

**Assessment tools for conducting attestation in discipline «Normal physiology – Physiology of the maxillofacial region» for students of 2026 year of admission
under the educational programme 31.05.03 Dentistry, specialisation (specialist's),
form of study full-time for the 2026-2027 academic year**

1. Assessment tools for certification in the discipline

Certification includes the following types of tasks: testing, interview on control questions.

1.1 Examples of test tasks

Verifiable indicators of competency achievement: ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3

1. A substance which is actively secreted by renal tubules cannot be helpful in determining:

- A. Renal blood flow
- B. GFR
- C. Filtration fraction
- D. Renal plasma flow
- E. Tubular maximum.

2. The term threshold substance implies that:

- A. There is no active secretion of that substance
- B. There is no active reabsorption of that substance
- C. There is no tubular maximum for secretion
- D. There is no tubular maximum for reabsorption
- E. None of the above.

3. Plasma clearance will be maximum for:

- A. Sodium
- B. Bicarbonate
- C. Phosphate
- D. Calcium
- E. Magnesium.

4. Plasma clearance will be the lowest for:

- A. Glucose
- B. Urea
- C. Uric acid
- D. Inulin
- E. Creatinine.

5. PAH clearance would indicate:

- A. GFR and renal blood flow
- B. GFR and filtration fraction
- C. Filtration fraction and tubular maximum
- D. GFR and tubular maximum
- E. Renal blood flow.

1.2. Examples of test questions for interviews

Verifiable indicators of competency achievement: ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3

Answer control questions:

1. Role of oral cavity in digestion process.
2. Composition and properties of saliva.
3. Schemes of reflex arc of unconditioned salivation reflex.
4. Adaptive character of salivation to various food and rejected substances.
5. General characteristics of digestive processes in stomach.
6. Composition and properties of gastric juice.
7. Regulation of gastric secretion: a) first phase of secretion – conditioned-reflex; b) second (gastric) – neurohumoral phase: main food products that cause gastric secretion; c) intestinal phase.

2. Assessment tools for conducting intermediate certification in the discipline

Certification is carried out in the form of an exam. Certification includes the following types of tasks: interview on control questions.

2.1. List of interview questions

№	Questions for intermediate assessment	Verifiable indicators of competency achievement
1	Hemoglobin. Functions, concentrations.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
2	Capillary circulation. Active and inactive capillaries. Venous circulation. Venous pressure and flow.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
3	Features of the processes of absorption in the oral cavity.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
4	Red blood cells. Morphology. Composition. Function.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
5	Blood pressure in different segments of the vascular tree. Interrelationship between the diameter of the blood vessel and the velocity of the flowing blood.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
6	Saliva. Composition and properties. Functions of saliva. Regulation of salivation.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
7	Plasma, its quantity, composition. Plasma proteins, its physiological role. Origin plasma proteins.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
8	Normal arterial blood pressure and factors determining the BP. Regulation of BP.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
9	The causes of changes in blood pressure during examination and treatment in dentistry.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
10	Functions of blood. Composition of blood.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
11	Quantity of in human organism, its relative constancy. Osmotic pressure.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1,

		ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
12	General structure of the vascular tree (segments of blood vessels-major divisions).	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
13	Functions of the individual segments.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
14	The role of oral cavity receptors in the regulation of secretory and motor function of the gastrointestinal tract.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
15	Digestion and absorption of carbohydrate, protein and fat. Absorption of water, minerals and vitamins.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
16	Sympathetic and parasympathetic supply.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
17	Influences from the Higher Centers. Limbic system, emotion and the heart rate.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
18	Reflex changes in heart activity and vascular tone in dentistry.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
19	Digestive and absorptive functions of the small intestine.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
20	Regulation of respiration. Respiratory center. Role of chemoreceptors (central and peripheral).	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
21	Physiological characteristics of the taste analyzer.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
22	Secretion and excretion of bile, control of secretion and control of excretion. Functions of gall bladder. Functions of bile.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
23	Gases transport by blood: transport of O ₂ by blood; transport of CO ₂ by blood. Factors affecting the affinity of hemoglobin for oxygen.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
24	Sensory function of the oral cavity, its features.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
25	Composition and function of pancreatic juice. Mechanism of secretion of pancreatic juice. Control of secretion of pancreatic juice.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
26	Gas transports between the lungs and the tissues. Gas exchange between blood and tissues. Partial pressure of O ₂ and CO ₂ in blood, tissues liquid and in cells.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
27	Excretory function of salivary glands and mucous membrane of the oral cavity.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
28	Composition and functions of gastric juice and mechanism of secretion. Control of gastric secretion. Regulation of gastric secretion.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3

