcaneocuboid ligaments
  + tarsometatarsal joints (Lisfrank's joint)
  + dorsal and plantar tarsometatarsal ligaments ,metetersal interosseous ligaments
  + "key" of a joint of Lisfrank – a medial cuneometatarsal interosseous ligament

10 . On the foot skeleton

* + Shopar and Lisfrank's joints
  + reference points of foot

**Topic 7**

**Introduction into the craniology. Bones of the neurocranium.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Parts of the skull –neurocranium and viscerocranium.

2. Bones of the neurocranium.

3. Occipital bone, its parts and their characteristic.

4. Parietal bone, characteristic of its parts. Special features of the flat bones of the skull.

5. Frontal bone, its parts and their characteristic. Frontal sinuse, its connections and

practical value.

6. Sphenoidal bone, its parts and their characteristic. Value of foramens, sulcuses and

canals on the bone. Structure and connections of the sphenoidal sinus.

7. Ethmoidal bone, its parts and their characteristic. The taking part of the bone in

the formation of the nasal cavity, orbit, neurocranium. Structure and connections

of the ethmoidal labyrinth.

8. Temporal bone its parts and their characteristic. Pneumatic cavities of the temporal

bone and labyrinth, their connections and function.

9. Canals of the temporal bone, their structure and contents.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The bones of the cerebral skull.

2. The skull as a whole.

3. Sagittal cutting of the skull.

**The student should know:**

* a material of lecture « Morphofunctional anatomy of a skull»;
* Latin terminology of the theme (the name of bones and their anatomic formations);
* the name of bones of a cerebral and visceral skull;
* the bones forming the vault and the basis of a skull;
* a classification belonging of occipital, frontal and parietal bones;
* the anatomic structure of occipital, frontal and parietal bones;
* parts of the ethmoid bone and its anatomic formations;
* correct anatomic position of ethmoid bone on a skull and its relationship with others adjoining bones;
* a belonging of the sphenoid bone according to classification;
* the correct anatomic position of the sphenoid bone on a skull and relationship with others adjoining bones;
* a belonging of the temporal bone according to classification;
* a correct anatomic position of a temporal bone on a skull and relationship with others adjoining bones;
* parts of a temporal bone and their anatomic formations;
* canals of a temporal bone and their contents;
* borders and anatomical formations of external surface of the base of skull;
* borders and anatomical formations of cranial fossas of internal surface of the bases of skull.

3. Test of practical skills.

**The student should be able to name and show*:***

1. On the occipital bone

* Basilar part
* pharyngeal tubercle
* groove for inferior petrosal sinus
* clivus
* Lateral part
* occipital condyle
* condylar canal
* articulate surface of a condyle
* hypoglossal canal
* jugular notch
* jugular process
* groove for sigmoid sinus
* Squamous part of occipital bone

*a) on the internal surface*

* groove for superior sagittal sinus
* groove for transverse sinus
* internal occipital crest
* cruciform eminence
* internal occipital protuberance

*b) on the external surface*

* external occipital crest
* inferior nuchal line
* superior nuchal line
* the highest nuchal line
* external occipital protuberance
* foramen magnum

2. On the parietal bone

* external surface
* internal surface
* occipital border
* sagittal border
* parietal foramen
* frontal border
* squamosal border
* mastoid angle
* occipital angle
* frontal angle
* sphenoidal angle

a) *on the external surface*

* + parietal tuber
  + superior temporal line
* inferior temporal line

*b) on the internal surface*

* groove for superior sagittal sinus
* groove for sigmoid sinus
* groove for middle meningeal artery
* Pacchionian bodies-arachnoid granulation

3. On the frontal bone

* squamous part
* external surface
* temporal surface
* internal surface

*a) on the external surface*

* frontal tuber
* supra-orbital margin
* supra-orbital foramen \ notch
* frontal cutting or opening
* superciliary arch
* glabella
* zygomatic process
* temporal line
* groove for superior sagittal sinus

*b) on the internal surface*

* frontal crest
* foramen caecum
* Orbital part of the frontal bone
* orbital surface
* brain surface
* ethmoidal notch

*a) on the orbital surface*

* lacrimal fossa
* trochlear fovea
* trochlear spine

*b) on the cerebral surface*

* cerebral eminences
* Nasal part of the frontal bone
* nasal spine
* opening of the frontal sinus
* frontal sinus
* septum of frontal sinuses

4. On the sphenoidal bone

* Body
* sphenoidal sinus
* opening of a sphenoidal sinus
* septum of sphenoidal sinuses
* sphenoidal crest
* sphenoidal rostrum
* prechiasmatic sulcus
* sellae turcica
* hypophysial fossa;
* dorsum sellae;
* tuberculum sellae;
* posterior clinoid process;
* carotid sulcus.
* Lesser wing
* anterior clinoid process;
* optic canal;
* superior orbital fissure.
* Greater wing
* orbital surface of the greater wing
* temporal surface of the greater wing
* infratemporal crest
* maxillary surface of the greater wing
* cerebral surface of the greater wing
* foramen rotundum
* foramen ovale
* awned opening
* Pterygoid process
* lateral plate of the pterygoid process
* medial plate of the pterygoid process
* pterygoid hamulus
* pterygoid notch
* pterygoid fossa
* pterygoid canal

5. On a temporal bone

* Petrous part (pyramid)
* anterior surface
* posterior surface
* inferior surface
* anterior border
* superior border
* posterior border
* apex of petrous part
* mastoid process
* mastoid foramen
* mastoid notch
* groove for occipital artery
* groove for sigmoid sinus

*a) on the anterior surface of the pyramid*

* tegmen tympani
* arcuate eminence
* hiatus and canal for greater petrosal nerve
* hiatus and canal for lesser petrosal nerve
* trigeminal impression

*b) at the superior border of the pyramid*

* groove for superior petrosal sinus

*c) on the posterior surface of the pyramid*

* internal acoustic opening
* internal acoustical meatus

*d) at posterior border of the pyramid*

* groove for inferior lesser sinus
* opening of cochlear canaliculus
* jugular notch

*e) on the inferior surface of the pyramid*

* jugular fossa
* external carotid foramen
* styloid process
* stylomastoid foramen
* petrosal fossula and tympanic canaculus

*f) on the anterior end of the pyramid*

* internal carotid foramen.

*g) on a anterior border of the pyramid*

* musculotubal canal
* Tympanic part
* external acoustic opening
* external acoustical meatus
* tympanomastoid fissure
* petrotympanic fissure
* petrosquamous fissure
* Squamous part
* temporal surface of squamous part
* cerebral surface of squamous part
* groove for middle temporal artery
* zygomatic process
* mandibular fossa
* articular tubercle
* Carotid canal
* Facial canal
* Musculotubal canal

6. On the ethmoidal bone

* cribiform plate and foramina
* crista galli
* perpendicular plate
* ethmoid labyrinth
* orbital plate
* superior nasal concha
* middle nasal concha

7. On the whole skull

* bones of a cranial skull
* the main sutures between them (lambdoid, sagittal, coronal and squamous)

8. On the sagittal saw of a skull

* frontal sinus
* sphenoidal sinus

3. Testing of practical skills.

Students independently study the structure of vertebrae in the classroom with the help of a textbook, atlas, natural preparations and a skeleton under the supervision of a teacher, write down Latin terms in a notebook.

Write down Latin and author's names:

1. Occipital bone- os occipitale

2. Parietal bone- os parietale

3. Frontal bone- os frontale

4. Sphenoid bone- os sphenoidale

5. Temporal bone- os temporale

6. Latticed bone- os ethmoidale

7. Facial canal - canalis facialis-Fallopian canal (auth.)

8. Carotid canal – canalis caroticus

9. Musculotubar canal- canalis musculotubarius

10. Semi-canal of the auditory tube- semicanalis tubae auditivae

11. Frontal sinus- sinus frontalis

12. Main sinus - sinus sphenoidalis

13. Lattice cells- cellulae ethmoidales

14. Stingray- clivus- Blumenbach (auth.)

15. Pterygoid canal canalis pterygoideus– Vidiev canal (auth.)

16. Rocky-scaly slit- fissura petrosquamosa - Glazer's slit (auth.)

17. Parietal opening- foramen parietale- graduate of Santorini (auth.)

**Topic 8**

**Viscerocranium. Temporomandibular joint. Conversation on the topic: Individual and specific features of the skull (CIW -1h).**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Bones of the viscerocranium.

2. Mandible, its structure, main formations

3. Maxilla, its structure, main formations.

4. Palatine bone, its structure, main formations.

5. Zygomatic bone, its structure, main formations.

6. Inferior nasal concha, its structure.

8. Lacrimal bone, its structure.

9. Nasal bone, its structure.

10.Vomer, its structure.

11. Hyoid bone, its structure.

12. Participation of the bones of the viscerocranium in formation of the orbit, oral and nasal cavities.

13. Temporomandibular joint, its structure.

14. Features of the skull of the infant.

15. Topography of the fontanels.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. Maxilla

2. Mandible

3. The zygomatic bone

4. Palatine bone

5. Small bones of the facial skull on the tablet:

a) nasal

b) lacrimal

c) vomer

d)inferior nasal concha

e) hyoid bone

6. The skull

**The student should know:**

* classification of small bones of the facial skull;
* correct anatomical position of small bones of the skull and their mutual relation with nearest bony formations;
* anatomical formations of small bones of the facial skull;
* structure of the walls of orbit: its foramens, fissures, canals and contents;
* structure of the walls of nasal cavity: foramens, canals and their contents;
* borders of nasal meatuses and sinuses which open into them;
* structure of hard palate: foramens, canals and their contents;
* communication between cranial cavities (orbit, nasal and oral cavity);
* classification of maxilla, mandible and palatine bone;
* correct anatomical position of these bones and their mutual relations with nearest bones;
* parts and anatomical formations of investigated bones;
* counterforces of the upper and lower jaws;
* walls of temporal, infratemporal and pterygopalatine fossas;
* communications of fossas with other cranial cavities;
* borders and anatomical formations of external surface of the base of skull ;
* borders and anatomical formations of cranial fossas of internal surface of the bases of skull;
* gender and age features of the skull;

3. Test of practical skills.

**The student should be able to name and show:**

1. On the inferior nasal concha

* + lacrimal process
  + maxillary process
  + ethmoidal process

2. On the lacrimal bone

* + lacrimal groove
  + posterior lacrimal crest
  + lacrimal hamulus

3. On the nasal bone

* + ethmoidal groove

4.On the vomer

* + alae of a vomer

5.On the maxilla

* + body
  + anterior surface
  + orbital surface
  + infratemporal surface
  + nasal surface
  + frontal process
  + zygomatic process
  + alveolar process
  + palatine process
* On the anterior surface
  + infra-orbital foramen
  + canine fossa
  + nasal notch
  + anterior nasal spine
* on the orbital surface
  + infra-orbital groove
  + infra-orbital canal
  + infra-orbital margin
* on the infratemporal surface
  + maxillary tuberosity
  + alveolar foramina
* on the nasal surface
  + lacrimal groove
  + conchal crest
  + maxillary hiatus
  + maxillary sinus
  + greater palatine groove
* on the frontal process
  + anterior lacrimal crest
  + ethmoidal crest
* on the palatine process
  + nasal crest
  + incisive canal
* on the alveolar process
* alveolar arch
* dental alveoli
* interalveolar septa
* interradicular septa
* alveolar yokes

6.On the palatinel bone

* + perpendicular plate
  + horizontal plate
* on the perpendicular plate
* conchal crest
* ethmoidal crest
* sphenoidal process
* orbital process
* sphenopalatine notch
* greater palatine groove
* pyramidal process
* on the horizontal plate
  + lesser palatine foramina
  + nasal crest
  + posterior nasal spine

7. On the zygomatic bone

* + surfaces: lateral, orbital, temporal
  + frontal process
  + temporal process
  + zygomatico-facial foramen
  + zygomatico-orbital foramen
  + zygomaticotemporal foramen

8.On the mandible

* + body of the mandible
  + base of the mandible
* on the external surface
  + mental protuberance
  + mental tubercle
  + mental foramen
  + oblique line
* on alveolar part
  + alveolar arch
  + dental alveoli
  + interalveolar septa
  + interradicular septa
  + alveolar yokes
* on the internal surface
  + mental spine
  + digastrics fossa
  + mylohyoid line
  + mylohyoid groove
  + sublingual fossa
  + submandibular fossa
* on the ramus of the mandible
  + masseteric tuberosity (on an external surface)
  + pterygoid tuberosity (on an internal surface)
  + condylar process
  + head of mandible
  + neck of mandible
  + pterygoid fovea
  + mandibular notch
  + coronal process
  + lingula
  + mandibular foramen
  + mandibular canal
  + angle of mandible

9. On the hyoid bone

* + body
  + greater horn
  + lesser horn

10. On the skull

* + all bones of a facial skull
  + connections of a facial skull

11**.** On the preparation of the temporomandibular joint

* + being jointed surfaces of a temporal bone and the mandible
  + places of an attachment of an articulate bag
  + articulate disc
  + lateral ligament
  + sphenomandibular ligament
  + stylomandibular ligament
  + the movements in a joint

12. On the preparation of the skull of the infant

* + anterior fontanel
  + posterior fontanel
  + lateral fontanels (sphenoid, mastoid)

**Topic 9**

**Skull topography. Orbit, nasal cavity, temporary fossa, pterygopalatine fossa**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

**1. Interview for control questions**

**Control questions**

1. The parts of the skull

2. Orbit: walls, connections

3. Nasal cavity: walls and connections

4. Temporal fossa

5. Pterygopalatine fossa: walls and messages

**2. Description of macro (micro) preparations.**

**A set of drugs:**

**1. The skull**

**Practical tasks to demonstrate practical skills:**

**Show:**

- neurocranium, borders and bones forming it;

- viscerocranium, borders and bones forming it;

- the outer base of the skull;

- the inner base of the skull;

- the orbit;

- nasal cavity;

- temporal fossa;

- the suspensory fossa;

- pterygoid-palatine fossa.

**Topic10**

**Final lesson**

**module «** **Bones and their connections ».**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Testing

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

А.Bones of the skull, trunk, girdles and free extremities

1. General characteristic of a vertebral column, its regions, curvatures and their value.

2.Structure of a thoracic vertebra.

3. Structure of a typical cervical vertebra. Features of a structure of I, II, VII cervical vertebrae.

4. Distinctions in a structure of the thoracic, cervical and lumbar vertebrae.

5. Structure of a sacrum.

6. Sternum, its parts, structure.

7. Ribs, their quantity, structure.

8. Structure of the scapula and clavicle.

9. Structure of a humerus.

10. Structure of the radius and ulna.

11. Structure of the carpal, metacarpal bones and phalanges of fingers.

12. Structure of a pelvic bone.

13. Structure of a femur. Patella.

14. Greater and lesser pelvis. Pelvic inlet, pelvic outlet, walls of a pelvis.

15. Sexual distinctions of a pelvis, sizes of a greater pelvis.

16. Sizes of a lesser pelvis. Sizes of the pelvic inlet, pelvic outlet.

17. Structure of the tibia and fibula.

18. Structure and relative positioning of the bones of a foot.

19. Division of a skull into cranial and facial, vault and basis, borders of these departments.

20. Frontal bone, its parts, structure.

21. Occipital bone, its parts, structure.

22. Parietal bone, structure.

23. Sphenoid bone, its parts, structure.

24. Temporal bone, its parts, structure.

25. Ethmoid bone, its parts, structure.

26. Features of a structure of a maxilla.

27. Features of a structure of the mandible.

28. Structure of a lacrimal, nasal bones, inferior nasal conchae, vomer, hyoid, palatine bones.

29. Borders, departments of the external and internal basis of a skull, their connections, cranial fossae.

30. Exit places of cranial nerves.

31. Structure of an orbit, its walls and connections.

32. Nasal cavity. General plan of a structure.

33 . Bony boundaries of the nasal cavity.

34. Paranasal sinuses: frontal, sphenoidal, maxillary, cells of a ethmoid bone. Opening places in a nasal cavity.

35 . Features of a structure of a skull of the newborn. Fontanels, their topography. Functional value. Terms of closing of fontanels.

36. Sexual, age and individual features of a structure of a skull.

B. Connections of bones of the skull, trunk, pectoral and pelvic girdles, upper

and lower limbs

1.Types of connections of bones. Synarthroses, their types and short characteristic, examples.

2. General structure of a synovial joint, basic and auxiliary elements. Value of synovial fluid.

3. Classification of joints by number of articulate surfaces, by a quantity of axises and movements.

4. Types of connections in a vertebral column between bodies, arches and processes of vertebrae.

5. Connection of ribs with a sternum.

6. Connection of ribs with vertebrae.

7. Thoracic cage as a whole.

8. Shoulder joint, its structure and function.

9. Elbow joint, its structure and function.

10. Structure of pubic hemiarthrosis (symphysis).

11. Structure of a hip joint and its function.

12. Structure of a knee joint and its function.

13. Temporomandibular joint.

2. Description of macro (micro) preparations and test of practical skills.

**To show on the preparations:**

1 . Vertebral body, arch and its pedicles.

2 . Head of rib.

3 . To call separate parts of an upper limb.

4 . Neck of a radius.

5 . Proximal end of a femur.

6 . Superior and inferior vertebral notches.

7 . To call bones of a shoulder girdle.

8 . Head of a humerus.

9 . Distal end of a tibia.

10 . Vertebral processes.

11. To call regions of a hand.

12 . Surgical and anatomic necks of a humerus.

13 . Linea aspera (medial and lateral lips).

14 . Transverse foramen of a cervical vertebra.

15 . True ribs.

16 . To call bones of proximal and distal rows of a wrist.

17 . Deltoid tuberosity of a humerus.

18 . Seperior and inferior borders of a rib (rib groove).

19 . Sternal end of a clavicle.

20 . Condyle of a humerus.

21 . The borders of a scapula.

22 . Typical cervical vertebra.

23 . Akromial end of a clavicle.

24 . Epicondyles of a humerus.

25 . Pelvic bones (right and left).

26 . Atypical cervical vertebrae.

27 . Angle and tubercle of a rib.

28 . Structure of a condyle of a humerus.

29 . To call and show components of a pelvic bone.

30 . Parts of a sternum.

31 . Surfaces of scapula.

32 . Radial and coronal fossae of a humerus.

33 . Acetabulum.

34 . Angles of a scapula.

35 . Diaphysis of a humerus.

36 . Obturator foramen.

37 . Vertebral foramen.

38 . False ribs.

39 .Supraspinous, infraspinous and subscapular fossae of a scapula.

40 . Tubercles of a humerus.

41 . Iliac crest.

42 . Lumbar vertebra.

43 . Clavicular notches on the sternum.

44 . Head of a radius.

45 . Ala of an ilium.

46 . Parts of a sacrum.

47 . Jugular notch on the sternum.

48 . Radial tuberosity.

59 . Spines of an ilium.

50 . Angle of a sternum.

51 . Radial styloid process of a radius.

52 . Distal epiphysis of a radius.

53 . Arcuate line.

54 . Scalene tubercle on the 1st rib.

55 . Sacral canal.

56 . Articular circumference of an ulna.

57 .Radial tuberosity.

58 . Sciatic tuber.

59 . Auricular surfaces of a sacrum.

60 . Costal notches on a sternum.

61 . Olecranon and coronoid process of an ulna.

62 . Rami of a pubic bone.

63 . Dens of the 2nd cervical vertebra.

64 . Dorsal surface of a sacrum (median, intermediate and lateral sacral crests).

65 . Articular circumference of an radius

66 . Trochlear notch of an ulna.

67 . Femur trochanters.

68 . Glenohumeral joint.

69 . Pubic symphysis.

70 . Sacrospinous ligament

***71 .*** Acetabular labrum and articular capsule of a hip joint***.***

72 . Sacrotuberous ligament.

73 . Menisci of a knee joint.

74 . Cruciate ligaments of a knee joint.

75 . Obturator membrane.

76 . Intervertebral disk (anulus fibrosus and nucleus pulposus).

77 . Collateral ligaments of an elbow joint and to call them.

78 . Anatomic planes.

79 . Articulate surfaces in a glenohumeral joint and to call them.

80 . Anular ligament of an elbow joint.

81 . Lunate surface of an acetabulum.

82 . Greater sciatic foramen.

83 . Curvatures of a spine column.

84 . Pelvic brim.

85 . Types of movements in joints on a sagittal axis.

86 . To call the plan of the answer for an arthrology.

87 . Lesser sciatic foramen.

88. Coronal suture.

89. Sagittal suture.

90. Lambdoid suture.

91. Squamous suture.

92. Anterior cranial fossa.

93. Middle cranial fossa .

94. Posterior cranial fossa.

95. Greater wings of a sphenoid bone.

96. Lesser wings of a sphenoid bone.

97. Pterygoid processes of sphenoid bone.

98. Sphenoidal sinuses.

99. Sella turcica.

100. Hypophyseal fossa of a sphenoid bone.

101. Pterygoid canal.

102. Optic canal.

103. Superior orbital fissure.

104. Foramen rotundum.

105. Foramen ovale .

106. Foramen spinosum.

107. Groove for sygmoid sinus of a parietal bone.

108. Groove for sygmoid sinus of a temporal bone.

109. Groove for sygmoid sinus of a parietal bone.

110. Zygomatic arch.

111. Mandibular fossa of a temporal bone.

112. External acoustic meatus.

113. Jugular foramen .

114. Carotid canal.

115. Foramen lacerum.

116. Internal acoustic meatus.

117. Mastoid process of a temporal bone.

118. Styloid process of a temporal bone.

119. Stylomastoid foramen.

120. Squamous part of a temporal bone.

121. Tympanic part of a temporal bone.

122. Petrous part of a temporal bone.

123. Supraorbital margin.

124. Supraorbital foramen (notch).

125. Glabella.

126. Frontal sinuses.

127. Foramen magnum.

128. Occipital condyles.

129. Hypoglossal canal.

130. External occipital protuberance.

131. Internal occipital protuberance.

132. External occipital crest.

133. Internal occipital crest.

134. Superior and inferior nuchal lines.

135. Crista galli.

136. Cribriform plate and cribriform foramina .

137. Mandibular angle.

138. Mandibular notch.

139. Coronoid process of a mandible.

140. Condylar process of a mandible.

141. Mandibular foramen.

142. Mental foramen.

143. Alveolar process of a maxilla.

144. Anterior nasal spine.

145. Palatine process of a maxilla.

146. Incisive fossa.

147. Frontal process of a maxilla.

148. Maxillary sinuses.

149. Zygomatic process of a maxilla.

150. Inferior orbital fissure .

151. Infraorbital foramen .

3. Testing

1. SPECIFIC FEATURE OF THE THORACIC VERTEBRA IS

1 costal facets on the bodies and transverse processes

2 foramen in the transverse process

3 spinous process

4 articular process

2. SPECIFIC STRUCTURE OF THE LUMBAR VERTEBRAE  
1 articular process

2 accessory process

3 transverse process

4 spinous process

3. SACRUM HAS  
1 obturator foramen  
2 arcuate line   
3 apex  
4 anterior gluteal line

4. SACRALISATION IS A PROCESS OF REPLACING OF

1 one sacral vertebra in lumbar portion

2 one lumbar vertebra in sacral portion

3 one thoracic vertebra in sacral portion

4 fusion of all five sacral vertebras in one single bone

5. SESAMOID BONE IS  
1 patella  
2 humerus  
3 talus  
4 capitate bone

6. The pharyngeal tubercle is situated on

1 the clivus of occipital bone

2 the external surface of the basilar part of the occipital bone

3 the occipital prominence

4 the occipital crest

7. Foramen of the middle cranial fossa  
1 inferior orbital fissure   
2 foramen rotundum  
3 foramen caecum   
4 jugular foramen  
  
8.II-nd branch of the trigeminal nerve passes through

1 foramen rotundum

2 foramen ovale

3 foramen spinosum

4 fissura orbitalis superior

9.III-rd branch of the trigeminal nerve passes through

1 fissura orbitalis superior

2 foramen rotundum

3 foramen ovale

4 foramen spinosum

10. The orbit is not connected with  
1 cavity of the skull   
2 nasal cavity   
3 oral cavity   
4 pterygopalatine fossa   
  
11. The pterygopalatine fossa connects with the nasal cavity by  
1 inferior orbital fissure   
2 spheno-palatine foramen  
3 infraorbital foramen   
4 pterygoid canal  
  
12. The foramen rotundum connects the middle cranial fossa with  
1 orbit  
2 nasal cavity   
3 pterygopalatine fossa   
4 base of the scull

13. BONE DOESN'T PARTICIPATE IN FORMATION OF THE TARSUS

1 talus

2 calcaneus

3 cuboid

4 capitate

14. TYPES OF THE SYNDESMOSES IN THE PELVIS

1 ligaments, interosseus membranes, sutures

2 sutures, interosseus membranes

3 ligaments, interosseus membranes

4 ligaments, sutures

15. OWN SYNDESMOSES OF THE PELVIS DON’T INCLUDE  
1 obturator membrane   
2 sacro-spinous ligament   
3 uterosacral ligament  
4 sacrotuberal ligament  
  
16. INTRINSIC LIGAMENTS OF THE HIP JOINT  
1 ilio-sacral ligament  
2 ilio-femoral ligament  
3 ligament of the head of the femur  
4 orbicular zone

17. IN THE FORMATION OF THE KNEE JOINT IS NOT INVOLVED  
1 thigh  
2 tibia  
3 fibula  
4 patella  
  
18. ONE OF THE INTRINSIC LIGAMENTS OF THE KNEE JOINT IS  
1 anterior cruciate ligament  
2 tibial collateral ligament  
3 oblique ligament  
4 arcuate ligament  
  
19. ONE OF THE EXTRINSIC LIGAMENTS OF THE KNEE JOINT IS  
1 posterior cruciate ligament   
2 tibial collateral ligament   
3 lateral meniscus   
4 medial meniscus   
  
20. DISTAL CONNECTION OF THE TIBIA AND FIBULA IS  
1 diarthrosis  
2 synchondrosis  
3 syndesmosis  
4 hemarthrosis

**Module № 2: Myology**

**Topic 1**

**Musces of the neck. Masticatory and facial expression muscles. Fasciae of the head and neck. Topography of the neck.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

* 1. Division of the head muscles by origin and location.

1. Masticatory muscles (masseter, temporalis, lateral pterygoid, medial pterygoid), their origin, insertion, mechanism of action of the mandibular joint.
2. Anatomical peculiarities of the facial expression muscles.
3. Facial muscles around the eye (orbicularis oculi, procerus, corrugatorsupercilii), their origin, function.
4. Muscles around the nose (nasalis, depressor septinasi), their origin, function.
5. Muscle around the mouth, their origin, function.
6. The muscles of the cranial vault, origin,insertion, function.
7. Division of the neck muscles on the groups on topography and developmental origin.
8. Anatomical features and function of the superficial muscles of the neck (platysma, sternocleidomastoid).
9. Anatomic features and function of the middle group muscles of the neck (suprahyoid muscles – digastric, stylohyoid, mylohyoid, geniohyoid)Anatomical features and function of the muscles of the middle group neck (infrahyoid muscles - sternohyoid, omohyoid, sternothyroid, thyrohyoid)
10. Deep muscles of the neck (lateral group- anterior scalene, middle scalene, posterior scalene; prevertebral group - longus colli, longus capitis rectus capitis anterior, rectus capitis lateralis) , their origin, insertion, function.
11. Neck topography: regions andmain triangles, their boundaries and value.
12. Characteristic of the neck fascia according V.M.Shevkunenko, topographical relationships with the muscles, organs and vessels.
13. Interfascial spaces of the neck and their communication with the mediastinum.
14. Characteristic of the fasciae of the masticatory muscles.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The human skeleton
2. The skull with mandible.
3. The cadaver with the prefilled muscles of the head and neck
4. Set of the tables «Musles of the neck», «Musles of the head», «Regions and triangles of the neck», «Fasciae of the neck».

**The student should know:**

* development of neck muscles;
* classification, shape, origin, insertion and functions of neck muscles;
* neck regions, their boundaries, triangles;
* neck fascia, their characteristic;
* intermuscular and interfascial spaces and their content;
* classification of head muscles;
* peculiarities of facial expression muscles;
* arrangement and function of facial expression muscles;
* origin, insertion and function of muscles of mastication;
* head fascia.

3. Test of practical skills.

**The student should be able to name and show*:***

1. Superficial muscles of the neck

* platysma
* sternocleidomastoid

1. Suprahyoid muscles

* digastric
* stylohyoid
* mylohyoid
* geniohyoid

1. Infrahyoid muscles

* sternohyoid
* omohyoid
* sternothyroid
* thyrohyoid

1. Deep muscles of the neck (lateral group)

* anterior scalene
* middle scalene
* posterior scalene

1. Deep muscles of the neck (prevertebral group)

* longus colli,
* longus capitis
* rectus capitis anterior
* rectus capitis lateral

1. Neck regions,their boundaries

* posterior
* anterior
* lateral
* sterno-cleido-mastoid

1. Main neck triangles and fossae

* omotrapezoid triangle
* omoclavicular triangle
* submandibular triangle
* Pirogov’s triangle.
* carotid triangle
* omotracheal triangle
* retromandibular fossa

1. Neck fasciae

* superficial cervical fascia
* superficial layer of the deep cervical fasciae.
* deep layer of the deep cervical fasciae, Riche’s aponeurosis.
* endocervical fascia
* prevertebral fascia.

1. Interfascial spaces of the neck

* suprasternal interaponeurotic space
* Grooberi’s Blind cervical sac
* pretracheal space (previsceral space)
* retrovisceral space

1. Masticatory muscles

* masseter
* temporalis
* lateral pterygoid
* medial pterygoid

1. Facial muscles around the eye

* orbicularis oculi (orbital, palpebral and lacrimal parts)
* procerus
* corrugator supercilii

1. Muscles around the nose

* nasalis
* depressor septi nasi

1. Muscle around the mouth

* levator labii superioris
* zygomaticus major and minor
* risorius
* levator angulioris
* depressor angulioris
* levator labii superioris
* depressor labii inferioris
* mentalis
* buccinator
* orbicularis oris

1. Muscles of the cranial vault

* epicranius

1. Fasciae of the head

* Temporal fascia
* masseteric fascia
* parotid fascia
* buccopharyngeal fascia

**Topic 2:**

**Back muscles. Chest and abdominal muscles. Inguinal canal. Diaphragm**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions:**

1. General description of the back muscles, their division into layers and groups

2. Superficial muscles of the back(latissimus dorsi, trapezius, levator scapulae,

rhomboids,serratus posterior superior, serratus posterior inferior), their origin, insertion, function.

3. Deep muscles of the back: the splenius (splenius capitis, splenius cervicis), erector spinae (its parts -iliocostalis, longissimus, spinalis), transversospinalis group (multifidus, rotators, semispinalis, rectus capitis posterior major, rectus capitis posterior minor, obliquus capitis superior, obliquus capitis inferior),origin, insertion, function.

4. General characteristic of the chest muscles. Division into groups.

5. Superficial chest muscles (the pectoralis major,pectoralis minor, serratus anterior and subclavius). Their origin, insertion, function.

6. Deep chest muscles (external intercostals, internal intercostals, transversus thoracis), their origin, insertion, function.

7. Diaphragm: parts, openings, functions.

8. Muscles of the respiration, their functions.

9. General description of the muscles of the abdominal wall, anterior, posterior and lateral groups.

10. Lateral group – wide abdominal muscles (external oblique, internal oblique and transversus abdominis), their origin, insertion, function.

11.Anterior group – rectus abdominis, pyramidalis.Origin, insertion, function.

12. Posterior group - quadratus lumborum.Origin, insertion, function.

13. Linea alba of the abdomen, its practical value in surgery.

14. Rectus sheath. Features of its structure above and below the umbilical ring.

15. Inguinal canal, its walls, rings,contents in the male and female body.

16. Abdominal regions.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The human skeleton
2. The cadaver with the prefilled muscles of the back, chest and abdomen
3. Set of the tables «Musles of the back «Musles of the chest and abdomen»
4. Model of the diaphragm

**The student should know:**

* classification of back muscles on development;
* classification of back muscles on location and shape;
* back muscles: their name, origin, insertion, functions;
* fascia of the back;
* chest muscles attaching to bones of upper limb: their structure and function;
* proper chest muscles: origin, insertion, functions;
* fascia of the thorax;
* structure and function of diaphragm.
* abdominal muscles characteristics according to the standard scheme;
* the white line structure, the inguinal ring, the rectus abdominis muscle sheath;
* the formation, contents and structure of the inguinal canal and it’s orifices;
* folds and weak places of peritoneum on the internal surface of the anterior abdominal wall.

3. Test of practical skills.

**The student should be able to name and show*:***

1. Superficial muscles of the back

* latissimus dorsi
* trapezius
* levator scapulae
* rhomboids
* serratus posterior superior
* serratus posterior inferior

1. Deep muscles of the back

* splenius
* splenius capitis
* splenius cervicis
* erector spinae
* iliocostalis,
* longissimus
* spinalis
* transversospinalis group
* multifidus
* rotators
* semispinalis
* rectus capitis posterior major
* rectus capitis posterior minor
* obliquus capitis superior
* obliquus capitis inferior

1. Chest muscles attaching to bones of upper limb

* pectoralis major
* pectoralis minor
* serratus anterior
* subclavius

1. Proper chest muscles

* external intercostal
* internal intercostal
* transversus thoracis
* subcostales

1. Diaphragm

* central tendon
* lumbar part
* right crus and left crus
* aortic hiatus
* esophageal hiatus
* costal part
* sternal part
* sternocostal triangle
* lumbocostal triangle
* caval opening

1. Abdominal muscles

* lateral group
* external oblique
* internal oblique
* transversus abdominis
* anterior group
* rectus abdominis,
* pyramidalis
* posterior group
* quadratus lumborum

1. Inguinal canal
2. Linea alba of the abdomen
3. Umbilical folds and fossae

* lateral umbilical fold
* medial umbilical fold
* median umbilical fold
* medial inguinal fossa
* lateral inguinal fossa
* supravesical inguinal fossa

**Topic 3**

**Muscles and topography of the upper limb**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions:**

1.Muscles of the shoulder girdle - posterior group (deltoid, supraspinatus infraspinatus, teres minor, teres major, subscapularis). Origin, insertion, functionof each muscle.

2. Muscles of the shoulder girdle -anterior group (coracobrachialis,pectoralismajor,pectoralis minor). Tell about origin, insertion, function of each muscle.

3. Muscles of the anterior (biceps brachii, brachialis) and posterior (triceps brachii, anconeus) groups of the arm; their origin, insertion and function.

4. Muscles of the 1-st surface layer of the anterior forearm (pronatorteres, flexor carpi radialis, palmaris longus, flexor carpi ulnaris), their origin, insertion function.

5. Muscle of the 2-nd layer of the anterior forearm (flexor digitorumsuperficialis), its origin, insertion function.

6. Muscles of the 3-d layer of the anterior forearm (flexor digitorumprofundus,flexorpollicis longus), their origin, insertion function.

7. Muscle of the 4-th layer of the anterior forearm (pronator quadratus), its origin, insertion function.

8. Muscles of the superficial layer of the posterior forearm (brachioradialis, extensor carpiradialis longus, extensor carpi radialis brevis, extensor digitorum, extensor digitiminimi, extensor carpi ulnaris), their origin, insertion function.

9. Muscles of the deep layer of the posterior forearm (supinator, abductor pollicis longus, extensor pollicis brevis, extensor pollicis longus, extensorindicis), their origin, insertion function.

10. Muscles of the thenar group of the hand (abductor pollicis brevis, flexor pollicis brevis, opponenspollicis, adductor pollicis, their origin, insertion function.

11. Hypothenar group of the hand (palmaris brevis, abductor digitiminimi, flexor digitiminimi brevis, opponensdigitiminimi), their origin, insertion function.

12. Midpalmar group of the hand (lumbricals, dorsal interossei, palmar interossei), their origin, insertion function.

13.Fasciae of the upper limb.

14.Axillary fossa and cavity, its topography, triangles, foramen tri- and quadrilaterum.

15.Topography of the arm: the medial bicipital and lateral bicipital grooves humeromuscularis (canalis spiralis) canal, their contents.

16. Topography of the cubital fossa and grooves of the forearm.

17. Anatomic snuffbox

18. Bony-fibrous canals, flexor and extensor retinaculums.

19.Synovial sheaths of the flexor tendons. Synovial bursa.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The human skeleton

2. Bones of upper limb

3. The cadaver with the prefilled muscles of the upper limb

4. The model of shoulder girdle muscles

**The student should know:**

* classification of shoulder girdle muscles;
* classification of arm and forearm muscles;
* description of arm and forearm muscles (name, origin, insertion, function);
* classification of hand muscles;
* hand muscles: name, origin, insertion, function;
* fascias of the upper limb, their structure, peculiarities;
* axillary and cubital fossas, their content;
* grooves and canals of the upper limb.

3. Test of practical skills.

**The student should be able to name and show:**

1. Muscles of the shoulder girdle - posterior group

* deltoid
* supraspinatus
* infraspinatus
* teres minor
* teres major
* subscapularis

2.Muscles of the shoulder girdle - anterior group

* coracobrachialis
* pectoralis major
* pectoralis minor

3.Muscles of the anterior group of the arm;

* biceps brachii
* brachialis

4.Muscles of the posterior group of the arm;

* triceps brachii
* anconeus

5.Muscles of the 1-st surface layer of the anterior forearm

* pronator teres
* flexor carpi radialis
* palmaris longus
* flexor carpi ulnaris

6.Muscle of the 2-nd layer of the anterior forearm

* flexor digitorum superficialis

7.Muscles of the 3-d layer of the anterior forearm

* flexor digitorum profundus
* flexor pollicis longus

8.Muscle of the 4-th layer of the anterior forearm

* pronator quadratus

9.Muscles of the superficial layer of the posterior forearm

* brachioradialis
* extensor carpi radialis longus
* extensor carpi radialis brevis
* extensor digitorum
* extensor digitiminimi
* extensor carpi ulnaris

10. Muscles of the deep layer of the posterior forearm

* supinator
* abductor pollicis longus
* extensor pollicis brevis
* extensor pollicis longus
* extensor indicis

11.Muscles of the thenar group of the hand

* abductor pollicis brevis
* flexor pollicis brevis
* opponens pollicis
* adductor pollicis

12. Hypothenar group of the hand

* palmaris brevis
* abductor digiti minimi
* flexor digiti minimi brevis
* opponens digiti minimi

13.Midpalmar group of the hand

* lumbricals
* dorsal interossei (4)
* palmar interosse (3)

14.Fasciae, bony-fibrous canals, retinaculums, synovial sheaths of the upper limb

* deltoid fascia
* brachial fascia and its septa
* antebrachial fasciaits septa
* extensor retinaculum
* 6 bony-fibrous canals of dorsal muscles
* palmar aponeurosis
* flexor retinaculum
* 3 canals under flexor retinaculum

15.Topography of the upper limb

* axillary fossa
* axillary cavity, its walls
* triangles (clavipectoral, pectoral, subpectoral)
* foramen tri- and quadrilaterum
* the medial bicipital and lateral bicipital grooves
* humeromuscular (spiral) canal
* cubital fossa
* radial groove of the forearm
* median groove of the forearm
* ulnar groove of the forearm
* anatomic snuffbox

**Topic 4**

**Muscles of the pelvis and lower limb**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions:**

1. Muscles of the anterior group of the pelvis (iliopsoas - psoas major, iliacus; psoas minor), origin, insertion, function.

2. Muscles of the posterior group of the pelvis (gluteus maximus, gluteus medius and gluteus minimus; tensor fasciae latae, piriformis, obturator internus, gemelli superior and inferior, quadratus femoris obturator externus).Origin, insertion, functionof each muscle.

