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

APPROVED BY
Head of the Department of
Biology, Botany and Ecology
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COLLECTION OF ASSESSMENT TOOLS
Б1.О.07 Biology
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)
Department	of Biology, Botany and Ecology

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 Learning Outcomes Requirements of the Basic Educational Program of Higher Education)

2. DOCUMENT BODY

2.1. Types of Assessment, Formats of Assessment Tools

No.	Types of assessment	Assessment Tools Format
1	**Continuous assessment**	**Tests**
		Mini-Case Studies
		Working with electron micrographs and microscope slides
		Checklists
2	**Interim assessment**	**Tests**

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

Tests for continuous and interim 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/05.7	Implementation of disease prevention measures for the adult population groups based on age and health status, as well as health and hygiene education of the population and monitoring their effectiveness
I		**ANSWER LEVEL 1 TEST QUESTIONS (ONE CORRECT ANSWER)**
		1. Cleavage in the embryonic period ends with the formation of 1) zygote 2) gastrula 3) neurula +4) blastula **2. Set of chromosomes in a somatic cell of the human body is**

1) haploid
2) tetraploid
3) polyploid
+4) diploid

3. The primary function of ribosomes is
1) digestive
2) providing energy
+3) synthetic
4) excretory

4. The structural and functional unit of the Golgi apparatus is
1) diplosome
+2) dictiosome
3) centrosome
4) centrosphere

5. Out of the following, an occluding junction is
1) nexus
2) anchoring junction
+3) tight junction
4) desmosome

6. During leptotene of prophase I of meiosis
1) chromosomes uncoil (despiralize)
2) chromosome conjugation occurs
3) crossover occurs
+4) on chromosomes, chromomeres are formed

7. During the process of ovogenesis 300 primary oocytes transform into
+1) 300 egg cells
2) 600 egg cells
3) 900 egg cells
4) 1200 egg cells

8. The following patient is monosomic
1) male patient with Klinefelter syndrome
+2) female patient with Shereshevsky-Turner syndrome
3) male patient with Patau syndrome
4) male patient with Down's syndrome

9. A systematized image of a karyotype where chromosomes are numbered according to their size and shape is called
1) karyotype
2) genetic chart
+3) idiogram
4) pedigree / genealogic table

10. Modificational changes are characterized by
+1) large scale
2) heredital character

		3) inadequacy relative to the causative factor 4) persistence **11. Holandric inheritance is characterized by** 1) the trait being transmitted from an affected father through his phenotypically healthy daughters to half of the grandchildren +2) the trait being passed from a father to all male children 3) the repeated risk of an affected child being born is 25% 4) affected women pass the mutant allele to half of their children regardless of their sex **12. Type of cleavage in human embryo** 1) total (complete), equal +2) holoblastic, unequal 3) incomplete, superficial 4) meroblastic, discoidal **13. As a result of complete equal cleavage, the following is formed** 1) discoblastula; +2) coeloblastula; 3) amphiblastula; 4) blastocyst **14. The fold of the hindgut that serves as a container for urea and uric acid is called** +1) allantois 2) chorion 3) blastopore 4) teloblast **15. Biological material used for laboratory diagnostics of trichocephalosis** 1) blood 2) duodenal contents 3) urine +4) feces **16. Ascarid larva migrates in the human body through the following organs** 1) heart-liver-lungs-intestines 2) liver-lungs-intestines +3) intestines-liver-heart-lungs-pharynx-intestines 4) heart-lungs-pharynx-liver-intestines. **17. Genetic code is defined as a system of nucleotides in the molecule of** 1) rRNA 2) tRNA 3) mRNA +4) DNA **18. Organelle of the cell that is responsible for producing**

