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Federal State Budget Educational Institution
of Higher Education
Pacific State Medical University
of the Ministry of Health of the Russian Federation

APPROVED BY
Director of the Institute of
Fundamentals and Information
Technologies in Medicine
_____ / Bagryantsev V.N./
"4th" of April 2025

COLLECTION OF ASSESSMENT TOOLS
Б1.О.08 Biological chemistry - Oral biochemistry
of the basic educational program
of Higher Education

Specialty	**31.05.03 Dentistry** **for international students (in English)** (code, name)
Degree	Specialist's degree
Profile	02 "Healthcare" (in the field of providing health care in patients with dental pathology)
Mode of study	**Full-time**
Period of mastering the BEP	**5 years** (nominal length of study)
Institute	of Fundamentals and Information Technologies in Medicine

Vladivostok, 2025

1. INTRODUCTION

1.1. **Collection of Assessment Tools** is a document that regulates the format, content, and types of assessment tools for continuous assessment, interim examination and final (state final) examination, and graded criteria for each type of assessment tools.

1.2. Assessment tools allows to evaluate the development of universal, general professional, and professional competencies (UCs, GPCs and PCs respectively) outlined in Federal State Educational Standard of Higher Education and defined in the basic educational program of higher education for the specialty 31.05.03 Dentistry for international students (in English), profile 02 "Healthcare" (in the field of providing health care in patients with dental pathology).

(BEP HE for the 31.05.03 Dentistry for international students (in English) specialty, section 3.2.3 General professional competencies of graduates and indicators of achieving them)

2. DOCUMENT BODY

2.1. Types of Assessment, Formats of Assessment Tools

No.	Types of assessment	Assessment Tools Format
1	**Continuous assessment**	**Tests**
		Interview Questions
		Mini case studies
2	**Interim assessment**	**Tests**
		Interview Questions

3. The contents of assessment tools for continuous and interim examination are prepared by the teacher of the course

Tests for continuous assessment

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for international students (in English)
C	GPC-8	Is able to use basic concepts and methods of physics, chemistry, mathematics and natural sciences when working to achieve objectives of professional activities
F	A/01.7	Examination of the patient in order to make a diagnosis
I		**ANSWER TEST QUESTIONS**
		1. Daily protein requirement for an average human is **a) 50g** b) 300g c) 100g d) 20-30g e) 200g 2. The coenzyme of transaminases is a derivative of a) Vitamin C b) Vitamin B_1 c) Vitamin B_{12} d) Vitamin PP **e) Vitamin B_6** 3. The formula of hydroxyapatite (HA) of solid tissues is

		a) $Ca(H_2PO_4)_2$ b) $Ca_3(PO_4)_2$ c) CaF_2 **d) $Ca_{10}(PO_4)_6(OH)_2$** 4. Increased synthesis of lactic acid in oral fluid is associated with such microflora enzyme as a) urease **b) lactate dehydrogenase** c) alanine aminotransferase d) acid phosphatase 5. Decreased bactericidal properties of saliva in patients with iron-deficiency anemia is associated with lower activity of **a) lysozyme** b) ribonuclease c) hyaluronidase d) salivary peroxidase e) LDH

Assessment criteria

"Very good" – over 90% correct answers of questions of every level

"Good" – 75-89% correct answers of questions of every level

"Satisfactory" – 60-74% correct answers of questions of every level

"Unsatisfactory" – less than 60% correct answers of questions of every level

Interview questions

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for international students (in English)
C	GPC-8	Is able to use basic concepts and methods of physics, chemistry, mathematics and natural sciences when working to achieve objectives of professional activities
F	A/01.7	Examination of the patient in order to make a diagnosis
I		**ANSWER THE QUESTIONS** 1. What are the primary, secondary, tertiary, and quaternary structures of a protein? What types of bonds are characteristic of the primary, secondary, and tertiary structures of a protein? 2. Explain the mechanism of pathology development in sickle cell anemia. 3. What significance does the change in protein composition during ontogenesis have for the development of the organism.

Assessment criteria

"Very good" grade is given to a student who is able to answer all questions clearly, exhaustively, and with no outside help.

"Good" is given to a student who is able to answer questions exhaustively with little to no outside help; does not always put emphasis on the most important information, but does not make significant mistakes.

"Satisfactory" is given to a student who has difficulties answering questions with no outside help, uses imprecise wording; makes mistakes in substantial number of their answers.

"Unsatisfactory" is given to a student who is not able to give an answer even with additional guiding questions.