3. Muscles of the anterior thigh (sartorius, quadriceps femoris- rectus femoris, vastus lateralis, vastus intermedius, vastus medialis,) their origin, insertion, function.

4. Muscles of the posterior thigh (biceps femoris, semimembranosus, semitendinosus, popliteus), their origin, insertion, function.

5. Muscles of the middle group of the thigh (pectineus, adductor brevis, adductor longus, adductor magnus, gracilis) their origin, insertion, function.

6. Anterior group of muscles of the leg (tibialis anterior, extensor digitorum longus, peroneus tertius, extensor hallucis longus).Origin, insertion, function.

7. Muscles of the lateral group of the leg (fibularis longus, fibularis brevis), their origin, insertion, function.

8. Muscles of the superficial layer of the posterior group of the leg (triceps surae – gastrocnemius and soleus; plantaris), their origin, insertion, function.

9. Muscles of the deep layer of the posterior group of the leg (tibialis posterior, flexor digitorum longus, flexorhallucis longus), their origin, insertion, function.

10. Muscles of the foot. Dorsal surface - extensor hallucis brevis, extensor digitorum brevis.Plantar surface - abductor hallucis, flexor hallucis, adductor hallucis, abductor digitiminimi, flexor digitiminimi brevis, flexor digitorum brevis, quadratus plantae, lumbricals, dorsal interossei, plantar interossei. Tell about origin, insertion, function of each muscle.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The human skeleton

2. Bones of lower limb

3. The cadaver with the prefilled muscles of the lower limb

4. The model of pelvic girdle muscles

5. Set of the tables «Musles and topography of the lower limbs»

**The student should know:**

* classification, attachment points and functions of hip joint area muscles
* classification, anatomical peculiarities, attachment points and functions of thigh muscles
* classification of leg and foot muscles
* characteristics of leg and foot muscles
* fascias and topography of lower limb
* biomechanics of the lower limb muscles, hip joint, knee and ankle joints

3. Test of practical skills.

**The student should be able to name and show*:***

1.Muscles of the anterior group of the pelvis

* + iliopsoas- psoas major, iliacus
  + psoas minor

2.Muscles of the posterior group of the pelvis

* + gluteus maximus
  + gluteus medius
  + and gluteus minimus
  + tensor fasciae latae
  + piriformis
  + obturator internus
  + gemelli superior and inferior
  + quadratus femoris
  + obturator externus

3.Muscles of the anterior thigh

* sartorius
* quadriceps femoris
* rectus femoris
* vastus lateralis
* vastus intermedius
* vastus medialis

4. Muscles of the posterior thigh

* biceps femoris
* semimembranosus
* semitendinosus
* popliteus

5.Muscles of the middle group of the thigh

* pectineus
* adductor brevis
* adductor longus
* adductor magnus
* gracilis

6.Anterior group of muscles of the leg

* tibialis anterior
* extensor digitorum longus
* peroneus tertius
* extensor hallucis longus

7. Muscles of the lateral group of the leg

* fibularis longus
* fibularis brevis

8. Muscles of the superficial layer of the posterior group of the leg

* triceps surae – gastrocnemius and soleus
* plantaris

9.Muscles of the deep layer of the posterior group of the leg

* tibialis posterior
* flexor digitorum longus
* flexor hallucis longus

10.Muscles of the dorsal surface foot

* extensor hallucis brevis
* extensor digitorum brevis

11. Muscles of the plantar surface foot

* abductor hallucis
* flexor hallucis
* adductor hallucis
* abductor digitiminimi
* flexor digitiminimi brevis
* flexor digitorum brevis
* quadratus plantae
* lumbricals
* dorsal interossei
* plantar interossei

**Topic 5**

**Topography of the pelvis and lower limb**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions:**

1. Topography of the pelvic area (suprapiriforme foramen and infrapiriforme foramen, canalisobturatorius).
2. Topography of the space under an inguinal ligament.Lacunamusculorum, lacuna vasorum, their contents.
3. Femoral canal, practical value.
4. Topography of the anterior thigh area : femoral triangle (scarpa’s triangle), iliopectineus groove, anterior femoralis groove, canalisadductorius(hunter's canal).
5. Popliteal fossa, boundaries, contents.
6. Cruropoliteal canal (Gruber’s canal).
7. Superior and inferior musculoperoneus canals
8. Medial and lateral plantar grooves of the foot.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The human skeleton

2. Bones of lower limb

3. The cadaver with the prefilled muscles of the lower limb

4. The model of pelvic girdle muscles

5. Set of the tables «Musles and topography of the lower limbs»

6. The models of the inguinal and femoral canals

**The student should know:**

* fascias and topography of lower limb
* biomechanics of the lower limb muscles, hip joint, knee and ankle joints

3. Test of practical skills.

**The student should be able to name and show*:***

1.Topography of the pelvic area

* suprapiriforme foramen
* infrapiriforme foramen
* obturator canal

2. Topography of the space under the inguinal ligament

* lacuna musculorum
* lacuna vasorum

3. Topography of the thigh

* femoral canal, their holes
* femoral triangle (Scarpa’s triangle)
* iliopectineus groove
* anterior femoral groove
* adductor canal (Hunter's canal)
* popliteal fossa, boundaries, contents

4. Topography of the leg

* cruropoliteal canal (Gruber’s canal)
* superior musculoperoneal canal
* inferior musculoperoneal canal

5. Topography of the foot

* medial plantar groove
* lateral plantar groove

**Topic 6**

**Final lesson.** **Myology.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations and test of practical skills.

3. Testing

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

**Anatomy:**

1. Division of muscles in the head by origin and location.
2. The masticatory muscles, their origin, insertion, mechanism of action of the mandibular joint.
3. Anatomical peculiarities of facial expression muscles.
4. The muscles of the cranial vault: origin, insertion, function.
5. Facial muscles around the eye, their origin, insertion, function.
6. Muscles circumference of the nose, their origin, insertion, function.
7. Muscles circumference of the mouth, their origin, insertion, function.
8. General description of back muscles, their division into layers and groups.
9. The superficial muscles of the back, their origin, insertion, function.
10. Deep muscles of the back: the splenius, erector spinae, transversospinalis groups,origin, insertion, function.
11. General characteristic of the chest muscles. Division into groups.
12. The chest muscles, related to top of the upper limb. Their origin, insertion, function.
13. The own (deep) chest muscles, their origin, insertion, function.
14. The diaphragm: parts, openings, functions.
15. The muscles of respiration, their functions.
16. General description of the muscles of the abdominal wall, dividing them on the anterior, posterior and lateral groups.
17. The lateral group of the abdominal wall muscles: their origin, insertion, function.
18. The anterior group of the abdominal wall muscles: origin, insertion, function.
19. The posterior group of the abdominal wall muscles: origin, insertion, function.
20. Muscles of the shoulder girdle - posterior group : origin, insertion, function of each muscle.
21. Muscles of the shoulder girdle – anterior: origin, insertion, function of each muscle.
22. Muscles of the anterior (biceps brachii, brachialis) and posterior (triceps brachii, anconeus) groups of the arm; their origin, insertion and function.
23. Muscles of the 1-st surface layer of the anterior forearm (pronator teres, flexor carpi radialis, palmaris longus, flexor carpi ulnaris), their origin, insertion function.
24. Muscle of the 2-nd layer of the anterior forearm (flexor digitorum superficialis), its origin, insertion function.
25. Muscles of the 3-d layer of the anterior forearm (flexor digitorum profundus, flexor pollicis longus), their origin, insertion function.
26. Muscle of the 4-th layer of the anterior forearm (pronator quadratus), its origin, insertion function.
27. Muscles of the surface layer of the posterior forearm (brachioradialis, extensor carpi radialis longus, extensor carpi radialis brevis, extensor digitorum, extensor digiti minimi, extensor carpi ulnaris), their origin, insertion function.
28. Muscles of the deep layer of the posterior forearm (supinator, abductor pollicis longus, extensor pollicis brevis, extensor pollicis longus, extensor indicis), their origin, insertion function.
29. Muscles of the thenar group of the hand, their origin, insertion function.
30. The hypothenar group of the hand, their origin, insertion function.
31. The midpalmar group of the hand (lumbricals, dorsal interossei, palmar interossei), their origin, insertion function.
32. Muscles of the anterior group of the pelvis, origin, insertion, function.
33. Muscles of the posterior group of the pelvis: origin, insertion, function of each muscle.
34. The muscles of the anterior surface of the thigh, their origin, insertion, function.
35. The muscles of the posterior surface of the thigh, their origin, insertion, function.
36. The muscles of the middle group of the thigh, their origin, insertion, function.
37. The anterior group of muscles of the leg: origin, insertion, function of each muscle.
38. Muscles of the lateral group of the leg, their origin, insertion, function.
39. Muscles of the superficial layer of the posterior group of the leg, their origin, insertion, function.
40. The muscles of the deep layer of the posterior group of the leg, their origin, insertion, function.
41. Muscles groups of the of the foot. Muscles of the dorsal surface of the foot (extensor hallucis brevis, extensor digitorum brevis): origin, insertion, function of each muscle.
42. Muscles of the plantar surface of the foot: origin, insertion, function of each muscle.

**Topography:**

1. Neck topography: regions and main triangles, their boundaries and value.
2. The characteristic of fascia of the neck according V.M.Shevkunenko, disassemble them topographical relationships with the muscles, organs and vessels.
3. Characterized closed and communicating interfascial spaces of the neck and their communication with the mediastinum.
4. The alba line of the abdomen, its structure and a practical value in surgery.
5. The rectus muscle sheath. Features of its structure above and below the umbilical ring.
6. The inguinal canal, its walls, rings. The length of the inguinal canal and its contents in the male and female body. Clinical value.
7. The anterior abdominal wall regions.
8. The axillary fossa and cavity, its topography, triangles, foramen tri- and quadrilaterum.
9. Topography of the arm: the medial bicipital and lateral bicipital grooves humeromuscularis (canalis spiralis) canal, their contents.
10. Topography of the cubital fossa and grooves of the forearm.
11. Anatomic snuffbox.
12. Bony-fibrous canals, flexor and extensor retinaculums.
13. Synovial sheaths of the flexor tendons. Synovial bursa.
14. Topography of the pelvic area (suprapiriforme foramen and infrapiriforme foramen, canalis obturatorius).
15. Topography of the space under an inguinal ligament. Lacuna musculorum, lacuna vasorum, their contents.
16. The femoral canal: walls, rings, contens, practical value.
17. Topography of the anterior thigh area: femoral triangle (scarpa’s triangle), iliopectineus groove, anterior femoralis groove, canalis adductorius (hunter's canal).
18. Popliteal fossa, boundaries, contents.
19. Cruropoliteus canal (gruberov canal).
20. Superior and inferior musculoperoneus canals.
21. Medial and lateral plantar grooves of the foot.

2. Description of macro (micro) preparations and test of practical skills.

**To show on the preparations:**

1. masseter m.
2. temporalis m.
3. lateral pterygoid m.
4. medial pterygoid m.
5. epicranius m.
6. epicranial aponeurosis
7. orbicularis oculi m.
8. procerus m.
9. corrugator supercilii m.
10. nasalis m.
11. depressor septi nasi m.
12. orbicularis oris m.
13. depressor anguli oris m.
14. risorius m.
15. zygomaticus major m.
16. zygomaticus minor m.
17. levator labii superioris m.
18. depressor labii inferioris m.
19. levator anguli oris m.
20. buccinators m.
21. mentalis m.
22. platysma m.
23. sternocleidomastoid m.
24. digastrics m.
25. stylohyoid m.
26. mylohyoid m.
27. geniohyoid m.
28. sternohyoid m.
29. thyrohyoid m.
30. anterior scalene m.
31. middle scalene m.
32. posterior scalene m.
33. longus colli m.
34. longus capitis m.
35. rectus capitis anterior m.
36. rectus capitis lateralis m.
37. latissimus dorsi m.
38. trapezius m.
39. levator scapulae m.
40. rhomboids m.
41. serratus posterior superior m.
42. serratus posterior inferior m.
43. splenius capitis m.
44. splenius cervicis m.
45. erector spinae m. (its parts -iliocostalis, longissimus, spinalis)
46. transversospinalis m. (its parts - multifidus, rotators, semispinalis)
47. rectus capitis posterior major m.
48. rectus capitis posterior minor m.
49. obliquus capitis superior m.
50. obliquus capitis inferior m.
51. pectoralis major m.
52. pectoralis minor m.
53. serratus anterior m.
54. subclavius m.
55. external intercostals m.
56. internal intercostals m.
57. transversus thoracis m.
58. diaphragm
59. external oblique m.
60. internal oblique m.
61. transversus abdominis m.
62. rectus abdominis m.
63. pyramidalis m.
64. quadratus lumborum m.
65. linea alba
66. inguinal canal
67. deltoid m.
68. supraspinatus m.
69. infraspinatus m.
70. teres minor m.
71. teres major m.
72. subscapularis m.
73. coracobrachialis m.
74. pectoralis major m.
75. pectoralis minor m.
76. biceps brachii m.
77. brachialis m.
78. triceps brachii m.
79. anconeus m.
80. pronator teres m.
81. flexor carpi radialis m.
82. palmaris longus m.
83. flexor carpi ulnaris m.
84. flexor digitorum superficialis m.
85. flexor digitorum profundus m.
86. flexor pollicis longus m.
87. pronator quadrates m.
88. brachioradialis m.
89. extensor carpi radialis longus m.
90. extensor carpi radialis brevis m.
91. extensor digitorum m.
92. extensor digiti minimi m.
93. extensor carpi ulnaris m.
94. supinator m.
95. abductor pollicis longus m.
96. extensor pollicis brevis m.
97. extensor pollicis longus m.
98. extensor indicis m.
99. abductor pollicis brevis m.
100. flexor pollicis brevis m.
101. opponens pollicis m.
102. adductor pollicis m.
103. palmaris brevis m.
104. abductor digiti minimi m.
105. flexor digiti minimi brevis m.
106. opponens digiti minimi m.
107. palmar lumbricals m. m.
108. dorsal interossei m. m.
109. palmar interossei m. m.
110. axillary cavity
111. cubital fossa
112. аnatomic snuffbox
113. iliopsoas m.
114. psoas major m.
115. iliacus m.
116. psoas minor m.
117. gluteus maximus m.
118. gluteus medius m.
119. gluteus minimus m.
120. tensor fasciae latae m.
121. piriformis m.
122. obturator internus m.
123. gemelli superior m.
124. gemelli inferior m.
125. quadratus femoris m.
126. obturator externus m.
127. sartorius m.
128. quadriceps femoris m.
129. rectus femoris m.
130. vastus lateralis m.
131. vastus intermedius m.
132. vastus medialis m.
133. biceps femoris m.
134. semimembranosus m.
135. semitendinosus m.
136. pectineus m.
137. adductor brevis m.
138. adductor longus m.
139. adductor magnus m.
140. gracilis m.
141. tibialis anterior m.
142. extensor digitorum longus m.
143. extensor hallucis longus m.
144. fibularis longus m.
145. fibularis brevis m.
146. popliteus m.
147. triceps surae m.
148. gastrocnemius m.
149. soleus m.
150. plantaris m.
151. tibialis posterior m.
152. flexor digitorum longus m.
153. flexor hallucis longus m.
154. extensor hallucis brevis m.
155. extensor digitorum brevis m.
156. abductor hallucis m.
157. flexor hallucis m.
158. adductor hallucis m.
159. abductor digiti minimi m.
160. flexor digiti minimi brevis m.
161. flexor digitorum brevis m.
162. quadratus plantae m.
163. plantar lumbricals m. m.
164. dorsal interossei m. m.
165. plantar interossei m. m.
166. suprapiriforme foramen
167. infrapiriforme foramen
168. canalis obturatorius
169. lacuna musculorum
170. lacuna vasorum
171. femoral canal
172. femoral triangle
173. iliopectineus groove
174. anterior femoralis groove
175. canalis adductorius
176. popliteal fossa
177. cruropoliteus canal
178. superior musculoperoneus canals
179. medial and lateral plantar grooves

3. Testing

1. MUSCLES OF THE BACK CAN BE DIVIDED INTO

1 superior and inferior

2 anterior and posterior

3 superficial and deep

4 external and internal

2. ONE OF THE SUPERFICIAL MUSCLES OF THE BACK IS  
1 m. splenius cervicis  
2 lateral tract   
3 m.latissimusdorsi  
4 medial tract  
  
3. ONE OF THE DEEP MUSCLES OF THE BACK IS  
1 medial tract  
2 m. levator scapulae   
3 m.rhomboid major  
4 m.trapezius

4. SUPERFICIAL MUSCLES OF THE BACK ATTACHED TO THE SHOULDER GIRDLE AND BRACHIUM

1 trapezoid, rhomboid, inferior posterior serratus muscle

2 trapezoid, latissimus dorsi, spinal muscle

3 superior posterior serratus muscle, inferior posterior serratus muscle

4 trapezoid, latissimus dorsi, rhomboid, levator scapula

5. PARTS OF THE ERECTOR SPINAE MUSCLE ARE

1 iliocostal muscle, longissimus muscle, spinalis muscle

2 multifidi muscle, splenius muscle of head, suboccipital muscle

3 iliocostal muscle, multifidi muscle, spinalis muscle

4 semispinal muscle, longissimus muscle, spinalis muscle

6. MAIN RESPIRATORY MUSCLES INCLUDE  
1 m.pectoralis minor   
2 m.pectoralis major   
3 external intercostal muscles  
4 m. serratus anterior

7. DEEP (PROPER) MUSCLES OF THE CHEST

1 external intercostal, subclavian, internal intercostal muscles

2 anterior serratus, internal intercostal, subcostal, lesser pectoral muscles

3 transverse muscle of thorax, subclavian, levator costae muscles

4 external intercostal, internal intercostal, subcostal, transverse muscle of a thorax

8. PARTS OF THE DIAPHRAGM

1 thoracic and abdominal

2 vertebral and costal

3 sternal, costal and lumbar

4 right and left

9. «WEAK» POINT OF THE DIAPHRAGM IS  
1 caval opening   
2 aortic hiatus  
3 esophageal hiatus  
4 central tendon

10. ANTERIOR GROUP OF THE THIGH MUSCLES INCLUDES  
1 m. gracilis  
2 m. sartorius  
3 m. adductor magnus  
4 m. biceps femoris  
  
11. MEDIAL GROUP OF THE THIGH MUSCLES INCLUDES  
1 m. semitendinosus

2 m.pectineus  
3 m.piriformis  
4 m. sartorius  
  
12. POSTERIOR GROUP OF THE THIGH MUSCLES INCLUDES  
1 m. quadriceps femoris  
2 m.tensor fasciae latae  
3 m.semimembranosus  
4 m. pectineus

13. FUNCTION OF THE ILIOPSOAS MUSCLE

1 flexion of the thigh

2 extension of the thigh

3 abduction of the thigh

4 rotation of the thigh

14 MUSCULAR LACUNA INCLUDES  
1 femoral nerve  
2 femoral artery   
3 internal pudendal nerve  
4 femoral vein

15. VASCULAR LACUNA INCLUDES  
1 femoral vein  
2 femoral nerve   
3 lateral cutaneous nerve of the thigh   
4 great saphenus vein   
  
16. MEDIAL BORDER OF THE FEMORAL TRIANGLE  
1 m. sartorius  
2 m. gracilis  
3 m. adductor longus  
4 inguinal ligament

17. THE DEEP FEMORAL RING IS FORMED BY

1 saphenous opening

2 layers of the broad fascia

3 fissure in the medial angle of vascular lacuna

4 fibers of aponeurosis of the external oblique muscle

18. LATERAL WALL OF THE FEMORAL CANAL IS

1 cribriform fascia

2 pirogov’s lymphatic node

3 falciform margin of the broad fascia of the thigh

19. WRINKLING OF THE FOREHEAD SKIN IS FUNCTION OF THE

1 m.temporalis

2 m.epicranial

3 m.occipitofrontal

4 m.procerus

20. DEVELOPMENT OF THE MASTICATORY MUSCLES IS FROM

1 I visceral arch

2 Ii visceral arch

3 Iii visceral arch

4 Iv visceral arch

**Module №3 Splanchnology**

**Topic 1.**

**Introduction into splanchnology.Review of the respiratory system organs. Nasal cavity. Larynx. Trachea.**

**The form of the current control of students ' progress**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.
2. List organs of the respiratory system.
3. Division into the superior and inferior respiratory ways.
4. Nasal cavity (external nose, walls of the nasal cavity, nasal conches and nasal meatuses, communications of the nasal cavity).
5. Paranasal sinuses. Communications of the nasal meatuses with the paranasal sinuses and the nasolacrimal canal.
6. Laryngeal structure (shape, parts, etc.)
7. Laryngeal cavity (laryngeal vestibule, glottis, laryngeal ventricles, infraglottic cavity), its communications.
8. Laryngeal cartilages, their structure.
9. Laryngeal connections (syndesmoses and diarthroses).
10. Fibro-elastic membrane of the larynx, its parts, vestibular and vocal ligaments.
11. Laryngeal muscles:
    1. muscles changing size of a glottis (dilator and constrictors);
    2. muscles changing degree of a tension of vocal ligaments (straining and weakening).
12. Phonation mechanism.
13. Topography of the larynx (skeletotopy, sintopy).
14. Structure and topography of the trachea.
15. Structure and topography of the right and left main bronchus.
16. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. The skulland its sagittal cut.

2. The sagittal cut of the head and a neck.

3. The anatomical dummies and preparations "Connections of the laryngeal cartilages".

4. The complex "Larynx, tongue, hyoid bone".

5. The complex "Larynx, trachea, bronchi, lungs, heart".

1. Test of practical skills.

**The student** **has to know, be able to show:**

1. On the skull and its sagittal cut

* the walls of the nasal cavity: superior, inferior, lateral, medial, incomplete posterior, their bones forming
* the piriform aperture of the nose and the choanae
* the nasal conches and the nasal meatuses, their communications
* the frontal, sphenoidal, maxillary sinuses

2. On the sagittal cut of the head and neck

* the nasal conches and nasal meatuses
* the communications of the nasal meatuses with frontal, maxillary, sphenoidal sinuses and nasolacrimal duct
* the departments of the laryngeal cavity, laryngeal vestibule, glottis, laryngeal ventricles, infraglottic cavity, vestibular and vocal folds, laryngeal ventricles
* the trachea

3. On the preparations

* the thyroid cartilage (laminae, angle, superior and inferior horns, notch)
* the cricoid cartilage (arch, lamina)
* the arytenoid cartilage (basis, top, vocal process, muscular process)
* the epiglottis (stalk of the epiglottis)

4. On the complex of the natural preparations "Larynx, tongue, hyoid bone"

* the laryngeal inlet and its border (epiglottis, ary-epiglottic fold, arytenoid cartilages)
* the laryngeal cartilages (thyroid cartilage, cricoid cartilage, arytenoid cartilages, epiglottis)
* the hyoid bone, the thyrohyoid membrane, its ligaments
* the departments of laryngeal cavity and their structural elements (laryngeal inlet, epiglottis, laryngeal vestibule, vestibular folds, laryngeal ventricles, infraglottic cavity)

5. On the anatomical dummies and preparations "Connections of the laryngeal cartilages"

* the separate laryngeal cartilages and their structural elements
* the thyrohyoid membrane and its ligaments
* the cricothyroid ligament
* the cricothyroid joint
* the crico-arytenoid joint
* the cricothyroid muscles
* the posterior crico-arytenoid muscles
* the lateral crico-arytenoid muscles
* the transverse and oblique arytenoid muscles
* the thyro-arytenoid muscles

6. On the complex "Larynx, trachea, bronchi, lungs, heart"

* the larynx
* the trachea
* the main bronchi and their differences
* the lungs
* the pulmonary arteries and pulmonary veins

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study the structure of the vertebrae, write down Latin terms in a notebook.

Draw and mark:

1. Nasal passages and their communication with the paranasal sinuses

2. Diagram of the mechanism of action of the laryngeal muscles

Write down Latin, Greek, and author's names:

1. Nose - nasus (Latin), rhinos (Greek.);

2. Maxillary sinus (cave) - sinus maxillaris( Latin), maxillary sinus (cave) (auth.);

3. The glottis – rima vocalis (Latin), rima glottidis (Greek).);

4. The ventricles of the larynx – the ventricles of the Morganii.

**Topic 2.**

**Lungs. The bronchial and alveolar tree. Anatomy of the pleura and mediastinum. Conversation on the topic: Topography of the pleura and lungs (CIW -1h).**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

1. External structure of the lungs (base, apex, borders, surfaces, hilum, fissures, lobes, cardiac notch).

2. Elements of the pulmonal roots, their interposition on the right and the left.

3. Structural units of the lung and the bronchi, them ventilating (lobes, segments, lobules, acinus).

4. Segmentary structure of the lungs.

5. Elements of the bronchial tree (lobar, segmental, intrasegmental and lobular bronchi, terminal bronchioles).

6. Elements of the alveolar tree (respiratory bronchioles, alveolar ducts, alveolar saccs, alveolae).

7. Vertical lines of the thorax (anterior median, parasternal, midclavicular, anterior, middle and posterior axillary, scapular, paravertebral, posterior median);

8. Topography of the lungs (skeletotopy, sintopy, golotopy);

9. Concept about the serous membrane and cavities. Structure of the serous membrane.

10. Pleura (parietal and visceral). Elements of the parietal pleura structure.

11. Pleural cavity, pleural recesses.

12. Concept of the mediastinum, it’s structure. Division into the anterior mediastinum and posterior mediastinum, their organs.

1. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. The skeleton.

2. The cadaver with the opened thoracic cavity.

3. The complex "Larynx, trachea, bronchi, lungs, heart"

4. The model "Bronchial tree and pulmonary segments".

3. Test of practical skills.

**The student has to know, be able to show:**

1.On the skeleton

* the vertical lines of the thorax
* the projection of the lungs to the thoracic walls

2. On the cadaver with the opened thoracic cavity and the complex "Larynx, trachea, brohchi, lungs, heart"

* the trachea
* tracheal bifurcation, right and left main bronchi
* the lungs and elements of their external structure (apex; base; costal, diaphragmatic and medial surfaces; anterior, posterior and inferior borders; horizontal and oblique fissures; lobes; cardiac notch of the left lung; hilum)
* the root of the lung, its elements and their relationship on the right and left lungs
* the parietal pleura
* the visceral pleura
* the pleural cavity, pleural recesses
* the organs of the anterior mediastinum (trachea and roots of the lungs, heart, pericardium, thymus, ascending aorta and its arch, superior vena cava)
* the organs of the posterior mediastinum (esophagus, descending aorta)

3. On the model "Bronchial tree and pulmonary segments"

* the trachea, the tracheal bifurcation
* the basic elements of the bronchial tree (main, lobar, segmental and intrasegmental bronchi, segments of the right and left lungs)

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study the structure of the vertebrae, write down Latin terms in a notebook.

Draw and mark:

1. Diagram of the segmental structure of the lungs;

2. The scheme of the roots of the lungs;

3. The scheme of pleural sinuses;

4. Diagram of the bronchial tree;

5. Acinus structure diagram;

6. A diagram of the lower borders of the lungs and pleura.

Write down Latin and Greek names:

1. Lung - pulmo (Latin), pneumo (Greek).

**Topic 3.**

**Vessels of a greater (systemic) and lesser (pulmonary) circles of the blood circulation. External and internal structure of a heart. The heart blood supply.**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

1. Circles of blood circulation: the pulmonary (lesser or lung) circle and the systemic (greater or corporal ) circle. The direction of blood flow inside the heart and great vessels.
2. External structure of the heart (shape, axis, basis, apex, surfaces - sternocostal, diaphragmatic and pulmonary, margins, coronary sulcus, anterior interventricular sulcus and posterior interventricular sulcus).
3. Chambers of the heart, their boundaries.
4. Structure of the atrium, the vessels bringing blood into the atria interatrial septum, oval fossa, connections of each atrium.
5. Structure of the ventricle, the vessels bringing blood from the ventricles, connections of each ventricle, atrioventricular openings.
6. Heart valves: cuspid and semilunar, their structure, location, functional significance.
7. The structure of the walls of the heart: endocardium, myocardium, epicardium.
8. Fibrous skeleton (rings). Structure and functions.
9. The heart’s conducting system (sinoatrial node, atrioventricular node, bundle of His, Purkinje fibers). Structure and functions.

2.Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. The cadaver with the opened chest cavity.

2. The unopened heart.

3. The heart with opened chambers and vessels.

4. The skeleton.

3.Test of practical skills.

**The student has to know, be able to show:**

1.On the cadaver with the opened chest cavity

* the position of the heart in the mediastinum, its syntopia
* the parietal and visceral layers of the pericardium, the place of their transition into each other, pericardial cavity
* the sinuses of the pericardium: transverse and oblique
* the great vessels of the heart.

2.On the unopened heart

* axis, basis, apex, surfaces - sternocostal, diaphragmatic and pulmonary, margins, coronary sulcus, anterior interventricular sulcus and posterior interventricular sulcus of the heart
* the external borders of the atria and ventricles, the auricles of the heart
* the vessels,bringing blood in the left atria - the superior cava vein, the inferior cava vein, the coronary sinus, pulmonary veins.

3. On the heart with opened chambers and vessels

* the right atrium: the superior cava vein, the inferior cava vein, the coronary sinus, atrioventricular opening, oval fossa, the cavity of the auricle
* the right ventricle: tricuspid valve, its parts; the pulmonary trunk, semilunar valve
* the left atrium: the pulmonary veins, the cavity of the left auricle, atrioventricular opening
* the left ventricle: mitral valve, its parts; the aortic semilunar valve, openings of the coronary arteries
* the chambers of the heart and vessels that take part in the flow of the blood in the greater and lesser circles of blood circulation.

4.On the heart with its own vessels

* the coronary arteries (right, left, their main branches)
* the place of origin of the coronary arteries
* coronary sinus, the place of its confluence into the right atrium.

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study the structure of the vertebrae, write down Latin terms in a notebook.

Draw and mark.

1. Diagram of the conducting system of the human heart

2. Projection of the borders of the heart and the place of listening to the valves on the front wall of the chest

Write down Latin, Greek, and author's names.

1. The heart (cor, cordis)

2. Double-leaf valve (volna bicuspidalis, valva atrioventricularis dextra, valva mitralis)

3. Tricuspid valve (volna bicuspidalis, valva atrioventricularis dextra.

4. Layers of the heart wall :

1. inner (endocard)
2. middle (miocard)
3. outer (epicard)

5. Sinus-atrial node (nodus sinuatrialis, Kisa-Fleck node)

6. Atrioventricular node (nodus atrioventricularis, Aschoff-Tavar node)

4. Atrioventricular bundle (Latin,auth.) – (fasciculus atrioventricularis, bundle of Gis).

**Topic 4.**

**The heart topography (borders and places of listening of valves). Pericardium. Mediastinum. Conversation on the topic: The fetal blood circulation (CIW -1h)**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

**Control questions for preparing:**

1. Heart topography. Projection of the heart boundaries and the heart valves on the anterior wall of the chest.
2. The places of the heart valves auscultation.
3. Coronary circulation.
4. Coronary arteries (the left coronary artery - anterior interventricular artery, circumflex artery, the right coronary artery).   The area of blood supply.
5. Coronary veins (veins of the coronary sinus, anterior cardiac veins, smallest cardiac veins(Tebeziy veins)).
6. Embryonal blood circulation.
7. Rentgenology of the heart.

2.Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. The cadaver with the opened chest cavity.

2. The unopened heart.

3. The heart with opened chambers and vessels.

4. The skeleton.

3. Test of practical skills.

**The student has to know, be able to show:**

1.On the skeleton

* the projection of the boundaries and the apex of the heart on the anterior wall of the chest
* the places of the heart valves auscultation

2.On the roentgenogram of the chest in frontal projection

* the right path of the heart (the superior arch - shadow of the ascending aorta, the superior cava vein and the inferior arch - shadow of the right ventricle)
* the left path of the heart (the first arch - shadow of the aortic arch, the second arch - shadow of the pulmonary trunk, the third arch - shadow of the left auricle, and the fourth arch - the shadow of the left ventricle).

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study the structure of the vertebrae, write down Latin terms in a notebook.

Draw and mark:

1. Fetal blood circulation diagram

2. The scheme of the pools of blood supply to the right and left coronary arteries.

**Topic 5.**

**Review of the digestive system organs. Mouth, oral cavity, major salivary glands, teeth, tongue, pharynx, soft palate**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

1. List organs of the digestive system.

2. Oral cavity. Walls of the vestibule and the proper oral cavity.

3. Structure of the cheeks, the lips.

4. Structure of the floor of the oral cavity (muscles and organs).

5. Structure of the hard palate, the soft palate.

6. Muscles of the soft palate.

7. Fauces, its boundaries.

8. Teeth, parts of the tooth. Structure of the tooth. Deciduous and permanent teeth.

9. Tongue: its division into parts, structure of lingual tonsil, lingual papillae. Functions of the tongue.

10. Lingual muscles.

11. Large salivary glands: parotid, submandibular, sublingual. Structure, topography, ducts and places of its opening.

12. Pharynx:

а) parts of the pharynx and their connections with other cavities;

b) walls of the nasopharynx (lateral, anterior, posterior). Pharyngeal and tubal tonsils, pharyngeal opening of auditory tube;

c) structure of wall layers;

d) the pharyngeal tonsils (Pirogov - [Waldeyer's tonsillar ring](http://en.wikipedia.org/wiki/Waldeyer%27s_tonsillar_ring));

e) topography of pharynx (skeletotopy, sintopy);

f) act of the swallowing.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. The base of the skull.
2. The skeleton.
3. The medial surface of the sagittal cutting head.
4. The preparations of the tongue, pharynx, esophagus with stomach
5. The set of the teeth.
6. The cadaver with opened thoracic and abdominal cavities.

3.Test of practical skills.

**The student has to know, be able to show:**

1. On the base of the skull

* parts of the palate
* the dental alveoli
* origin and insertion of the soft palate muscles, tongue, and floor of the oral cavity.

2. On the skeleton

* skeletotopy of the pharynx
* skeletotopy of the parts and constrictions of the esophagus;
* skeletotopy of the stomach.

3. On the medial surface of the sagittal section of head

* parts of the oral cavity, their boundaries
* the floor of the oral cavity (mylohyoid muscle, anterior belly of digastric muscle, geniohyoid muscle)
* the lips, cheeks, teeth
* the parts of the tongue (apex, body, root, dorsum)
* the lingual tonsil
* the muscles of the tongue (genioglossus, hyoglossus, styloglossus, superior longitudinal muscle, inferior longitudinal muscle, transverse and vertical muscles)
* the sublingual salivary gland and place of opening its duct (sublingual papilla)
* the hard palate
* the soft palate, uvula, arches, palatine tonsil
* the pharynx
* the larynx
* the connections of the pharynx with other cavities  
  - the nasal cavity (choanae)  
  - the tympanic cavity (the pharyngeal opening of auditory tube)  
  - the oral cavity (fauces)  
  - the cavity and the larynx (the entrance to the larynx)  
  - the cavity and the esophagus (the entrance into the esophagus)
* the elements of the lympho-epithelial ring (Pirogov-Waldeyer´s ring).

4. On the preparation of the tongue

* the median and the terminal grooves
* the parts(the apex, the body, root)
* the papillae of tongue (filiform, fungiform, vallate, foliate)
* the lingual tonsil.

5. On the set of teeth

* different kinds of teeth (incisor, canine, premolar, molar, wisdom)
* parts of the tooth (crown, cervix, root, pulp cavity, root canal)

6. On the preparation of the pharynx

* the choanae
* the pharyngeal opening of auditory tube
* the soft palate
* the root of the tongue
* the epiglottis
* the inlet to the larynx

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study the structure of the vertebrae, write down Latin terms in a notebook.

Draw and mark:

1. soft palate musculature diagram;

2. diagram of the tooth structure;

3. the layout of the tonsils of the pharynx;

Write down Latin, Greek, and author's names:

1. Oral cavity-cavum oris (Latin), stoma (Greek);

2. Language-lingua (Latin), glossa (Greek);

3. Tooth – dens (Latin), odontos (Greek);

4. The duct of the parotid salivary gland – the stenonic duct (auth);

5. The duct of the submandibular salivary gland-Warton's duct (auth);

6. The duct of the sublingual salivary gland-the Bartholinian duct (auth);

7. The fat body of the cheek – a lump of Bicha (auth).

**Topic 6. Anatomy of the esophagus, stomach. Small and large intestine.**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.
2. Esophagus. Parts: constrictions of the esophagus, its practical value. The structure of the wall layers. Topography (skeletotopy, sintopy).
3. Stomach. Parts, the wall layers, curvatures. Topography (skeletotopy, sintopy).Parts of the small intestine.
4. Duodenum:
   1. parts, flexures, confluence of the common bile duct, pancreastic duct, accessory pancreatic duct;
   2. structure of the layers of the duodenum wall;
   3. topography of the duodenum (skeletotopy, syntopy, holotopy).
5. Jejunum and ileum:
   1. differences between the jejunum and ileum;
   2. structure of the layers of jejunum and ileum;
   3. topography of the jejunum and ileum (skeletotopy, syntopy, holotopy).
6. Parts of the large intestine (cecum, colon, rectum).
7. Cecum and appendix:
   1. external structure of the cecum and the appendix;
   2. cavity of the caecum and its connections;
   3. topography of the cecum and the appendix (skeletotopy, syntopy, holotopy).  
      6. Colon:
   4. parts and curvatures of the colon;
   5. teniae coli, haustra, epiploic appendages;
   6. topography of the colon (skeletotopy, syntopy, holotopy).
   7. structure of the layers of the cecum, colon and appendix.
8. Rectum:
   1. parts and curvatures of the rectum;
   2. structure of the rectum wall;
   3. sphincter muscles of the anus (internal, external);
   4. topography of the rectum in male and female pelvis.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. The complex “Liver, stomach, duodenum, pancreas, spleen”.
2. The jejunum and ileum.
3. The sagittal cut of the pelvis.
4. The cadaver with opened abdominal cavity

3.Test of practical skills.

**The student has to know, be able to show:**

1. On the thoracic cavity of the cadaver

* the esophagus
* the organs, adjoining with the esophagus (trachea with major bronchi, aorta, diaphragm, heart)

2. On the preparation of the esophagus with stomach

* the longitudinal folds of mucous membrane of the esophagus
* the longitudinal muscles of the esophagus
* the adventitia of the esophagus
* the parts, curvatures and walls of the stomach
* the orientation of the folds of mucous membrane of the stomach into the different parts
* the pyloric sphincter

3. On the abdominal cavity of the cadaver

* the abdominal esophagus and organs in contact with it (left lobe of liver, spleen)
* the parts, the walls, and the curvatures of the stomach.

4.On the complex “Liver, stomach, duodenum, pancreas, spleen”

* the parts, the flexures of duodenum
* the relief of the mucous membrane (circular and longitudinal folds, major duodenal papilla, single lymphoid nodules)

5. On the jejunum and ileum

* the relief of the mucous membrane of the jejunum (circular folds, solitary lymphoid nodules)
* the relief of the mucous membrane of the ileum (circular folds, solitary and aggregated lymphoid nodules)
* differences in the structure of the jejunum and ileum.