		energy is called 1) a ribosome 2) a lysosome 3) a plastid 4) mitochondria **19. Individual development of an organism is called** +1) ontogeny 2) embryogenesis 3) organogenesis 4) phylogeny **20. A method that entails compiling and analyzing a pedigree is called** 1) dermatographic 2) cytological 3) biochemical +4) genealogical
		ANSWER LEVEL 2 TEST QUESTIONS (MULTIPLE CORRECT ANSWERS)
		1. Arctic adaptive type is characterized by 1) elongated body 2) low hemoglobin +3) well-developed bone and muscle system +4) high level of plasma protein and blood cholesterol **2. Autosomal recessive type of inheritance is characterized by the following** 1) the trait being passed from an affected father to all children 2) the trait mostly manifests in males +3) the repeated risk of an affected child being born is 25% +4) the trait is spread in the genealogical tree / pedigree "horizontally" **3. Point mutations include** 1) detachment of a section of a chromosome 2) a portion of a chromosome detaches and rotates 180^{o} +3) one or more pairs of nucleotides are inserted in the DNA molecule +4) replacement or detachment of one or more nucleotide pairs from the DNA molecule **4. The following contributes to the difficulty of studying human genetics** 1) low number of linkage groups 2) rapid change of generations +3) low reproduction capability +4) high number of chromosomes **5. Cytoplasmic inheritance is characterized by the following** 1) all children of an affected mother do not have the trait 2) the trait is only found in male children +3) the trait is found in both male and female children with

		equal frequency +4) the trait is inherited maternally **6. Diseases associated with impaired repair processes include** 1) color blindness 2) Down's syndrome +3) Bloom syndrome +4) xeroderma pigmentosum **7. Parasitic invasions of the Far East include** 1) malaria 2) schistosomiasis +3) paragonimosis +4) nanophyetosis **8. Prevention of vernal encephalitis (tick-borne encephalitis) includes** 1) boiling water 2) avoiding raw/undercooked food +3) wearing bright clothes that fully cover the body when hiking in a forest +4) using methods of protection against tick bites **9. Mode of transmission of intestinal trichomoniasis is** 1) airborne (droplets) 2) direct (sexual) contact +3) alimentary (through contaminated food) +4) water-borne (drinking unboiled water) **10. Hereditary diseases for which mass neonatal screening is carried out in Russia** 1) hemophilia 2) diabetes mellitus +3) cystic fibrosis +4) phenylketonuria **11. The following parasites are active in the human intestines** 1) Leishmania 2) Trypanosoma +3) Metagonimus +4) Balantidium **12. Mosquitoes (g. Culex, Aedes) are a vector of the following** 1) malaria 2) toxoplasmosis +3) anthrax +4) Japanese encephalitis **13. Insecta of Arthropoda phylum includes** 1) Ixodes persulcatus 2) Taenia solium

		+3) Phtirus pubis +4) Blatta orientalis **14. Holandric traits include** 1) hemophilia 2) ichthyosis +3) hypertrichosis +4) premature balding **15. The submembrane complex of the cell surface consists of** 1) myofibrils +2) microvilli +3) microfilaments 4) microtubules **16. Microtubules are involved in the formation of** 1) tonofibrils +2) neurofibrils +3) centrioles +4) cilia **17. The membrane complex of the cell surface consists of** 1) carbohydrates 2) nucleic acid +3) lipids +4) proteins **18. The cytoplasm includes** 1) nucleolus +2) inclusions 3) organelles +4) hyaloplasm **19. Biological mesosystems include the following levels** 1) cellular 2) biospheric +3) organ level +4) organism level **20. Variations of active transport include** 1) facilitated diffusion +2) pinocytosis +3) sodium-potassium pump +4) phagocytosis **21. Two-layered embryo forms as a result of** +1) delamination 2) cleavage +3) invasion 4) epiboly **22. Derivatives of ectoderm include** 1) cartilage tissue

		+2) tooth enamel +3) nervous system 4) skeletal muscles **23. Endoderm derivatives include** 1) uterine epithelium 2) vessels +3) gastric epithelium +4) secretory liver cells **24. Holoblastic unequal cleavage is observed in** +1) amphibians +2) mammals 3) birds 4) reptiles
		ANSWER LEVEL 3 TEST QUESTIONS (MATCHING QUESTIONS)
		1. Match parasitic diseases and modes of infection A) scabies B) trypanosomiasis C) giardiasis D) urogenital schistosomiasis 1) vector-borne 2) indirect contact 3) ingestion 4) percutaneous A-2, B-1, C-3, D-4 **2. Match hereditary diseases and chromosomal formulas** A) Down's syndrome B) Turner syndrome C) Klinefelter syndrome D) Edwards syndrome 1) 47,XX(+21) 2) 45,X 3) 47,XXY 4) 47,XY(+18) A-1, B-2, C-3, D-4 **3. Match the abnormality to the mutation type** A) detachment of the end section of a chromosome B) doubling the genome of one kind C) nucleotide loss D) addition of an extra chromosome 1) intrachromosomal aberration 2) gene mutation 3) polyploidy 4) aneuploidy A-1, B-3, C-2, D-4