Standardized case studies and checklists for the **Б1.О.08 Biological chemistry - Oral biochemistry** course

Case Study No.1

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.03	Dentistry for international students (in English)
C	GPC-8	Is able to use basic concepts and methods of physics, chemistry, mathematics and natural sciences when working to achieve objectives of professional activities
F	A/01.7	Examination of the patient in order to make a diagnosis
I		**READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS**
		Patient S., 44 years old, after sustaining an injury (leg fracture), was recommended by the attending physician to take vitamin-mineral complexes containing calcium and vitamins D3 and C.
Q	1	Question: Justify these doctor's recommendations from a biochemical perspective

Case Study No.2

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.03	Dentistry for international students (in English)
C	GPC-8	Is able to use basic concepts and methods of physics, chemistry, mathematics and natural sciences when working to achieve objectives of professional activities
F	A/01.7	Examination of the patient in order to make a diagnosis
I		**READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS**
		Blood and urine test results: blood glucose – 11 mmol/l, pH – 7.35; glucose and ketone bodies detected in urine.
Q	1	Question: Assess the patient's condition based on the provided laboratory test results

Case Study No.3

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.03	Dentistry for international students (in English)
C	GPC-8	Is able to use basic concepts and methods of physics, chemistry, mathematics and natural sciences when working to achieve objectives of professional activities
F	A/01.7	Examination of the patient in order to make a diagnosis
I		**READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS**

		For some inflammatory diseases of the oral cavity (stomatitis, cheilosis, glossitis), folic acid (vitamin B9) is prescribed to accelerate the regeneration of the oral mucosa.
Q	1	Question: Explain the mechanism of action of this vitamin preparation
Q	2	Question: How else might folic acid deficiency manifest in the body?

Assessment criteria:

"Very good" grade is given to a student who possesses knowledge of the subject in full scope outlined in the curriculum, has a sufficiently deep insight into the subject; is able to answer all questions clearly, exhaustively, and with no outside help; structures their answers logically, with emphasis on the most important information; is able to analyze, compare, classify, summarize, refine, and structure the course content, giving particular attention to cause-and-effect relationships.

"Good" is given to a student whose knowledge of the subject is almost in full scope outlined in the curriculum (gaps are only present in the knowledge of some especially complex aspects); is able to answer questions exhaustively with little to no outside help; does not always put emphasis on the most important information, but does not make significant mistakes.

"Satisfactory" is given to a student who possesses the bulk of knowledge on the subject; has difficulties answering questions with no outside help, uses imprecise wording; makes mistakes in substantial number of their answers.

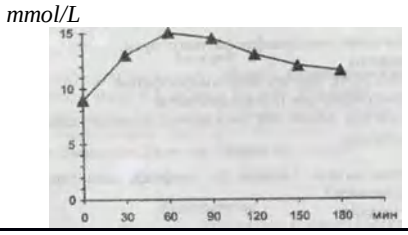
"Unsatisfactory" is given to a student who does not have the mandatory minimum of knowledge on the subject, is not able to give an answer even with additional guiding questions.

Examples of repot topics:

1. Dental plaque and caries development.
2. Influence of unfavorable environmental factors on the composition and properties of saliva.
3. Changes in saliva composition in smokers.
4. Current state of the issue regarding chewing gum use.
5. Changes in saliva composition in gastrointestinal tract pathology.
6. Fluoride metabolism in the body

Tests for interim assessment

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.01	General Medicine for international students (in English)
C	GPC-8	Is able to use basic concepts and methods of physics, chemistry, mathematics and natural sciences when working to achieve objectives of professional activities
F	A/01.7	Examination of the patient in order to make a diagnosis
I		**ANSWER TEST QUESTIONS**
		1. Indicator enzymes are a) enzymes synthesized primarily in the liver normally, released into the blood and performing a specific function b) enzymes synthesized in the liver and excreted in bile **c) enzymes synthesized in cells and entering the blood upon tissue damage** d) enzymes synthesized in any tissue 2. Organ-specific enzymes of the liver include a) LDH

		b) CPK c) ALP **d) ALT, AST** 3. The main blood plasma proteins are synthesized **a) in the liver** b) in the intestinal wall c) in bone tissue d) in the spleen 4. In case of insufficient protein nutrition and associated "hunger" edema a) renal excretory function is impaired **b) albumin formation in the liver is impaired** **c) concentration of total protein in the blood is decreased** d) protein is excreted in urine 5. What conclusion can be drawn from the graph characterizing the glucose tolerance test ("Glucose curve")? a) normal glucose curve **b) impaired glucose tolerance** c) excessive insulin secretion 

4. Assessment criteria for learning outcomes

"Very good" grade is given to a student who possesses knowledge of the subject in full scope outlined in the curriculum, has a sufficiently deep insight into the subject; is able to answer all questions clearly, exhaustively, and with no outside help; structures their answers logically, with emphasis on the most important information; is able to analyze, compare, classify, summarize, refine, and structure the course content, giving particular attention to cause-and-effect relationships.

Test results: over 91% correct answers of questions of every level

"Good" is given to a student whose knowledge of the subject is almost in full scope outlined in the curriculum (gaps are only present in the knowledge of some especially complex aspects); is able to answer questions exhaustively with little to no outside help; does not always put emphasis on the most important information, but does not make significant mistakes.

Test results: 81-90% correct answers of questions of every level

"Satisfactory" is given to a student who possesses the bulk of knowledge on the subject; has difficulties answering questions with no outside help, uses imprecise wording; makes mistakes in substantial number of their answers.

Test results: 71-80% correct answers of questions of every level

"Unsatisfactory" is given to a student who does not have the mandatory minimum of knowledge on the subject, is not able to give an answer even with additional guiding questions.

Test results: less than 71% correct answers of questions of every level