6 At «The ileocecal corner»:

* the ileum, cecum, appendix, mesoappendix
* ileocecal foramen and valve (Bauhinia)
* the orifice of the appendix
* the beginning of the colon tenia
* semilunar folds

7. On sagittal cuts of the pelvis

* syntopia and sceletotopia of rectum in female pelvis
* syntopia and sceletotopia of rectum in male pelvis
* the departments of the rectum (part above ampulla, ampulla, anal canal), anus
* the fissures of the rectum (the sacral and lateral)
* the relief of the mucous membrane of the rectum (folds, anal columnes, anal sinuses, hemorrhoid area, anocutaneons line)

8. On the abdominal cavity

* the duodenum (parts, fissures, covering the peritoneum)
* the jejunum and ileum, covering the peritoneum
* the ileocecal corner, vermiform appendix, covering their peritoneum
* the colon (departments, curvatures, covering the peritoneum, teniae coli, haustra, epiploic appendages)
* the rectum, covering the peritoneum

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study, write down Latin terms in a notebook.

Draw and mark:

1. diagram of the topography of the thoracic esophagus;

2. diagram of the stomach departments.

3. The scheme of skeletotopy of the duodenum;

4. Diagram of the anterior abdominal wall areas with the holotopy of the abdominal organs;

5. Diagram of the extrahepatic biliary tract.

Write down the Latin, author's and Greek names of the organs:

1. The stomach-ventriculus (lat), gaster, stomachus (Greek).

2. The lymphoepithelial ring of the pharynx-the Waldeyer-Pirogov ring (auth).Small intestine-intestinum tenue (Latin), enteron (Greek);

3. Large duodenal papilla- Phater's papilla (auth);

4. Group lymphoid nodules-Peyer's plaques (auth);

5. Ileo-cecal valve – Bauginieva valve (auth);

6. Caecum- caecum (Latin), typhlon (Greek);

7. Sigmoid colon-colon sigmoideum (Latin), S-Romanum (Greek);

8. Tenia coli -Valsalv's tenia (auth);

9. Rectum-rectum (Latin), proktos (Greek).

10. Anal columns and sinuses - morgani columns and sinuses (auth).

**Topic 7.**

**Liver. Pancreas. Spleen.** **Bile ducts.**

**Topography of the digestive system organs. Regions of an anterior abdomen wall.**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

1. Liver:

a) external structure of liver;

b) internal structure of the liver;

c) skeletotopy, syntopy, holotopy of the liver, covering by the peritoneum;

d) extrahepatic bile ducts;

e) gallbladder (parts, layers of wall, skeletotopy, syntopy, holotopy, covering by the peritoneum).

2. Pancreas:

a) external structure of the pancreas (parts, surfaces, margins);

b) internal structure of the pancreas (excretory and endocrine parts, excretory ducts of the pancreas and the place of their opening);

c) skeletotopy, syntopy, holotopy, covering by the peritoneum.

3. Relationship of the excretion of the bile and the pancreatic juice.

4. Spleen (organ of the immune and blood system):

a) external structure (surfaces, margins, ends, hilus);

b) skeletotopy, syntopy, holotopy, covering of the peritoneum.

5.Bile ducts.

6.Topography of the digestive system organs.

7.Regions of an anterior abdomen wall.

2.Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. A complex with the opened abdominal cavity.

2. Sagittal section of male and female pelvic.

3.Test of practical skills.

**The student has to know, be able to show:**

1.On the complex “Liver, stomach, duodenum, pancreas, spleen”

* the parts, the flexures of duodenum
* the relief of the mucous membrane (circular and longitudinal folds, major duodenal papilla, single lymphoid nodules)
* the confluence of the common bile duct, the pancreatic duct, the accessory pancreatic duct)
* the diaphragmatic and visceral surfaces and the inferior margin of the liver
* the ligaments of the liver (coronary, falciform, round, venous, hepatoduodenal, hepatogastric)
* the lobes of the liver on the diaphragmatic and visceral surfaces (right, left, quadrate, caudate)
* the deepenings of visceral surface of liver (fossa for gallbladder, groove for vena cava, fissures for round and venous ligaments) and their contents
* the porta of the liver, the relationships between hepatic duct, own hepatic artery, the portal vein
* the foramens of the hepatic veins on the anterior wall of the inferior vena cava
* the extrahepatic bile ducts (right and left hepatic ducts, common hepatic duct, cystic duct, common bile duct), gallbladder
* the papilla on the longitudinal fold of mucous membrane of the medial wall of the descending part of the duodenum
* the parts of the pancreas (head, neck, body and tail)
* the gallbladder (fundus, body, neck, cystic duct)

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher, write down Latin terms in a notebook.

Draw and mark - diagram of the areas of the anterior abdominal wall and the projection of internal organs on it.

Write down Latin, Greek and author's names:

1. Liver – jecur (Latin), hepar (Greek);

* 1. fibrous membrane of the liver-glissonova capsule (auth);
  2. caudate lobe of the liver – spiegel lobe (auth);

2. Gallbladder-vesica fellae, vesica biliaris (Latin), cholecystis (Greek);

3. Sphincter of the neck of the gallbladder – Lutkens ' sphincter (auth);

4. Sphincter of the common hepatic duct-Merizzi sphincter (auth);

5. Sphincter of the hepatic-pancreatic ampoule-sphincter of Oddi (auth);

6.Pancreas - Azelli's gland (auth);

7. Pancreatic islets-islets of Langerhans (auth);

8. The duct of the pancreas-the Virsung duct (auth);

9. The additional duct of the pancreas – the Santorini duct (auth);

10. Spleen – lien (Latin), spleen (Greek).

**Topic 8.**

**Peritoneum (course, types of a covering of organs and derivatives.**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

1. The peritoneum, its parietal and visceral portions.

2. The concept of the abdominal and peritoneal cavities. Peritoneal cavity, its sexual features.

3. Types of coverage of peritoneum all organs of the abdominal cavity (intra-, meso-, extraperitoneal).

4. The notion of derivatives peritoneum: ligaments, mesentery, omentum.  
5. The course of the peritoneum in the abdomen. The formation of lesser and greater omentum, mesentery. The contents of the hepato-duodenal ligament.

6. The division of the peritoneal cavity on 3storeys, their boundaries.

7. Topographo - anatomic structures of the peritoneal cavity.

8. Folds and fossae in the anterior abdominal wall.

2.Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. A complex with the opened abdominal cavity.

2. Sagittal section of man's and female pelvic.

3.Test of practical skills.

**The student has to know, be able to show:**

1.The topographo-anatomic structures of the peritoneal cavity of the floors:Upper floor:

* omental bursa (walls, content)
* pregastric bursa (walls, content)
* hepatic bursa (walls, departments, content)

Middle floor:

* the right and left side channels (border, messages)
* the right and left mesenteric sinuses (border, messages)
* the recesses of the middle floor of the abdomen

Lower floor:

* peritoneal deepening of the small pelvis (sexual features).

2. Folds and fossae in the anterior abdominal wall:

* the parietal and visceral sheets of the peritoneum, the peritoneal cavity
* the course of the peritoneum on the floors of the abdomen
* in the upper floor of the abdomen:
* the ligaments of diaphragmatic surface of the liver (coronary, falciform)
* the lesser omentum (hepatoduodenal, hepatogastric, and diaphragmogastric ligaments)
* the ligaments of spleen (diaphragmosplenic, gastrosplenic and colonosplenic)
* the gastrocolic ligament
* hepatic bursa (walls, content, above and subhepatic space)
* the pregastric bursa (walls, content)
* the omental bursa, its foramen
* on the middle floor of the abdomen:
* a greater omentum
* mesentery of small intestine
* the mesentery of the transverse colon, sigmoid intestine and the appendix
* right and left mesenteric sinuses and its borders
* the right and left side channels and its borders
* recesses
* the folds and fossa of peritoneum on the anterolateral wall of the abdomen (median, medial and lateral umbilical folds, supravesical fossa, medial and lateral inguinal fossae)
* in the lower floor of the male abdomen
* recto-vesical pouch
* in the lower floor of the female abdomen
* recto- uterine pouch
* vesico-uterine pouch

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher, write down Latin terms in a notebook.

Draw and mark- Diagram of the peritoneum stroke.

Write down Latin, Greek and author's names:

1. Оmentum – omentum (Latin), epiploon (Greek);

2. The opening of the omental bursa - foramen intervenosum (Latin), foramen epiploicum (Greek), Vinslov's foramen (auth.)

3. Rectal - uterine recess - Douglas pouch (auth.).

**Topic 9.**

**The final lesson. Part I.**

**Splanchnology.**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Testing

1..Interview for control questions.

1. List organs of the respiratory system.
2. Division into the superior and inferior respiratory ways.
3. Nasal cavity (external nose, walls of the nasal cavity, nasal conches and nasal meatuses, communications of the nasal cavity).
4. Paranasal sinuses. Communications of the nasal meatuses with the paranasal sinuses and the nasolacrimal canal.
5. Laryngeal structure (shape, parts, etc.)
6. Laryngeal cavity (laryngeal vestibule, glottis, laryngeal ventricles, infraglottic cavity), its communications.
7. Laryngeal cartilages, their structure.
8. Laryngeal connections (syndesmoses and diarthroses).
9. Fibro-elastic membrane of the larynx, its parts, vestibular and vocal ligaments.
10. Laryngeal muscles
11. Phonation mechanism.
12. Topography of the larynx.
13. Structure and topography of the trachea.
14. Structure and topography of the right and left main bronchus.
15. External structure of the lungs.
16. Elements of the pulmonal roots, their interposition on the right and the left.
17. Structural units of the lung and the bronchi, them ventilating.
18. Segmentary structure of the lungs.
19. Elements of the bronchial tree.
20. Elements of the alveolar tree.
21. Vertical lines of the thorax Topography of the lungs.
22. Concept about the serous membrane and cavities. Structure of the serous membrane.
23. Pleura (parietal and visceral). Elements of the parietal pleura structure.
24. Pleural cavity, pleural recesses.
25. Concept of the mediastinum, it’s structure. Division into the anterior mediastinum and posterior mediastinum, their organs.
26. Circles of blood circulation: the pulmonary (lesser or lung) circle and the systemic (greater or corporal ) circle. The direction of blood flow inside the heart and great vessels.
27. External structure of the heart.
28. Chambers of the heart, their boundaries.
29. Structure of the atrium, the vessels bringing blood into the atria interatrial septum, oval fossa, connections of each atrium.
30. Structure of the ventricle, the vessels bringing blood from the ventricles, connections of each ventricle, atrioventricular openings.
31. Heart valves: cuspid and semilunar, their structure, location, functional significance.
32. The structure of the walls of the heart: endocardium, myocardium, epicardium.
33. Fibrous skeleton (rings). Structure and functions.
34. The heart’s conducting system. Structure and functions.
35. Heart topography. Projection of the heart boundaries and the heart valves on the anterior wall of the chest.
36. The places of the heart valves auscultation.
37. Coronary circulation.
38. Coronary arteries (the left coronary artery - anterior interventricular artery, circumflex artery, the right coronary artery).   The area of blood supply.
39. Coronary veins (veins of the coronary sinus, anterior cardiac veins, smallest cardiac veins (Tebeziy veins).
40. Embryonal blood circulation.
41. Organs of the digestive system.
42. Oral cavity. Walls of the vestibule and the proper oral cavity.
43. Structure of the cheeks, the lips.
44. Structure of the floor of the oral cavity.
45. Structure of the hard palate, the soft palate.
46. Muscles of the soft palate.
47. Fauces, its boundaries.
48. Teeth, parts of the tooth. Structure of the tooth. Deciduous and permanent teeth.
49. Tongue: its division into parts, structure of lingual tonsil, lingual papillae. Functions of the tongue.
50. Lingual muscles.
51. Large salivary glands: parotid, submandibular, sublingual. Structure, topography, ducts and places of its opening.
52. Pharynx(parts, walls,topography)
53. Esophagus. Parts: constrictions of the esophagus, its practical value. The structure of the wall layers. Topography.
54. Stomach. Parts, the wall layers, curvatures. Topography.
55. Parts of the small intestine.
56. Duodenum.
57. Jejunum and ileum
58. Parts of the large intestine (cecum, colon, rectum).
59. Cecum and appendix.
60. Colon.
61. Rectum
62. Liver
63. Pancreas.
64. Relationship of the excretion of the bile and the pancreatic juice.
65. Spleen (organ of the immune and blood system):
66. The peritoneum, its parietal and visceral portions.
67. The concept of the abdominal and peritoneal cavities. Peritoneal cavity, its sexual features.
68. Types of coverage of peritoneum all organs of the abdominal cavity (intra-, meso-, extraperitoneal).
69. The notion of derivatives peritoneum: ligaments, mesentery, omentum.
70. Topographo - anatomic structures of the peritoneal cavity.
71. Folds and fossae in the anterior abdominal wall.

2.Description of macro (micro) preparations.

**To be able to find and show:**

1. the walls of the nasal cavity
2. the piriform aperture of the nose and the choanae
3. the nasal conches and the nasal meatuses, their communications
4. the frontal, sphenoidal, maxillary sinuses
5. the nasal conches and nasal meatuses
6. the communications of the nasal meatuses with frontal, maxillary, sphenoidal sinuses and nasolacrimal duct
7. he departments of the laryngeal cavity
8. the trachea
9. the laryngeal inlet and its border (epiglottis, ary-epiglottic fold, arytenoid cartilages)
10. laryngeal cartilages (thyroid cartilage, cricoid cartilage, arytenoid cartilages, epiglottis)
11. the hyoid bone, the thyrohyoid membrane, its ligaments
12. the departments of laryngeal cavity and their structural elements
13. separate laryngeal cartilages and their structural elements
14. thyrohyoid membrane and its ligaments, the cricothyroid ligament
15. the cricothyroid joint
16. the crico-arytenoid joint
17. muscles of laryngs.
18. main bronchi and their differences
19. lungs
20. pulmonary arteries and pulmonary veins
21. vertical lines of the thorax
22. the projection of the lungs to the thoracic walls
23. tracheal bifurcation, right and left main bronchi
24. the root of the lung, its elements and their relationship on the right and left lungs
25. the parietal pleura
26. the visceral pleura
27. the pleural cavity, pleural recesses
28. the organs of the anterior mediastinum
29. the organs of the posterior mediastinum
30. the basic elements of the bronchial tree (main, lobar, segmental and intrasegmental bronchi, segments of the right and left lungs)
31. the dental alveoli
32. origin and insertion of the soft palate muscles, tongue, and floor of the oral cavity.
33. skeletotopy of the pharynx
34. skeletotopy of the parts and constrictions of the esophagus;
35. skeletotopy of the stomach.
36. parts of the oral cavity, their boundaries
37. the floor of the oral cavity (mylohyoid muscle, anterior belly of digastric muscle, geniohyoid muscle)
38. the lips, cheeks, teeth
39. the parts of the tongue (apex, body, root, dorsum)
40. the lingual tonsil
41. the muscles of the tongue
42. the sublingual salivary gland and place of opening its duct
43. the hard palate
44. the soft palate, uvula, arches, palatine tonsil
45. the connections of the pharynx with other cavities
46. the elements of the lympho-epithelial ring (Pirogov-Waldeyer´s ring).
47. 4. the tongue
48. The teeth
49. different kinds of teeth (incisor, canine, premolar, molar, wisdom)
50. parts of the tooth (crown, cervix, root, pulp cavity, root canal)
51. the choanae
52. the pharyngeal opening of auditory tube
53. the soft palate
54. the root of the tongue
55. the epiglottis
56. the longitudinal folds of mucous membrane of the esophagus
57. the longitudinal muscles of the esophagus
58. the adventitia of the esophagus
59. the parts, curvatures and walls of the stomach
60. the confluence of the common bile duct, the pancreatic duct, the accessory pancreatic duct
61. the diaphragmatic and visceral surfaces and the inferior margin of the liver
62. the ligaments of the liver
63. the lobes of the liver on the diaphragmatic and visceral surfaces
64. the visceral surface of liver
65. the porta of the liver
66. the foramens of the hepatic veins on the anterior wall of the inferior vena cava
67. the extrahepatic bile ducts,
68. gallbladder
69. the parts of the pancreas
70. the duodenum
71. the jejunum and ileum
72. cecum, appendix, mesoappendix
73. ileocecal foramen and valve (Bauhinia)
74. tenia coli
75. the departments of the rectum
76. omental bursa
77. pregastric bursa
78. hepatic bursa
79. the right and left side channels
80. the right and left mesenteric sinuses
81. the recesses of the middle floor of the abdomen
82. peritoneal deepening of the small pelvis.
83. folds and fossae in the anterior abdominal wall
84. the ligaments of diaphragmatic surface of the liver
85. the lesser omentum
86. the ligaments of spleen
87. the gastrocolic ligament
88. a greater omentum
89. mesentery of small intestine
90. recto-vesical pouch
91. recto- uterine pouch
92. vesico-uterine pouch
93. the heart in the mediastinum
94. the parietal and visceral layers of the pericardium,
95. the sinuses of the pericardium
96. axis, basis, apex, surfaces of the heart
97. the superior cava vein, the inferior cava vein, the coronary sinus, atrioventricular opening, oval fossa, the cavity of the auricle
98. tricuspid valve, the pulmonary trunk, semilunar valve
99. the pulmonary veins, the cavity of the left auricle, atrioventricular opening
100. mitral valve, the aortic semilunar valve, openings of the coronary arteries
101. the chambers of the heart 4.On the heart with its own vessels
102. the coronary arteries
103. coronary sinus.
104. the projection of the boundaries and the apex of the heart on the anterior wall of the chest
105. the places of the heart valves auscultation

3.Testing

1. THE ANATOMICAL STRUCTURES THAT FORM THE UPPER WALL OF THE PROPER ORAL CAVITY:

1. hard and soft palate
2. the root of the tongue
3. the cheeks
4. the diaphragm of the mouth

2.THE SKELETAL MUSCLE OF THE TONGUE:

1. the upper longitudinal muscle
2. the palatine-lingual muscle
3. the lower longitudinal muscle
4. the vertical muscle

3.WHERE THE PAROTID DUCT (STENON DUCT) OPENS IN THE ORAL CAVITY:

1. in the vestibule of the mouth, at the level of the 1st upper molar
2. in the vestibule of the mouth, at the level of the 2nd upper molar
3. in the area of the hyoid papilla
4. in the area of the hyoid fold

4. THE COMUNICATIONS OF THE ORAL PART OF THE PHARYNX:

1. the nasal cavity
2. auditory tube (Eustachian tube)
3. oral cavity
4. esophagus

5. THE NUMBER OF PHARYNGEAL CONSTRICTORS:

1. 2
2. 3
3. 4
4. 5

6. THE SKELETOTOPY OF THE ORIGIN OF THE ESOPHAGUS:

1. IV cervical vertebra
2. V cervical vertebra
3. VI cervical vertebra
4. VII cervical vertebra

7. THE SKELETOTOPY OF THE PLACE OF THE CONFLUENCE OF THE ESOPHAGUS INTO THE STOMACH:

1. IX thoracic vertebra
2. X thoracic vertebra
3. XI thoracic vertebra
4. XII thoracic vertebra

8. THE POSITION OF THE PANCREAS IN RELATION TO THE PERITONEUM:

1. intraperitoneal position
2. mesoperitoneal position
3. extraperitoneal position
4. intraperitoneal position in the presence of mesentery

9. THE ANATOMICAL STRUCTURE THAT FORMS THE UPPER WALL VESTIBULE OF THE OMENTAL BURSA:

1. caudate lobe of the liver
2. mesentery of the transverse colon
3. small omentum and posterior wall of the stomach
4. parietal peritoneum

10. THE LOCATION OF THE URETER IN THE RENAL HALUM IN RELATION TO THE BLOOD VESSELS:

1. anteriorly
2. posteriorly
3. medially
4. laterally

11. WHERE THE KIDNEY CALYX ARE LOCATED:

1. in the cortical substance of the kidney
2. in the renal pyramids
3. in the renal sinus
4. in the renal columns

12. ORGANS LYING BEHIND THE LARYNX:

1. esophagus
2. pharynx
3. descending aorta
4. the superior vena cava

13. ON WHICH SURFACE THE LUNG HILUM IS LOCATED:

1. on the diaphragmatic
2. on the medial
3. on the costal
4. on the pericardial

14. THE SUPERFICIAL MUSCLES OF THE PELVIC DIAPHRAGM:

1. coccygeal muscle
2. the muscle that levator the anus
3. the external sphincter of the anus
4. the sphincter of the urethra

15. IN THE RIGHT ATRIOVENTRICULAR OPENING IS LOCATED:

1. tricuspid valve
2. bicuspid valve
3. aortic valve
4. pulmonary trunk valve

16.IN THE LEFT ATRIOVENTRICULAR OPENING IS LOCATED:

1. tricuspid valve
2. bicuspid valve
3. aortic valve
4. pulmonary trunk valve

17.PROJECTION OF THE PULMONARY TRUNK VALVE IS:

1. 1.behind a cartilage of the left third rib at sternum margin
2. behind a sternum closer to the left third intercostal space
3. behind a sternum closer to a cartilage of the fifth right rib
4. at the basis of a xiphoid process

18..THE PLACE OF THE TRICUSPID VALVE AUSCULTATION IS LOCATED:

1. behind a cartilage of the left third rib at the sternum margin
2. behind a sternum closer to the left third intercostal space
3. at the level of the fifth right rib cartilage or at the basis of a xiphoid process
4. in the second intercostal space at the sternum margin

**Topic 10.**

**Anatomy of the urinary system organs. Adrenal glands. Retroperitoneal space.**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

1. Kidneys:

a) external structure (poles, surfaces, borders, hilum);

b) internal structure (renal cortex, renal medulla, sinus, maior and minor calices, renal pelvis);

c) renal coats, fixing apparatus;

d) concept about a segmentary structure of a kidney;

e) topography (skeletotopy, sintopy, holotopy), relation to a peritoneum;

f) structure nephron and features of the blood supply

2. Ureter

a) departments, places of constriction;

b) wall structure;

c) topography (skeletotopy, sintopy, holotopy).

3. Urinary bladder:

a) external structure (apex, body, fundus, neck);

b) wall structure;

c) topography (skeletotopy, sintopy, holotopy) in male and female.

4. Female urethra:

a) internal and external openings;

b) wall structure;

c) voluntary external sphincter.

5. Retroperitoneal space:

a) borders (superior, inferior, posterior, lateralis, anterior);

b) organs of retroperitoneal space;

c) renal fascia (prerenal and postrenal layer);

d) ascendens and descendens paracolon, paranephros, tectus cellulosus retroperitonealis.

1. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. A complex with the open abdominal cavity.

2. Complex" Kidneys, ureter, urinary bladder".

3. A kidney with covers, an adrenal gland and a renal hilum.

4. A frontal section of kidney.

5. Sagittal section of man's and female pelvis.

6. The open urinary bladder.

7. Skeleton.

3. Test of practical skills.

**The student has to know, be able to show:**

1. On a cadaver with the opened abdominal cavity

* sintopiya of the right and left kidneys
* organs and cellulose of retroperitoneal space
* sintopiya of a ureter (right and left)
* sintopiya of urinary bladder

2. On the "Kidneys, Ureter, Bladder" complex

* poles, surfaces, borders, hilum of urinary bladder
* elements of a renal hilum
* ureter and places of its constrictions
* urinary bladder, its departments, communications

3. On the preparation "Kidney with Coats"

* poles, surfaces, borders, hilum of urinary bladder
* elements of a renal hilum
* renal coats (renal fascia, perinephric fat, fibrous capsule)

4. On a frontal section of a kidney

* renal cortex and medulla, renal pyramids and pappilae, renal columns
* renal sinus and its contents (maior and minor calices, renal pelvis, branches of a renal artery and sources of a renal vein, fatty cellulose)
* renal artery, vein and ureter

5. On the sagittal section of man's and female pelvic

* sintopiya of a man's and female bladder
* prevesical cellular space
* peritoneum course in a man's and female pelvis

6. On a preparation of the opened urinary bladder

* departments (apex, body, fundus, neck)

mucous membrane (orifice of ureter, internal urethral orifice, trigone of urinary bladder).

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study the structure of the vertebrae, write down Latin terms in a notebook.

Draw and mark:

1. diagram of the kidney arteries;

2. nephron diagram;

3. a diagram of the retroperitoneal space.

Write down Latin, Greek, and author's names

1. kidney-ren( Latin), nephros (Greek);

2. glomerulus capsule-Shumlyansky-Bowman capsule (auth);

3. renal corpuscle-Malpighian corpuscle (auth);

4. renal columns-Malpighian columns (auth.);

5. the renal pelvis-pelvis renalis( Latin), pyelos (Greek.);

6. bladder-vesica urinaria( Latin), cystis (Greek);

7. vesical triangle-Lieto triangle (auth);

8. fat capsule of the kidney-capsula adiposa( Latin), paranephros( Greek);

9. ascending and descending paracolon - ascendens et descendens paracolon (Greek).

**Topic 11.**

**Anatomy of the female genital system. Cellular spaces and fasciae of a lesser pelvic. Perineum.** **Conversation on the topic: The menstrual cycle (CIW – 1h)**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

1. The division of the female genital organs for internal and external.  
2. The ovary:

a) the external structure (ends, borders, surfaces);

b) the ligaments of the ovaries (the proper ovarian ligament, the suspensory ligament of the ovary, the mesovarium);

c) the internal structure (cortex and medulla, germinal (ovarian) epithelium, the tunica albuginea);

d) the topography of the ovary, the attitude to the peritoneum.

3. The fallopian tubes:

a) the departments (the uterine part, the isthmus, the ampulla, the infundibulum, fimbriae), ostiums (uterine and abdominal);

b) the structure of the wall:

- the mucosa (ciliated epithelium, longitudinal folds)

- the muscular coat (outer longitudinal and inner circular layers)

- the serous membrane (the mesosalpinx)

c) topography, the attitude to the peritoneum.

4. The uterus:

a) the external structure: parts (fundus, body, cervix and supravaginal part of the cervix); surfaces (anterior and posterior), borders, the uterine cavity, the ostium of the fallopian tubes, cervical canal, internal os, external os,

b) the internal structure:

- the mucosa (no wrinkles in the uterine cavity, palmate folds in the cervical canal);

- the muscular coat (the inner and outer longitudinal layer, the medial circular layer);

- the serous membrane;

c) the support of the uterus (the round ligament, the broad ligament, cardinal ligament), position tipped "anteversio" and "retroversio", position of fundus "anteflexio" and "retroflexio").

d) topography and the attitude to the peritoneum, parametrium.

5. The vagina:

a) the external structure (walls, fornices, vaginal orifice, hymen);

b) the structure of the wall:

- the mucosa (vaginal rugae, vaginal columnes);

- the muscular coat;

- the adventitia;

- the lymphoid apparatus (single lymphoid nodules);

c) topography (sintopia), the attitude to the peritoneum.

6. The external genitalia:

a) the pudendal cleft;

b) the labia majora (the anterior and posterior comissurae);

c) the labia minora (the lateral and medial crura, the foreskin of the clitoris);  
 d) the vestibule of the vagina (borders, organs and ducts of the glands, opening in it);

e) the greater vestibular glands (glands of Bartholin);

f) the clitoris (the glans, the crura, the body, the foreskin);

g) the bulb of the vestibule.

7. The perineum:

a) the concept of the perineum in anatomic and clinical aspects;  
 b) the pelvic diaphragm (borders, organs, that pass through it, the muscles and fasciae, ischio-anal fossa, paraproktos;

c) the urogenital diaphragm (borders, organs, that pass through it, the muscles and fasciae).

8. The fiber spaces of the pelvis and perineum.

2.Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. The complex: "the Uterus, fallopian tubes, ovaries, vagina".

2. The front section of the uterus, fallopian tubes, and vagina.

3. The preparation of the external female genital organs.

4. The model of male and female perineum.

3. Test of practical skills.

**The student has to know, be able to show:**

1. In the complex: "the Uterus, fallopian tubes, ovaries, vagina"

* the ovary (ends, borders, surfaces, the proper ovarian ligament, mesovarium)
* the fallopian tube (the uterine part, the isthmus, the ampulla, the infundibulum, fimbriae)
* the uterus (the surfaces, borders, fundus, body, cervix and vaginal supravaginal portion of the cervix, the uterine cavity, the ostium of the fallopian tubes, cervical canal, internal os, external os, broad ligament of the uterus, round ligament of the uterus)
* the vagina (the walls, the folds of mucous membrane, fornices)
* the broad ligament of the uterus (the mesovarium and the mesosalpinx),  
   round ligament of the uterus, ligament of ovary, parametrium.

2. On the front section of the uterus, fallopian tubes, and vagina

* the uterine cavity
* the openings of the fallopian tubes
* the cervical canal, internal os and external os
* the fornices and the folds of the vagina, the opening of the vagina.

3. On the sagittal section female pelvis:

* the ovary (ends, borders, surfaces, the proper ovarian ligament, mesovarium)
* the fallopian tube (the uterine part, the isthmus, the ampulla, the infundibulum, fimbriae, mesosalpinx)
* the uterus (the fundus, body, supravaginal and vaginal portions of the cervix,   
  the uterine cavity, the openings of the uterus, syntopia, anteversio and retroversio, anteflexio, pouch of Douglas)
* the vestibule of the vagina (the walls, folds, fornices)
* the vestibule of the of the vagina (labia minora, external opening of   
  the urethra, the opening of the vagina)
* the urinary bladder
* the rectum.

4. On the preparation of the external female genital organ

* the labia majora (the anterior and posterior comissurae) and pudendal cleft
* the labia minora (the lateral and medial crura, the foreskin of the clitoris)
* the clitoris (the glans, the foreskin)
* the vestibule of the vagina (external opening of the uretra, the opening of the vagina).

5. On the model of male and female perineum

* the pelvic diaphragm (borders, anal canal, muscles raising the anus, the external anal sphincter openings, ischio-anal fossa, paraproktos)
* the urogenital diaphragm (borders, organs, that pass through it, deep and surface transverse muscles, ischiocavernosus and bulbospongiosus muscles)

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study the structure of the vertebrae, write down Latin terms in a notebook.

Draw and mark.

1. Perineal muscles.

2. Fascia of the perineum.

Write down Latin, Greek, author's names.

1. Ovary-ovarium( Latin), oophoron (Greek);

2. Ovarian vesicular follicle-Graaf's vesicle (auth);

3. Mesentery of the ovary-mesovarium (lat);

4. Fallopian tube - tuba uterina( Latin), salpinx (Greek), fallopian tube (auth);

5. Mesentery of the fallopian tube-mesosalpinx (Greek);

6. Uterus-uterus (Latin), metra, hystera (Greek);

7. The vagina - vagina( Latin), colpos (Greek);

8. Hymen-claustrum virginale( Latin), hymen (Greek);

9. Large glands of the vestibule - bartholin's glands (auth);

10. Labia minora pudendi (Latin), nymphaea (Greek)

**Topic 12.**

**Anatomy of the male genital system.**

**The form of the current control of students' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students' progress**

1. Interview for control questions.

1. The division of the organs of male reproductive system into two groups: internal and external.

2. The testis, epididymis:

a) the external structure of the testis (ends, surfaces, margines);  
 b) the internal structure of the testis - lobules, mediastinum testis, convoluted and direct seminiferous tubules, rete testis, efferent ductules);

с) the external structure of the epididymis (head, body, tail, sinus);  
 d) the internal structure of the epididymis (efferent ductules, ductus epididymidis).   
3. The coats of the testes, their structure and compliance with the layers of the anterior abdominal wall.

4. The ductus deferens:

a) the parts (scrotal, funicular, inguinal, pelvic) and their topography;

b) the structure of the wall (the mucosa with submucosa, muscular layer, adventitia).

5. The spermatic cord:

a) the elements (the ductus deferens, testicular artery and veins, the artery and vein

of the epididymis, lymph vessels, testicular nerve, cremaster muscle and a connective tissue covering);

b) parts and their topography (scrotal, inguinal).

6. The seminal vesicles (external structure, structure of the wall, duct, syntopiya).

7. The prostate gland:

a) the external structure (basis and apex, surfaces, lobes, isthmus);

b) the internal structure (glandular parenchyma, smooth muscles, the capsule, prostate part of the urethra, ejaculatory duct).

8. The penis:

a) the root, body, glans penis, external urethral orifice, the corona of the glans penis, the foreskin (prepuce), frenulum of the prepuce, the cavity of the foreskin

b) the corpus spongiosum (bulb of the penis, body, head, internal structure, spongy part of the urethra);

c) the corpora cavernosa, crura of the penis and their internal structure;

d) the foreskin, frenulum of the prepuce.

9. The male urethra:

a) the parts (prostatic, membranous, spongy);

b) the constrictions - internal and external openings of an urethra and all membranous part;

c) the dilatations - all prostatic part, bulbous dilatation and a naviculare fossa;

d) the wall layers (mucosa, muscular layer, adventitia), lymphoid apparatus (single lymphoid nodules);

e) the ducts, that open in the male urethra (ejaculatory ducts, ducts of the prostate, bulbourethral and urethral glands);

f) the involuntary (internal urethral sphincter at the bladder outlet and prostatic sphincter) and voluntary (urethral) sphincter.

10. The bulbourethral (Cowper's) glands, their position, place of opening its ducts.

11. Out of the sperm in sequential order.

2.Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. The sagittal section of the male pelvis.

2. The preparation of the testis with the epididymis and spermatic cord.

3. The preparation of the penis.

4. The complex: "The male urinary bladder, prostate gland, seminal vesicles, the tubes that carry sperm".

3.Test of practical skills.

**The student has to know, be able to show:**

1. On the sagittal section of the male pelvis

* the testis into the scrotum, spermatic cord
* the ductus deferens and its parts (scrotal, funicular, inguinal, pelvic)
* the urinary bladder, seminal vesicles, the ductus deferens and its ampulla, the prostate gland
* the parts of the penis (root, body, glans, foreskin and its cavity),the corpora of the penis
* the urethra:
* the parts ( prostatic, membranous and sponges)
* the openings (external and internal)
* the constrictions: internal and external openings of an urethra and all membranous part
* the dilatations: all prostatic part, bulbous dilatation and a naviculare fossa
* place of opening of ejaculatory ducts, ducts of the prostate, bulbourethral and urethral glands; place of voluntary and involuntary sphincters
* the rectum.

2. On the preparation of the testis with the epididymis and spermatic cord

* the ends, surfaces, margines, of the ends of the testis
* the epididymis, parts (head, body, tail), sinus
* the lobules of testicular parenchyma, mediastinum testis, ductus deferens
* the tunica vaginalis testis (visceral and parietal layers)
* the spermatic cord, ductus deferens.

3. In the complex: " The male urinary bladder, prostate gland, seminal vesicles, the tubes that carry sperm"

* the tubes that carry sperm
* the prostate gland (basis and apex, surfaces, lobes, isthmus, prostate part of the urethra)
* the seminal vesicles
* the internal opening of the urethra.

4. On the preparation of the penis

* the root, body, glans, external opening of the urethra
* the corpora cavernosa, crura of the penis
* the corpus spongiosum (its bulb, corona and neck of glans, foreskin with its frenulum and cavity, the urethra and its external orifice)

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study the structure of the vertebrae, write down Latin terms in a notebook.

Draw and mark.

Diagram of the vas deferens.

Write down Latin, Greek, and author's names

1. Testis - testis (Latin), orchis, didymis (Greek);

2. Bulbourethral glands-Cooper's gland (auth);

3. Urethral glands-Littre glands (auth);

4. Seminal colliculus - Haller's colliculus (auth);

5. Penis - penis( Latin), phallos, priap (Greek).

**Topic 13.**

**Anatomy of the endocrine system**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

1. The function of the endocrine glands and the main features of their structure.
2. Classification of the endocrine glands by origin:  
   A. entodermal glands :  
   • bronhogenetic group (thyroid, parathyroid glands);  
   • pancreatic islets of the pancreas;  
   B. mesodermal glands:  
   • interstitial cells of sexual glands;  
   • cortex of the adrenal gland;  
   • corpus luteum;  
   C) ectodermal glands:  
   • neurogenic group (hypophysis, epiphysis);  
   • adrenal group (medulla of the adrenal gland, paraganglia).
3. Classification of endocrine glands on their relationship to the anterior   
   pituitary gland (adenohypophysis):  
   a) hipophyso-dependent glands (thyroid gland, adrenal cortex, ovaries, testis);  
   b) hipophyso-independent glands (parathyroid, pineal glands, pancreatic islets, adrenal medulla, paraganglia).
4. Topography, the blood supply and innervation of the endocrine glands.
5. The development of the endocrine glands and their anomalies.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. Set of the tables «Endicrine system»

3. Test of practical skills.

**To be able to find and show:**

1. The thyroid gland with its lobes and the isthmus
2. Parathyroid gland
3. Superior and inferior thyroid arteries
4. Superior and recurrent laryngeal nerves
5. Laryngo-pharyngeal branches of sympathetic trunk
6. Pancreas, their parts
7. Superior and inferior pancreaticoduodenal arteries
8. Splenic artery
9. Branches of the abdominal part of the vagus nerve
10. Ganglia and branches of the celiac plexus
11. Adrenal gland
12. Superior, middle and inferior adrenal arteries
13. Ovaries
14. Ovarian and uterine arteries
15. Pelvic splanchnic nerves
16. Ganglia and branches of the hypogastric plexices
17. Testes
18. Testicular artery and artery of the ductus defferens
19. Cremasteric artery of the inferior epigastric artery
20. Hipophysis with its infundibulum
21. Epiphysis

**Topic 14.**

**Anatomy of the lymphoid system**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

**1. Interview for control questions**

1. The function of the lymphoid system

2.The classification of the organs of the lymphoid system

3.The general concept of the immunocompetent cells (T-lymphocytes and B-lymphocytes).

4.The concept of the lymphoid tissue.

5.Features of development and localization of the organs of the lymphoid system.

6. Structure and functions of the organs of the lymphoid system

**2. Description of macro (micro) preparations.**

Set of the natural preparations, models and tables

1. Set of the tables «Lympoid system»

**3. Test of practical skills.**

**To be able to find and show:**

1. spleen
2. appendix
3. tonsills
4. regional lymph nodes of the head (occipital, mastoid, parotid, mandibular)

**Topic 15.**

**The final lesson. Part II**

**The internal organs anatomy module.**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Testing

1..Interview for control questions.

1. Kidneys:

a) external structure (poles, surfaces, borders, hilum);

b) internal structure (renal cortex, renal medulla, sinus, maior and minor calices, renal pelvis);

c) renal coats, fixing apparatus;

d) concept about a segmentary structure of a kidney;

e) topography (skeletotopy, sintopy, holotopy), relation to a peritoneum;

f) structure nephron and features of the blood supply

2. Ureter

a) departments, places of constriction;

b) wall structure;

c) topography (skeletotopy, sintopy, holotopy).

3. Urinary bladder:

a) external structure (apex, body, fundus, neck);

b) wall structure;

c) topography (skeletotopy, sintopy, holotopy) in male and female.

4. Female urethra:

a) internal and external openings;

b) wall structure;

c) voluntary external sphincter.

5. Retroperitoneal space:

a) borders (superior, inferior, posterior, lateralis, anterior);

b) organs of retroperitoneal space;

c) renal fascia (prerenal and postrenal layer);

d) ascendens and descendens paracolon, paranephros, tectus cellulosus retroperitonealis.

6. The division of the female genital organs for internal and external.  
7. The ovary:

a) the external structure (ends, borders, surfaces);

b) the ligaments of the ovaries (the proper ovarian ligament, the suspensory ligament of the ovary, the mesovarium);

c) the internal structure (cortex and medulla, germinal (ovarian) epithelium, the tunica albuginea);

d) the topography of the ovary, the attitude to the peritoneum.

8. The fallopian tubes:

a) the departments (the uterine part, the isthmus, the ampulla, the infundibulum, fimbriae), ostiums (uterine and abdominal);

b) the structure of the wall:

- the mucosa (ciliated epithelium, longitudinal folds)

- the muscular coat (outer longitudinal and inner circular layers)

- the serous membrane (the mesosalpinx)

c) topography, the attitude to the peritoneum.