4. Match the malformation and the organ system
A) Patent ductus arteriosus
B) prosencephaly
C) impaired reduction of the Wolffian (mesonephric) ducts
D) esophagotracheal fistulas

1) urogenital system
2) circulatory system
3) nervous system
4) respiratory system
A-2, B-3, C-1, D-4

5. Match the characteristic and the organoid of the cell which it describes
A) produces lysosomes
B) participates in protein synthesis
C) participates in the construction of the cell membrane
D) divides the cell into compartments

1) rough endoplasmic reticulum
2) the Golgi apparatus
A-2, B-1, C-2, D-1

6. Match the characteristic and the organoid of the cell which it describes
A) digests matter
B) participates in protein synthesis
C) concentrates and dehydrates matter
D) neutralizes hydrogen peroxide

1) rough endoplasmic reticulum
2) the Golgi apparatus
3) lysosome
4) peroxisome
A-3, B-1, C-2, D-4

7. Match the parasite to the morphological characteristic
A) Ascaris
B) Trichuris
C) pinworm (Enterobius)
D) Ancylostoma

1) the length of the female is 3-5 cm, the anterior end of the body is filamentous (thread-like), the posterior is thickened
2) the length of the female is about 1 cm, the vesicle is at the anterior end of the body
3) the length of the female is 20-40 cm, there are cuticular lips
4) the length of the female is 1 cm, there is a bulbus and a protorhabdion with teeth
A-3, B-1, C-2, D-4

8. Match organelles and their functions

A) ribosome
B) lysosome
C) centrosome
D) mitochondria

1) energy production
2) digestive function
3) synthetic function
4) participation in cell proliferation

A-3, B-2, C-4, D-1

9. Match organelles and their structure

A) endoplasmic reticulum
B) the Golgi apparatus
C) mitochondria
D) lysosome

1) its structural and functional unit is a dictyosome
2) a vesicle containing enzymes
3) outer membrane is smooth, inner membrane has cristae
4) a system of membranes forming a network of tubules and cisternae

A-4, B-1, C-3, B-2

10. Match environmental factors to their attributes

A) precipitation
B) parasitism
C) competition
D) sea currents

1) biotic
2) abiotic

A-2, B-1, C-1, B-2

11. Match adaptive types to their attributes

A) reduced weight and elongated body shape
B) asthenoid type with flattened chest
C) widened chest and elongated long tubular bones
D) strong development of the musculoskeletal component of the body, reduction in the length of the limbs

1. arctic type
2. tropical type
3. arid type
4. mountain type

A-2, B-3, C-4, B-1

12. Match environmental regulations to their contents

A) body size increases with decreasing body temperature
B) enlargement of the protruding parts of the body with an increase in environmental temperature
C) in warm and humid climates, the coloration (coat color) is brighter
D) nose width depends on the temperature

1. Thompson-Buxton rule
2. Gloger's rule
3. Allen's rule
4. Bergmann's rule

A-4, B-3, C-2, D-1

13. Match the hereditary pathology and the type of mutation

1) Patau syndrome
1) Turner syndrome
3) Prader–Willi syndrome
4) phenylketonuria
5) Klinefelter syndrome
6) galactosemia

A) autosomal trisomy
B) Point mutation, impaired enzyme activity
C) Deletion of a chromosome part
D) sex chromosome trisomy
E) sex chromosomes monosomy

