CONTROL AND MEASURING DEVICES

Program Questions for Midterm Control I–II

Discipline Code: NSSOVHBN 2209

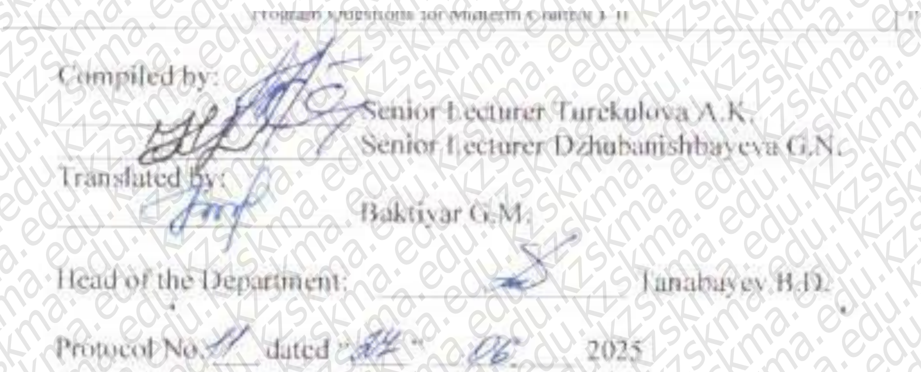
Discipline Title: “The nervous system, sensory organs, vision, hearing, and balance are normal”

Educational Program Code and Title: 6B10115 “Medicine”

Total Academic Hours/Credits: 120 hours / 4 credits

Year and Semester of Study: 2nd year, 3rd semester

Shymkent, 2025 y



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Questions for Midterm Control – I–II

1. A 14-year-old child was admitted to the infectious diseases hospital with a preliminary diagnosis: Meningitis (inflammation of the membranes of the brain and spinal cord). To clarify the diagnosis, a cerebrospinal fluid test is required.
Anatomy: Anatomy of the spinal cord.
Histology: Describe the histological specimen of the spinal cord.
Physiology: Main functions of the spinal cord. Bell–Magendie law.

2. Patient A., 45 years old, complained of lower back pain that worsens with movement. Diagnosis: lumbosacral radiculitis (lesion of spinal nerve roots).
Anatomy: Describe the formation of spinal nerve plexuses (lumbosacral).
Histology: Describe the histological specimen of the spinal ganglion.
Physiology: Neurons of the spinal cord. Sensory neurons.

3. Patient K., 30 years old, complained of hearing loss, hallucinations (false perception without external stimuli), and vestibular disorders. Examination revealed a tumor at the floor of the fourth ventricle (rhomboid fossa).
Anatomy: Structure of the floor of the fourth ventricle of the brain (rhomboid fossa).
Histology: Describe the cytoarchitecture of the cerebral cortex.
Physiology: Functional significance of the brain ventricles.

4. Patient K., 35 years old, had impaired balance, coordination, and decreased muscle tone. Which pathways are likely affected?
Anatomy: Topography and structure of the cerebellum.
Histology: Describe the histological specimen of the cerebellum.
Physiology: Connections of the cerebellum with other CNS structures (afferent and efferent pathways).

5. Patient S., 49 years old, complained of memory loss, headaches, fatigue, and palpitations. Diagnosed with arterial hypertension (Stage II) and asthenovegetative syndrome.
Anatomy: Topography and structure of the medulla oblongata.
Histology: Describe the myeloarchitecture of the brain.
Physiology: Functions of the medulla oblongata (vasomotor center).

6. Patient V., 14 years old, hospitalized with a preliminary diagnosis of meningitis. Cerebrospinal fluid test required.
Anatomy: Formation and circulation of cerebrospinal fluid.
Physiology: Functions of the spinal cord.
Histology: Describe the spinal canal.

7. CT scan of the brain revealed a lesion at its base. One of the symptoms: loss of lateral visual fields in both eyes.
Anatomy: Structure and topography of the pons.
Physiology: Define visual fields.
Histology: Describe the somatic reflex arc.

8. A 47-year-old man complained of pain in the occipital area and difficulty speaking after a fall on the back of his head. Examination revealed deviation of the tongue to the right, with atrophy of its left side. Hypoglossal nerve lesion suspected.
Anatomy: Topography of cranial nerve roots at the base of the skull.
Physiology: Function of the occipital lobe.
Histology: Describe the histological specimen of a peripheral nerve.