9. The uterus:

a) the external structure: parts (fundus, body, cervix and supravaginal part of the cervix); surfaces (anterior and posterior), borders, the uterine cavity, the ostium of the fallopian tubes, cervical canal, internal os, external os,

b) the internal structure:

- the mucosa (no wrinkles in the uterine cavity, palmate folds in the cervical canal);

- the muscular coat (the inner and outer longitudinal layer, the medial circular layer);

- the serous membrane;

c) the support of the uterus (the round ligament, the broad ligament, cardinal ligament), position tipped "anteversio" and "retroversio", position of fundus "anteflexio" and "retroflexio").

d) topography and the attitude to the peritoneum, parametrium.

10. The vagina:

a) the external structure (walls, fornices, vaginal orifice, hymen);

b) the structure of the wall:

- the mucosa (vaginal rugae, vaginal columnes);

- the muscular coat;

- the adventitia;

- the lymphoid apparatus (single lymphoid nodules);

c) topography (sintopia), the attitude to the peritoneum.

11. The external genitalia:

a) the pudendal cleft;

b) the labia majora (the anterior and posterior comissurae);

c) the labia minora (the lateral and medial crura, the foreskin of the clitoris);  
 d) the vestibule of the vagina (borders, organs and ducts of the glands, opening in it);

e) the greater vestibular glands (glands of Bartholin);

f) the clitoris (the glans, the crura, the body, the foreskin);

g) the bulb of the vestibule.

12. The perineum:

a) the concept of the perineum in anatomic and clinical aspects;  
 b) the pelvic diaphragm (borders, organs, that pass through it, the muscles and fasciae, ischio-anal fossa, paraproktos;

c) the urogenital diaphragm (borders, organs, that pass through it, the muscles and fasciae).

13. The fiber spaces of the pelvis and perineum.

14. The division of the organs of male reproductive system into two groups: internal and external.

15. The testis, epididymis:

a) the external structure of the testis (ends, surfaces, margines);  
 b) the internal structure of the testis - lobules, mediastinum testis, convoluted and direct seminiferous tubules, rete testis, efferent ductules);

с) the external structure of the epididymis (head, body, tail, sinus);  
 d) the internal structure of the epididymis (efferent ductules, ductus epididymidis).   
16. The coats of the testes, their structure and compliance with the layers of the anterior abdominal wall.

17. The ductus deferens:

a) the parts (scrotal, funicular, inguinal, pelvic) and their topography;

b) the structure of the wall (the mucosa with submucosa, muscular layer, adventitia).

18. The spermatic cord:

a) the elements (the ductus deferens, testicular artery and veins, the artery and vein

of the epididymis, lymph vessels, testicular nerve, cremaster muscle and a connective tissue covering);

b) parts and their topography (scrotal, inguinal).

19. The seminal vesicles (external structure, structure of the wall, duct, syntopiya).

20. The prostate gland:

a) the external structure (basis and apex, surfaces, lobes, isthmus);

b) the internal structure (glandular parenchyma, smooth muscles, the capsule, prostate part of the urethra, ejaculatory duct).

21. The penis:

a) the root, body, glans penis, external urethral orifice, the corona of the glans penis, the foreskin (prepuce), frenulum of the prepuce, the cavity of the foreskin

b) the corpus spongiosum (bulb of the penis, body, head, internal structure, spongy part of the urethra);

c) the corpora cavernosa, crura of the penis and their internal structure;

d) the foreskin, frenulum of the prepuce.

22. The male urethra:

a) the parts (prostatic, membranous, spongy);

b) the constrictions - internal and external openings of an urethra and all membranous part;

c) the dilatations - all prostatic part, bulbous dilatation and a naviculare fossa;

d) the wall layers (mucosa, muscular layer, adventitia), lymphoid apparatus (single lymphoid nodules);

e) the ducts, that open in the male urethra (ejaculatory ducts, ducts of the prostate, bulbourethral and urethral glands);

f) the involuntary (internal urethral sphincter at the bladder outlet and prostatic sphincter) and voluntary (urethral) sphincter.

23. The bulbourethral (Cowper's) glands, their position, place of opening its ducts.

24. Out of the sperm in sequential order.

1. The function of the lymphoid system
2. The classification of the organs of the lymphoid system
3. The general concept of the immunocompetent cells (T-lymphocytes and B-lymphocytes).
4. The concept of the lymphoid tissue.
5. Features of development and localization of the organs of the lymphoid system.
6. Structure and functions of the organs of the lymphoid system
7. The function of the endocrine glands and the main features of their structure.
8. Classification of the endocrine glands by origin:
9. Classification of endocrine glands on their relationship to the anterior pituitary gland (adenohypophysis)
10. Topography, the blood supply and innervation of the endocrine glands.
11. The development of the endocrine glands and their anomalies.

2.Description of macro (micro) preparations.

1. The cadaver with opened thoracic and abdominal cavities.
2. The sagittal cut of the pelvis.
3. Complex" Kidneys, ureter, urinary bladder".
4. The preparation of the testis with the epididymis and spermatic cord.
5. The preparation of the penis.
6. The complex: "The male urinary bladder, prostate gland, seminal vesicles, the tubes that carry sperm".

**To be able to find and show:**

1. kidneys
2. organs and cellulose of retroperitoneal space
3. the ureter
4. the urinary bladder
5. elements of a renal hilum
6. renal coats (renal fascia, perinephric fat, fibrous capsule)
7. renal cortex and medulla, renal pyramids and pappilae, renal columns
8. the ovary
9. the fallopian tube
10. the uterus
11. the vagina (the walls, the folds of mucous membrane, fornices)
12. the broad ligament of the uterus
13. the round ligament of the uterus, ligament of ovary, parametrium.
14. the vestibule of the of the vagina
15. the labia majora (the anterior and posterior comissurae) and pudendal cleft
16. the labia minora
17. the clitoris (the glans, the foreskin)
18. the pelvic diaphragm
19. the urogenital diaphragm
20. the testis into the scrotum, spermatic cord
21. the ductus deferens and its parts
22. the urinary bladder, seminal vesicles, the ductus deferens and the prostate gland
23. the parts of the penis
24. the urethra
25. the spermatic cord
26. the epididymis, parts
27. the ductus deferens.
28. the seminal vesicle The thyroid gland with its lobes and the isthmus
29. Parathyroid gland
30. Superior and inferior thyroid arteries
31. Superior and recurrent laryngeal nerves
32. Laryngo-pharyngeal branches of sympathetic trunk
33. Pancreas, their parts
34. Superior and inferior pancreaticoduodenal arteries
35. Splenic artery
36. Branches of the abdominal part of the vagus nerve
37. Ganglia and branches of the celiac plexus
38. Adrenal gland
39. Superior, middle and inferior adrenal arteries
40. Ovaries
41. Ovarian and uterine arteries
42. Pelvic splanchnic nerves
43. Ganglia and branches of the hypogastric plexices
44. Testes
45. Testicular artery and artery of the ductus defferens
46. Cremasteric artery of the inferior epigastric artery
47. Hipophysis with its infundibulum
48. Epiphysis
49. Arterial circle of the brain
50. Internal carotid and vertebral nerves of the sympathetic trunk
51. Paraganglia
52. Thoracic duct

3.Testing

1. IN WHICH TUBULES OF THE TESTICLE SPERMATOZOA ARE FORMED:

1. in the excretory tubules
2. in the convoluted seminal tubules
3. in the straight seminal tubules
4. in the tubules of the testicular network

2. THE LOCATION OF THE OVARIAN HILUM:

1. medial margin
2. lateral margin
3. free margin
4. mesenteric margin

3. THE SUPERFICIAL MUSCLES OF THE PELVIC DIAPHRAGM:

1. coccygeal muscle
2. the muscle that levator the anus
3. the external sphincter of the anus
4. the sphincter of the urethra

**MODULE 4. Anatomy of the arterial, venous, lymphatic systems**

**Topic 1.**

**Aorta. Branches of the aortic arch (external and internal carotid, subclavian arteries): to-pography, branches, the area of blood sup-ply. Thoracic aorta». Conversation on the topic: Blood supply of the brain and spinal cord (CIW -1h)**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Aorta, its parts and topography.

2. Branches of the ascending aorta.

3. Branches of the aortic arch: brachiocephalic trunk (its division), left common carotid artery, left subclavian artery.

4. External carotid artery, its topography and branches.

5. Anterior group of the branches of the external carotid artery, the area of blood supply.

6. Posterior group of the branches of the external carotid artery, the area of blood supply.

7. Middle group of the branches of the external carotid artery, the area of blood supply. Maxillary artery, its branches.

8. Internal carotid artery, topography and branches, anastomoses.

9. Blood supply of the brain and spinal cord. Cerebral arterial circle  
(Willise) and ring of Zakharchenko.

10. Ophthalmic artery, its course and main branches. The central retinal artery. Intersystematic anastomosis in the medial angle of the eye.

11. Subclavian artery, topography, differences in derogation of the right  
and left subclavian arteries. Three parts, area of the blood supply. Anastomoses in the thyroid gland.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The cadaver with the prefilled aorta and its branches

2. Set of the tables «arteries of the head and neck»

3. Test of practical skills.

**To be able to find and show on the corpse, models and tables:**

1. The aorta, its divisions; branches of the aortic arch.
2. The left and right common carotid artery, peculiarities of their discharge  
   and level of division for external and internal carotid arteries.
3. The branches of the external carotid artery:
4. anterior group:

- facial artery,

- lingual artery,

- superior thyroid artery;

b) middle group:

- superficial temporal artery,

- ascending pharyngeal artery,

- maxillary artery;

c) posterior group:

- occipital artery,

- posterior auricular artery,

- sternocleidomastoid branch;

4) On the base of the skull with the mandibula to allocate three divisions during the maxillary artery:

-temporomandibular,  
- subtemporal,

- pterygopalatine.

5) The main branches of the maxillary artery:

- inferior alveolar artery,

- middle meningeal artery,

-descending palatine artery

- posterior superior alveolar arteries,

-infraorbital artery,

-muscular brunches.

6) The internal carotid artery:

a) on the base of the skull to find carotid canal and the groove of carotid artery;

b) on the base of the brain to show branches:

- the anterior cerebral artery,

- the middle cerebral artery,

- the anterior communicating artery,

- the posterior communicating artery;

c) on the table of the eye to show the way and main branches of the ophthalmic artery;

d) on the base of the brain to show cerebral arterial circle (Willise) and its arteries. To tell about projection of the cerebral arterial circle on the base of the skull and brain.

7) The left and right subclavian arteries, peculiarities of their discharge from the aorta, the division into branches of the three topographic departments regarding interscalenal space.

8) The branches of the subclavian artery:

a) the first division (before interscalenal space ):

- vertebral artery,

- internal thoracic artery,

- thyrocervical trunk and its branches;

b) the second part (in the interscalenal space):

- costocervical trunk and its branches;

c) the third part (after interscalenal space):

- transverse cervical artery;

9) On the base of the brain to show vertebral arteries, the basilar artery and their branches:

- cerebellar artery,

- pontine artery,

- posterior cerebral artery.

Conversation on the topic: Blood supply of the brain and spinal cord (CIW – 1h)

**Topic 2.**

**Arteries of the shoulder girdle and upper limbs: topography, branches, the area of blood supply. Collateral blood supply of the upper limbs. Blood supply of the main joints of the upper limbs**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Axillary artery, its parts, topography, branches (in the triangles), the area of their blood supply.

2. Brachial artery, its topography at different levels of the shoulder, its branches.

3. Blood supply of the shoulder joint, the formation of its arterial rete.

4. Deep artery of arm, its topography, course in humero-muscular canal.

5. Radial artery, its topography in the cubital fossa and forearm, branches of the radial artery and the area of blood supply.

6. Ulnar artery, its topography in the cubital fossa and forearm, branches of the ulnar artery, the area of blood supply.

7. The blood supply of the elbow joint and the formation of its arterial rete.

8. Interosseous arteries, the levels of their occurrence and area of blood supply.  
9. The formation of the superficial palmar arch, its topography and branches.

10. The formation of the deep palmar arch, its topography and branches.

11. The blood supply to the wrist joint and the formation of its arterial rete.

12. Features of blood supply of pollicis.

13. Collateral blood supply of the upper limb. Anatomical rationale possible ligation of major vessels (brachial, ulnar, radial arteries) of the upper limb.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The cadaver with the prefilled upper limb arteries

2. Set of the tables «Arteries of the upper limb»

3. Test of practical skills.

**To be able to find and show:**

1. Branches of the axillary artery:

a) the first part (in the claviculo-pectoral triangle):

- superior thoracic artery

- thoraco-acromial artery

2) the second part (in the pectoral triangle):

- lateral thoracic artery.

3) the third part ( in the subpectoral triangle):

- subscapular artery and its branches:

- --circumflex scapular artery (in the trilaterum foramen)

- --thoracodorsal artery (on the latersl margin of scapulae)

- posterior circumflex humeral artery (in the quadrilaterum foramen)

- anterior circumflex humeral artery

2. Brachial artery, its boundaries, topography on the shoulder and division on

the terminal branches in the cubital fossa.

3. Branches of the brachial artery:

1) deep artery of the arm and its branches:

- medial collateral artery,

- radial collateral artery,

2) superior ulnar collateral artery,

3) inferior ulnar collateral artery.

3. Radial artery, its boundaries, topography on the forearm and wrist, its branches:

- radial recurrent artery,

- palmar carpal branch,

- dorsal carpal branch,

- superficial palmar branch,

- princeps pollicis artery,

- first dorsal metacarpal artery,

- muscle branches.

4. Ulnar artery, its boundaries, topography on the forearm and brunches;  
5. Branches of ulnar artery:  
- ulnar recurrent artery,  
- common interosseous artery its branches:  
 - anterior interosseous artery,  
 - posterior interosseous artery,  
- palmar carpal branch,  
- dorsal carpal branch,  
- deep palmar branch.  
6. Palmar carpal rete:  
- palmar carpal branch of radial artery;  
- palmar carpal branch of ulnar artery;  
- anterior interosseous artery.  
7) Dorsal carpal rete:  
- dorsal carpal branch of the radial artery;  
- dorsal carpal branch of the ulnar artery;  
- posterior interosseous artery;  
- dorsal metacarpal arteries;   
- dorsal digital arteries.  
8) Superficial palmar arch:   
- distal part of ulnar artery;  
- superficial palmar branch of radial artery;  
- common palmar digital arteries;  
- proper palmar digital arteries.  
9) Deep palmar arch:  
- distal part of radial artery;  
- deep palmar branch of ulnar artery;  
- palmar metacarpal arteries;  
- perforating branches.

**Topic 3.**

**External iliac artery. Arteries of the pelvic girdle and lower limbs: topography, branches, the area of blood sup-ply. Collateral blood supply of the lower limbs. Blood supply of the main joints of the lower limbs**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. The external iliac artery, its topography, branches, areas of blood supply, anastomoses.

2. The femoral artery, its topography below the inguinal ligament and at different

levels of hip, branches of the femoral artery and anastomoses.

3. The blood supply of the hip joint (the sources of formation of arterial rete).

4. The deep artery of the thigh, its topography and areas of blood supply.

5. The popliteal artery, its topography, branches, areas of blood supply.

6. The blood supply of the knee joint (the sources of formation of arterial rete).

7. The posterior tibial artery, its topography on the tibia and in the Grubber’s canal, branches, areas of blood supply.

8. The anterior tibial artery, its topography in the tibia, areas of blood supply.

9. The blood supply of the ankle joint (the sources of formation of arterial rete).

10. The dorsal artery of foot, its topography, branches, areas of blood supply. The formation of the dorsal arch of pedis.

11. The plantar arch, sources, branches, the area of blood supply.

12. The anastomoses between the dorsal and plantar arteries of the foot.

13. Arterial arches of the foot, the sources of formation, anastomoses.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The cadaver with the prefilled lower limb arteries

2. Set of the tables «Arteries of the lower limb»

3. Test of practical skills.

**To be able to find and show on the corpse, models and tables:**

1. The external iliac artery, its way in the pelvic cavity, borders, main branches:

- inferior epigastric artery in the rectus sheath,

- deep circumflex iliac artery (it is parallel to the inguinal ligament).

2. The femoral artery, its boundaries and topography in the vascular lacuna, in the femoral triangle and the Gunter’s canal.

3. The branches of femoral artery:

- superficial epigastric artery,

- superficial circumflex iliac artery,

- external pudendal artery,

- deep artery of thigh and its branches:

a) lateral circumflex femoral artery,

b) medial circumflex femoral artery,

c) three perforating arteries.

- muscular arteries,

- descending genicular artery.

4. The popliteal artery, its boundaries, topography in the popliteal fossa and main branches:

- superior lateral genicular artery,

- superior medial genicular artery,

- inferior lateral genicular artery,

- inferior medial genicular artery,

- middle genicular artery,

- terminal branches in the canal of Grubber: anterior and posterior tibial

arteries.

5. The anterior tibial artery, its boundaries, topography on the anterior and posterior surfaces of the crus and its main branches:

- posterior tibial recurrent artery (to the hole in the interosseous membrane),

- anterior tibial recurrent artery (after passing through the interosseous membrane),   
 - anterior lateral malleolar artery,

- anterior medial malleolar artery,

- dorsal artery of foot.

6. The posterior tibial artery, its boundaries, topography in the Grubber’s canal, main branches:

- peroneal artery (in the upper third of the leg),

- muscular branches,

- lateral plantar artery in the lateral groove of the foot;

- medial plantar artery in the medial groove of the foot.

7. The arteries of the foot:

- dorsal artery of the foot;

- medial tarsal artery;

- lateral tarsal artery;

- arcuate artery and anastomoses with the lateral tarsal artery (dorsal arterial arch of the foot) and its branches:

- three dorsal metatarsal arteries,

- dorsal digital arteries,

- the first dorsal metatarsal artery;

- deep plantar branch (vertical plantar arch);

8) Plantar arterial arch (anastomosis of the lateral and medial plantar arteries) and its branches:

- four plantar metatarsal arteries,

- plantar digital arteries,

- anterior and posterior perforating arteries.

**Topic 4.**

**Abdominal aorta (to-pography, branches, the area of blood supply). Blood supply and arterial anastomoses of the internal organs. Internal iliac artery (topography, branches, the area of blood supply)**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Thoracic aorta, its course and topography.

2. Abdominal aorta, its course and topography.

3. The principle of the division of the branches of the thoracic and abdominal aorta.

4. Parietal and visceral branches of the thoracic aorta, the area of blood supply, anastomoses. Participation of intercostal arteries in blood supply of the spinal cord.

5. Unpaired visceral branches of the abdominal aorta:

a. *coeliac trunk*, its branches, areas of blood supply, anastomoses;

b. *superior mesenteric artery,* its branches, areas of blood supply, anastomoses;

c. *inferior mesenteric artery*, its branches, areas of blood supply, anastomoses.  
6. Paired visceral branches of the abdominal aorta, the area of blood supply.  
7. Parietal branches of the abdominal aorta. Participation of the lumbar arteries the blood supply of the spinal cord.

8. Common iliac artery, its topography, division on external and internal iliac arteries. Branches of the external iliac artery.

9. Internal iliac artery, its topography, parietal branches.

10. Visceral branches of the iliac artery, anastomosis.

11. Features of blood supply of the lungs.

12. Sources of blood supply of the stomach. Arterial anastomoses on the major and minor curvatures.

13. Sources of blood supply of the pancreas,

14. Blood supply and arterial anastomoses of small and large intestine.

15. Features of blood supply of the rectum.

16. Blood supply of the liver and gall bladder.

17. Features of organ blood supply of the kidneys, adrenal glands, ovaries and testes.

18. The blood supply of the pelvic organs: urinary bladder, uterus with the vagina, the ovaries, internal and external male genitalia.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The cadaver with the prefilled aorta and its branches

2. Set of the tables «Arteries of the abdominal and thoracic aorta»

3. Test of practical skills.

**To be able to find and show on the corpse, models and tables:**

1. Ascending aorta, aortic bulb and coronary arteries.

2. Aortic arch and its branches.   
3. Descending aorta, its thoracic part:   
a) parietal branches:  
- posterior intercostal arteries,  
- superior phrenic arteries;

b) visceral branches:

- bronchial arteries,  
- esophageal arteries,   
- mediastinal arteries,  
- pericardial arteries.   
4. Abdominal aorta, the level of its bifurcation, the common, external and internal iliac arteries.   
5. Unpaired visceral branches of the abdominal aorta:  
a) celiac trunk, its trifurcation and main branches:  
-left gastric artery  
-common hepatic artery and its branches:  
- gastroduodenal artery,  
- hepatic artery proper,  
- right gastric artery  
- right gastroomental artery,  
- superior pancreatoduodenal artery;  
-splenic artery and its branches:

- the left gastroomental artery  
- short gastric arteries,  
- pancreatic branches;  
b) superior mesenteric artery and its branches:  
- inferior pancreatoduodenal artery,  
- intestinal (jejunal and iliac) arteries,  
- ileocolic artery,  
- right colic artery,   
- middle colon artery;  
c) the inferior mesenteric artery and its branches:  
- left colic artery,   
- sigmoid artery,   
-superior rectal artery.  
6. Paired visceral branches of the abdominal aorta:  
a) middle adrenal artery;   
b) renal artery;

c) ovarian, (testicular) artery.  
7. Parietal branches of the abdominal aorta:  
a) inferior phrenic artery;  
b) lumbar arteries;  
c) the median sacral artery.  
  
On sagittal cut of the male and female pelvis with vessels to show:  
1. Common, external and internal iliac arteries.  
2. Branches of the external iliac artery:  
a) inferior epigastric artery,  
b) deep circumflex iliac artery.  
3. Branches of the internal iliac artery:  
a) parietal branches of the internal iliac artery:  
- iliolumbar artery,   
- lateral sacral arteries,  
- superior gluteal artery,  
- obturator artery,  
- inferior gluteal artery;   
b) visceral branches of the internal iliac artery:   
- umbilical artery  
- ureteric branches,  
- superior and inferior vesical arteries,  
- uterine artery,

- artery to the ductus deferens  
- middle rectal artery,  
- internal pudendal artery;

**Topic 5.**

**Venous system. Superior vein cava and Inferior vein cava (formation, topography, tributaries and sources.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

1. Superior vena cava, the level of its formation, topography, areas from which it collects the blood.

2. Internal jugular vein, it intracranial and extracranial tributaries.

3. Sinuses of the dura mater, their morphological features and function.

4.Anastomoses between intracranial and external veins of the head (their clinical significance).

5. Azygos and hemiazygos veins , the levels of their formation, branches. Clinical value.

6. Venous outflow from the upper limbs, characteristic of the superficial and deep veins, their anastomoses.

7. Inferior vena cava, the level of its formation, topography, areas from which it collects the blood.

8. Features of the venous outflow from the small pelvis.

9. Venous outflow from the lower limbs, characteristic of the superficial and deep veins, their anastomoses.

10. Portal vein, its roots. The confluence of the portal vein to the liver.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The cadaver with the prefilled veins

2. Set of the tables «Veins»

3. Test of practical skills.

**To be able to find and show on the corpse, models and tables:**

1. Superior vena cava,

2. Internal jugular vein, it intracranial and extracranial tributaries.

3. Sinuses of the dura mater

4. Azygos vein

5. Hemiazygos vein

6. Inferior vena cava,

8. Veins of the small pelvis.

9. Veins of the lower limbs

10. Portal vein, its roots.

**Topic 6.**

**Cava-caval and porto-caval anastomoses. Venous blood outflow from the head and neck organs**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

1. Cava-caval anastomoses and their clinical significance.

2. Cava-portal anastomoses, and their clinical significance.

3. Venous blood outflow from the head and neck organs

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The cadaver with the prefilled veins

2. Set of the tables «Veins»

3. Test of practical skills.

**To be able to find and show on the corpse, models and tables:**

1. Superior vena cava,

2. Internal jugular vein, it intracranial and extracranial tributaries.

3. Sinuses of the dura mater

4. Azygos vein

5. Hemiazygos vein

6. Inferior vena cava,

8. Veins of the small pelvis.

9. Veins of the lower limbs

10. Portal vein, its roots.

**Topic 7.**

**The lymphatic system». Conducting a conversation on the topic: Lymph outflow from the organs (CIW -1h)**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

1. General plan of structure of the lymphatic system; lymphatic capillaries, vessels, regional nodes, lymphatic trunks and ducts.   
2. The main lymphatic trunks and ducts. Regions from which they were collected lymph. The confluence of the right and the thoracic ducts into the venous system.   
3. The thoracic duct, its formation, topography, the area from which it collects lymph, its connection with the venous   
system.   
4. The right lymphatic duct, his education, the field of which it collects lymph, the confluence of the venous system.   
5. The lymphatic vessels and nodes of the chest and abdomen and pelvis. Features of the lymphatic system of the small intestine.   
6. The lymphatic vessels and nodes of the upper and lower limbs.   
7. The lymphatic vessels and nodes of the head and neck.   
8. The locations of the regional lymph nodes and paths lymph drainage from the following organs: a) of the stomach, b) uterus and c) the rectum, d) mammary gland, e) lungs, f) tongue, lower lip, g) the small intestine.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. Set of the tables «Lymphatic system»

3. Test of practical skills.

**To be able to find and show:**

1. Thoracic duct

  • superficial lymphatic vessels and regional lymph   
       nodes of the head (occipital, mastoid, parotid, mandibular,   
       submental);   
     • superficial and deep lymphatic vessels of the neck, and the superficial and   
       deep lymph nodes of the neck (including the jugulodigastric and and   
       jugulo-omohyoid);   
     • superficial and deep lymphatic vessels of the upper limb and   
       the shoulder girdle, the regional lymph nodes of the shoulder girdle and   
       upper limb (cubital and axillary limph nodes);   
     • parietal and visceral lymph vessels of the thoracic cavity,   
       parietal (parasternal, intercostal, superior mediastinum,   
       lateral, pre- and postperikardial) lymph nodes;   
     • lymph vessels of the mamma;   
     • parietal and visceral abdominal lymph vessels,   
       parietal (inferior epigastric, lumbar, lower   
       diaphragmatic) and visceral (celiac, gastric, gastro-omental, pancreatic, pancreatoduodenal, splenic, hepatic, mesenteric, cecal, colic);   
   • superficial and deep lymphatic vessels of the lower limb and   
       pelvic girdle, regional lymph nodes (popliteal, superficial and deep inguinal)   
   • lumbar, intestinal, bronhomediastinal, subclavian and jugular lymph trunks;   
   • right and left lymphatic ducts and places them into the venous confluence   
       channel (right and left venous angles).

**Topic 8.**

**Final test.**

**Anatomy of the arterial, venous, lymphatic systems.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3.Testing

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Aorta, its parts and topography.

2. Branches of the ascending aorta.

3. Branches of the aortic arch: brachiocephalic trunk (its division), left common carotid artery, left subclavian artery.

4. External carotid artery, its topography and branches.

5. Anterior group of the branches of the external carotid artery, the area of blood supply.

6. Posterior group of the branches of the external carotid artery, the area of blood supply.

7. Middle group of the branches of the external carotid artery, the area of blood supply. Maxillary artery, its branches.

8. Internal carotid artery, topography and branches, anastomoses.

9. Blood supply of the brain and spinal cord. Cerebral arterial circle  
(Willise) and ring of Zakharchenko.

10. Ophthalmic artery, its course and main branches. The central retinal artery. Intersystematic anastomosis in the medial angle of the eye.

11. Subclavian artery, topography, differences in derogation of the right  
and left subclavian arteries. Three parts, area of the blood supply. Anastomoses in the thyroid gland.

11. Axillary artery, its parts, topography, branches (in the triangles), the area of their blood supply.

12. Brachial artery, its topography at different levels of the shoulder, its branches.

13. Blood supply of the shoulder joint, the formation of its arterial rete.

14. Deep artery of arm, its topography, course in humero-muscular canal.

15. Radial artery, its topography in the cubital fossa and forearm, branches of the radial artery and the area of blood supply.

16. Ulnar artery, its topography in the cubital fossa and forearm, branches of the ulnar artery, the area of blood supply.

17. The blood supply of the elbow joint and the formation of its arterial rete.

18. Interosseous arteries, the levels of their occurrence and area of blood supply.  
19. The formation of the superficial palmar arch, its topography and branches.

20. The formation of the deep palmar arch, its topography and branches.

21. The blood supply to the wrist joint and the formation of its arterial rete.

22. Features of blood supply of pollicis.

23. Collateral blood supply of the upper limb. Anatomical rationale possible ligation of major vessels (brachial, ulnar, radial arteries) of the upper limb.

24. The external iliac artery, its topography, branches, areas of blood supply, anastomoses.

25. The femoral artery, its topography below the inguinal ligament and at different

levels of hip, branches of the femoral artery and anastomoses.

26. The blood supply of the hip joint (the sources of formation of arterial rete).

27. The deep artery of the thigh, its topography and areas of blood supply.

28. The popliteal artery, its topography, branches, areas of blood supply.

29. The blood supply of the knee joint (the sources of formation of arterial rete).

30. The posterior tibial artery, its topography on the tibia and in the Grubber’s canal, branches, areas of blood supply.

31. The anterior tibial artery, its topography in the tibia, areas of blood supply.

32. The blood supply of the ankle joint (the sources of formation of arterial rete).

33. The dorsal artery of foot, its topography, branches, areas of blood supply. The formation of the dorsal arch of pedis.

34. The plantar arch, sources, branches, the area of blood supply.

35. The anastomoses between the dorsal and plantar arteries of the foot.

36. Arterial arches of the foot, the sources of formation, anastomoses.

37. Thoracic aorta, its course and topography.

38. Abdominal aorta, its course and topography.

39. The principle of the division of the branches of the thoracic and abdominal aorta.

40. Parietal and visceral branches of the thoracic aorta, the area of blood supply, anastomoses. Participation of intercostal arteries in blood supply of the spinal cord.

41. Unpaired visceral branches of the abdominal aorta:

a. *coeliac trunk*, its branches, areas of blood supply, anastomoses;

b. *superior mesenteric artery,* its branches, areas of blood supply, anastomoses;

c. *inferior mesenteric artery*, its branches, areas of blood supply, anastomoses.  
42. Paired visceral branches of the abdominal aorta, the area of blood supply.  
43. Parietal branches of the abdominal aorta. Participation of the lumbar arteries the blood supply of the spinal cord.

44. Common iliac artery, its topography, division on external and internal iliac arteries. Branches of the external iliac artery.

45. Internal iliac artery, its topography, parietal branches.

46. Visceral branches of the iliac artery, anastomosis.

47. Features of blood supply of the lungs.

48. Sources of blood supply of the stomach. Arterial anastomoses on the major and minor curvatures.

49. Sources of blood supply of the pancreas,

50. Blood supply and arterial anastomoses of small and large intestine.

51. Features of blood supply of the rectum.

52. Blood supply of the liver and gall bladder.

53. Features of organ blood supply of the kidneys, adrenal glands, ovaries and testes.

54. The blood supply of the pelvic organs: urinary bladder, uterus with the vagina, the ovaries, internal and external male genitalia.

55. Superior vena cava, the level of its formation, topography, areas from which it collects the blood.

56. Internal jugular vein, it intracranial and extracranial tributaries.

57. Sinuses of the dura mater, their morphological features and function.

58.Anastomoses between intracranial and external veins of the head (their clinical significance).

59. Azygos and hemiazygos veins , the levels of their formation, branches. Clinical value.

60. Venous outflow from the upper limbs, characteristic of the superficial and deep veins, their anastomoses.

61. Inferior vena cava, the level of its formation, topography, areas from which it collects the blood.

62. Features of the venous outflow from the small pelvis.

63. Venous outflow from the lower limbs, characteristic of the superficial and deep veins, their anastomoses.

64. Portal vein, its roots. The confluence of the portal vein to the liver.

65. Cava-caval anastomoses and their clinical significance.

66. Cava-portal anastomoses, and their clinical significance.

67. General plan of structure of the lymphatic system; lymphatic capillaries, vessels, regional nodes, lymphatic trunks and ducts.   
68. The main lymphatic trunks and ducts. Regions from which they were collected lymph. The confluence of the right and the thoracic ducts into the venous system.   
69. The thoracic duct, its formation, topography, the area from which it collects lymph, its connection with the venous   
system.   
70. The right lymphatic duct, his education, the field of which it collects lymph, the confluence of the venous system.   
71. The lymphatic vessels and nodes of the chest and abdomen and pelvis. Features of the lymphatic system of the small intestine.   
72. The lymphatic vessels and nodes of the upper and lower limbs.   
73. The lymphatic vessels and nodes of the head and neck.   
74. The locations of the regional lymph nodes and paths lymph drainage from the following organs: a) of the stomach, b) uterus and c) the rectum, d) mammary gland, e) lungs, f) tongue, lower lip, g) the small intestine.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The cadaver with the prefilled arteries and veins

2. Set of the tables «Arteries of the head and neck», «Arteries of the upper limb», «Arteries of the lower limb», «Arteries of the abdominal and thoracic aorta», «Veins».

**To be able to find and show:**

1. The aorta, its divisions; branches of the aortic arch.
2. The left and right common carotid artery, peculiarities of their discharge  
   and level of division for external and internal carotid arteries.
3. The branches of the external carotid artery:
4. anterior group:

- facial artery,

- lingual artery,

- superior thyroid artery;

b) middle group:

- superficial temporal artery,

- ascending pharyngeal artery,

- maxillary artery;

c) posterior group:

- occipital artery,

- posterior auricular artery,

- sternocleidomastoid branch;

4. On the base of the skull with the mandibula to allocate three divisions during the maxillary artery:

-temporomandibular,  
- subtemporal,

- pterygopalatine.

5. The main branches of the maxillary artery:

- inferior alveolar artery,

- middle meningeal artery,

-descending palatine artery

- posterior superior alveolar arteries,

-infraorbital artery,

-muscular brunches.

6. The internal carotid artery:

a) on the base of the skull to find carotid canal and the groove of carotid artery;

b) on the base of the brain to show branches:

- the anterior cerebral artery,

- the middle cerebral artery,

- the anterior communicating artery,

- the posterior communicating artery;

c) on the table of the eye to show the way and main branches of the ophthalmic artery;

d) on the base of the brain to show cerebral arterial circle (Willise) and its arteries. To tell about projection of the cerebral arterial circle on the base of the skull and brain.

7. The left and right subclavian arteries, peculiarities of their discharge from the aorta, the division into branches of the three topographic departments regarding interscalenal space.

8. The branches of the subclavian artery:

a) the first division (before interscalenal space ):

- vertebral artery,

- internal thoracic artery,

- thyrocervical trunk and its branches;

b) the second part (in the interscalenal space):

- costocervical trunk and its branches;

c) the third part (after interscalenal space):

- transverse cervical artery;

9. On the base of the brain to show vertebral arteries, the basilar artery and their branches:

- cerebellar artery,

- pontine artery,

- posterior cerebral artery.

10. Branches of the axillary artery:

1) the first part (in the claviculo-pectoral triangle):

- superior thoracic artery

- thoraco-acromial artery

2) the second part (in the pectoral triangle):

- lateral thoracic artery.

3) the third part ( in the subpectoral triangle):

- subscapular artery and its branches:

- --circumflex scapular artery (in the trilaterum foramen)

- --thoracodorsal artery (on the latersl margin of scapulae)

- posterior circumflex humeral artery (in the quadrilaterum foramen)

- anterior circumflex humeral artery

11. Brachial artery, its boundaries, topography on the shoulder and division on

the terminal branches in the cubital fossa.

12. Branches of the brachial artery:

1) deep artery of the arm and its branches:

- medial collateral artery,

- radial collateral artery,

2) superior ulnar collateral artery,

3) inferior ulnar collateral artery.

13. Radial artery, its boundaries, topography on the forearm and wrist, its branches:

- radial recurrent artery,

- palmar carpal branch,

- dorsal carpal branch,

- superficial palmar branch,

- princeps pollicis artery,

- first dorsal metacarpal artery,

- muscle branches.

14. Ulnar artery, its boundaries, topography on the forearm and brunches;  
15. Branches of ulnar artery:  
- ulnar recurrent artery,  
- common interosseous artery its branches:  
 - anterior interosseous artery,  
 - posterior interosseous artery,  
- palmar carpal branch,  
- dorsal carpal branch,  
- deep palmar branch.  
16. Palmar carpal rete:  
- palmar carpal branch of radial artery;  
- palmar carpal branch of ulnar artery;  
- anterior interosseous artery.  
17) Dorsal carpal rete:  
- dorsal carpal branch of the radial artery;  
- dorsal carpal branch of the ulnar artery;  
- posterior interosseous artery;  
- dorsal metacarpal arteries;   
- dorsal digital arteries.  
18) Superficial palmar arch:   
- distal part of ulnar artery;  
- superficial palmar branch of radial artery;  
- common palmar digital arteries;  
- proper palmar digital arteries.  
19) Deep palmar arch:  
- distal part of radial artery;  
- deep palmar branch of ulnar artery;  
- palmar metacarpal arteries;  
- perforating branches.

20. The external iliac artery, its way in the pelvic cavity, borders, main branches:

- inferior epigastric artery in the rectus sheath,

- deep circumflex iliac artery (it is parallel to the inguinal ligament).

21. The femoral artery, its boundaries and topography in the vascular lacuna, in the femoral triangle and the Gunter’s canal.

22. The branches of femoral artery:

- superficial epigastric artery,

- superficial circumflex iliac artery,

- external pudendal artery,

- deep artery of thigh and its branches:

a) lateral circumflex femoral artery,

b) medial circumflex femoral artery,

c) three perforating arteries.

- muscular arteries,

- descending genicular artery.

23. The popliteal artery, its boundaries, topography in the popliteal fossa and main branches:

- superior lateral genicular artery,

- superior medial genicular artery,

- inferior lateral genicular artery,

- inferior medial genicular artery,

- middle genicular artery,

- terminal branches in the canal of Grubber: anterior and posterior tibial

arteries.

24. The anterior tibial artery, its boundaries, topography on the anterior and posterior surfaces of the crus and its main branches:

- posterior tibial recurrent artery (to the hole in the interosseous membrane),

- anterior tibial recurrent artery (after passing through the interosseous membrane),   
 - anterior lateral malleolar artery,

- anterior medial malleolar artery,

- dorsal artery of foot.

25. The posterior tibial artery, its boundaries, topography in the Grubber’s canal, main branches:

- peroneal artery (in the upper third of the leg),

- muscular branches,

- lateral plantar artery in the lateral groove of the foot;

- medial plantar artery in the medial groove of the foot.

26. The arteries of the foot:

- dorsal artery of the foot;

- medial tarsal artery;

- lateral tarsal artery;

- arcuate artery and anastomoses with the lateral tarsal artery (dorsal arterial arch of the foot) and its branches:

- three dorsal metatarsal arteries,

- dorsal digital arteries,

- the first dorsal metatarsal artery;

- deep plantar branch (vertical plantar arch);

27) Plantar arterial arch (anastomosis of the lateral and medial plantar arteries) and its branches:

- four plantar metatarsal arteries,

- plantar digital arteries,

- anterior and posterior perforating arteries.