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29	Gas exchange in the lungs. Partial pressure of O ₂ and CO ₂ in alveolar air and in blood.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
30	The adaptive nature of salivation on various foods.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
31	Functional anatomy of stomach. Digestion in stomach. Functions of stomach. Some important cells in the gastric glands.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
32	Mechanism of external respiration. Biomechanics of inspiration and expiration.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
33	Respiratory muscles. Compliance of the lungs and chest wall.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
34	Innervation of the salivary glands.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
35	Mechanism of thermoregulation in exposure to cold.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
36	Mechanism of thermoregulation in hot environment.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
37	The clotting mechanism. Factors which accelerate clotting. Anticlotting mechanism. Anticoagulants.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
38	Salivary glands. Qualitative features of the chemical composition of secrets, divided by various salivary glands (parotid, submandibular, sublingual).	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
39	Importance of thermoregulation. Normal body temperature. Source of 'gain' of body heat & channels of heat loss.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
40	Platelets. Count and morphology. Function of platelets.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
41	The role of the chewing apparatus in digestion processes.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
42	Internal secretion of the gonads, its physiological significance.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
43	White blood cells (the leukocytes). Total count and classification. Morphology of the WBCs. Functions of the WBCs.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
44	Characteristics of the salivary glands. The composition and properties of saliva. Physiological role of its components.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
45	Functions of medulla oblongata and pons.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3

46	Functional anatomy of the salivary glands. Composition and functions of saliva	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
47	Mechanism and control of salivary secretion.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
48	Water excretion. Proximal tubule. Loop of Henle. Distal tubule. Collecting ducts. The countercurrent mechanism.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
49	Synapses of CNS. Structure, classification, functional properties.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
50	Mechanism of thermoregulation in exposure to cold. Mechanism of thermoregulation in hot environment.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
51	Normal arterial blood pressure and factors determining the BP. Regulation of BP.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
52	The neuron, its physiological properties, classification. Features of rising and propagation of excitation in neuron.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
53	Internal secretion of the adrenals, hormones of the adrenal medulla and the adrenal cortex, its physiological significance.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
54	Automaticity of the heart. Anatomical substratum and nature of automaticity (the conduction system).	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
55	The neuromuscular junction, structure, mechanism of excitation transmission. The basic properties of neuromuscular synapses.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
56	Internal secretion of the pituitary gland, pituitary hormones, its physiological significance.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
57	Regulation of respiration. Respiratory center. Role of chemoreceptors (central and peripheral).	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
58	Fiber types (red muscles and white muscles). Work and strength of skeletal muscle. Muscular fatigue. The theory of muscular fatigue.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
59	Pain reception.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
60	Mechanism of external respiration. Biomechanics of inspiration and expiration.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
61	Respiratory muscles. Compliance of the lungs and chest wall.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
62	Hearing and equilibrium.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
63	Blood types. The ABO system. Transfusion reactions. Inheritance of A- and B-antigens. Other agglutinogens.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3

64	The Rh Group. Compatibility of blood types, basic rule of blood type compatibility determination.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
65	Features of the processes of absorption in the oral cavity.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
66	The structure of skeletal muscles. The motor unit. Fast and slow motor units.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
67	Vision.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
68	Reflex changes in heart activity and vascular tone in dentistry.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
69	The mechanism of excitation conduction in nervous fibers (in myelinated and unmyelinated nervous fibers).	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
70	Nerve fiber types and functions.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
71	General types of higher nervous activity in man.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
72	Functions of blood. Composition of blood. Quantity of in human organism, its relative constancy. Osmotic pressure.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
73	Action potential. Electrogenesis and ionic basis of the action potential.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
74	Conditioned and unconditioned reflexes, their difference.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
75	Digestive and absorptive functions of the small intestine.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
76	Resting membrane potential. Its ionic basis.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
77	Structural and functional features of autonomic and somatic nervous systems.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
78	Functional anatomy of stomach. Digestion in stomach. Functions of stomach. Some important cells in the gastric glands.	ОПК-5.1.1, ОПК-8.1.1, ОПК-8.1.2, ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
79	Biomembranes, their structure and functional features. Ionic channels, their classification and role.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
80	Types of transport through biomembranes. The concept of excitability.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
81	Chemical synapses. Mediator mechanisms of excitation transmission in CNS synapse.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3
82	Mouth and its role in digestion. Mastication.	ОПК-9.1.1, ОПК-13.1.2, ПК-1.1.2, ПК-9.1.3

2.2. Example of the exam card

Federal State Budgetary Educational Institution of Higher Education «Volgograd State Medical University» of the Ministry of Health of the Russian Federation

Department: Normal physiology

Discipline: «Normal physiology – Physiology of the maxillofacial region»

Specialist degree in the specialty: 31.05.03 Dentistry, specialisation (specialist's)

Academic year: 2026-2027

Exam card № 1

1. Biomembranes, their structure and functional features. Ionic channels, their classification and role. Types of transport through biomembranes. The concept of excitability.
2. Chemical synapses. Mediator mechanisms of excitation transmission in CNS synapse.
3. Mouth and its role in digestion. Mastication.

Head of the Department _____ S.V.Klauchek

Considered at the meeting of the department of normal physiology «25» May 2026, protocol № 9

Head of the Department



С.В. Клаучек