9. A patient with a skull base fracture lost taste and general sensitivity of the posterior third of the tongue and sensitivity of the pharynx.
Anatomy: Exit point, branches, and innervation area of the glossopharyngeal nerve.
Histology: Describe the histological specimen of a spinal ganglion.
Physiology: Components of the gustatory reflex arc.

10. A pathological process localized in the lateral corners of the rhomboid fossa caused hearing and balance disorders.
Anatomy: Describe the nuclei of the auditory and vestibular analyzers.
Histology: Describe the histological specimen of the cerebellum.
Physiology: Function of the lateral nuclei of the rhomboid fossa.

11. X-ray revealed a large lesion in the cribriform plate of the ethmoid bone.
Physiology: Which analyzer’s function may be impaired? Describe its normal function.
Anatomy: Describe the conducting pathway of the affected analyzer.
Histology: Describe the histological specimen of the olfactory organ.

12. Patient S., 33 years old, presented with hand tremors at rest, worsening over the last month. Preliminary diagnosis: Parkinson’s disease.
Anatomy: Structure of the midbrain.
Histology: Describe the cytoarchitecture of the brain.
Physiology: Functions of the midbrain.

13. CT scan showed a tumor at the base of the brain with loss of lateral visual fields.
Anatomy: Describe the conducting pathways of the visual analyzer.

Histology: Describe the histological specimen.
Physiology: Define visual fields.

14. A 47-year-old man after head trauma (falling backward) developed speech impairment and tongue deviation to the right. Hypoglossal nerve lesion suspected.
Anatomy: Exit point, branches, and innervation areas of the hypoglossal nerve.
Physiology: Function of the occipital lobe.
Histology: Histological features of the cerebellar cortex.

15. A patient shows sensory aphasia—hears sounds but cannot understand words.
Anatomy: Identify the lesion site. Name the sulci and gyri of the temporal lobe.
Physiology: Neocortex and its centers.
Histology: Describe the myeloarchitecture of the brain.

16. A 50-year-old woman hospitalized with head trauma in the occipital region has gait and balance disturbances, hand tremors.
Anatomy: Which brain part is affected? Describe its structure.
Physiology: Function of the cerebellum.
Histology: Describe the histological specimen of the cerebellum.

17. A patient lost the ability to write letters and numbers after a stroke.
Anatomy: Which lobe is affected? Name the sulci and gyri of the frontal lobe.
Physiology: Functions of the cerebral cortex.
Histology: Describe the histological specimen of the cerebral cortex.

18. A patient complained of hearing loss in the left ear; examination revealed damage to the spiral organ inside the cochlear duct.
Anatomy: Describe the structure of the cochlea.
Physiology: Functions of the parts of the Corti organ.
Histology: Identify the histological specimen of the cochlea (axial section).

19. A patient with vision loss, obesity, and low body temperature had a tumor in the sella turcica region.
Anatomy: Which structure is affected? Structure and topography of the hypothalamus and the third ventricle.
Histology: Describe the cytoarchitecture of the brain.
Physiology: Functions of the diencephalon.

20. Fracture of the skull base in the posterior cranial fossa can damage the brainstem and vital centers (circulation and respiration), which may be fatal.
Anatomy: Structure and topography of the medulla oblongata.

Histology: Describe the myeloarchitecture of the brain.
Physiology: Functions of the medulla oblongata.

21. A patient developed impaired cerebrospinal fluid production after head trauma.
Anatomy: Formation and circulation of cerebrospinal fluid.
Histology: Describe neuroglial cells involved in CSF production.
Physiology: Functions of cerebrospinal fluid.

22. A neurologist tested the patellar (knee) reflex by tapping the patellar tendon.
Anatomy: Identify the neurons of a simple reflex arc.
Histology: Describe the somatic reflex arc.
Physiology: Analyze the somatic reflex arc.

23. A post-stroke patient had a drooping eyelid, flattened nasolabial fold, and mouth corner. Diagnosis: facial nerve dysfunction.
Anatomy: Which nerve innervates facial muscles? Exit point, branches, and innervation zones.
Histology: Describe the histological specimen of a peripheral nerve.
Physiology: Functions of motor fibers of cranial nerves.