28. Ascending aorta, aortic bulb and coronary arteries.

29. Aortic arch and its branches.   
30. Descending aorta, its thoracic part:   
a) parietal branches:  
- posterior intercostal arteries,  
- superior phrenic arteries;

b) visceral branches:

- bronchial arteries,  
- esophageal arteries,   
- mediastinal arteries,  
- pericardial arteries.   
31. Abdominal aorta, the level of its bifurcation, the common, external and internal iliac arteries.   
32. Unpaired visceral branches of the abdominal aorta:  
a) celiac trunk, its trifurcation and main branches:  
-left gastric artery  
-common hepatic artery and its branches:  
- gastroduodenal artery,  
- hepatic artery proper,  
- right gastric artery  
- right gastroomental artery,  
- superior pancreatoduodenal artery;  
-splenic artery and its branches:

- the left gastroomental artery  
- short gastric arteries,  
- pancreatic branches;  
b) superior mesenteric artery and its branches:  
- inferior pancreatoduodenal artery,  
- intestinal (jejunal and iliac) arteries,  
- ileocolic artery,  
- right colic artery,   
- middle colon artery;  
c) the inferior mesenteric artery and its branches:  
- left colic artery,   
- sigmoid artery,   
-superior rectal artery.  
33. Paired visceral branches of the abdominal aorta:  
a) middle adrenal artery;   
b) renal artery;

c) ovarian, (testicular) artery.  
34. Parietal branches of the abdominal aorta:  
a) inferior phrenic artery;  
b) lumbar arteries;  
c) the median sacral artery.  
35. Common, external and internal iliac arteries.  
36. Branches of the external iliac artery:  
a) inferior epigastric artery,  
b) deep circumflex iliac artery.  
37. Branches of the internal iliac artery:  
a) parietal branches of the internal iliac artery:  
- iliolumbar artery,   
- lateral sacral arteries,  
- superior gluteal artery,  
- obturator artery,  
- inferior gluteal artery;   
b) visceral branches of the internal iliac artery:   
- umbilical artery  
- ureteric branches,  
- superior and inferior vesical arteries,  
- uterine artery,

- artery to the ductus deferens  
- middle rectal artery,  
- internal pudendal artery;  
38. Superior vena cava,

39. Internal jugular vein, it intracranial and extracranial tributaries.

40. Sinuses of the dura mater

41. Azygos vein

42. Hemiazygos vein

43. Inferior vena cava,

44. Veins of the small pelvis.

45. Veins of the lower limbs

46. Portal vein, its roots.

3.Testing

1. THE PAIRED VISCERAL BRANCHES OF THE ABDOMINAL AORTA:

1. middle adrenal arteries
2. pancreatoduodenal arteries
3. lumbar arteries
4. superior phrenic arteries

2. THE BRANCH OF THE CELIAC TRUNK:

1. pancreatoduodenal artery
2. adrenal artery
3. middle colic artery
4. splenic artery

3. THE BRANCH OF THE SPLENIC ARTERY:

1. right gastro-omental artery
2. left gastro-omental artery
3. right gastric artery
4. esophageal branches

4.THE INFERIOR MUSCULOPERONEAL CANAL INCLUDES:

1. femoral artery
2. obturator artery
3. posterior tibial artery
4. peroneal artery

5. THE BRANCHES OF THE DEEP BRACHIAL ARTERY ARE:

1. inferior ulnar collateral artery
2. radial collateral artery
3. posterior interosseous artery
4. superior ulnar collateral artery

6.CHOOSE THE CORRECT DIRECTION OF BLOOD FLOW AS GIVEN BELOW:

1. Arteries - Arterioles - Capillaries - Venules - Veins
2. Veins - Venules - Capillaries - Arterioles - Arteries
3. Arteries - Veins - Capillaries - Venules - Arterioles
4. Capillaries - Arteries - Veins - Organ - Arterioles

7. THE BRANCHES OF THE BRACHIOCEPHALIC TRUNK ARE

1. right subclavian artery
2. left subclavian artery
3. left common carotid artery
4. right common carotid artery

8.THE COMMON CAROTID ARTERY DIVIDES INTO

1. facial artery
2. internal carotid artery
3. external carotid artery
4. lingual artery

9. THE VEIN, WHICH COLLECT BLOOD FROM HEMIAZYGOS VEIN:

1. superior vena cava
2. left brachiocephalic vein
3. azygos vein
4. right brachiocephalic vein

10.BETWEEN WHICH VEINS OF THE NECK IS THE JUGULAR VENOUS ARCH:

1. between the internal jugular veins
2. between the external jugular veins
3. between the anterior jugular veins
4. between the external and internal jugular veins

11.THE VESSELS WITH WHICH THE ESOPHAGEAL VEINS HAVE ANASTOMOSIS:

1. right gastric vein
2. left gastro-epiploic vein
3. right gastro-epiploic vein
4. left gastric vein

12.THE VEINS WHICH LOCATED IN THE ROUND LIGAMENT OF THE LIVER:

1. the paraumbilical veins
2. esophageal veins
3. hepatic veins
4. gallbladder veins

13.THE ANATOMICAL STRUCTURES ON THE LEVEL OF WHICH INTERNAL AND EXTERNAL ILIAC VEINS HAVE FUSION:

1. IV lumbar vertebra
2. V lumbar vertebra
3. sacroiliac joint
4. I sacral vertebra

14.THE VISCERAL TRIBUTARIES OF THE INTERNAL ILIAC VEIN:

1. inferior rectal vein
2. superior rectal vein
3. middle rectal vein
4. testicular (ovarian) vein

15.TRIBUTARIES OF THE BRACHIOCEPHALIC VEINS:

1. azygos vein
2. inferior thyroid vein
3. deep cervical vein
4. superior thyroid vein

16.THE ANATOMICAL STRUCTURES WHICH COLLECT BLOOD FROM THE DIPLOIC VEINS:

1. superior sagittal sinus
2. external jugular vein
3. internal jugular vein
4. transverse sinus

17.THE LOCATION OF THE BASILIC VEIN OF THE HAND:

1. the dorsal surface of the hand
2. anterior surface of the radial edge of the forearm
3. the medial side of the forearm
4. the lateral side of the forearm

18.THE VEINS WHICH COLLECT BLOOD FROM THE ABDOMINAL PART ESOPHAGUS AND THE CARDIAC PART OF THE STOMACH TO THE PORTAL VEIN OF THE LIVER:

1. esophageal veins
2. left gastric vein
3. azygos vein
4. hemiazygos vein

19.CENTRAL VEINS WHICH COLLECT BLOOD FROM THE VENOUS PLEXUS OF THE RECTUM:

1. the superior vena cava and inferior vena cava
2. the superior vena cava and portal vein of the liver
3. the inferior vena cava and portal vein of the liver
4. the superior, inferior vena cava and portal vein of the liver

20. SPECIFY THE PLACE WHERE THE THORACIC LYMPHATIC DUCT FLOWS INTO THE VENOUS SYSTEM:

1. left venous angle
2. brachiocephalic vein
3. right venous angle
4. unpaired vein

**Module 5: Сentral nervous system and sensory organs**

**Topic 1.**

**Introduction into CNS. Spinal cord (external and internal structure). Reflex arches of somat-ic and autonomic re-flexes». Conducting a conversation on the top-ic: Meninges and inter-meningeal spaces of a spinal cord (CIW -1h).**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Сontrol questions:**

1. General information about the anatomy of the nervous system (neurons and their morphological varieties, classification of the nervous system, the concept of nuclei and ganglia, gray and white matter of the central nervous system, nerves and pathways).
2. External structure of the spinal cord (shape, length, enlargements, position).
3. Skeletotopy of the spinal cord (rule of Shipo, its clinical significance).
4. Roots of the spinal cord (anterior and posterior, their conductors, spinal ganglia).
5. Meninges of the spinal cord, intermeningeal spaces and their contents/
6. Internal structure of spinal cord.

a) topography of the gray matter of the spinal cord (anterior horn, posterior horn, lateral horn and its nuclei, central canal of the spinal cord).

b) topography of the white matter of the spinal cord (posterior funiculus, lateral funiculus, anterior funiculus, its localization, anterior white commissure). Position of the pathways of each funiculus with their functional characteristic.

1. Scheme of somatic and autonomic reflex arches with subscriptions.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. The spinal cord on the opened spinal canal with meninges.

2. Cross-section of the spinal cord (colored micropreparation).

3. Tables:

a) the external structure of the spinal cord (anterior and posterior surfaces);

b) skeletotopy of the spinal cord;

c) the meninges of the spinal cord;

d) the internal structure of the spinal cord (cross-section).

3. Test of practical skills.

**The student should be able to name and show*:***

1. On the exposed spinal canal:

a) the spinal cord, its cervical and lumbosacral enlargements, medullary cone, anterior and posterior roots, cauda equina, filum terminale, spinal ganglia;

b) the spinal dura mater, pia mater, arachnoid mater; epidural, subdural and subarachnoid spaces.

2. On the tables of the external structure of the spinal cord, its skeletotopy and meninges:

a) sulci and enlargements, medullary cone;

b) the roots and spinal ganglia;

c) parts and segments;

d) compliance segments of different departments of the spinal cord departments

and the vertebrae of the spine;

e) the meninges and intermeningeal spaces.

3. On the table of the internal structure of the spinal cord:

a) anterior, posterior, lateral horns, central intermediate substance, the central canal of the spinal cord;

b) the nuclea of gray matter (gelatinous substance, nucleus proprius, thoracic nucleus, lateral and medial intermediate nuclea, motor nuclea, reticular formation) and their functional characteristics;

c) posterior, lateral, anterior funiculi, anterior white commissure;

d) pathways and their functional characteristics:

• the pathways of the posterior funiculus – fasciculus gracilis and fasciculus cuneatus (tracts of Gaulle, Burdach (tr. gangliobulbothalamocorticalis),

• the pathways of the lateral funiculus:

- anterior and posterior cerebellar tracts: tract of Flexia (tr.gangliospinocerebellaris posterior), tract of Govers (tr.gangliospinocerebellaris anterior),

- rubrospinal tract is the tract of Manakova (tr. rubrospinomuscularis),

- spinothalamic tract is the tract of Westphal-Edinger

(tr.gangliospinothalamocorticalis),

- lateral corticospinal tract - (tr. сorticospinоmuscularis lateralis),

• the pathways of the anterior funiculus:

- anterior corticospinal tract (tr. corticospinоmuscularis anterior),

- olivospinal tract is the tract of Bekhterev-Helwege (tr. оlivospinomuscularis),

- reticulospinal tract (tr. reticulospinomuscularis),

- tectospinal tract (tr. tectospinomuscularis),

- vestibulospinal tract is the tract of Leventala (tr. vestibulospino-muscularis),

• own beams

e) the anterior and posterior roots, spinal ganglia, spinal nerve (cord) with their conductors and its characteristics:

-posterior root presents sensitive conductors and spinal ganglion;

- anterior roots- they contain in all segments the motor axons, in addition, in anterior roots of the C8-L3 segments are axons of I sympathetic neurons (preganglionic conductors), and the roots of the S2-S4 - axons of I parasympathetic neurons (preganglionic conductors).

**To draw and mark:**

a) The scheme of the internal structure of the spinal cord (cross section);

b) The scheme of the simple somatic reflex arc.

**Topic 2:**

**The hindbrain (bulb, pons, cerebellum): external and internal structure. The fourth ventricle. Topography of cranial nerves nucleus (projection of cranial nerves nuclei to a rhomboid fossa).**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Parts of the brain.

2. Classification of the hindbrain.

3. External structure of myelencephalon.

4. Internal structure of myelencephalon (topography of grey and white matter).

5. External structure of the pons.

6. Internal structure of the pons (topography of grey and white matter).

7. External structure of the cerebellum, its communication with departments of a brainstem.

8. Internal structure of a cerebellum (nuclei, pathway of cerebellar peduncles).

9. Rhomboid fossa (boundaries, relief).

10. Projection of the cranial nerves nuclei on the surface of the rhomboid fossa. 11. Fourth ventricle (its walls, communications).

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. Sagittal section of the brain.

2. The brain stem with the cerebellum.

3. The cerebellum.

4. Tables:

a) the internal structure of the medulla oblongata at the level of the cuneate and gracile tubercles, olive;

b) the internal structure of the pons;

c) the internal structure of the cerebellum;

d) projection of cranial nerve nuclei on the surface of the rhomboid fossa.

3. Test of practical skills.

**The student should be able to name and show*:***

1. On a sagittal section of a brain:

a) departments of brain (rhombencephalon, mesencephalon, prosencephalon ) and them components;

b) departments of a rhombencephalon (myelencephalon, metencephalon)

c) Fourth ventricle, cerebral aqueduct (Sylvian aqueduct).

2 . On a preparation of brainstem with a cerebellum:

a) elements of an external structure of myelencephalon :

• on a ventral surface –anterior median fissure, anterolateral sulcus, pyramids, decussacion of pyramids, olives;

• on a dorsal surface –posterior median sulcus, posterolateral sulcus, posterior intermediate sulcus, cuneate and gracile fasciculuses, cuneate and gracile tubercles, inferior cerebellar peduncles, inferior department of the fossa rhomboidea with its hypoglossal and vagal trigones;

b) elements of an external structure of the pons:

• on a ventral surface –basilar sulcus, exit places trigeminal and facial cranial nerves, middle cerebellar peduncles;

• on a dorsal surface –superior department of a fossa rhomboidea;

c) elements of an external structure of a cerebellum – superior and inferior

surfaces, horizontal fissure, hemispheres, vermis, superior cerebellar peduncle, middle cerebellar peduncle , inferior cerebellar peduncle.

d) elements of an external structure of a fossa rhomboidea – superior cerebellar peduncle, middle cerebellar peduncle , inferior cerebellar peduncle, opening of an cerebral aqueduct, median sulcus, medial eminence, facial colliculus, medullary stria of fourth ventricle, vestibular (acoustical) areas, hypoglossal and vagal trigones;

e) elements of an external structure of the fourth ventricle – a root of fourth ventricle (superior cerebellar peduncle, fastigium, superior and inferior medullary velums, fundus of fossa rhomboidea, opening of an cerebral aqueduct).

3. On tables of an internal structure of a myelencephalon and fossa rhomboidea :

a) nucleus of grey substance:

– sensitive nucleus (spinal nucleus of a trigeminal nerve, nucleus of

single tracts of fascial, hypoglossal and vagal nerves); bodies of the II neurons of conscious conductors skin, proprioceptory, gustatory, vestibular and interoceptory sensitivities from the head and a neck, an internal organs of the head, a neck, thoracic cavity, superior and inferior floors abdominal cavity);

- sensitive nucleus of the cuneate and gracile fasciculuses (body of I

neurons of conscious conductors of the proprioceptory sensitivity axons of the I neurons conscious conductors proprioceptory sensitivity respectively from the inferior half of a body and extremities and superior half of body and superior extremities;

- motor nucleus (nucleus inferior olive, accessory nucleus of hypoglossal vagus, accessory nerves, nucleus of hypoglossal nerve, nucleus of an accessory nerve; bodies of the II neurons conscious and unconscious motor pathways to skeletal muscles of the head and neck);

- autonomic nucleus (inferior salivatory nucleus of hypoglossal nerve, a dorsal nucleus of a vagus nerve; bodies of the I autonomic parasympathetic neurons of the specified nerves);

b) pathway of white substance:

- pyramidal pathways (axons of the I neurons conscious motor conductors);

- decussatio of medial lemniscus (decussatio of axons of the II neurons conscious conductors of proprioceptory sensitivity from a body and extremities);

- medial lemniscus (complex of axons of the II neurons conscious conductors skin, proprioceptory, gustatory, vestibular and interoceptory sensitivities after them decussatio ;

- ventral spinocerebellaris tract (axons of the II neurons unconscious conductors of proprioceptory sensitivity from a body and extremities) ;

- rubrospinal tract (axons of the I neurons unconscious motor pathway to muscles of a body and extremities);

- tectospinal tract (axons of the I neurons unconscious motor pathway to muscles of a body and extremities);

4. On tables of an internal structure of the pons and a rhombencephalon:

a) nucleus of grey substance:

– sensitive nucleus ( nucleus of a and main sensitive nucleus of trigeminal nerve– a body of II neurons of conscious conductors skin and proprioceptory sensitivity from the head; superior, inferior, lateral and medial vestibular nucleuses - bodies of the II neurons of conductors vestibular sensitivity; anterior and posterior cochlear nucleuses- bodies of the II neurons of an auditory tract;

- motor nucleuses (motor nucleus of a trigeminal nerve, nucleus facial and abducens nerves, bodies of the II neurons conscious and unconscious motor pathways to skeletal muscles heads and necks);

- autonomic nucleus (superior salivatory nucleus of the facial nerve, bodies of the I vegetative parasympathetic neurons);

- nucleus of the pons – a body of the II neurons cortical -pontocerebellar

tract;

b) pathway of white substance:

– trapezoid body, medullary (acoustical) striae (decussatio axons of the II neurons of an auditory tract );

- pyramidal tracts;

- medial lemniscus,

4. On the table of an internal structure of a cerebellum:

a) nuclea of grey substance (globose nucleus, emboliform nucleus, fastigial nucleus, dentate nucleus);

b) pathway of peduncles of a cerebellum:

• superior cerebellar peduncle – a dorsal spinocerebellaris tract;

• middle cerebellar peduncle ,– a pontocerebellaris tract;

• inferior cerebellar peduncle – a ventral spinocerebellaris tract,

Tecto-cerebellar tract.

5. On the table of a projection of nucleus of cranial nerves on a surface of the fossa rhomboidea:

• Motor nucleus V, VII, IX, X, XI, XII

• Vegetative nucleus VII, IX, X

• Sensitive nucleus V, VII, VIII, IX, X.

**To draw and mark:**

1. The scheme of the internal structure of all parts of the hindbrain;

2. The scheme of projection of cranial nerve nuclei on the surface of the rhomboid fossa.

**To write Latin, Greek, Russian and author’s names:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **English name** | **Latin name** | **Russian name** | **Greek name** | **The author's**  **name** |
|  | Apertura mediana ventriculi quarti | Срединное отверстие IV желудочка | - | Majendi |
|  | Aperturaе medianales laterales ventriculi quarti | Латеральных отверстий IV | - | Lyushka |

**Topic 3:**

**Midbrain. Brain isthmus. Reticular formation. Diencephalon. The third ventricle. Brain trunk.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. External and internal structure of the midbrain, its departments.
2. Functional significance of the superior and inferior colliculi of the midbrain.
3. Composition and functions of the brains term.
4. Isthmus of the brain, its components.
5. Parts of the forebrain.
6. Divisions of the diencephalon and their subdivisions, composition and functional value of the thalamus, metathalamus, epithalamus, hypothalamus.
7. Structural elements of the telencephalon.
8. Basal nuclei (corpus striatum, concept of striopallidar system).
9. Internal capsule, functional characteristics of the pathways that make it up.
10. White matter of the hemispheres, classification of its three types of fibers.
11. Fornix.
12. III ventricle (walls, communications).
13. Reticular formation.

2. Description of macro (micro) preparations.

**Set of the natural preparations models and tables and tables:**

1. Sagittal cross-section of the brain

2. Brain stem

3. Horizontal cross-section of the cerebral hemispheres

4. Brain stem table

5. Table of the internal structure of the midbrain at the level of the upper and lower colliculi

6. Table of basal nuclei

3. Test of practical skills.

**The student should be able to name and show*:***

1. On the sagittal section of the brain:

     a) parts of the brain;

     b) forebrain (telencephalon , diencephalon);

     c) the walls of the ventricle III:

         - lateral (medial surface of the thalamus);

         - anterior (terminal plate, lamina terminalis, the peduncles of fornix and anterior cerebral commissure);

        - posterior (habenular commissure, posterior cerebral commissure, recess of epiphysis);

        - inferior (optic chiasma, gray tuber, mammillary bodies and posterior perforated substance);

        - superior (vascular epithelial plate tight between medullary striae);

     d ) III ventricle’s communications:

        - with the lateral ventricles ( by the interventricular foramens (Monroev’s);

        - with the IV ventricle (by the cerebral aqueduct);

     e) anterior cerebral commissure;

     f) posterior cerebral commissure;

     g) thalamus.

2. On the preparation of the brainstem with the cerebellum:

    a) the elements of the external structure of the midbrain (plate with colliculi,

        cerebral peduncles, interpeduncular fossa);

    b) parts of the isthmus of hindbrain (superior peduncle of the cerebellum, superior medullary velum, brachii colliculi and peduncles of the cerebri, midbrain triangle of lemniscus );

    c) the departments of the diencephalon and elements of their external structure:

    • thalamic region:

      - the thalamus and its parts (anterior tuberculum and pulvinar);

      - epithalamic area and its elements (pair of the habenula, the habenular comissura and trigonum, the pineal gland);

      - metathalamic area and its elements (two lateral and two medial geniculate bodies);

     • hypothalamic region(hypothalamus) and its elements (optic tract, optic chiasma, cinereum tuber, infundibulum, hipophysis, mammillary bodies, anterior perforate substance, Ljuis body);

   d) III ventricle and its walls.

3. On the horizontal section of the cerebral hemispheres and table of the basal ganglia:

        a) the basal ganglia (caudate, lentiform, claustrum);

        b) the internal capsule (anteriort and posterior limbs, knee);

        c) external and extreme capsules;

        d) amygdaloid body;

e) striated body;

f) putamen;

g) globus pallidus.

4. On the tables of the internal structure of the midbrain at the level of the superior and inferior colliculi and the rhomboid fossa:

       a) levels of the midbrain (tectum (roof), tegmentum and basis, cerebral peduncles), cerebral aqueduct;

       b) topography of a white matter:

           - medial lemniscus;

           - lateral lemniscus;

          - occipito-temporo-parieto-pontinus and frontj -pontinus pathways;

- corticospinal tract;

- corticonuclear tract;

- corticopontine tract;

    - tectospinal tract and posterior tegmental cross – Meinert;

- rubrospinal tract and anterior tegmental cross - Forel;

       c) topography of gray matter:

         • motor nucleus:

- nucleus of the oculomotor nerve;

            - nucleus of the trochlear nerve;

            - red nucleus;

            - substantia nigra;

            - central gray matter.

         • autonomic parasympathetic nucleus:

            - accessory nucleus of the oculomotor nerve (Jakubowicz);

            - unpaired median nucleus of the oculomotor nerve (Pearl).

**To draw and mark:**

1. The scheme of the internal structure of the midbrain at the level of the upper and lower colliculi;

2. The scheme of the basal nuclei, internal, external and extreme capsules.

**Topic4:**

**External and internal structure of a cerebrum (telencephalon). Lateral ventricles. Localization of the cortical ends of analyzers. Olfactory brain. Limbic system. Cranial meninges. Cerebrospinal fluid circulation.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Layers of the cortex of the cerebral hemisphere.
2. Lobes of the cerebral hemispheres and their boundaries.
3. Sulci and gyri of the superolateral surface of the cerebral hemispheres.
4. Sulci and gyri of the mediobasal surface hemispheres.
5. Concept of the analyzer.
6. Cortical ends of the I signaling system analyzers.
7. Cortical ends of the II signaling system analyzers.
8. Olfactory brain, its peripheral and central parts .
9. Limbic system: functions, structure.
10. Lateral ventricles (I - left, II - right) and their communications.
11. Cranial meningesand their classification, intermeningeal spaces.
12. Dural venous sinuses.
13. Cerebrospinal fluid circulation.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The hemisphere.

2. The base of the brain.

3. Lateral ventricles.

4. The dura mater of the brain.

5. Sagittal cross-section of the brain.

6. Table of localization of the cortical ends of the analyzers.

3. Test of practical skills.

**The student should be able to name and show*:***

1. On cerebral hemispheres:  
*• on the superolateral surface of the hemisphere :*    a) the main sulci superolateral surface ( central ,lateral );  
    b) sulcus of the frontal lobe ( precentral sulcus, superior and inferior frontal sulci, anterior and asdending branch );  
    c) gyrus of the frontal lobe (precentral gyrus , superior and middle frontal  
        gyri , inferior frontal gyrus with its orbital , triangular and  
        opercular parts);  
    d) parietal sulcus ( postcentral , intraparietal );  
    d ) gyrus of the parietal lobe ( postcentral , superior parietal lobule , the inferior parietal lobule with its angular and supramarginal gyri );  
    e) sulci and gyri of the occipital lobe ;  
   g) sulcus of the temporal lobe ( the superior and inferior temporal sulci);  
    h) gyrus of the temporal lobe ( superior , middle and inferior temporal  lobes, insular lobe );  
*• on the mediobasal surface of a hemisphere:*  
    a) basic mediobasal surface sulci( sulcus corpus callosum , hippocampal sulcus, cingulate sulcus , parietal- occipital sulcus, calcarine sulcus, olfactory sulcus );  
    b) the basic gyri mediobasal surface ( superior frontal gyrus, olfactory gyrus , cingulate gyrus , isthmus of cingulate gyrus, parahippocampal gyrus with its uncus, precuneus, cuneus );  
    c) the corpus callosum ;  
    g ) fornix ( columns and body) ;  
    d ) septum pellucium;  
    e) anterior cerebral commissure;  
    g) the lamina terminalis .

2 . On the base of the brain:  
         a) a place for cranial nerves:  
 I - olfactory nerve ( olfactory bulb , rhinal sulcus , olfactory tract, olfactory triangle, anterior perforated substance);

II - optic nerve ( optic nerves , optic chiasm ,optic tract);

III - oculomotor nerve ( interpeduncular fossa );

IV - trochlear nerve ( laterallyof the cerebral peduncle) ;

V - the trigeminal nerve (the anterior end of the trigeminal and facial lines);

VI - abducens ( between the pons and the pyramid );

VII - and VIII - vestibular - cochlear nerve ( in area of the cerebellopontine angle );

IX - glossopharyngeal nerve , X pair - the vagus nerve , XI

- the accessory nerve (posteriorly Olive );

XII - hypoglossal nerve ( between the pyramid and the olive );

 b) the main parts of the brain and the major structural components:  
             - The medulla oblongata with the main elements of its ventral  
                surface ( pyramid , olive );  
             - Pons with the main groove ;  
             - Middle cerebellar peduncles ;  
             - The brainstem , the interpeduncular fossa of the midbrain ;  
             - Mammillary bodies , tuber cinereum, infundibulum and hypophysis of  diencephalon ;  
             - Olfactory bulbs , tracts , triangles , anterior perforated substance of  rhinencephalon ;

- Optic nerves , optic chiasm , optic tract ;

3. On the lateral ventricles:  
         a) Anterior ( frontal ) horn and its walls :  
                  - Lateral ( head of the caudate nucleus );  
                  - Medial (septum pellucium);  
         b) the central part and its wall :  
                  - Inferior (the body of the caudate nucleus , the dorsal surface the thalamus );  
                  - Medial ( body of fornix);  
                  - Superior (fibers of the corpus callosum );  
         c) Inferior (temporal ) horn and its walls :  
                  - Superolateral (fibers of the corpus callosum );  
                  - Medial ( hippocampus) ;  
         d) Posterior ( occipital ) horn and its walls :  
                  - Superolateral (fibers of the corpus callosum );  
                  - Medial ( hippocampus );  
         d ) interventricular foramen ;  
         e) the choroid plexus .  
4. On the preparation of the dura mater of the brain:  
         a) The falx cerebri ;  
         b ) Tentorium cerebelli ;  
         c) The falx cerebelli ;  
         d) diaphragma sellae ;  
         d ) the dura mater sinuses brain :  
               - Superior sagittal ;  
               - Inferior sagittal ;  
               - Straight;  
               - Occipital ;  
               - Confluence of sinuses ;  
               - Transverse ;  
               - Sigmoid ;  
               - Cavernous .

5. On the table all cortical analyzers:  
        The cortical centers (nuclei) of I-st signaling system include:

1. Centers of general types of sense (cortical end of analyzer of general sense (temperature, pain, tactile and proprioceptive)) are located in postcentral gyrus, superior parietal lobule.
2. Center of stereognosis is at the superior parietal lobule, adjacent to the posterior division of postcentral gyrus. Stereognosis is a three-dimensional feeling.
3. Center of hearing (cortical end of auditory analyzer) is at the medial surface of superior temporal gyrus (Heshl's gyrus), in the depths of lateral sulcus.
4. Center of vision (cortical end of visual analyzer) is at the medial surface of occipital lobe along both sides of calcarine sulcus.
5. Center of olfactory analyzer is at the inferior surface of the temporal lobe at the region of uncus and hippocampus.
6. The nucleus of the center of taste perception is at the lower divisions of postcentral gyrus, uncus of hippocampus.
7. Motor zone is at the precentral gyrus of frontal lobe and paracentral lobule on the medial surface of hemisphere.
8. Center of combined turning of head and eye in the opposite direction is at the posterior divisions of middle frontal gyrus.
9. Center of praxis is at the supramarginal gyrus.

The analyzers forming the second signaling system are:

1. Sensory center of spoken speech (Vernike`s center) is at the posterior divisions of the superior temporal Gyri.
2. Motor center of spoken speech (Broca's area) is at the posterior divisions of lower frontal gyrus.
3. Center of lexia, sensory center of written speech is at the *gyrus* angularis.
4. Center of graphia, motor center of written speech is at the posterior divisions of middle frontal gyrus of left hemisphere.

**To draw and mark:**

1. The scheme of the main sulci and gyri of the superolateral surface of the hemispheres.

2. The scheme of the main sulci and gyri of the mediobasal surface of the hemispheres.

3. The scheme of localization of the cortical ends of the analyzers I and II of the signaling systems.

**Topic 5.**

**Tracts. Voluntary and involuntary sensory tracts. Voluntary motor tracts. Extrapyramidal system.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. The concept of pathways and their basic elements.
2. Classification of conducting pathways.
3. Conscious afferent pathways (general sensitivity tract, proprioceptive cortical pathway, olfactory pathway).
4. Unconscious afferent pathways (proprioceptive pathways of the cerebellar direction).
5. Conscious efferent (pyramid) pathways (corticospinal and corticonuclear tracts).
6. Unconscious efferent (extrapyramidal) pathways (rubrospinal, vestibulospinal, tectospinal, olivospinal, reticulospinal tracts).
7. Extrapyramidal system (centers, paths) and its functional significance.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The path of skin sensitivity.

2. The ways of Gaulle and Burdach.

3. Flexig and Govers paths.

4. The corticospinal pathway.

5. The corticonuclear pathway.

6. Extrapyramidal centers, extrapyramidal pathways.

7. A set of tables of all sections of the spinal cord and brain.

**The student should be able to name and show*:***

1. On the tables of the pathways and sections of various parts of the brain and spinal cord, show the locations of their neurons; demonstrate the course of their dendrites and axons, the levels and names of their intersections.

2. Give a functional characteristic of each pathway.

**Topic 6:**

**Structure of the organ of hearing and balance. Auditory tract.** **Structure of the vision organ and its accessory structures. Visual tract. Eyeball section. Organ of smell, olfactory tract.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions

**Control questions**

1. Сlassification of the organ of hearing and balance (external ear, middle ear, internal ear).
2. External ear:
   1. Auricle;
   2. External acoustic meatus;
   3. Tympanic membrane.
3. Middle ear:
   1. Tympanic cavity (walls), scheme of the tympanic cavity walls,
   2. Ossicles (structure, connections between them, function) and muscles (location, function),
   3. Auditory tube (structure, function).
4. Internal ear:
   1. bony labyrinth (vestibule, semicircular canals, cochlea),
   2. membranous labyrinth(semicircular ducts utricle and saccule, cochlear duct).
5. Sound-wave pathway.
6. Auditory analyzer tract (conscious and unconscious parts).
7. Vestibular pathway (conscious and unconscious parts).
8. General characteristics of the eyeball (location, poles, axises, accessory structures).
9. Layers of eyeball:
10. Fibrous tunic - cornea, sclera (structure, function)
11. Vascular tunic - choroid, ciliary body, iris (structure, function)
12. Internal tunic – retina (structure, function)
13. Structure of the lens (surface, poles, capsule, ciliary zonule- Zinn’s ligament).
14. Transparent formations of the eye.
15. Production and circulation of the aqueous humor.
16. External muscles of the eyeball.
17. Capsule of the eye (Tenon’s), episcleral (Tenon’s) space, retrobulbar fat.
18. Eyelids (structure, function).
19. Conjuctiva (superior and inferior conjunctival fornicis, conjunctival sac).
20. Lacrimal apparatus: lacrimal gland, lacrimal sac, nasolacrimal duct, lacrimal canal (structure, functions).
21. Tract of visual analyzer (conscious and unconscious portions).
22. Arch of the pupillary reflex.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables**

1. The skull as a whole

2. Temporal bone

3. Model of the organ of hearing and balance

3. The brain stem

4. Sagittal section of the brain

5. Basal nuclei of the cerebral cortex

6. Table of the scheme of the auditory pathway

7.Table of the scheme of the visual pathway with the arc of the pupillary reflex.

8. Animal eyes (for the eyeball section).

3. Test of practical skills.

**To draw and mark:**

1. The scheme of the bony and membranous labyrinths.

2. The scheme of the auditory pathway.

3. The scheme of the vestibular pathway.

4.The scheme of the external muscles of the eye;

5. The scheme of the visual pathway and the arc of the pupillary reflex.

**To write the Latin, Greek, Russian and eponyms:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **English name** | **Latin name** | **Russian name** | **Greek name** | **The author's**  **name** |
| Ear | Auris | Ухо | Otos | - |
| Vestibular membrane | Membrane vestibularis | Преддверная мембрана | - | Reissner’s membrane |
| Spiral organ | Organum spirale | Спиральный орган | - | Organ of Corti |
| Eyeball | Oculus | Глаз | Ophthalmus | - |
| Pectineal ligament | lig. pectinatum iris | Гребенчатая связка | - | Zinn’s ligament |
| Scleral venous sinus | Sinus venosus sclerae | Венозный синус склеры | - | Shlem’s canal |
| Spaces of iridocorneal angle | Spatia anguli iridocornealis | Пространства радужнороговичного утла | - | Fontanov’s spaces |
| Episcleral space | Spatium episclerale | Эписклеральное пространство | - | Tenon’s space |

**Topic 7:**

**The final lesson.**

**The anatomy of the central nervous system and sense organs**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Test of practical skills.

3. Testing

1. Interview for control questions

**The control questions:**

1. Concept of neurons and their morphological varieties. Neuroglia.
2. The concept of nuclei and ganglia, gray and white matter of the central nervous system, nerves and pathways.
3. External structure of the spinal cord (shape, length, enlargements, position).

Roots of the spinal cord, their conductors. Spinal ganglia.

1. Topography of the gray matter of the spinal cord (anterior horn, posterior horn, lateral horn and its nuclei, central canal of the spinal cord).
2. Topography of the white matter of the spinal cord. Position of the pathways of each funiculus with their functional characteristic.
3. Meninges of the spinal cord, intermeningeal spaces and their contents.
4. External and internal structure of myelencephalon.
5. External and internal structure of the pons.
6. Rhomboid fossa (boundaries, relief). Projection of the cranial nerves nuclei on the surface of the rhomboid fossa.
7. The base of the brain and the exit places of the cranial nerve roots.
8. External and internal structure of a cerebellum (nuclei, pathway of cerebellar peduncles).
9. Fourth ventricle (its walls, communications).
10. External and internal structure of the midbrain, its departments, superior and inferior colliculi of the midbrain.
11. Composition and functions of the brains term.
12. Isthmus of the brain, its components.
13. Divisions of the diencephalon and their subdivisions. III ventricle (walls, communications).
14. Anatomy and functional value of the thalamus, metathalamus, epithalamus,
15. Anatomy and functional value of the hypothalamus.
16. Structural elements of the telencephalon. Olfactory brain
17. Basal nuclei (corpus striatum, concept of striopallidar system).
18. White matter of the hemispheres, classification of its three types of fibers. Internal capsule, functional characteristics of the pathways that make it up.
19. Fornix.
20. Reticular formation.
21. Lobes, sulci and gyri of the cerebral hemispheres.
22. Cortical ends of the I signaling system analyzers.
23. Cortical ends of the II signaling system analyzers.
24. Limbic system: functions, structure.
25. Lateral ventricles (I - left, II - right) and their communications.
26. Cranial meningesand their classification, intermeningeal spaces.Dural venous sinuses.
27. Cerebrospinal fluid circulation.
28. The concept of pathways and their basic elements.
29. Conscious afferent pathways (general sensitivity tract, proprioceptive cortical pathway, olfactory pathway).
30. Unconscious afferent pathways (proprioceptive pathways of the cerebellar direction).
31. Conscious efferent (pyramid) pathways (corticospinal and corticonuclear tracts).
32. Unconscious efferent (extrapyramidal) pathways (rubrospinal, vestibulospinal, tectospinal, olivospinal, reticulospinal tracts).
33. Extrapyramidal system (centers, paths) and its functional significance.
34. Сlassification of the organ of hearing and balance (external ear, middle ear, internal ear).
35. External ear (auricle, external acoustic meatus, tympanic membrane).
36. Middle ear (tympanic cavity (walls), scheme of the tympanic cavity walls,

ossicles (structure, connections between them, function) and muscles (location, function), auditory tube (structure, function).

1. Internal ear (bony labyrinth, membranous labyrinth).
2. Sound-wave pathway.
3. Auditory analyzer tract (conscious and unconscious parts).
4. Vestibular pathway (conscious and unconscious parts).
5. General characteristics of the eyeball (location, poles, axises, accessory structures).
6. Fibrous tunic of the eyeball - cornea, sclera (structure, function)
7. Vascular tunic of the eyeball - choroid, ciliary body, iris (structure, function)
8. Internal tunic – retina (structure, function)
9. Structure of the lens (surface, poles, capsule, ciliary zonule- Zinn’s ligament).
10. Transparent formations of the eye.
11. Production and circulation of the aqueous humor.
12. External muscles of the eyeball.
13. Arc of the pupillary reflex.
14. Capsule of the eye (Tenon’s), episcleral (Tenon’s) space, retrobulbar fat.
15. Eyelids (structure, function).
16. Conjuctiva (superior and inferior conjunctival fornicis, conjunctival sac).
17. Lacrimal apparatus: lacrimal gland, lacrimal sac, nasolacrimal duct, lacrimal canal (structure, functions).
18. Tract of visual analyzer (conscious and unconscious portions).

2. Test of practical skills.

List of anatomical elements (practical skills) for the module «Central nervous system and sensory organs»:

1. Falx cerebri (dura mater)

2. Tentorium cerebelli

3. Superior sagittal sinus (dura mater)

4. Inferior sagittal sinus

5. Transverse sinus

6. Sigmoid sinus

7. Pyramid of the medulla oblongata

8. Olive of the medulla oblongata

9. Basilar sulcus (pons)

10. Middle cerebellar peduncle

11. Inferior cerebellar peduncle

12. Superior cerebellar peduncle

13. Pons

14. Superior medullary velum

15. IV ventricle (on the sagittal section)

16. Rhomboid fossa

17. The hemisphere of the cerebellum "Aubor vitae "( on the section of the cerebellum)

18. Cerebral peduncle (midbrain)

19. Roof of the midbrain (quadriplegic plate)

20. Aquedact of midbrain (on a cross-section of the midbrain)

21. Brain stem

22. Diencephalon

23. Pineal body

24. Thalamus

25. Medial geniculate body

26. Lateral geniculate body

27. Optic chiasm

28. Mammillary body

29. Tuber cinereum

30. III ventricle

31. Interventricular foramen

32. Central sulcus of the cerebral hemisphere

33. Lateral sulcus of the cerebral hemisphere

34. Precentral sulcus

35. Superior frontal sulcus

36. Inferior frontal sulcus

37. Postcentral sulcus

38. Intraparietal sulcus

39. Superior temporal sulcus

40. Lower temporal sulcus

41. Sulcus of the corpus callosum

42. Cingulate sulcus

43. Parietal-occipital sulcus

44. Calcarine sulcus

45. Hippocampal sulcus

46. Collateral sulcus

47. Olfactory sulcus

48. Precentral gyrus

49. Superior frontal gyrus

50. Middle frontal gyrus

51. Lower frontal gyrus

52. Postcentral gyrus

53. Superior parietal lobule

54. Inferior parietal lobule

55. Superior temporal gyrus

56. Middle temporal gyrus

57. Inferior temporal gyrus

58. Insular lobe of the large brain (insula)

59. Cingulate gyrus

60. Isthmus of the cingulate gyrus

61. Paracentral lobule

62. Precuneus

63. Cuneus

64. Parahippocampal gyrus

65. Lingual gyrus

66. Rectus gyrus

67. Olfactory bulb

68. Olfactory tract

69. The olfactory triangle

70. Anterior perforated substance

71. Corpus callosum

72. Anterior comissure

73. Fornix

74. Septum pelucidum

75. Central part of the lateral ventricle

76. Anterior horn of the lateral ventricle

77. Posterior horn of the lateral ventricle

78. Inferior horn of the lateral ventricle

79. Head of the caudate nucleus

80. The body of the caudate nucleus

81. Tail of the caudate nucleus

82. Lentiform nucleus

83. Claustrum

84. The internal capsule

85. The auricle with its helix

86. Semicircular channels

87. Organ of Corti

88. The auricle with its antihelix

89. The cochlea its base

90. Endolymphatic space in the diagram

91. Cochlea cupula

92. The anterior semicircular duct

93. The auricle with its antihelix

94. The cochlea with its modeolus

95. The posterior semicircular duct

96. The auricle with its lobule

97. The cochlea with its spiral lamina

98. The lateral semicircular duct

99. The external auditory canal with its cartilaginous part

100. Secondary tympanic membrane

101. The external acoustic canal with its bony part

102. The cochlea with its spiral canal

103. The tympanic membrane

104. Tympanic cavity

105. Utricle and saccule

106. Auditory bones

107. The reuniens duct on the diagram

108. Optic disc

109. Posterior chamber of the eye

110. The auditory tube with its bony part

111. Cochlear duct

112. The anterior chamber of the eye

113. The lens

114. The auditory tube with its cartilaginous part

115. Connecting duct on the diagram

116. Macula and fovea centralis

117. Venous sinus of the sclera

3. Testing

1. AUTONOMIC NUCLEUS IS LOCATED:

1. in the anterior horns of the spinal cord
2. in the lateral horns of the spinal cord
3. in the posterior horns of the spinal cord
4. in the lateral cord of the spinal cord

2. CORTICAL END OF ANALYZER OF PROPRIOCEPTIVE SENSE IS:

1. in the superior temporal gyrus
2. in the precentral gyrus
3. in the postcentral gyrus
4. in the middle frontal gyrus

3. CORTICAL END OF THE VISUAL ANALYZER OF THE FIRST SIGNAL SYSTEM IS:

1. in the frontal lobe
2. in the occipital lobe
3. in the temporal lobe
4. in the parietal lobe

4. BASAL NUCLEI ARE IN:

1. in the rhombencephalon
2. in the mesencephalon
3. in the diencephalon
4. in the telencephalon

5. MORPHOLOGICAL BASIS OF THE GRAY MATTER OF THE BRAIN ARE:

1. pseudounipolar neurons
2. bipolar neurons
3. multipolar neurons
4. unipolar neurons

6. PSEUDOUNIPOLAR NEURONS ON FUNCTION ARE:

1. sensitive
2. motor
3. sympathetic
4. parasympathetic

7. BIPOLAR NEURONS ON FUNCTION ARE:

1. sensitive
2. motor
3. sympathetic
4. parasympathetic

8. LAST EFFERENT NEURON OF SOMATIC REFLEX ARC LIES:

1. in the spinal ganglia
2. in the anterior horn of the spinal cord
3. in the autonomic ganglia
4. in the lateral horn of the spinal cord

9. DORSAL ROOT OF THE SPINAL CORD ON FUNCTION IS:

1. sensitive
2. motor
3. sympathetic
4. parasympathetic

10. SPINAL CORD ENDS AT THE LEVEL OF:

1. XI-XII thoracic vertebrae
2. I-II lumbar vertebrae
3. II-III lumbar vertebrae
4. I-II sacral vertebrae

11. CERVICAL SPINAL CORD HAS

1. 6 segments
2. 7 segments
3. 8 segments)
4. 9 segments

12. ROLAND’S SUBSTANCE IS LOCATED:

1. in the anterior horns of the spinal cord
2. in the posterior horns of the spinal cord
3. in the lateral horns of the spinal cord
4. in the central part of the spinal cord

13. MOTOR NUCLEI ARE LOCATED:

1. in the anterior horns of the spinal cord
2. in the posterior horns of the spinal cord
3. in the lateral horns of the spinal cord
4. in the central part of the spinal cord

14. THORACIC NUCLEUS (CLARKE-STILLING’S) IS LOCATED:

1. in the anterior horns of the spinal cord
2. in the posterior horns of the spinal cord
3. in the lateral horns of the spinal cord
4. in the central part of the spinal cord

15. TECTOSPINAL PATHWAY IS:

1. in the anterior funiculi of the spinal cord
2. in the own bundles of the spinal cord
3. in the posterior funiculi of the spinal cord
4. in the lateral funiculi of the spinal cord

16. RUBROSPINAL PATHWAY IS:

1. in the anterior funiculi of the spinal cord
2. in the own bundles of the spinal cord
3. in the posterior funiculi of the spinal cord
4. in the lateral funiculi of the spinal cord

17. INFERIOR CEREBELLAR PEDUNCLES CONNECT THE CEREBELLUM WITH:

1. medulla oblongata
2. spinal cord
3. midbrain
4. diencephalon

18. MIDDLE CEREBELLAR PEDUNCLES CONNECT THE CEREBELLUM WITH:

1. medulla oblongata
2. pons
3. midbrain
4. diencephalon

19. SUPERIOR CEREBELLAR PEDUNCLES CONNECT THE CEREBELLUM WITH:

1. medulla oblongata
2. pons
3. midbrain
4. diencephalon

20. HYPOTHALAMUS IS PART OF:

1. midbrain
2. telencephalon
3. rhombencephalon
4. diencephalon

**Module №6.**

**Anatomy of the peripheral and autonomic nervous systems**

**Topic 1.**

**I - VI pairs of the cranial nerves (nuclea, conduction structure, exit places from a brain and from a skull, branches and zone of their innerva-tion). Arch of the pupillary reflex.**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

1. Classification of the cranial nerves.

2. The principle of forming of cranial nerves.

3. Anatomy of the olfactory nerve: topography, place of entry into the cranial cavity, olfactory pathway.

4. Anatomy of the optic nerve: topography, the place of entry into the cranial cavity, the conductor composition, the visual pathway. The pupil reflex arc and its functional significance.

5. Anatomy of the oculomotor nerve: nuclei, places of exit from the brain and cranial cavity, branches, conductor composition, areas of innervation.

6. Anatomy of the trochlear nerve: the nucleus, exit places from the brain and the cranial cavity, the conductor composition, the area of innervation.

7. Anatomy of the abducent nerve: the nucleus, the exit places from the brain and the cranial cavity, the conductor composition, the area of innervation.

8. Anatomy of the trigeminal nerve: nuclei, ganglion, exit places from the cranial cavity, branches.

9. Anatomy of the ophtalmic nerve (1st branch of the trigeminal nerve): nuclei, ganglion, exit place from the cranial cavity, branches in the orbit, their topography, conductor composition, innervation areas.

10. Anatomy of the maxillary nerve (2nd branch of the trigeminal nerve): nuclei, ganglion, exit place from the cranial cavity, branches in the pterygopalatine fossa, their topography, conductor composition, innervation areas.

11. Anatomy of the mandibular nerve (3rd branch of the trigeminal nerve): nuclei, ganglion, exit place from the cranial cavity, branches in the infratemporal fossa, their topography, conductor composition, areas of innervation.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1) On the table "Rhomboid fossa" of the cranial nerve nucleus:

1. Motor nucleus of the oculomotor nerve (III)

2. Accessory oculomotor nerve (Yakubovich nucleus) (III)

3. Unpaired median nucleus of the oculomotor nerve (Perlia nucleus) (III)

4. The nucleus of the trochlear nerve (IV)

5. The nucleus of the spinal tract of the trigeminal nerve (V)

6. The mesencephalic nucleus of the trigeminal nerve (V)

7. The principal sensory nucleus of the trigeminal nerve (V)

8. Motor nucleus of the trigeminal nerve (V)

9. The nucleus of the abducens nerve (VI)

3. Test of practical skills.

**The student has to know, be able to show:**

On the skull, the exit places of the cranial nerves:

1. Cribriform plate of the ethmoid bone – olfactory nerve, n. olfactorius (I).

2. Optic canal-optic nerve, n. opticus (II).

3. Superior orbital fissure

- oculomotor nerve, N. oculomotorius (III),

- trochear nerve, N. trochlearis (IV),

- ophtalmic nerve, n. ophtalmicus (1 branch of the trigeminal nerve, P. trigeminus (V),

- abductor nerve, n. abducens (VI).

4. Round foramen - maxillary nerve, n. maxillaris (2 branch of the trigeminal nerve, N. trigeminus (V)).

5. Oval foramen - mandibular nerve, n. mandibularis (3 branch of the trigeminal nerve, N. trigeminus (V).

**Topic 2.**

**VII - XII pairs of the cranial nerves (nuclea, conduction structure, exit places from a brain and from a skull, branches and zone of their innervation).**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

1. Anatomy of the facial nerve: nuclei, exit place from the brain and cranial cavity, the conductor composition, branches, area of innervation.
2. Anatomy of the vestibular-cochlear nerve: nuclei, exit places from the brain and cranial cavity, conductor composition, innervation area. The auditory pathway.
3. Anatomy of the glossopharyngeal nerve: nuclei, exit place from the brain and cranial cavity, conductor composition, branches, innervation area.
4. Anatomy of the vagus nerve: the nuclei, the exit place from the brain and the cranial cavity, departments (head, neck, thoracic, abdominal), branches, conductor composition, innervation area.
5. Anatomy of the accessory nerve: nuclei, roots, exit place from the brain and cranial cavity, conductor composition, branches, innervation area.
6. Anatomy of the hypoglossal nerve: the nucleus, the exit place from the brain and the cranial cavity, the conductor composition, branches, the area of innervation.

2. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. The nucleus of a solitary tract (VII, IX, X);
2. Superior salivary nucleus (VII);
3. Motor nucleus of the facial nerve (VII);
4. Dorsal cochlear nucleus (VIII);
5. Ventral cochlear nucleus (VIII);
6. The superior vestibular nucleus (Bekhtereva) (VIII);
7. Lower vestibular nucleus (Roller)(VIII);
8. The lateral vestibular nucleus (Deiters) (VIII);
9. Medial vestibular nucleus (Schwalbe)(VIII);
10. Lower salivary nucleus of the glosso-pharyngeal nerve (IX);
11. Nucleus ambiqus (IX, X, XI);
12. Dorsal nucleus of the vagus nerve (X);
13. Nucleus of the accessory nerve (XI);
14. Motor nucleus of the hypoglossal nerve (XII).

3.Test of practical skills.

**The student has to know, be able to show:**

1. Foramen stylomastoid - facial nerve, N. facialis (VII).
2. Internal auditory foramen of the temporal bone - vestibular-cochlear nerve, N. vesribulocochlearis (VII).
3. Jugular foramen-glosso-pharyngeal nerve, N. glossopharyngeus (IX),

- vagus nerve, N. vagus (X),

- accessory nerve, N. accessorius (XI).

4. Canal of the hypoglossal nerve - N. hypoglossus (XII).

**Topic 3.**

**The autonomic nervous system. The parasympathetic part. The sympathetic part. The somatic and autonomic nervous arches.**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1.Interview for control questions.

1. The concept of soma and viscera.

2. Functional classification of the nervous system.

3. Afferent part of the nervous system, its unity for the somatic and autonomic nervous system.

4. Efferent part of the somatic nervous system. The arc of the somatic reflex.

5. Efferent part of the autonomic nervous system (structural features, the arc of the autonomic reflex).

6. Morphological elements of the autonomic nervous system (autonomic ganglia, pre- and postganglionic conductors).

7. Substrate of innervation of the autonomic division of the nervous system in the soma and viscera.

8. Function of the autonomic nervous system.

9. Division of the autonomic nervous system into parasympathetic and

sympathetic parts, the difference in their influence on the main organs.

10. Higher (suprasegmental) autonomic centers and their functional value.

11. Communication of higher vegetative centers with subordinates (segmental)

parasympathetic and sympathetic centers.

12. General characteristics of the parasympathetic part of nervous system:

a. central part (cranial and spinal parasympathetic

centers);

b. peripheral part (paraorganic and intramural ganglia,

pre- and postganglionic conductors);

c. the course of parasympathetic pre- and postganglionars in the cranial

and spinal nerves from each parasympathetic center

13.General characteristics of the sympathetic part of autonomic nervous system:

a. central part (sympathetic centers);

b. peripheral part (paravertebral and prevertebral ganglia, pre- and postganglionic conductors).

14. The concept of white and gray connecting branches.

15. Patterns of sympathetic innervation of the soma, internal organs of the head, neck and chest cavity, abdominal cavity.

16. Connection of sympathetic conductors with sensitive fibers of spinal nature (the concept of double afferent innervation of internal organs).

17. The sympathetic trunk (nodes, departments, branches and their areas of innervation).

2.Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. A set of tables of the internal structure of all departments of the central nervous system
2. system and spinal cord.
3. Table on the anatomy of the autonomic nervous system
4. Table on the anatomy of the parasympathetic division of the autonomic nervous system.

3.Test of practical skills.

**The student has to know, be able to show:**

1. On the specified set of tables, the higher vegetative centers:

* 1. upper parts of the precentral gyrus, upper parts postcentral gyrus, pericentral lobule, upper lobule the frontal gyrus of the cerebral hemispheres;
  2. basal nuclei;
  3. hypothalamic region;
  4. visual tubercle of the midbrain;
  5. gray matter around the Sylvian aqueduct of the midbrain;
  6. reticular formation;
  7. the cerebellum.

2. On a set of brain slice tables, parasympathetic centers:

* 1. cranial (accessory nucleus and unpaired median nucleus of the midbrain, superior salivary nucleus of the bridge, inferior salivary nucleus and dorsal nucleus of the vagus nerve of the medulla oblongata);
  2. spinal (lateral intermediate nuclei of segments S2-S4)

3. On the table, the autonomic nervous system:

* 1. parasympathetic ganglions:

- paraorganic parasympathetic ganglions (ciliated, pterygopaloid, submandibular, sublingual, parotid);

- intramural parasympathetic ganglions (vagus and pelvic internal nerves);

* 1. parasympathetic component of the oculomotor nerve:

- I neuron - cells of the additional and unpaired median nuclei of the midbrain, preganglionic conductors leave the brain as part of the oculomotor nerve and leave its lower branch with the formation of the oculomotor root,

- II neuron - cells of the ciliated ganglion, postganglionic conductors form short ciliated nerves that penetrate the eyeball and innervate the ciliated muscle and the muscle that narrows the pupil.

* 1. parasympathetic component of the facial nerve:

- I neuron-cells of the superior salivary nucleus of the bridge, preganglionic conductors leave the brain as part of the intermediate nerve and the knee of the facial canal are divided into two parts:

• one part forms the large stony nerve, the conductors of which switch to the II neuron in the pterygopalic ganglion, then the postganglions form the orbital, large and small palatine and posterior nasal nerves, which provide secretory innervation of the glands of the mucous membranes of the nose and paranasal sinuses, palate and lacrimal gland;

• the other part of them passes as part of the drum string, switches to the II neuron in the submandibular and non-permanent sublingual nodes. Further, postganglionic fibers provide secretory innervation of the submandibular and sublingual salivary glands.

* 1. parasympathetic component of the lingual-pharyngeal nerve:

- I neuron-cells of the lower salivary nucleus of the medulla oblongata, preganglionic conductors leave the brain as part of the lingual-pharyngeal nerve, pass into the tympanic nerve and exit the tympanic cavity as a small stony nerve;

- II neuron - cells of the ear ganglion, postganglionic conductors of which provide secretory innervation of the parotid salivary gland;

* 1. parasympathetic component of the vagus nerve:

- I neuron-cells of the dorsal nucleus of the vagus nerve of the medulla oblongata, preganglionic conductors leave the brain as part of the nerve stem, after which they diverge into all its branches (except for the shell and ear branches of the brain);

- II neuron-cells of the intramural nodes of the thyroid, parathyroid and thymus glands, larynx, trachea, main bronchi and lungs, heart, soft palate, pharynx, esophagus, stomach, small intestine, caecum and appendix, ascending and transverse colon, liver, gallbladder and bile ducts, pancreas, kidneys and ureters, spleen. Postganglionic conduits from the intramural ganglia provide innervation of the smooth muscles and glands of the listed organs.

* 1. The parasympathetic component of the spinal nerves:

- I neuron-cells of the lateral intermediate nuclei of the II-IV sacral segments of the spinal cord, preganglionic conductors pass in the composition of the anterior roots, and then in the composition of the anterior branches of these nerves; in the pelvic region, they leave the sacral spinal nerves in the form of pelvic internal nerves;

- II neuron-cells of the intramural nodes of the bladder, descending and sigmoid colon, rectum, ovaries, fallopian tubes, uterus, vagina in women, vas deferens, seminal vesicles, prostate gland in men. Postganglions from the nodes innervate the glands and smooth muscles of this group of organs.

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study the structure of the vertebrae, write down Latin terms in a notebook.

Draw and indicate:

a) the scheme of the functional classification of the nervous system.

b) the scheme of the autonomic reflex arc.

Write down Latin and author's names:

1. The accessory nucleus-n. accessorius( Latin), the cranial nucleus of Yakubovich (auth.);

2. The unpaired middle nucleus - the Pearlea nucleus (auth.);

3. Vagus nerve-cranial nucleus;

4. Lateral intermediate nuclei of segments S2-S4-n. n.

intermediolateralis( Latin), sacral Yakubovich nuclei (auth.);

5.Pelvic internal nerves

Draw:

a) a diagram of the course of sympathetic conductors to the internal organs of the head, neck and chest cavity;

b) a diagram of the course of sympathetic conductors to the internal organs of the abdominal cavity;

c) the scheme of the course of sympathetic conductors to the soma.

**Topic 4.**

**Innervation of organs. Formation of the spinal nerves. Cervical plexus (branches, topography and zone of the innervation). Conducting a conversation on the topic: The autonomic plexuses (CIW- 1h).**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1.Interview for control questions.

1. General patterns of innervation of internal organs.

2. The pathways of the sensitive, motor, parasympathetic and sympathetic conductors to the internal organs.

3. The pathways of sensory, motor, sympathetic conductors to the soma.

4. General data on the formation of vegetative plexuses. Extraorganic and

organic autonomic plexuses and their structural components.

5. Autonomic plexuses of the head.

6. Autonomic plexuses of the neck.

7. Autonomic plexuses of the chest cavity.

8. Autonomic plexuses of the abdominal cavity. Celiac plexus (sources of formation, departments, areas of innervation).

9. The formation of the spinal nerves and their branches.

10. The features of the anterior branches of the spinal nerves (the formation of the plexus and intercostal nerves).

11. The cervical plexus, the formation of the branches (cutaneous, muscular, mixed), areas of the innervation.

12.The phrenic nerve, topography, areas of the innervation.

2.Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. Table on the anatomy of the autonomic nervous system
2. Table on the anatomy of the parasympathetic division of the autonomic nervous system.

3.Test of practical skills.

**The student has to know, be able to show:**

3. On the table, the autonomic nervous system:

* 1. parasympathetic ganglions:

- paraorganic parasympathetic ganglions (ciliated, pterygopaloid, submandibular, sublingual, parotid);

- intramural parasympathetic ganglions (vagus and pelvic internal nerves);

* 1. parasympathetic component of the oculomotor nerve:

- I neuron - cells of the additional and unpaired median nuclei of the midbrain, preganglionic conductors leave the brain as part of the oculomotor nerve and leave its lower branch with the formation of the oculomotor root,

- II neuron - cells of the ciliated ganglion, postganglionic conductors form short ciliated nerves that penetrate the eyeball and innervate the ciliated muscle and the muscle that narrows the pupil.

* 1. parasympathetic component of the facial nerve:

- I neuron-cells of the superior salivary nucleus of the bridge, preganglionic conductors leave the brain as part of the intermediate nerve and the knee of the facial canal are divided into two parts:

• one part forms the large stony nerve, the conductors of which switch to the II neuron in the pterygopalic ganglion, then the postganglions form the orbital, large and small palatine and posterior nasal nerves, which provide secretory innervation of the glands of the mucous membranes of the nose and paranasal sinuses, palate and lacrimal gland;

• the other part of them passes as part of the drum string, switches to the II neuron in the submandibular and non-permanent sublingual nodes. Further, postganglionic fibers provide secretory innervation of the submandibular and sublingual salivary glands.

* 1. parasympathetic component of the lingual-pharyngeal nerve:

- I neuron-cells of the lower salivary nucleus of the medulla oblongata, preganglionic conductors leave the brain as part of the lingual-pharyngeal nerve, pass into the tympanic nerve and exit the tympanic cavity as a small stony nerve;

- II neuron - cells of the ear ganglion, postganglionic conductors of which provide secretory innervation of the parotid salivary gland;

* 1. parasympathetic component of the vagus nerve:

- I neuron-cells of the dorsal nucleus of the vagus nerve of the medulla oblongata, preganglionic conductors leave the brain as part of the nerve stem, after which they diverge into all its branches (except for the shell and ear branches of the brain);

- II neuron-cells of the intramural nodes of the thyroid, parathyroid and thymus glands, larynx, trachea, main bronchi and lungs, heart, soft palate, pharynx, esophagus, stomach, small intestine, caecum and appendix, ascending and transverse colon, liver, gallbladder and bile ducts, pancreas, kidneys and ureters, spleen. Postganglionic conduits from the intramural ganglia provide innervation of the smooth muscles and glands of the listed organs.

* 1. The parasympathetic component of the spinal nerves:

- I neuron-cells of the lateral intermediate nuclei of the II-IV sacral segments of the spinal cord, preganglionic conductors pass in the composition of the anterior roots, and then in the composition of the anterior branches of these nerves; in the pelvic region, they leave the sacral spinal nerves in the form of pelvic internal nerves;

- II neuron-cells of the intramural nodes of the bladder, descending and sigmoid colon, rectum, ovaries, fallopian tubes, uterus, vagina in women, vas deferens, seminal vesicles, prostate gland in men. Postganglions from the nodes innervate the glands and smooth muscles of this group of organs.

1. Spinal nerves (31 pairs) in the intervertebral foramina:

1) Posterior rami and their innervation:

a) suboccipital nerve

b) greater occipital nerve.

2) Rami communicantes to the sympathetic trunk:

a) white ramus communicans,

b) grey ramus communicans.

3) Meningeal (recurrent) branch.

4) Anterior rami and their derivatives:

- cervical plexus,

- brachial plexus,

- intercostal nerves,

- lumbar plexus,

- sacrococcygeal plexus.

2.The intercostal nerves in the thoracic cavity, their pathway, topography and communication with the sympathetic trunk.

3.The cervical plexus, the formation of the four superior cervical nerves by the anterior branches. To show in the area of the neck behind the sternocleidomastoid muscle:

1) Cutaneous rami:

a) lesser occipital nerve

b) great auricular nerve

c) transverse cervical nerve

g) supraclavicular nerves

2) Muscular rami

3) Mixed phrenic nerve

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher, write down Latin terms in a notebook.

Draw and indicate:

a) the scheme of the functional classification of the nervous system.

b) the scheme of the autonomic reflex arc.

Write down Latin and author's names:

1. The accessory nucleus-n. accessorius( Latin), the cranial nucleus of Yakubovich (auth.);

2. The unpaired middle nucleus - the Pearlea nucleus (auth.);

3. Vagus nerve-cranial nucleus;

4. Lateral intermediate nuclei of segments S2-S4-n. n.

intermediolateralis( Latin), sacral Yakubovich nuclei (auth.);

5.Pelvic internal nerves

Draw:

a) a diagram of the course of sympathetic conductors to the internal organs of the head, neck and chest cavity;

b) a diagram of the course of sympathetic conductors to the internal organs of the abdominal cavity;

c) the scheme of the course of sympathetic conductors to the soma.

d) the scheme of formation of the spinal nerve and its branches.

e). the scheme of skin innervation - the head and neck from the cervical plexus.

**Topic 5.**

**Thoracic spinal nerves. Brachial plexus (branches, topography and zone of the innervation).**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1.Interview for control questions.

1. The formation of the brachial plexus, its topographic divisions and cords.

2. The short branches of the brachial plexus, areas of the innervation.

3. The medial, lateral and posterior cords of the brachial plexus, long branches originating from each cord.

4. The median nerve, its formation, topography, areas of the innervation.

5. The ulnar nerve, its course, topography, areas of the innervation.

6. The radial nerve, its course, topography, areas of the innervation.

7. The cutaneous branches of the brachial plexus, areas of the innervation.

8. Group innervation of the muscles of the shoulder.

9. Group innervation of the muscles of the shoulder girdle.

10. Group innervation of the muscles of the forearm.

11. Group innervation of the muscles of the hand.

12. Thoracic nerves

2.Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. A cadaver with prepared nerves of the brachial plexus.

2. Upper limb with prepared vessels and nerves.

3. Museum preparations:

a) brachial plexus;

b) the spinal cord with roots and nerves.

4. The skeleton

3.Test of practical skills.

**The student has to know, be able to show:**

1) Brachial plexus formed by the anterior branches of the four inferior

cervical and first thoracic spinal nerves.

1. To show on the neck in the interscalenal space supraclavicular part on

the brachial plexus and its short branches:

a) the dorsal scapular nerve along its medial margin:

- to the m. levator scapulae,

- to the m.rhomboid;

b) the suprascapular nerve in the suprascapular notch:

to the m. supraspinatus,

to the m. infraspinatus,

to the capsule of the shoulder joint.

c) the long thoracic nerve:

- to the m. serratus anterior;

d) the medial and lateral pectoral nerves:

- to the m. pectoralis major,

- to the m. pectoralis minor;

e) the subclavian nerve:

- to the subclavian muscle;

f) the subscapular nerves:

- to the m. subscapularis,

- to the m. teres major,

- to the m. latissimus dorsi;

g) the axillary nerve in the quadrilateral foramen:

muscular branches:

-to the m.deltoid,

- to the m. teres minor;

cutaneous branches:

-superior lateral cutaneous nerve of arm to the skin of the posterolateral region of the shoulder,

-branches to the shoulder joint.

2) Infraclavicular part of the brachial plexus in the axilla and its three cords (lateral, medial and posterior) around the axillary artery and leaving them long nerves:

a) the musculocutaneous nerve (mixed), extending from the lateral cord, its pathway and topography on the shoulder:

muscular branches:

- to the m.biceps brachii,

- to the m. brachialis,

- to the m. coracobrachialis;

cutaneous branches:

- to the skin of the lateral surface of the forearm,

- to the skin of the thenar

b) the median nerve (mixed), extending from the medial and lateral cords by the two roots, its pathway and topography on the shoulder, forearm and the branches on the hand:

muscular branches:

- to the muscles of the anterior surface of the forearm with the exception of two (m. flexor carpi ulnaris, m. flexor digitorum profundus),

- to the m. pronator teres,

- to the m. pronator quadratus,

- to the m. abductor policis, the m. opponens policis and the superficial head of the m. flexor policis brevis,

- to the first and second mm. lumbricals;

cutaneous branches:

- to the skin of the radial side of the palm,

- to the skin I-III fingers and the radial side of the IV finger;

c) the ulnar nerve (mixed), extending from the medial cord, its pathway and topography on the shoulder, forearm, the division into dorsal and palmar  
surfaces of the hand:

muscular branches:

- to the two muscles of the forearm (m. flexor carpi ulnaris, ulnar part of the m. flexor digitorum profundus),

- to the third and fourth mm. lumbricals,

- to the interosseous muscles (four dorsal and three palmar),

- to the m. adductor policis and the deep head of the m. flexor policis brevis;

cutaneous branches:

- to the skin of the ulnar side of the palm,

- to the skin of the V and ulnar side IV of the fingers,

- to the skin of the back surface V, IV and ulnar side III of the fingers;

d) the radial nerve (mixed), extending from the posterior cord, its pathway in the spiral canal, on the lateral surface of the shoulder and forearm, its superficial and deep branches in the forearm and branches on the back of the hand:

muscular branches:

- the mm. extensors at the shoulder,

- the mm. extensors at the forearm;

- the m. supinator.

cutaneous branches:

- to the skin of the posterior surface of the shoulder,

- to the skin of the posterior surface of the forearm,

- to the skin of the I, II, and radial side III of the fingers on the back of the hand,

-to the capsule of the elbow joint;

e) the medial cutaneous nerve of the arm (sensitive), extending from medial cord to the skin of the anterior-medial surface of the shoulder;

f) the medial cutaneous nerve of the forearm (sensitive), extending from the medial cord to the skin anterior-medial surface of the forearm.

Students independently in the classroom with the help of a textbook, an atlas, natural preparations and a skeleton under the supervision of a teacher study the structure of the vertebrae, write down Latin terms in a notebook.

Draw and mark:

1. The scheme of formation of the spinal nerve and its branches.

2. The scheme of formation of the brachial plexus.

3. Scheme of skin innervation of the upper limb

Write down the names.

1. Radial nerve canal
2. Carpal tunnel

**Topic 6.**

**Lumbar plexus,** **sacral and coccygeal plexus (branches, topography and zone of the innervation).**

**The form of the current control of students ' progress**

1. Interview for control questions.

2. Description of macro (micro) preparations.

3. Test of practical skills.

**Assessment materials of the current control of students ' progress**

1. Interview for control questions.

1. The formation and topography of the lumbar plexus.

2. The branches of the lumbar plexus, leaving the lateral margin of the m.gluteus maximus (iliohypogastric nerve, ilio-inguinal nerve, the lateral femoral cutaneous nerve and femoral nerve), their pathways, area of innervation.

3. The branches of the lumbar plexus, leaving the medial margin of the m.gluteus maximus (obturator nerve), its course, topography, area of innervation.

4. The branches of the lumbar plexus, emerging from the anterior surface of the m.gluteus maximus (genitofemoral nerve and its terminal branches), their way, areas of innervation.

5. The formation and topography of the sacral plexus.

6. The short branches of the sacral plexus, their way, topography, area of innervation.  
7. The long branches of the sacral plexus, their way, topography, area of innervation.  
8. The sciatic nerve, its course, the topography, the division into the terminal branches, area of innervation.

9. The tibial nerve, its course, topography, areas of innervation.

10. The common, superficial and deep peroneal nerves, their pathway, topography, area of innervation.

11. The group innervation of the muscles of the pelvic girdle.

12. The group innervation of the muscles of the thigh

13. The group innervation of the muscles of crus.

14. The group innervation of the muscles of the foot.

15. The innervation of the skin of the thigh, leg and foot.

16. The formation and topography of coccygeal plexus, area of innervation.

1. Description of macro (micro) preparations.

**Set of the natural preparations, models and tables:**

1. A cadaver with prepared vessels and nerves of all areas.

2. Lower limb with vessels and nerves.

3. Museum preparations: lumbar plexus, spinal cord with roots, nerves of the foot.

4. The skeleton.

1. Test of practical skills.

**The student has to know, be able to show:**

1. Lumbar plexus formed by the anterior branches of the four superior lumbar nerves and the anterior branch of the twelfth thoracic nerve and its branches;

1) The branches of the lumbar plexus, leaving the lateral margin of the m.gluteus maximus:

a) ilio-hypogastric nerve (mixed):

- to m.transversus abdominis and mm. obliqueabdominis,

- to skin of the superior part of the buttocks and pubis;

b) ilio-inguinal nerve (mixed):

- to inferior parts of the abdominal muscles,

- to skin of the pubis, scrotum or labia majora;

c) lateral femoral cutaneous nerve (sensitive):

-to external surface of skin of the thigh;

d) femoral nerve (mixed) in the pelvic cavity, in the muscular lacuna and on the anterior surface of the thigh:

e) musculoskeletal (muscle) branches:

- to m.iliopsoas,

- to m. quadriceps femoris,

- to m. sartorius,

- to m. pectineus;

f) sensitive (skin) branches:

- to anterior-medial surface of the thigh,

- to anterior-medial surface of the leg and foot.

2) The branches of the lumbar plexus, emerging from the anterior surface of the m.gluteus maximus (genitofemoral nerve and its terminal branches

a) genitofemoral nerve (mixed):

- to skin of the anterior-medial surface of the thigh (femoral branch),

- to m. cremaster (genital branch).

3) Branches of the lumbar plexus, leaving the medial margin of the m.gluteus maximus:

a) obturator nerve (mixed), its way in the pelvis through the obturator canal

and on the medial surface of the thigh:

- to skin of the internal surface of the middle third of the thigh,

- to capsule of the hip joint,

- to medial group of the thigh muscles (mm. adductors , m.gracilis, m.pectineus, m. obturator external ).

2. Sacral plexus formed by the anterior branches of the lower two four upper

lumbar and sacral spinal nerves, located on the anterior surface of the sacrum, its branches in the field great sciatic holes:

1) Short branches of the sacral plexus:

a) superior gluteal nerve in the suprapiriforme foramen of the pelvis and the area of innervation;

- to mm. gluteus medius and minimus,

- to m. tensor fasciae latae;

b) inferior gluteal nerve in the infrapiriforme foramen of the pelvis and the area of innervation:

- to m.gluteus maximus,

- to capsule of the hip joint;

с) pudendal nerve, its pathway and topography in the pelvic region, branches and

areas of innervation:

1. inferior rectal nerves:

- to m. external sphincter of the anus,

- to the skin of the anus;

1. perineal nerves:

- to m. ischiocavernosus,

- to m. bulbospongiosus,

- to superficial transverse perineal muscle,

- to skin of the perineum,

- to skin of the posterior surface of the scrotum or labia majora;

1. dorsal nerve of the penis (clitoris):

- to deep transverse muscle the perineum,

- to m. schincter urethra,

- to skin of the glans penis;

d) muscular branches:

- to m. piriformis,

- to m.obturator internus,

- to m. gemellus superior and m. gemellus inferior,

- to m. quadrates femoris,

- to m. levator anus,

- to m. coccygeus.

2) Long branches of the sacral plexus:

a) posterior cutaneous nerve of the thigh in the inferior infrapiriformis foramen:

- to skin of the posterior side of the thigh.

- to skin of the inferior part of the gluteal region and perineum;

b) sciatic nerve (mixed), its course and topography in the ass area on the thigh and the division in the popliteal fossa on the terminal branches, areas of innervation:

- to m.semitendinosus,

- to m. semimembranosus,

- to t long head of the biceps femoris;

Terminal branches of the sciatic nerve in the popliteal fossa:

1. common peroneal nerve, its pathway and topography, branches and area of

innervation:  
- to short head of the biceps femoris,

- to skin of the lateral surface of the crus;

a) superficial peroneal nerve, its course and topography, branches and the area of innervation:

- to long and short peroneal muscles,

- to skin of the dorsal surface of the foot and fingers, except for the first interdigital interval;

b) deep peroneal nerve, its course and topography, branches and areas of

innervation:  
- to m. tibialis anterior,

- to mm. extensor digitorum longus and brevis,

- to m. extensor hallucis longus,

- to capsule of the ankle joint,

- to skin of the first interdigital interval;

2) tibial nerve, its course and topography in the canal of Grubber and dividing on the foot on the terminal branches, areas of innervation:

- to m. triceps surae,

- to m. tibialis posterior,

- to m. flexor digitorum longus,

- to m. flexor hallucis longus,

- to skin of the medial surface of the crus;

c) sural nerve, topography, and areas of innervation:

- to skin of the lateral surface of the foot;

d) the medial plantar nerve, its course and topography, areas of innervation:

- to m. flexor digitorum brevis,

- to m. abductor hallucis,

- to medial head of the m. flexor hallucis brevis,

- to first and second mm. lumbricals,

- to skin of the interdigital intervals of I, II, III and medial surface IV of the

fingers;   
5) lateral plantar nerve, its course, topography, areas of innervation:

- to m. quadrates plantae,

- to m. abductor digiti minimi,

- to m. flexor digiti minimi,

- the third and fourth mm. lumbricals,

- to all interosseous muscles,

- to m. adductor pollicis,

- to lateral head of the m. flexor hallucis brevis,

- to skin of the lateral surface of the foot,

- to skin of the interdigital interval of V and lateral side of the IV fingers.

3. Coccygeal plexus formed by the anterior branches of the V sacral and the first coccygeal spinal nerves. To show in the pelvic cavity, its branches and area of innervation.

Students with the help of a textbook, atlas, tables and natural preparations under the supervision of a teacher study the structure, topography of the lumbar and sacrococcygeal plexuses, their branches, simultaneously repeating the muscles of the gluteal region, thigh, lower leg, foot, their topography. Memorize the group innervation of these muscles.

**Topic7.**

**The final lesson.**

**The peripheral and autonomic nervous systems.**

**Form (s) of the current progress control:**

1. Interview for control questions

2. Description of macro (micro) preparations.

3. Test of practical skills.

4.Testing

1.Interview for control questions.

1. Classification of the cranial nerves.
2. The principle of forming of cranial nerves.
3. Anatomy of the olfactory nerve: topography, place of entry into the cranial cavity, olfactory pathway.
4. Anatomy of the optic nerve: topography, the place of entry into the cranial cavity, the conductor composition, the visual pathway. The pupil reflex arc and its functional significance.
5. Anatomy of the oculomotor nerve: nuclei, places of exit from the brain and cranial cavity, branches, conductor composition, areas of innervation.
6. Anatomy of the trochlear nerve: the nucleus, exit places from the brain and the cranial cavity, the conductor composition, the area of innervation.
7. Anatomy of the abducent nerve: the nucleus, the exit places from the brain and the cranial cavity, the conductor composition, the area of innervation.
8. Anatomy of the trigeminal nerve: nuclei, ganglion, exit places from the cranial cavity, branches.
9. Anatomy of the ophtalmic nerve (1st branch of the trigeminal nerve): nuclei, ganglion, exit place from the cranial cavity, branches in the orbit, their topography, conductor composition, innervation areas.
10. Anatomy of the maxillary nerve (2nd branch of the trigeminal nerve): nuclei, ganglion, exit place from the cranial cavity, branches in the pterygopalatine fossa, their topography, conductor composition, innervation areas.
11. Anatomy of the mandibular nerve (3rd branch of the trigeminal nerve): nuclei, ganglion, exit place from the cranial cavity, branches in the infratemporal fossa, their topography, conductor composition, areas of innervation.
12. Anatomy of the facial nerve: nuclei, exit place from the brain and cranial cavity, the conductor composition, branches, area of innervation.
13. Anatomy of the vestibular-cochlear nerve: nuclei, exit places from the brain and cranial cavity, conductor composition, innervation area. The auditory pathway.
14. Anatomy of the glossopharyngeal nerve: nuclei, exit place from the brain and cranial cavity, conductor composition, branches, innervation area.
15. Anatomy of the vagus nerve: the nuclei, the exit place from the brain and the cranial cavity, departments (head, neck, thoracic, abdominal), branches, conductor composition, innervation area.
16. Anatomy of the accessory nerve: nuclei, roots, exit place from the brain and cranial cavity, conductor composition, branches, innervation area.
17. Anatomy of the hypoglossal nerve: the nucleus, the exit place from the brain and the cranial cavity, the conductor composition, branches, the area of innervation.
18. The concept of soma and viscera.
19. Functional classification of the nervous system.
20. Afferent part of the nervous system, its unity for the somatic and autonomic nervous system.
21. 4. Efferent part of the somatic nervous system. The arc of the somatic reflex.
22. Efferent part of the autonomic nervous system (structural features, the arc of the autonomic reflex).
23. Morphological elements of the autonomic nervous system (autonomic ganglia, pre- and postganglionic conductors).
24. Substrate of innervation of the autonomic division of the nervous system in the soma and viscera.
25. Function of the autonomic nervous system.
26. Division of the autonomic nervous system into parasympathetic and

sympathetic parts, the difference in their influence on the main organs.

1. Higher (suprasegmental) autonomic centers and their functional value.
2. Communication of higher vegetative centers with subordinates (segmental)

parasympathetic and sympathetic centers.

1. General characteristics of the parasympathetic part of nervous system:

a. central part (cranial and spinal parasympathetic

centers);

b. peripheral part (paraorganic and intramural ganglia, pre- and postganglionic conductors);

c. the course of parasympathetic pre- and postganglionars in the cranial and spinal nerves from each parasympathetic center

1. General characteristics of the sympathetic part of autonomic nervous system:

a. central part (sympathetic centers);

b. peripheral part (paravertebral and prevertebral ganglia, pre- and postganglionic conductors).

1. The concept of white and gray connecting branches.
2. Patterns of sympathetic innervation of the soma, internal organs of the head, neck and chest cavity, abdominal cavity.
3. Connection of sympathetic conductors with sensitive fibers of spinal nature (the concept of double afferent innervation of internal organs).
4. The sympathetic trunk (nodes, departments, branches and their areas of innervation).
5. General patterns of innervation of internal organs.
6. The pathways of the sensitive, motor, parasympathetic and sympathetic conductors to the internal organs.
7. The pathways of sensory, motor, sympathetic conductors to the soma.
8. General data on the formation of vegetative plexuses. Extraorganic and

organic autonomic plexuses and their structural components.

1. Autonomic plexuses of the head.
2. Autonomic plexuses of the neck.
3. Autonomic plexuses of the chest cavity.
4. Autonomic plexuses of the abdominal cavity. Celiac plexus (sources of formation, departments, areas of innervation).
5. The formation of the spinal nerves and their branches.
6. The features of the anterior branches of the spinal nerves (the formation of the plexus and intercostal nerves).
7. The cervical plexus, the formation of the branches (cutaneous, muscular, mixed), areas of the innervation.
8. The phrenic nerve, topography, areas of the innervation.
9. The formation of the brachial plexus, its topographic divisions and cords.
10. The short branches of the brachial plexus, areas of the innervation.
11. The medial, lateral and posterior cords of the brachial plexus, long branches originating from each cord.
12. The median nerve, its formation, topography, areas of the innervation.
13. The ulnar nerve, its course, topography, areas of the innervation.
14. The radial nerve, its course, topography, areas of the innervation.
15. The cutaneous branches of the brachial plexus, areas of the innervation.
16. Group innervation of the muscles of the shoulder.
17. Group innervation of the muscles of the shoulder girdle.
18. Group innervation of the muscles of the forearm.
19. Group innervation of the muscles of the hand.
20. The formation of the brachial plexus, its topographic divisions and cords.
21. The short branches of the brachial plexus, areas of the innervation.
22. The medial, lateral and posterior cords of the brachial plexus, long branches originating from each cord.
23. The median nerve, its formation, topography, areas of the innervation.
24. The ulnar nerve, its course, topography, areas of the innervation.
25. The radial nerve, its course, topography, areas of the innervation.
26. The cutaneous branches of the brachial plexus, areas of the innervation.
27. Group innervation of the muscles of the shoulder.
28. Group innervation of the muscles of the shoulder girdle.
29. Group innervation of the muscles of the forearm.
30. Group innervation of the muscles of the hand. 1. The formation and topography of the lumbar plexus.
31. The branches of the lumbar plexus, leaving the lateral margin of the m.gluteus maximus (iliohypogastric nerve, ilio-inguinal nerve, the lateral femoral cutaneous nerve and femoral nerve), their pathways, area of innervation.
32. The branches of the lumbar plexus, leaving the medial margin of the m.gluteus maximus (obturator nerve), its course, topography, area of innervation.
33. The branches of the lumbar plexus, emerging from the anterior surface of the m.gluteus maximus (genitofemoral nerve and its terminal branches), their way, areas of innervation.
34. The formation and topography of the sacral plexus.
35. The short branches of the sacral plexus, their way, topography, area of innervation.
36. The long branches of the sacral plexus, their way, topography, area of innervation.
37. The sciatic nerve, its course, the topography, the division into the terminal branches, area of innervation.
38. The tibial nerve, its course, topography, areas of innervation.
39. The common, superficial and deep peroneal nerves, their pathway, topography, area of innervation.
40. The group innervation of the muscles of the pelvic girdle.
41. The group innervation of the muscles of the thigh
42. The group innervation of the muscles of crus.
43. The group innervation of the muscles of the foot.
44. The innervation of the skin of the thigh, leg and foot.
45. The formation and topography of coccygeal plexus, area of innervation.

2.Description of macro (micro) preparations.

1. The table "Rhomboid fossa" of the cranial nerve with nucleus:
2. A set of tables of the internal structure of all departments of the central nervous system and spinal cord.
3. Table on the anatomy of the autonomic nervous system
4. Table on the anatomy of the parasympathetic division of the autonomic nervous system.
5. A cadaver with prepared nerves of the cervical plexus, brachial plexus
6. Upper limb with prepared vessels and nerves.
7. Lower limb with vessels and nerves.
8. The skeleton.

1. Olfactory bulb and tract.

2. Supraorbital nerve.

3. The subglacial nerve.

4. Lingual nerve.

5. Lower alveolar nerve.

6. The chin nerve.

7. Facial nerve.

8. Branches of the parotid plexus.

9. The lingual-pharyngeal nerve.

10. Recurrent laryngeal nerve.

11. Vagus nerve (cervical region).

12. Vagus nerve (thoracic region).

13. Accessory nerve.

14. Hyoid nerve.

15. The cervical region of the borderline sympathetic trunk.

16. Thoracic section of the borderline sympathetic trunk.

17. White connecting branches (according to the scheme).

18. Gray connecting branches (according to the scheme).

19. The phrenic nerve.

20. Long thoracic nerve.

21. Supra-scapular nerve.

22. Subcapular nerve.

23. The sternospinal nerve.

24. Lateral and medial thoracic nerves.

25. Axillary nerve.

26. Musculocutaneous nerve.

27. Lateral cutaneous nerve of the forearm.

28. Medial cutaneous nerve of the shoulder.

29. Medial cutaneous nerve of the forearm.

30. The median nerve.

31. Ulnar nerve.

32. The radial nerve on the shoulder.

33. The radial nerve canal.

34. The radial nerve on the forearm.

35. Intercostal nerves.

36. Ileo-submandibular nerve.

37. Ileo-inguinal nerve.

38. The femoral-genital nerve (its two branches).

39. Lateral cutaneous nerve of the thigh.

40. 3abjective nerve.

41. Femoral nerve.

42. Subcutaneous nerve.

43. The superior gluteal nerve.

44. The inferior gluteal nerve.

45. The genital nerve.

46. Posterior cutaneous nerve of the thigh.

47. Sciatic nerve.

48. The tibial nerve.

49. Medial plantar nerve.

50. Lateral plantar nerve.

51. Common peroneal nerve.

52. The superficial peroneal nerve.

53. Deep peroneal nerve.

54. Medial cutaneous nerve of the calf.

55. Lateral cutaneous nerve of the calf.

56. The calf nerve.

3.Testing.

1.THE MIXED BRANCH OF THE MANDIBULAR NERVE IS:

1. inferior alveolar nerve
2. meningeal branches
3. buccal nerve
4. [auriculotemporal nerve](https://translate.academic.ru/auriculotemporal%20nerve/ru/en/)

2.AREAS OF INNERVATION OF AFFERENT (SENSITIVE) NERVE FIBERS OF THE MANDIBULAR NERVE ARE:

1. anterior 2/3 of tongue (taste sensitivity)
2. anterior 2/3 of tongue (general sensitivity)
3. posterior 1/3 of tongue (taste sensitivity)
4. posterior 1/3 of tongue (general sensitivity)

3.THE MOTOR NUCLEUS OF THE FACIAL NERVE (VII) IS:

1. the nucleus of the facial nerve
2. nucleus of solitarytract
3. the [nucleus salivatorius superior](https://www.multitran.com/m.exe?s=nucleus+salivatorius+superior&l1=37&l2=2)
4. lacrimal nucleus

4.THE SENSORY NUCLEUS OF THE FACIAL NERVE (VII)IS:

1. the nucleus of the facial nerve
2. nucleus of solitarytract
3. the [nucleus salivatorius superior](https://www.multitran.com/m.exe?s=nucleus+salivatorius+superior&l1=37&l2=2)
4. lacrimal nucleus

5.THE PART OF THE BRAIN WHERE THE FACIAL NERVE NUCLEI ARE LOCATED (VII):

1. spinal cord
2. medulla oblongata
3. pons
4. midbrain

6.THE SOURCE OF EFFERENT SOMATIC (MOTOR) NERVE FIBERS OF THE FACIAL NERVE (VII):

1. the nucleus of the facial nerve
2. nucleus of solitarytract
3. the [nucleus salivatorius superior](https://www.multitran.com/m.exe?s=nucleus+salivatorius+superior&l1=37&l2=2)
4. lacrimal nucleus

7.THE SOURCE OF AFFERENT (SENSITIVE) NERVE FIBERS OF THE FACIAL NERVE [VII]:

1. the nucleus of the facial nerve
2. nucleus of solitarytract
3. the [nucleus salivatorius superior](https://www.multitran.com/m.exe?s=nucleus+salivatorius+superior&l1=37&l2=2)
4. geniculateganglion

8.THE PART OF THE FACIAL NERVE (VII) THAT HAS AFFERENT AND EFFERENT AUTONOMOUS NERVE FIBERS:

1. geniculateganglion
2. the  [nervus stapedius](https://translate.academic.ru/nervus%20stapedius/ru/en/)
3. the intermediate nerve
4. the [posterior auricular nerve](https://translate.academic.ru/posterior%20auricular%20nerve/ru/en/)

9.THE LOCALIZATION OF THE FACIAL NERVE (VII) ON THE BASE OF THE BRAIN:

1. cerebellopontine angle, between the posterior edge of the pons and olives
2. the posterior lateral sulcus
3. [bulbopontine sulcus](https://translate.academic.ru/bulbopontine%20sulcus/ru/en/)
4. interpeduncular fossa

10.THE ANATOMICAL STRUCTURES THAT FORM THE MOTOR ROOT OF THE FACIAL NERVE (VII):

1. axons of neurons of the sensitive nuclei of the facial nerve
2. axons of the facial nerve nucleus
3. central processes (axons) of the geniculateganglion
4. peripheral processes (dendrites) of the geniculateganglion

11. THE BRANCHES OF ALL NODES OF THE SYMPATHETIC TRUNK FORMED BY THE SIMPATHETIC POSTGANGLIONIC NERVE FIBERS:

1. grey connecting branches
2. white connective branches
3. esophageal branches
4. small internal nerve

12.THE NUCLEUS FROM WHICH THE PARASYMPATHETIC PREGANGLIONIC NERVE FIBERS BEGIN FOR THE INNERVATION OF THE LACRIMAL GLAND:

1. accessory nuclei of the oculomotor nerve [III]
2. the main nucleus of the trigeminal nerve [V]
3. the lacrimal nucleus [VII]
4. posterior nucleus of the vagus nerve [X]

13. THE MUSCLE GROUPS ARE INNERVATED BY THE POSTERIOR BRANCHES OF THE SPINAL NERVES:

1. facial muscles
2. superficial back muscles
3. proper back muscles (autochthonous)
4. pelvic muscles

14.THE NUMBER OF SPINAL NERVES:

1. 12
2. 2 pairs
3. 31
4. 31 pairs

15. THE SPINAL NERVES, THE ANTERIOR BRANCHES OF WHICH DO NOT ACCEPT INVOLVEMENT IN PLEXUS FORMATION:

1. thoracic (Th1) spinal nerves
2. thoracic (Th2–Th11) spinal nerves
3. thoracic (Th3) spinal nerves
4. coccygeal (Co) spinal nerves

16. THE SPINAL NERVES, THE ANTERIOR BRANCHES OF WHICH FORM

CERVICAL PLEXUS:

1. upper cervical (C1–C4) spinal nerves
2. lower cervical (C5–C8) spinal nerves
3. part of the first thoracic (Th1) spinal nerve
4. upper thoracic (Th1–Th4) spinal nerves

17. THE TOPOGRAPHIC STRACTURE THROUGH WHICH THE MEDIAN NERVE PASSES ON THE PALM:

1. median furrow
2. carpal canal
3. elbow canal
4. the radial canal

18.THE NERVE INNERVATING THE INTEROSSEOUS MUSCLES OF THE HAND:

1. ulnar nerve
2. radial nerve
3. median nerve
4. musculocutaneous nerve

19. THE TOPOGRAPHIC STRACTURE THROUGH WHICH THE FEMORAL NERVE PASSES COMES OUT OF THE PELVIC CAVITY:

1. muscle lacuna
2. vascular lacuna c
3. femoral ring
4. obturator canal

20. THE NERVE INNERVATING THE POSTERIOR THIGH MUSCLE GROUP

1. femoral-genital nerve
2. femoral nerve
3. occlusal nerve
4. sciatic nerve

**ASSESSMENT FUND**

**FOR CURRENT PROGRESS MONITORING AND MIDTERM CERTIFICATION OF STUDENTS STUDYING ON DISCIPLINE**

**Characteristics of monitoring forms**

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| **Monitoring form** | **Characteristics** |
| **Report** | A report is a public announcement or document that contains information and reflects the essence of the issue or research in relation to a given situation. It can be written or oral. An oral presentation can be accompanied by a multimedia presentation or demonstration of any visual (material) objects.  Report allows you to assess the level of student`s theoretical knowledge on a given question, as well as to check the skills of analysis, synthesis, generalization and concretization, used by students while preparing a report. |
| **Project defense** | A project is a set of documents (calculations, drawings, etc.) for making any structure or product. Preliminary text of a document. Concept, plan. Independent student activity to solve the problem with the achievement of a practical result. It allows you to assess student`s knowledge level on the problem of the project, as well as the skills of planning, goal-setting, research, practical application of knowledge in typical and non-standard situations (for example, the material design of a project product or its separate component). To assess the skills of students, the project should have a practice-oriented nature, which would clearly show the ability of students to practically apply knowledge in typical and non-standard situations (for example, the material design of the project product or its separate component). |
| **Control of assignments in the workbook** | Control tasks in the workbook are aimed at identifying and comparing at a particular stage of learning the results of students' educational activities with the requirements set by the content of the discipline being studied. It can be used in IS OrSMU if the workbook with methodological instructions is placed in the work program of the discipline and students have the opportunity to complete tasks by filling out the notebook and sending it to the teacher for checking. It allows you to check and evaluate the knowledge of students, to determine the degree of their readiness for further education, as well as the skills level, if the tasks are of a practice-oriented nature. |
| **Test** | A test is one of the forms of written verification and assessment of the acquired knowledge, the level of independence and activity of students in educational activities. They can be carried out in the classroom and in the form of homework, current and final, graphic, practical, frontal (for all) and individual. Traditionally, the test involves the identification of knowledge on a specific topic (section), as well as an understanding of the essence of the studied phenomena, objects, their patterns (for example, assignments for comparison, insertion of missing words, etc.). To assess the skills of students primarily graphical and practical tests are used. The graphical test is aimed at identifying the ability of students to draw up a generalized visual model that reflects certain relationships, relationships in an object or in their totality. These can be graphics, pictures, drawings, diagrams, tables. Practical tests are carried out to identify the abilities and skills of students to carry out certain research, laboratory experiments, make measurements, perform appropriate operations and manipulations in educational and industrial conditions. One of the forms of testing practical skills and abilities is a control practical exercise lesson (in physics, chemistry, biology, anatomy, physiology, surgery, etc.), usually held at the end of the study of the topic or section of the discipline. |
| **Writtenquestionnaire** | A written questionnaire is a type of written assessment of students' knowledge on certain questions or topics. It can be current and final, individual and frontal. It involves posing a number of questions to students, to which they give a detailed written answer. It allows you to assess the knowledge of students on the passed topic (or module) of the discipline. |
| **Presentation** | A presentation (computer presentation) is a demonstration in a visual form of the main provisions of the oral presentation, the degree of mastering the content of the problem. It allows you to assess the level of students` knowledge on a given question (topic, section), as well as to check their skills of analysis, synthesis, generalization and concretization, information and communication skills used by students in the process of preparing a presentation. |
| **Abstract** | Abstract is a summary, in writing or in the form of a public speech, of the content of a book, scientific work, and the results of studying a scientific problem, a report on a specific topic, including a review of relevant literary and other sources. As a rule, it is an independent student's work on revealing the essence of the problem under study, presenting various points of view and their own views on it. The defense of the abstract can be accompanied by a presentation. Since the main purpose of the essay is scientific and informational, this form of control is aimed mainly at assessing the knowledge of students on a specific topic (issue), although it allows us to identify the level of formation of the skills of analysis, synthesis, generalization and concretization used by the student in the process of preparing a report. |
| **Case-task completion** | Case-tasks are technology for teaching students. The students are given a set of educational material (case) and, as a result of acquaintance with it, they ought to comprehend the essence of the problem, which, as a rule, does not have an unambiguous solution, and offer their solution using the acquired knowledge and skills. It is widely used in practical classes in a foreign language, management, law, economics and other disciplines. In medicine, it can be used to teach students to write a medical history. It allowsto evaluate, first of all, the students' skills to apply the acquired knowledge when solving specific practical situations. Knowledge assessment is present at the stage of collecting material for a case-task. |
| **Terminological dictation** | Terminological dictation is a type of students` written work to consolidate and test knowledge on a specific topic (issue). It can be checking or repetitive. The first is aimed at controlling knowledge, the second one is aimed at training students in the use of certain terms. It allows you to assess the students` knowledge. In this case, it should be used only if students have clear instructions on which terms are to be memorized. Otherwise, the student will write the term that he has learned from the literature he has. |
| **Testing** | Testing is a written way of testing students' knowledge. It can be current and final (by Module or discipline as a whole). Test items can include questions with one or more correct answers, assignments for matching and sequencing, as well as problem-situation tasks that require the selection of the correct (or several correct) answer options, as well as graphic images that require interpretation or definition. In most cases, testing is aimed at assessing students' knowledge. It allows to assess the students' skills when the test tasks are presented by problem-situational tasks, tasks with graphic (visual) images that require the use of a solution algorithm (action with an object). |
| **Recitation** | Recitation is a method of testing the knowledge and skills of students, which consists in the fact that students are invited to reproduce a certain content: empirical facts, theoretical positions, formulations of concepts, examples, classifications, scientific laws. It allows you to assess the level of knowledge of students on a particular issue, topic, section, discipline. Assessment of the students' skills is possible if, in the course of answering the question posed, the student needs to demonstrate the acquired knowledge in order to solve a problem question or problem-situational task. |
| **Practicaltaskcompletionmonitoring** | A practical task is a task that contains exercises and tasks that the student must solve (complete) visually (effectively), i.e. practically manipulating real objects or their substitutes. It is widely used in mathematics, computer science, physics, chemistry, economics, and other natural science disciplines. In medicine, it can be represented by the student performing direct practical manipulations with the "patient" both in the course of practical training and directly at the bases of practical training. It allows you to assess the ability of students to apply theoretical knowledge to solve (perform) a practical task in both standard and non-standard situations. |
| **Control norm administration** | A norm (from the Latin norm) is a regulatory rule indicating the boundaries of its application. Time, quantitative and qualitative indicators of students' performance of certain tasks, techniques and actions related to the content of the academic discipline. Administration of control standards is widely represented in the technical, engineering, military fields of knowledge, as well as in the field of physical culture and sports. In medicine, it can take place when assessing the performance by students of direct actions with a "patient" that have clear normative indicators (for example, cardiopulmonary resuscitation, the number of sutures, auscultation, palpation, percussion, injections, etc.). It allows you to assess the ability of students to apply the theoretical knowledge received (about certain standards) in standard and non-standard situations. |
| **Checking case histories** | A case history is an accounting and operational document drawn up for each patient in a medical and preventive treatment institution, designed to register information about the diagnosis, course and outcome of the disease, as well as diagnostic and medical-preventive activities taken during the patient's stay in the hospital. It allows you to assess the student's ability to apply the theoretical knowledge gained in direct professional learning situations (so-called contextual learning). |
| **Solving problem-situational tasks** | Problem-situational tasks are a kind of practical task that involves solving an issue in a certain situation. Both the question and the situation itself can be problematic. In most cases, problem-situational tasks have a professional focus. They allow assessing the ability of students to apply the obtained theoretical knowledge in various situations. |
| **Test of practical skills.** | Testing of practical skills can be used to control the students' practical actions (medical manipulations) with the "patient". It allows you to assess the skills and abilities of students to apply the theoretical knowledge (about certain actions and manipulations) in standard and non-standard situations. |
| **Practice report** | A report is a message, a report on their actions, work. Practice report – is the information compiled in a certain form, data on the student's activities for a certain period based on practical training. It allows you to evaluate the practical experience achieved by students in the application of the theoretical knowledge, abilities and skills in the process of direct professional activity. |
| **Practice diary** | A diary is the records of everyday activity. The practice diary reflects the student's daily activities based on practical training. It allows to evaluate the dynamics of students' mastering of practical professional activity experience in the process of practical training (educational and industrial practice). |

**Assessment criteria used in the current control of academic performance, including the control of independent work of students**

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| **Monitoring form** | **Assessment criteria** |
| **Recitation** | On "FIVE POINTS" the answer is assessed, which shows solid knowledge of the main questions of the studied material, is distinguished by the depth and completeness of the disclosure of the topic; knowledge of the terminological apparatus; the ability to explain the essence of phenomena, processes, events, draw conclusions and generalizations, give reasoned answers, give examples; fluency in monologue speech, consistency and consistency of the answer. |
| On "FOUR POINTS" the answer is assessed, which reveals a solid knowledge of the basic questions of the studied material, differs in the depth and completeness of the disclosure of the topic; knowledge of the terminological apparatus; the ability to explain the essence of phenomena, processes, events, draw conclusions and generalizations, give reasoned answers, give examples; fluency in monologue speech, consistency and consistency of the answer. However, one or two inaccuracies in the answer are allowed. |
| On "THREE POINTS" the answer is assessed, which testifies mainly to the knowledge of the studied material, which is characterized by insufficient depth and completeness of the disclosure of the topic; knowledge of the basic issues of theory; poorly formed skills in analyzing phenomena, processes, insufficient ability to give reasoned answers and give examples; lack of fluency in monologue speech, logic and consistency of the answer. Several mistakesare allowed in the content of the answer. |
| On "TWO POINTS" the answer is assessed, revealing ignorance of the studied material, characterized by a shallow disclosure of the topic; ignorance of the main issues of theory, unformed skills in the analysis of phenomena, processes; inability to give reasoned answers, weak command of monologue speech, lack of consistency and consistency. Serious errors in the content of the answer are allowed. |
| ZERO POINTS" is given if there is no answer |
| **Testing** | "FIVE POINTS" is given on condition of 90-100% correct answers |
| "FOUR POINTS" is given on condition of 75-89% correct answers |
| "THREE POINTS" is given on condition of 60-74% correct answers |
| "TWO POINTS" is given on condition of 59% or less correct answers. |
| "ZERO POINTS" is given if there is no answer |
| **Written question are** | "FIVE POINTS" is given to a student if he knows the conceptual apparatus, demonstrates the depth and complete mastery of the content of the educational material, in which he is easily oriented. |
| "FOUR POINTS" are given to the student for the ability to correctly present the material, but the content and form of the answer may have some inaccuracies. |
| "THREE POINTS" is awarded if a student discovers knowledge and understanding of the main provisions of the educational material, but expresses it incompletely, inconsistently, makes inaccuracies in the definition of concepts, does not know how to substantiate his judgments with evidence. |
| "TWO POINTS" is given if a student has scattered, unsystematic knowledge, does not know how to distinguish the main and the secondary, makes mistakes in the definition of concepts, distorts their meaning. |
| "ZERO POINTS" is set if there is no answer. |
| **Problem-situational tasks** | "FIVE POINTS" - the student correctly and fully conducts the initial assessment of the condition, independently identifies the satisfaction of which needs are violated, determines the patient's problems, sets goals and plans nursing interventions with their justification, conducts current and final assessment. |
| "FOUR POINTS" - the student correctly conducts the initial assessment of the condition, identifies the satisfaction of what needs are violated, determines the patient's problems, sets goals and plans nursing interventions with their justification, conducts the current and final assessment. Some minor difficulties in answering are allowed; justification and final assessment is carried out with additional comments from the teacher. |
| "THREE POINTS" - the student correctly but incompletely conducts the initial assessment of the patient's condition. Identifying the satisfaction of what needs are violated, determining the patient's problem is possible with leading questions from the teacher. Sets goals and plans for nursing interventions without justification, conducts ongoing and final assessment with leading questions from the teacher; Difficulties with a comprehensive assessment of the proposed situation. |
| "TWO POINTS" - wrong assessment of the situation; incorrectly chosen tactics of action. |
| "ZERO POINTS" is set if there is no answer. |
| **Practicalskills** | "FIVE POINTS". The student has shown full knowledge of the program material, the workplace is equipped with all the requirements for preparation for performing manipulations; practical actions are performed sequentially in accordance with the algorithm for performing manipulations; all requirements for the safety of the patient and medical staff are observed; the time limit is observed; the workplace is cleaned in accordance with the requirements of the sanitary and epidemiological supervision; all actions are justified. |
| "FOUR POINTS". The student has shown complete knowledge of the program material, the workplace is not fully independently equipped to perform practical manipulations; practical actions are performed consistently, but not confidently; all requirements for the safety of the patient and medical staff are observed; time regulations are violated; the workplace is cleaned in accordance with the requirements of the sanitary and epidemiological regime; all actions are justified with clarifying questions of the teacher, made small mistakes or inaccuracies. |
| "THREE POINTS". The student showed knowledge of the basic program material in the amount necessary for the upcoming professional activity, but made no more than one fundamental mistake, the workplace is not fully equipped to perform practical manipulations; the sequence of their implementation is broken; unsure actions, leading and additional questions and comments of the teacher are needed to justify actions; all requirements for the safety of the patient and medical staff are observed; the workplace is cleaned in accordance with the requirements of the sanitary and epidemiological regime. |
| "TWO POINTS". The student discovered significant gaps in the knowledge of the practical skill algorithm, made more than one fundamental mistake, difficulties in preparing the workplace, the inability to independently perform practical manipulations; actions are taken that violate the safety of the patient and the medical staff, the requirements of the sanitary and epidemiological regime, safety measures when working with the equipment and materials used are violated. |
| "ZERO POINTS" is given if there is no answer |
| **Abstract defense** | "FIVE POINTS" is awarded if the student fulfills all the requirements for writing and defending the abstract: the problem is identified and its relevance is justified, a brief analysis of various points of view on the problem under consideration is made and their own position is logically stated, conclusions are formulated, the topic is fully disclosed, the volume is maintained, requirements for the external design, the correct answers to additional questions are given. |
| "FOUR POINTS" is given if the students meet the basic requirements for the abstract and its defense, but at the same time there are some mistakes. In particular, there are inaccuracies in the presentation of the material; there is no logical consistency in judgments; the volume of the abstract is not kept; there are omissions in the design; incomplete answers were given to additional questions during the defense. |
| "THREE POINTS" is given if the student allows significant deviations from the requirements for abstracting. In particular, the topic is covered only partially; factual errors were made in the content of the abstract or when answering additional questions; there is no output during protection. |
| "TWO POINTS" is given if the topic of the abstract is not disclosed to the students, a significant misunderstanding of the problem is revealed. |
| "ZERO POINTS" is given if there is no answer |
| **Presentation demonstration** | "FIVE POINTS" is awarded if there is a connection between the presentation and the program and curriculum, the corresponding section; the didactic and methodological goals and objectives of the presentation were achieved; provides reliable information about historical references and current events; all conclusions are confirmed by reliable sources; the language of the presentation is clear to the audience; the chronology is followed, the priorities are correctly set; logical transition to the conclusion; correct conclusions; the font is readable, the color (background, font, headers) is correctly selected, animation elements are present; no grammatical errors. |
| "FOUR POINTS" is given if the students meet the basic requirements for the presentation, but there are some mistakes. In particular, there are inaccuracies in the presentation of the material; a topic was chosen without taking into account the curriculum; there is no logical consistency in judgments; requirements for graphic content are not met; there are omissions in the design; incomplete answers were given to additional questions during the defense. |
| "THREE POINTS" is given if the student makes significant deviations from the requirements for presentation design. In particular, the topic is covered only partially; errors of fact were made in the content of the presentation or when answering additional questions; no output was presented during the demo. |
| "TWO POINTS" is given if the topic of the abstract is not revealed to the students, a significant misunderstanding of the problem is revealed. |
| "ZERO POINTS" is given if there is no answer. |
| **Practical tasks (Patient card)** | "FIVE POINTS" is awarded if the content corresponds to the given topic; the topic is fully disclosed and contains modern, reliable data; the text is written consistently, logically and correctly from the point of view of the norms of the Russian language; there are photographs, diagrams, according to the stated topic; matches the pictorial design. |
| “FOUR POINTS” is awarded if the student has issued a booklet that meets the same requirements as for the mark “excellent”, but made minor corrections in the text or image, which he himself corrects. |
| "THREE POINTS" is given if the content does not fully correspond to the declared theme; the topic is not fully disclosed and contains outdated data; the text is written consistently, logically, but there are mistakes from the point of view of the norms of the Russian language; not enough photos and diagrams are available; matches the pictorial design. |
| "TWO POINTS" is given if the content does not correspond to the declared topic; the topic is not fully disclosed and does not contain modern, reliable data; the text is not written consistently and logically, there are gross mistakes from the point of view of the norms of the Russian language; there are no photos and diagrams available; it does not match the pictorial design. |

**3. Assessment materials for** **midterm attestation of students**

Midterm attestation on the discipline is carried out in the form of an exam on examination cards in oral form – stages 2 and 3 (reception of practical skills and interview) and in the form of testing (stage 1).

**Criteria used for assessing students at** **midterm attestation**

(The disciplinary rating is calculated as follows:

if the form of midterm attestation in the discipline – exam*:*

**Rd=Rts+Re, where**

**RD-**disciplinary rating;

**Rts -** current standardized rating;

**Re*-***examination rating.

**Examination rating:**

**25-30 points.** The answers to questions are presented logically, consistently and do not require additional explanations. The cause-and-effect relationships between phenomena and events are fully revealed. Reasonable conclusions are made. Deep knowledge of basic legal acts is demonstrated. The norms of literary speech are observed. (Test: number of correct answers> 91 %).

**20-24 points.** The answers to questions are presented in a systematic and consistent manner. The basic legal acts are used, but not to a sufficient extent. The material is presented confidently. The causal relationships between phenomena and events are revealed. The ability to analyze the material is demonstrated, but not all conclusions are reasoned and evidence-based. The norms of literary speech are observed. (Test: number of correct answers> 81%).

**15-19 points.** Violations in the sequence of presentation are allowed. There are references to certain basic legal acts. The causal relationships between phenomena and events are not fully disclosed. A superficial knowledge of the issue is demonstrated, and specific tasks are difficult to solve. There are difficulties with conclusions. Violations of the norms of literary speech are allowed. (Test: number of correct answers> 71 %).

**0-14 points.** The material is presented inconsistently, confusingly, does not represent a certain system of knowledge in the discipline. The causal relationships between phenomena and events are not disclosed. No analysis is performed. There are no conclusions. There are no answers to additional questions. There are noticeable violations of the norms of literary speech. (Test: number of correct answers <70 %).

For each stage of the midterm attestation (stage 1) is awarded 0- 3.0 points, practical skills (stage 2) is awarded 0- 3.0 points, interview (stage 3) is awarded from 0-24.0 points.

**Theoretical questions of the discipline.**

1. The early stages of the human embryogenesis. The three layers, their derivatives.
2. The development of the skeleton, stages, ossifications, abnormalities.
3. The main abnormalities.
4. Differentiation of the branchial apparatus, the main derivatives of the I, II, III, IV-V branchial arches.
5. The development of the digestive system, abnormalities.
6. The development of the nervous system, abnormalities.
7. The development of the heart, abnormalities.
8. The development of the urogenital system, abnormalities.
9. Classification of the bones. General plan of the bone structure. The structure of the long tubular bone ( diaphysis, metaphysis, epiphysis, apophysis).
10. Classification of the bones connections (synarthrosis, diarthrosis and hemiarthrosis).
11. Concept about the immovable bones connections: syndesmosis, synhondrosis, synostosis . Their characteristics.
12. Concept about the movable bones connections: Joint structure. Characteristic of the main elements of a joint: articulate surfaces, articular capsule, joint cavity. Supplementary elements of a joint.
13. Classification of the joints according the number of the articular surfaces. The characteristic of the simple,compound, complex, combined joints (examples).
14. Classification of joints according the articular surface shape. Examples.
15. Introduction to the anatomy of the nervous system (neurons and their morphological types, classification of the nervous system, the concept of nuclei and ganglia, gray and white matter of the сentral nervous system, nerves and pathways).
16. Parts, structure and functions of the vertebra column. General plan of the structure of the vertebra. Specific features of the each departments vertebrae.
17. The vertebral column as a whole. Physiological and pathological curvatures of the vertebral column: kyphoses, lordoses, scolioses. Types of connections between bodies of vertebrae. Connections of arches and processes of vertebrae.
18. Types of ribs and their characteristic. The structure of the rib. The structure of the I rib. The sternum anatomy: parts, notches, its position in a thorax. Connections of the ribs with the sternum. Cоnnections of the ribs with the vertebrae. Thorax as a whole (structural elements).
19. The bones of a shoulder girdle: the clavicle anatomy, the structure of the scapulae.
20. Parts and their bones of the upper limb skeleton. Structure of the each bone (the humerus, the radius, the ulna).
21. The departments of the hand, their bones ( carpal, metacarpal bones, phalanges).
22. Joints of the shoulder girdle: sterno-clavicular and acromio-clavicular joints, the articular surfaces, shape, number of axis, types of movements, auxiliary elements of joint. Scapular ligaments. Structure of the shoulder joint: the articular surfaces, shape, number of axis, types of movements, auxiliary elements of joint.
23. The elbow joint: the articular surfaces, shape, number of axis, types of movements, auxiliary elements of joint. Connections of the forearm bones: proximal and distal radio-ulnar joints (the combined joint). Connection between the diaphysis of the forearm bones.
24. The wrist joint: the articular surfaces, shape, number of axis, types of movements, auxiliary elements of joint.
25. The bones of the pelvic girdle. Structure of the each part of the pelvic bone (ilium, pubis and ischium).
26. Parts of the free lower limb. The femur anatomy. The fibula and tibia anatomy.
27. The foot anatomy, its departments and number of bones in each of them. Structure of the calcaneus and talus. The metatarsal and phalanges of fingers.
28. The connections of the pelvic girdle bones. The sacroiliac joint: the articular surfaces, shape, number of axis, types of movements, auxiliary elements of joint.
29. The division of the pelvis (a greater and lesser pelvis), terminal line, the pelvic inlet and pelvic outlet. Sizes of the greater pelvis. The sizes of a lesser pelvis. Sexual distinctions of the pelvis.
30. The hip joint: the articular surfaces, shape, number of axis, types of movements, auxiliary elements of joint.
31. The knee joint: the articular surfaces, shape, number of axis, types of movements, auxiliary elements of joint. Connections of the leg bones.
32. The ankle joint: the articular surfaces, shape, number of axis, types of movements, auxiliary elements of joint. Surgical joints of foot: a) Chopar's joint, Lisfrank's joint. «Keys» of these joints. Foot in general. Foot arches.
33. The cranium bones (occipital bone, parietal bone, frontal bone, sphenoidal bone, ethmoidal bone, temporal bone): borders, parts, their structure. Canals of a temporal bone, their structure and contents.
34. The facial bones (maxilla, palatine bone, zygomatic bone, mandible, inferior nasal concha, lacrimal bone, nasal bone, vomer, hyoid bone): their borders, form, structure.
35. Topography of the skull: the orbits, the nasal cavity (walls, communications). The temporal, infratemporal and pterygopalatine fossae (walls, communications).
36. The masticatory muscles, their origin, insertion, mechanism of action of the temporal-and-mandibular joint. The facial muscles (the muscles of the cranial vault, muscles around the eye, muscles circumference of the nose, muscles circumference of the mouth): their origin, insertion, function.
37. Division of the neck muscles on the groups on topography and developmental origin. The superficial and deep muscles of the neck, their origin, insertion, function.
38. General description of back muscles, their division into layers and groups. The superficial and deep muscles of the back, their origin, insertion, function.
39. General characteristic of the chest muscles. Division into groups. The chest muscles, related to top of the upper limb. The own (deep) chest muscles, their origin, insertion, function.
40. The diaphragm: parts, openings, functions.
41. General description of the muscles of the abdominal wall, dividing them on the anterior, posterior and lateral groups. The lateral, anterior and posterior group of the abdominal wall muscles: origin, insertion, function.
42. Muscles of the shoulder girdle: origin, insertion, function of each muscle. Muscles of the anterior and posterior groups of the arm: their origin, insertion and function.
43. Muscles of the forearm (anterior and posterior group): their origin, insertion function.
44. Muscles of the thenar, hypothenar and midlpalmar group of the hand: their origin, insertion function.
45. Muscles of the pelvis (anterior and posterior group): origin, insertion, function. The muscles of the thigh (anterior, posterior and medial groups): their origin, insertion, function.
46. The muscles of the leg (anterior, lateral and posterior group): origin, insertion, function of each muscle.
47. Muscles groups of the foot. Muscles of the dorsal and plantar surface of the foot: origin, insertion, function of each muscle.
48. Neck topography: regions and main triangles, their boundaries and value. The characteristic of the neck fascia according V.N. Shevkunenko, topographical relationship with the muscles, organs and vessels. Interfacial spaces.
49. The inguinal canal, its walls, rings. The length of the inguinal canal and its contents in the male and female body. Clinical value.
50. The axillary fossa and cavity, its topography, triangles, foramens. Topography of the arm: the medial bicipital and lateral bicipital grooves, humeromuscular canal, their contents.
51. Topography of the wrist: anatomic snuffbox. Bony-fibrous canals, flexor and extensor retinaculums. Synovial sheaths of the flexor tendons. Synovial bursa.
52. Topography of the pelvic area (suprapiriform foramen and infrapiriform foramen, obturator canal). Topography of the space under the inguinal ligament. Muscular lacuna, vascular lacuna, their contents. The femoral canal: walls, rings, contents, clinical value.
53. Topography of the leg and the foot: Popliteal fossa, boundaries, contents. Cruropoliteal canal (Gruber’s canal). Superior and inferior musculoperoneal canals. Medial and lateral plantar grooves of the foot.
54. The oral cavity (vestibule and own parts). Structure of the floor, hard palate, soft palate. Fauces, its boundaries. Tongue: its parts, lingual papillae. Tongue muscles. Functions of the tongue. Lingual tonsil.
55. Teeth, parts of the tooth. Structure of the tooth. Decidues and permanent teeth.
56. Large salivary glands: parotid, submandibular, sublingual. Structure, topography, ducts and places of its opening.
57. Pharynx (parts of the pharynx and their connections, structure of the wall). Topography of pharynx (skeletotopy, sintopy). The pharyngeal tonsils (Pirogov - [Waldeyer's tonsillar ring](http://en.wikipedia.org/wiki/Waldeyer%27s_tonsillar_ring)).
58. The esophagus. Parts, constrictions of the esophagus, its clinical value. The structure of the wall layers. Topography of the esophagus (skeletotopy, sintopy, holotopy).
59. Stomach. Parts, curvatures, the wall coats. Topography (skeletotopy, sintopy, holotopy) of the stomach.
60. The parts of the small intestine. Anatomy and topography of the duodenum. Jejunum and ileum: anatomy and topography (skeletotopy, sintopy, holotopy).
61. The parts of the large intestine. Anatomy of the caecum and appendix; topography of the caecum and the appendix (skeletotopy, sintopy, holotopy). Colon: the parts and the curvatures of the colon. The structure of the wall. Topography of the colon (skeletotopy, sintopy, holotopy).
62. Rectum: the departments and curvatures. The structure of the wall, covering by the peritoneum. The sphincter muscles of the rectum (internal, external). Topography of the rectum in male and female pelvis (skeletotopy, sintopy, holotopy).
63. Liver: the external structure of liver, the porta of the liver with its contents. Skeletotopy, sintopy, holotopy of the liver, covering of the peritoneum.
64. Extrahepatic bile ducts (right and left hepatic ducts, common hepatic duct, cystic duct and its sphincter, common bile duct and its sphincter). Gallbladder (external structure and its sphincters, layers of the wall, skeletotopy, sintopy, holotopy, covering by the peritoneum).
65. The pancreas (the external and internal structure of the pancreas). Skeletotopy, sintopy, holotopy of the pancreas, covering by the peritoneum.
66. The concept of serous membranes, their morphological peculiarities, functional and clinical significance. The peritoneum, its parietal and visceral layers. The concept of the abdominal and peritoneal cavities. Peritoneal cavity, its sexual features.
67. The course of peritoneum in the abdomen. The division of the peritoneal cavity on 3 storeys, their boundaries. Types of covering by peritoneum. The peritoneum derivatives: ligaments, mesentery, omentum. The formation of lesser and greater omentum, mesentery. The contents of the hepatoduodenal ligament. Peritoneal folds and fossae on the anterior abdominal wall.
68. Nasal cavity (walls, nasal conches and nasal meatuses, communications of nasal cavity). Paranasal sinuses.
69. Laryngeal structure (parts, structure). Laryngeal cartilages, their structure. Laryngeal cavity, its communications. Laryngeal cartilages connections (syndesmosis and diarthrosis). Laryngeal muscles. Topography of the larynx (skeletotopy, sintopy).
70. Structure and topography of the trachea and main bronchus.
71. External structure of the lungs. Elements of the hilum of the lungs, their interposition on the right and the left. Structural units of a lung and bronchi them ventilating. Segmentary structure of lungs. Elements of a bronchial tree. Elements of an alveolar tree. Topography of the lungs (skeletotopy, sintopy, holotopy);
72. Concept of serous coat and cavities. Structure of a serous coat. Pleura (parietal and visceral). Elements of the structure parietal pleura. Skeletotopy of pleura. Pleural cavity, pleural recesses.
73. Concept of a mediastinum. Division into an anterior mediastinum and a posterior mediastinum.
74. Kidneys: external structure and internal structure. Structure of the nephron. The renal coats, the fixing apparatus. Topography of the kidneys (skeletotopy, sintopy, holotopy), relation to a peritoneum. Features of the blood supply of the kidneys .
75. Ureter: anatomy and topography, covering by the peritoneum.
76. Urinary bladder: external structure, wall structure, internal urethral sphincter? Covering by the peritoneum. Topography of the urinary bladder (skeletotopy, sintopy, holotopy) in male and female. Female urethra (internal and external openings, wall structure, voluntary external sphincter).
77. Retroperitoneal space (borders, organs). Renal fascia (prerenal and postrenal layers). Cellulose spaces.
78. Classification of the male reproductive system. Testis, epididymis: the external and internal structure. The coats of the testes, their structure and compliance with the layers of the anterior abdominal wall.
79. Ductus deferens. Parts and their topography; the structure of the wall. Spermatic cord (the elements, parts and their topography). Seminal vesicles (external structure, structure of the wall, duct, syntopy). Prostate gland: the external structure and the internal structure, function .
80. Penis: the external structure and the internal structure . Male urethra: parts; constrictions, dilations, structure of the wall, lymphoid apparatus, ducts, opened to the male urethra, involuntary and voluntary sphincters. The bulbourethral (Cowper's) glands, their position, place of opening of its ducts.
81. The division of the female genital organs for internal and external. Ovary: the external structure and the internal structure, function. The ligaments of the ovaries ; topography of the ovary. Fallopian tubes: parts, ostiums, structure of the wall, topography, covering by the peritoneum.
82. Uterus: the external structure and the internal structure, function. Fixing apparatus of the uterus, "anteversio" and "retroversio", "anteflexio" and "retroflexio". Topography of the uterus and covering by the peritoneum. Parametrium.
83. Vagina (external structure, structure of the wall, lymphoid apparatus, topography (syntopy). External female genitalia. Vestibule of the vagina. Greater vestibular glands (glands of Bartholin).
84. Perineum: structure, division. Pelvic diaphragm (borders, organs, that pass through it, the muscles and fasciae, ischiorectal fossa). Urogenital diaphragm (borders, the muscles and fasciae). Cellular spaces of the pelvis and perineum.
85. The spinal cord: the external and internal structure. Skeletotopy of the spinal cord (rule of Shipo). The roots of the spinal cord. Meninges of the spinal cord, spaces between meninges and their contents.
86. The division of the brain. Rhombencephalon (boundaries, relief).
87. The myelencephalon: the external and internal structure. The pons: the external and internal structure.
88. The cerebellum: the external and internal structure. Its communication with parts of the brainstem.
89. Projection of cranial nerves nuclea on the surface of the rhomboid fossa. Fourth ventricle (its walls, communications ).
90. The midbrain: the external and internal structure. Cerebral peduncles. Cerebral aqueduct.
91. Lateral lemniscus, its components.
92. Brainstem. Isthmus of the brain, its constituent parts.
93. Parts of the forebrain. The diencephalon, its parts and their functional significance.
94. Thalamus: external and internal structure, the nuclea and their functions. Epithalamus: its parts and their functions. Metathalamus: parts and their functions.
95. Hypothalamus: its components. Hypophysis. Nuclea of hypothalamus, their functions. Hypothalamo-hypophyseal system.
96. III ventricle: its walls, communication .
97. The basal ganglia, their structure and functions.
98. The parts of the telencephalon. The white matter of the hemispheres. Associative, commissural and projective fibers (tracts).
99. The internal capsule (parts, tracts)
100. The cortex of cerebral hemispheres. Lobes of the cerebral hemispheres and their boundaries. Sulci and gyri of the superolateral surface of the cerebral hemispheres. Sulci and gyri of the mediobasal surface of the hemispheres.
101. Concept of analyzers. Cortical ends of the analyzers I signaling system. Cortical ends of the analyzers II signaling system.
102. Olfactory brain, its peripheral and central parts . Limbic system: functions, structure. Reticular formation: functions, structure.
103. Lateral ventricles (I - left , II - right) and their communications.
104. Cranial meningesand their classification , intermeningeal spaces. Dural venous sinuses of dura mater. Specific features of the dura matter encephali. Cerebrospinal fluid circulation.
105. Tracts. Classifications. General characteristic. Unconscious sensory tracts. Conscious sensory tracts. Unconscious motor tracts (extrapyramidal). Conscious motor tracts (pyramidal). Medial lemniscus.
106. I pair of cranial nerve (Olfactory nerve): general characteristic, conductors, branches, area of the innervation.
107. II pair of cranial nerve (Optic nerve): general characteristic, conductors, branches, area of the innervation.
108. III pair of cranial nerve (Oculomotor nerve), IV pair of cranial nerve (Trochlear nerve), VI pair of cranial nerve (Abducens nerve): general characteristic, conductors, branches, area of the innervation.
109. V pair of cranial nerve (Trigeminal nerve): general characteristic, conductors, branches, area of the innervation.
110. VII pair of cranial nerve (Facial nerve); general characteristic, conductors, branches, area of the innervation.
111. VIII pair of cranial nerve (Vestibulocochlear nerve); general characteristic, conductors, branches, area of the innervation.
112. IX pair of cranial nerve (Glossopharyngeal nerve): general characteristic, conductors, branches, area of the innervation.
113. X pair of cranial nerve (Vagus nerve): general characteristic, conductors, branches, area of the innervation.
114. XI pair of cranial nerve (Accessory nerve), XII pair of cranial nerve (Hypoglossal nerve): general characteristic, conductors, branches, area of the innervation.
115. The highest autonomic centers. Spinal central and peripheral parts of parasympathetic system. Spinal central and peripheral parts of sympathetic system.
116. Three principles of a sympathetic innervations of the internal organs. The sympathetic trunk: parts, their branches, area of the innervation.
117. Spinal centers of parasympathetic system. Parasympathetic innervation the small pelvis organs.
118. The formation of the spinal nerves, it parts and branches. The features of the anterior and posterior rami of the spinal nerves.
119. The cervical plexus, the formation of the branches (cutaneous, muscular, mixed), area of the innervation. The phrenic nerve, topography, area of the innervation.
120. The formation of the brachial plexus, its topographic divisions. The short branches of the brachial plexus, areas of the innervation. The medial, lateral and posterior cords of the brachial plexus, long branches.
121. The median nerve, its formation, topography, area of the innervation.
122. The ulnar nerve, its course, topography, area of the innervation. The radial nerve, its course, topography, area of the innervation
123. The formation and topography of the lumbar plexus. The branches of the lumbar plexus, course, area of innervation.
124. The formation and topography of the sacral plexus. The short branches of the sacral plexus, their way, topography, area of innervation. The long branches of the sacral plexus, their way, topography, area of innervation.
125. The sciatic nerve, its course, the topography, the division into the terminal branches, area of innervation. The tibial nerve, its course, topography, area of innervation. The common, superficial and deep peroneal nerves, their way, topography, area of innervation.
126. The group innervation of the muscles of the pelvic girdle, thigh, leg, foot.
127. Aorta, its parts and topography. Branches of the ascending aorta: topography, branches, area of the blood supply.
128. The aortic arch (brachiocephalic trunk (its division), left common carotid artery, left subclavian artery): topography, branches, area of the blood supply.
129. External carotid artery: its topography, groups of branches, area of the blood supply.
130. Internal carotid artery, its topography, groups of branches, area of the blood supply. Blood supply of the brain and spinal cord. Cerebral arterial circle  
     (Willis’) and the circle of Zakharchenko.
131. Subclavian artery: its topography, groups of branches, area of the blood supply. Three parts, area of the blood supply. Anastomoses in the thyroid gland.
132. Thoracic aorta, its course and topography. Parietal and visceral branches, area of blood supply, anastomoses. Participation of intercostal arteries in blood supply of the spinal cord.
133. Abdominal aorta, its course and topography. Unpaired visceral branches of the abdominal aorta,its branches, area of blood supply, anastomoses.
134. Paired visceral branches of the abdominal aorta, the area of blood supply. Parietal branches of the abdominal aorta. Participation of the lumbar arteries in the blood supply of the spinal cord.
135. Common iliac artery, its topography, division on external and internal iliac arteries. Branches of the external iliac artery.
136. Internal iliac artery: its topography, groups of branches, area of the blood supply.
137. Axillary artery, its parts, topography, branches (in the triangles), area of blood supply.
138. Brachial artery, its topography and branches. Blood supply of the shoulder joint, the formation of arterial rete. Deep artery of arm, its topography.
139. Radial artery, its topography in the cubital fossa and forearm, branches and area of blood supply.
140. Ulnar artery, its topography in the cubital fossa and forearm, branches, area of blood supply. The blood supply of the elbow joint and the formation of its arterial rete. Interosseous arteries.
141. The blood supply of the wrist: the formation of the superficial palmar arch, its topography and branches. The formation of the deep palmar arch, its topography and branches. The blood supply to the wrist joint and the formation of its arterial rete. Features of blood supply of pollicis. Collateral blood supply of the upper limb.
142. The external iliac artery, its topography, branches, area of blood supply, anastomoses.
143. The femoral artery, its topography, branches and anastomoses. The blood supply of the hip joint (formation of arterial rete). The deep artery of the thigh, its topography and areas of blood supply.
144. The popliteal artery, its topography, branches, area of blood supply. The blood supply of the knee joint (formation of arterial rete).
145. The anterior and posterior tibial artery, their topography on the tibia, branches, areas of blood supply. The blood supply of the ankle joint (formation of arterial rete).
146. The blood supply of the foot: the dorsal pedis artery of foot, its topography, branches, areas of blood supply. The formation of the dorsal arch of pedis. The plantar arch, sources, branches, the area of blood supply. The anastomoses between the dorsal and plantar arteries of the foot.
147. Superior vein cava: formation, topography, confluence, area of the venous drainage.
148. The internal jugular vein: formation, topography, confluence, area of the venous drainage. The intracranial and external veins anastomoses of the head. Diploic veins and emissary veins.
149. The azygos and hemiazygos veins: formation, confluence, topography, area of the venous drainage, the clinical significance.
150. The upper limb veins: formation, topography, confluence, area of the venous drainage, their anastomoses.
151. Inferior vein cava, its formation, topography, tributaries and roots. Features of the venous outflow from the pelvic organs: formation, topography, influxes, area of the venous drainage.
152. The lower limb veins: formation, topography, influxes, area of the venous drainage, their anastomoses.
153. Portal vein, its roots: formation, topography, influxes, area of the venous drainage. The cavacaval and cavaportal anastomoses and their clinical significance.
154. General plan of the lymphatic system anatomy, its parts: lymphatic capillaries, vessels, regional nodes, lymphatic trunks and ducts.
155. The main lymphatic trunks and ducts. Regions of the lymph drainage. The confluence of the right and the thoracic ducts into the venous system.
156. The thoracic lymphatic duct, its formation, topography, the area of the lymph drainage, its connection with the venous system. The right lymphatic duct, its formation, topography, the area of the lymph drainage, its connection with the venous system.
157. The lymphatic vessels and nodes of the chest, abdomen and pelvis. Features of the lymphatic system of the small intestine. The lymphatic vessels and nodes of the upper and lower limbs. The lymphatic vessels and nodes of the head and neck.
158. The endocrine apparatus: divisions according the origins of the development, functions, features.
159. The lymphoid system: functions, classification. The central and peripheral lymphoid organs: anatomy, topography, function.
160. Spleen (anatomy, topography)

**LIST OF THE ANATOMICAL STRUCTURES**

**FOR A PRACTICE-ORIENTED QUESTION**

OSTEOLOGY

1. Vertebral body
2. Vertebral arch
3. Vertebral foramen
4. Superior articular process
5. Inferior articular process
6. The first cervical vertebra
7. The second cervical vertebra
8. Thoracic vertebra
9. Lumbar vertebra
10. The base of the sacrum
11. Auricular surface of the sacrum
12. The apex of the sacrum
13. Pelvic sacral surface
14. Dorsal sacral surface
15. Sacral canal
16. Head of the rib
17. Neck of the rib
18. Costal tubercle
19. Costal groove
20. Jugular foramen of the sternum
21. Xiphoid process
22. Supraorbital foramen (excision) of the frontal bone
23. Fossa of the lacrimal gland of the frontal bone
24. Sellae turcica
25. Lesser wing of the sphenoid bone
26. Optic canal
27. Greater wing of the sphenoid bone
28. Foramen rotundum
29. Foramen ovale
30. Foramen spinosum
31. Lacrimal bone
32. Vomer
33. Nasal bone
34. Pterygoid process of the sphenoid bone
35. Pterygoid canal of the sphenoid bone
36. Basilar part of the occipital bone
37. Occipital condyle
38. Hypoglossal canal
39. Foramen magnum
40. Pyramid (petrous part) of the temporal bone
41. Mastoid process of the temporal bone
42. Roof of the tympanic cavity of the temporal bone
43. Internal acoustic meatus and internal acoustic foramen
44. Zygomatic arch
45. Mandibular fossa of the temporal bone
46. Carotid canal of the temporal bone
47. Superior orbital fissure
48. Inferior orbital fissure
49. Infraorbital foramen
50. Tuberosity of the maxilla
51. Frontal process of the maxilla
52. Perpendicular plate of the palatine bone (on the skull)
53. Horizontal plate of the palatine bone
54. Body of the mandible
55. Dental alveoli of the mandible
56. Angle of the mandible
57. Ramus of the mandible
58. Masseter tuberosity of the mandible
59. Pterygoid tuberosity of the mandible
60. Condylar process of the mandible
61. Coronoid process of the mandible
62. Mandibular foramen
63. Foramen lacerum
64. Jugular foramen
65. Anterior cranial fossa
66. Middle cranial fossa
67. Posterior cranial fossa
68. Clivus
69. Groove for transverse sinus
70. Groove for sigmoid sinus
71. Choanae (scull)
72. Hard palate
73. Pterygopalatine fossa
74. Infratemporal fossa
75. Temporal fossa
76. Acromion
77. Glenoid cavity of the scapula
78. Supraglenoid tubercle of the scapula
79. Infraglenoid tubercle of the scapula
80. Coracoid process of the scapula
81. Anatomical neck of the humerus
82. Greater tubercle of humerus
83. Lesserer tubercle of humerus
84. Surgical neck of the humerus
85. Deltoid tuberosity
86. Radial groove
87. Lateral epicondyle of the humerus
88. Medial epicondyle of the humerus
89. Trochlea humeri
90. Olecranon fossa of the humerus
91. Head of the radius
92. Articular circumference of the radius
93. Neck of the radius
94. Styloid process of the radius
95. Olecranon
96. Coronoid process of the ulna
97. Head of the ulna
98. Styloid process of ulna
99. Parts of hand
100. Obturator foramen
101. Acetabulum
102. Lunate surface
103. Acetabular notch
104. Iliac crest
105. Lesser sciatic foramen
106. Greater sciatic foramen
107. Ischial tuberosity
108. Ischial spine
109. Head of femur
110. Neck of femur
111. Lesser trochanter of the femur
112. Greater trochanter of the femur
113. Linea aspera
114. Medial condyle of the femur
115. Lateral condyle of the femur
116. Medial condyle of the tibia
117. Lateral condyle of the tibia
118. Tibial tuberosity
119. Medial malleolus
120. Lateral malleolus
121. Calcaneus
122. Talus

ARTHROLOGY

1. Coronal suture (skull)
2. Sagittal suture (skull)
3. Lamboid suture (skull)
4. Intervertebral disc
5. Anterior longitudinal ligament
6. Posterior longitudinal ligament
7. Acromioclavicular joint
8. The coracoacromial ligament
9. Interosseous membrane of the forearm
10. Radiocarpal joint
11. Carpal canal
12. Obturator membrane
13. Obturator canal
14. Sacrotuberous ligament
15. Sacrospinous ligament
16. Greater sciatic foramen
17. Greater sciatic foramen
18. Pubic symphysis
19. Acetabulum of the hip joint
20. Ligament of head of femor
21. Patellar ligament
22. Transverse ligament of knee
23. Lateral meniscus of the knee joint
24. Medial meniscus of the knee joint
25. Cruciate ligaments of the knee
26. The interosseous membrane of the leg
27. Transverse tarsal joint (Chopar’s joint)
28. Tarsometatarsal joints (Lisfrank’s joint)

MYOLOGY

1. Trapezoid muscle
2. Latissimus dorsi muscle
3. Rhomboid muscle
4. Erector of spine muscle
5. Long head of the biceps brachii muscle
6. The coracobrachialis muscle
7. Axillary cavity
8. Trilateral foramen
9. Quadrilateral foramen
10. Brachioradial canal
11. Cubital fossa
12. Flexor carpi radialis muscle
13. Pronator teres muscle
14. Flexor carpi ulnaris muscle
15. Flexor digitorum superficialis muscle
16. Flexor digitorum profundus muscle
17. Flexor pollicis longus muscle
18. Pronator quadratus muscle
19. Flexor retinaculum
20. Extensor carpi radialis longus muscle
21. Extensor carpi radialis brevis muscle
22. Extensor digitorum muscle
23. Extensor carpi ulnaris muscle
24. Abductor pollicis longus muscle
25. Extensor pollicis longus muscle
26. Adductor pollicis muscle
27. Ilio-lumbar muscle
28. Muscular lacuna (on the thigh)
29. Vascular lacuna (on the thigh)
30. Tensor fascia latae muscle
31. The gluteus maximus muscle
32. The gluteus medius muscle
33. The gluteus minimus muscle
34. The piriformis muscle
35. The suprapiriformis foramen
36. The infrapiriformis foramen
37. Sartorius muscle
38. Rectus femoris muscle (quadriceps muscle)
39. Adductor long muscle
40. Gracilis muscle
41. Adductor canal
42. Biceps femoris
43. Semitendinosus muscle
44. Semimembranosus muscle
45. Tibial anterior muscle
46. Extensor hallucis longus muscle
47. Extensor digitorum muscle
48. Fibularis longus muscle
49. Fibularis brevis muscle
50. Triceps surae muscle
51. Soleus muscle
52. Gastrocnemius muscle
53. Flexor digitorum longus muscle
54. Flexor hallucis longus muscle
55. Pectoral major muscle
56. Pectoral minor muscle
57. Anterior serratus muscle
58. Lumbar part of the diaphragm
59. Costal part of the diaphragm
60. Sternal part of the diaphragm
61. Aortic opening of the diaphragm
62. Esophageal orifice of the diaphragm
63. Inferior vena cava opening of the diaphragm
64. Rectus abdominis muscle
65. Inguinal ligament
66. The superficial ring of the inguinal canal
67. External oblique abdominal muscle
68. Sternoclaidomastoid muscle
69. Mylohyoid muscle
70. Stylohyoid muscle
71. Digastric muscle
72. Sternohyoid muscle
73. Sternothyroid muscle
74. Thyrohyoid muscle
75. Omohyoid muscle
76. Anterior scalene muscle
77. Orbicularis oculi muscle
78. Temporal muscle
79. Masticatory muscle
80. Deltoid muscle
81. Subscapular muscle

SPLANCHNOLOGY

**Digestive system**

1. Parotid salivary gland
2. The body of the tongue
3. Lingual tonsil
4. Soft palate
5. Palatoglossal arch
6. Palatopharyngeal arch
7. Pharyngeal tonsil
8. Pharyngeal opening of the auditory tube
9. Greater curvature of the stomach
10. Lesser curvature of the stomach
11. Cardiac part of the stomach
12. Fundus of the stomach
13. Pyloric part of the stomach
14. Duodenum
15. Jejunum
16. Ileum
17. Caecum
18. Ilio-colic angle
19. Vermiform process
20. Ascending colon
21. Right colic flexure
22. Transverse colon
23. Splenic flexure of the colon
24. Descending colon
25. Sigmoid colon
26. Haustra of colon
27. Omental appendices
28. Taeniae of colon
29. Rectum
30. Visceral surface of the liver
31. Left lobe of the liver
32. Quadrate lobe of the liver
33. Caudate lobe of the liver
34. Inferior vena cava (on the liver)
35. Round ligament of the liver
36. Right hepatic duct
37. Left hepatic duct
38. Gallbladder
39. Cystic duct
40. Common bile duct
41. Pancreas
42. Mesentery of the jejunum
43. Mesosigmoid
44. Lesser omentum
45. Greater omentum
46. Omental bursa
47. Hepatic bursa
48. Pregastric bursa
49. Right mesenteric sinus
50. Left mesenteric sinus
51. The right lateral canal
52. Left lateral canal
53. Rectouterine pouch
54. Vesicouterine pouch
55. Rectovesical pouch

**Respiratory system**

1. Superior nasal concha
2. Middle nasal concha
3. Inferior nasal concha
4. Superior nasal meatus
5. Middle nasal meatus
6. 6.Inferior nasal meatus
7. Choanae
8. Larynx (on sagittal cutting of the head)
9. Thyroid cartilage of the larynx
10. Cricoid cartilage
11. Epiglottis
12. The thyro-hyoid membrane
13. The vestibule of the larynx
14. Vocal folds (larynx)
15. Vestibular folds (larynx)
16. Laryngeal ventricle
17. Trachea
18. Membrane of the trachea
19. Tracheal bifurcation
20. Right principal bronchus
21. Left principal bronchus
22. The base of the lung
23. The apex of the lung
24. Costal surface of the lung
25. Mediastinal surface of the lung
26. Diaphragmatic surface of the lung
27. Hilum of the lung
28. Root of the lung
29. Costo-diaphragmatic sinus

**Urinary and reproductive systems**

1. Kidney (right and left)
2. Renal hilum
3. Cortex of the kidney
4. Medulla of the kidney
5. Renal columns
6. Renal pelvis
7. Calyx major
8. Calyx minor
9. Ureter
10. Urinary bladder
11. Triangle of the urinary bladder
12. Epididymis of the testis
13. Vas deferens
14. Seminal vesicle
15. Prostate gland
16. Ovary
17. Proper ovarian ligament
18. Fallopian tube
19. Infundibulum of the fallopian tube
20. Ampoule of the fallopian tube
21. Isthmus of the fallopian tube
22. The body of the uterus
23. Fundus of the uterus
24. Cervix of the uterus
25. Broad ligament of the uterus
26. Round ligament of the uterus
27. The external opening of the female urethra
28. Ischio-rectal fossa

ANGIOLOGY

1. The base of the heart
2. The apex of the heart
3. Sternocostal (anterior) surface of the heart
4. The diaphragmatic (lower) surface of the heart
5. The left ear of the heart
6. The coronal sulcus of the heart
7. Anterior interventricular sulcus
8. The right ventricle of the heart
9. The left ventricle of the heart
10. Aortic valve
11. Pulmonary trunk valve
12. The opening of the superior vena cava (in the heart)
13. The opening of the inferior vena cava (in the heart)
14. Trabeculae carneae
15. Papillary muscles
16. Chordae tendineae
17. Right coronary artery
18. Left coronary artery
19. Anterior interventricular artery
20. Pulmonary trunk
21. Aortic bulb
22. The ascending part of the aorta
23. Aortic arch
24. Brachiocephalic trunk
25. Left common carotid artery
26. Right common carotid artery
27. External carotid artery
28. Superior thyroid artery
29. Lingual artery
30. Facial artery
31. Ascending pharyngeal artery
32. Superficial temporal artery
33. Maxillary artery
34. Inferior alveolar artery
35. Middle meningeal artery
36. Internal carotid artery
37. Subclavian artery
38. Vertebral artery
39. Internal thoracic artery
40. Thyrocervical trunk
41. Axillary artery
42. Lateral thoracic artery
43. Subscapular artery
44. Thoraco-acromial artery
45. Circumflex scapula artery
46. Circumflex humeri anterior artery
47. Circumflex humeri posterior artery
48. Brachial artery
49. Deep artery of the arm
50. Superior ulnar collateral artery
51. Inferior ulnar collateral artery
52. Radial artery
53. Ulnar artery
54. The superficial palmar arch
55. Thoracic aorta
56. Abdominal aorta
57. Lumbar arteries
58. Left gastro-omental artery
59. Left gastric artery
60. Common hepatic artery
61. Own hepatic artery
62. Gastro-duodenal artery
63. Right gastro-omental artery
64. Superior mesenteric artery
65. Jejunal and iliac arteries
66. Ilio-colic artery
67. Right colic artery
68. Middle colic artery
69. Inferior mesenteric artery
70. Left colic artery
71. Sigmoid arteries
72. Renal artery
73. Ovarian (Testicular) artery
74. Common iliac artery
75. Internal iliac artery
76. Superior gluteal artery
77. The obturator artery
78. External iliac artery
79. Inferior epigastric artery
80. Femoral artery
81. Deep femoral artery
82. Medial circumflex femoris artery
83. Lateral circumflex femoris artery
84. Descending knee artery
85. Popliteal artery
86. Posterior tibial artery
87. Lateral plantar artery
88. Medial plantar artery
89. Anterior tibial artery
90. Dorsal artery of the foot
91. Dorsal arterial arch (foot)
92. Superior vena cava
93. Azygos vein
94. Hemiazygos vein
95. Posterior intercostal veins
96. Right brachiocephalic vein
97. Internal jugular vein
98. Subclavian vein
99. Lateral subcutaneous vein of the arm
100. Medial subcutaneous vein of the arm
101. Axillary vein
102. Brachial vein
103. Inferior vena cava
104. Renal vein
105. Portal vein
106. Common iliac vein
107. The great saphenous vein
108. Femoral vein

LYMPHOID (IMMUNE) SYSTEM

1. Pharyngeal tonsil
2. Lingual tonsil
3. Appendix
4. Spleen

CENTRAL NERVOUS SYSTEM

1. Falx cerebri (dura mater)
2. Tentorium cerebelli
3. Superior sagittal sinus (dura mater)
4. Inferior sagittal sinus
5. Pyramid of the medulla oblongata
6. Olive medulla
7. Basilar groove
8. Middle cerebellar pedicle
9. Inferior cerebellar pedicle
10. Superior cerebellar pedicle
11. IV ventricle
12. Rhomboid fossa
13. Brain pedicle
14. Superior collicles of the midbrain
15. Inferior collicles of the midbrain
16. Aqueduct of the cerebri
17. Diencephalon
18. Pineal gland
19. Thalamus
20. Optic chiasm
21. III ventricle
22. Central groove of the cerebral hemisphere
23. Lateral groove of the cerebral hemisphere
24. Precentral sulcus
25. Superior frontal sulcus
26. Inferior frontal groove
27. Postcentral sulcus
28. Intra-parietal sulcus
29. Superior temporal sulcus
30. Inferior temporal sulcus
31. Groove of the corpus callosum
32. Cingulate sulcus
33. Parieto-occipital sulcus
34. Calcarine sulcus
35. Precentral sulcus
36. Superior frontal gyrus
37. Middle frontal gyrus
38. Inferior frontal gyrus
39. Postcentral gyrus
40. Superior parietal lobule
41. Inferior parietal lobule
42. Superior temporal gyrus
43. Middle temporal gyrus
44. Inferior temporal gyrus
45. Cingulate gyrus
46. ​​Paracentral lobule
47. Precuneus
48. Cuneus
49. Uncus
50. Olfactory tract
51. Corpus callosum
52. The central part of the lateral ventricle
53. Head of caudate nucleus
54. Lentiform nucleus
55. Claustrum
56. Extreme capsule
57. External capsule
58. Internal capsule

PERIPHERAL NERVOUS SYSTEM

1. Optic nerve (II pair)
2. Trigeminal nerve (V pair)
3. Inferior alveolar nerve
4. Facial nerve (intermediate facial nerve of the VII pair)
5. Glossopharyngeal nerve (IX pair)
6. Vagus nerve (X pair). Cervical part
7. Vagus nerve (X pair). Thoracic part
8. Hypoglossal nerve (XII pair)
9. Phrenic nerve
10. Musculocutaneous nerve
11. Median nerve
12. Ulnar nerve
13. Radial nerve
14. Axillary nerve
15. Lateral cutaneous nerve
16. Femoral nerve
17. Obturator nerve
18. Sciatic nerve
19. Common peroneal nerve
20. Deep peroneal nerve
21. Superficial peroneal nerve
22. Tibial nerve
23. Medial plantar nerve
24. Lateral plantar nerve
25. Sympathetic trunk

ENDOCRINE GLANDS

1. Thyroid gland
2. Ovary
3. Testis
4. Adrenal gland
5. Pancreas

Tests for conducting midterm attestation are formed on the basis of the submitted theoretical questions and practical tasks. Testing of students is carried out in the Information system of the University.

**FSBEI of HE OrSMU of the Health Ministry of Russia**

**The Full-time studying, specialist**

**Human anatomy department**

**Speciality: 31.05.01 General medicine**

**Discipline: Human anatomy**

**Examination ticket/card №1**

1. **CONTROL OF PRACTICAL SKILLS:**

To show 10 anatomical structures on the natural preparations.

1. **THEORETICAL QUESTIONS:**

|  |
| --- |
| 1. The early stages of the human embryogenesis. The three layers, their derivatives. The main anomalies.   2. Heart topography. Projection of the heart boundaries and the heart valves on the anterior wall of the chest. The places of the heart valves auscultation. Coronary arteries and veins.  3. The thoracic and right lymphatic ducts, their formation, topography, the area of the lymphdrain, its connection with the venous system.  4. The cortex of cerebral hemispheres. Lobes of the cerebral hemispheres and their boundaries. Sulci and gyri of the superolateral surface of the cerebral hemispheres. Cortical ends of the analyzers I and II signaling system.    **Экзаменационный билет №1**   1. **КОНТРОЛЬ ПРАКТИЧЕСКИХ НАВЫКОВ:**   Показать 10 анатомических структур на натуральных препаратах.   1. **ТЕОРЕТИЧЕСКИЕ ВОПРОСЫ:** 2. Ранние этапы эмбриогенеза человека. Три листка зародыша, их производные. Основные аномалии. 3. Сердце. Топография сердца. Проекция границ сердца. Проекция и места выслушивания клапанов. Кровоснабжение сердца. 4. Грудной (левый) и шейный (правый) лимфатические протоки (сложение, топография, притоки, области дренирования). 5. Кора полушарий головного мозга. Доли, их границы. Основные борозды и извилины верхнелатеральной поверхности. Локализация центров I и II сигнальных систем.   Head of the Human anatomy department  Dr. med., Prof. D.N. Liashchenko  Dean of the Foreign students faculty  MD, PhD A.O. Mironchev |

11 января 2023г.

**The list of didactic materials for students on** **midterm attestation.**

|  |  |  |
| --- | --- | --- |
| **№**  **п\п** | Visual learning tools, tables, diagrams, which can be used by the student at the midterm attestation | |
| **Type** | **Quantity** |
| 1 | Bone preparations | 160 |
| 2 | Preparations (fixed by formalin) | 64 |
| 3 | Ttables without symbols | 134 |
| 4 | Dummies | 78 |
| 5 | Preparations of the Department museum | 50 |
| 6 | Poster for age-related anatomy | 1 |
| 7 | Dissected corpses | 3 |

**The list of equipment used for the midterm attestation.**

|  |  |  |
| --- | --- | --- |
| **№**  **п\п** | The list of equipment used for the midterm attestation | |
| **Type** | **Quantity** |
|  | Educational preparations, specialized and laboratory equipment of the department for independent work of students |  |
| 1 | X-ray anatomy board | 2 |
| 2 | Anatomical instruments | 50 |
| 3 | Multimedia projectors | 2 |
| 4 | Laptops | 2 |
| 5 | Multiplying technique | 1 |
| 6 | Scanners | 1 |

**Table of correspondence of the results of training in the discipline and-evaluation materials used in the midterm attestation**.

|  |  |  |  |
| --- | --- | --- | --- |
| № | Verifiable competence | Descriptor | Control and evaluation tool (question number/practical task) |
| 1 | OPK-1 is able to implement moral and legal norms, ethical and deontological principles in professional activity.  Ind.OPK1.1. The ability to analyze the content of ethical and deontological principles in professional activity, taking into account cultural and religious values | To know  -To know and use the basic rules of medical law.  -To know and apply ethical and deontological principles in practice, uses knowledge of the history of medicine and anatomy | questions № 1-160 |
| Be able to  -Use the basic rules of medical law. | practical tasks № 1-543 |
| Possess:  -skills of presenting an independent point of view, analysis and logical thinking, public speech, moral and ethical argumentation, conducting discussions and round tables; principles of medical deontology and medical ethics; | practical tasks № 1-543 |
| 2 | OPK-5 is able to evaluate morphofunctional, physiological states and pathological processes in the human body to solve professional problems.  Ind.OPK5.1. The ability to assess morphofunctional features, physiological states of the human body within the framework of professional activity | To know  the medical and anatomical conceptual apparatus; morphofunctional organization of internal organs and human systems in normal; sources and course of development of internal organs and systems; human; anatomical and topographic features of internal organs and systems; | questions № 1-160 |
| Be able to  • analyze the structural and functional features of the structure of internal organs and human systems; explain the nature of deviations in the course of their development, which can lead to the formation of anomalies and defects; describe morphological changes identified | practical tasks № 1-543 |
| Possess  practical experience: skills of using medical-anatomical conceptual apparatus in the discipline of Anatomy; skills of using knowledge about the development, structure, function, possible variants, anomalies and malformations of internal organs and systems | practical tasks № 1-543 |
| 3 | OK-1 is able to carry out a critical analysis of problem situations based on a systematic approach, develop a strategy of actions  Ind.OK 1.2. The ability to apply a systematic approach to analyze a problem situation  1.4. The ability to use logical and methodological tools to solve problems of a philosophical, moral and personal nature based on the use of basic philosophical ideas and categories in their historical development and socio-cultural context | Know  -algorithm of system analysis of an actual problem and methods of its structural decomposition | questions № 1-160 |
| Be able to  -use different search engines to create an objective information picture, critically comprehend it to solve the task | practical tasks № 1-543 |
| Posses  -methods of analytical work with the text, allowing you to understand the meanings inherent in it | practical tasks № 1-543 |
| 4 | OK-4 is able to apply modern communication technologies, including in a foreign language(s), for academic and professional interaction  Ind.CC 4.1. The ability to establish and develop professional contacts in accordance with the needs of joint activities, including the exchange of information and the development of a unified strategy of interaction | Know  -technologies for the correct construction of effective messages using Russian and foreign languages | questions № 1-160 |
| Be able to  -build business communication based on knowledge of the cultural contexts of target audiences | practical tasks № 1-543 |
| Posses  -methods of using information and communication technologies in professional activities. Skills of preparation and analysis of information sources, preparation of scientific publications based on research results. | practical tasks № 1-543 |

4. **Methodical recommendations for using point-rating system.**

Within the implementation of point-rating system for assessing the educational achievements of students in the discipline (module), in accordance with the provision "About the point-rating system for assessing educational achievements of students", the following rules for forming the current actual rating of students are defined.

The current actual rating of students in the discipline (module) (maximum points) is made up of the sum of points scored as a result:

- current monitoring of students' progress at each practical lesson in the discipline:

- control of students' progress in each module of the discipline.

- independent work of students.

The student receives up to 12 points for each practical lesson,. The number of points is made up of the sum of the points obtained for three control points: attendance (0-2 points), Interview for control questions (0-5 points) and practical skills (0-5 points).

Final lesson on the cards in oral form (testing, passing practical skills and an interview on card issues) is carried out at the end of each module of the discipline. The number of control points is determined by a maximum of 5 points.

The student receives the number of points in accordance with the evaluation criteria specified in the FOS for the completion of each task for independent work.

The current actual rating is obtained by summing up the points for each of the above areas.

**Assessment system for the exam (test)**

|  |  |  |  |
| --- | --- | --- | --- |
| Stage | Points | | Note |
| I Practical part | 0 – 6 | | 6 and less structures – 0 points  7 structures– 3 points  8 structures– 4 points  9 structures– 5 points  10 structures– 6 points |
| II Theoretical questions  (interview) | 1 question | 0 – 6 | 0 points-unsatisfactory  3 points-satisfactory  4 points – good  5-6 points – excellent |
| 2 question | 0 – 6 |
| 3 question | 0 – 6 |
| 4 question | 0 – 6 |
| **Final exam mark:** | | | |
| 0 – 14 points | | Unsatisfactory («2») | |
| 15 – 20 points | | Satisfactory («3») | |
| 21 – 25 points | | Good («4») | |
| 26 – 30 points | | Excellent («5») | |

|  |  |
| --- | --- |
| **Total disciplinary rating** | **Human anatomy discipline mark** |
| 86 – 105 points | 5 (excellent) |
| 70 – 85 points | 4 (good) |
| 50 – 69 points | 3 (satisfactorily) |
| 49 and less points | 2 (unsatisfactorily) |