1 - A, 2 - E, 3 - C, 4 - B, 5 - D, 6 – B

14. Match alternate traits to the type of allelic gene interaction

1. A – brown eye gene
a – blue eye gene
P: ♀ AA x ♂ aa
G: A a
F: Aa – 100% brown eyes

2. A – brachydactyly gene
a – normal gene

1. P: ♀ Aa x ♂ Aa
G: A, a A, a
F: AA, Aa, Aa, aa
death 50% 25%

3. D – Rh+ gene
d – Rh- gene
P: ♀Dd x ♂ Dd
G: D, d D, d
F: DD, Dd, Dd, dd
75% - Rh+ 25% - Rh-

4. $I^A=I^B>I0$
P: ♀ $I^A I^A$ x ♂ $I^B I^B$
G: I^A I^B
F: $I^A I^B$ –100% IV blood group

5. A – large race gene

a – small race gene

P: ♀Aa x ♂Aa

G: A, a A, a

F: AA, Aa, Aa, aa

17 - average 39 - large 21 - small

6. $I^N=I^M$

P: ♀I^NI^N x ♂I^MI^M

G: I^N I^M

F: I^NI^M - 100% MN blood group

7. C – normal pigmentation gene

c – albinism gene

P: ♀Cc x ♂Cc

G: C, c C, c

F: CC, Cc, CC, cc

75% - normal pigmentation 25% - albinism

A) Co-dominance

B) Complete dominance

C) Incomplete dominance

D) Overdominance

1 - C; 2 - D; 3 - C; 4 - A; 5 – D; 6 – A; 7 – B

15. Match the disorder to the type of chromosomal aberration:

1. Detachment of a section of a chromosome
2. Incorporation of an extra, duplicating region of the chromosome
3. Combining two non-homologous chromosomes into one
4. A portion of a chromosome detaches and rotates 180°
5. Two damaged non-homologous chromosomes exchange detached sections
6. Detached segment attaches itself to the original chromosome, but at a new location
7. Transfer of a segment of one chromosome to another

A) Duplication

B) Inversion

C) Translocation

D) Transposition

E) Deletion

1 - E; 2 - A; 3 - C; 4 - B; 5 - C; 6 – D; 7 - C

16. Match the parasite species to the morphological characteristics:

1. pork tapeworm
2. toxoplasma
3. alveococcus
4. human roundworm
5. balantidium

		6. lamblia 7. whipworm A) the body is spindle-shaped, internal organs are located in the true coelom of the body, the excretory system is represented by one or two overgrown cells B) the body is dorsoventrally flattened, there is no coelom, the excretory system is protonephridial, the digestive system is divided into the anterior and middle sections C) the body is egg-shaped and covered with cilia, there is a cytostome at the anterior end, and an anal pore at the posterior end D) body is orange-wedge-shaped, the anterior end is narrow and has a conoid from which rhoptries sprout inside the body E) the body is pear-shaped, has bilateral symmetry and a double set of organelles 1 - B: 2 - D: 3 - C: 4 - A: 5 - C: 6 - E: 7 - A **17. Match the hereditary pathology and the type of inheritance:** 1) Leber hereditary optic neuropathy 2) albinism 3) vitamin resistant rickets 4) ichthyosis 5) Marfan syndrome 6) phenylketonuria 7) hemophilia A) autosomal dominant B) autosomal recessive C) dominant X-linked D) recessive X-linked E) mitochondrial 1 - E; 2 - B; 3 - C; 4 - D; 5 - A; 6 - B; 7 - D **18. Match the organelle and its structure:** 1. peroxisome 2) chloroplast 3) ribosome 4) microfilaments 5) mitochondria 6) microtubules 7) lysosome A) common single-membrane organelle that contains enzymes B) common non-membranous organelle which contains proteins and rRNA C) common non-membranous organelle formed by contractile proteins D) common non-membranous organelle formed by non-contractory proteins E) common double-membrane organelle containing a DNA

		molecule 1 - A; 2 - E; 3 - B; 4 - C; 5 - E; 6 - D; 7 – A **19.** Match parasitic invasion and the method of infection: 1) demodicosis 2) teniosis 3) leishmaniasis 4) trypanosomiasis 5) schistosomiasis 6) taeniarhynchus infection 7) diphyllobotriosis A) active penetration of larvae through intact skin in water B) eating not thoroughly cooked meat C) through an insect bite D) eating uncooked fish E) using towels and bedding of an infected person 1 - E; 2 - B; 3 - C; 4 - C; 5 - A; 6 - B; 7 - D

Assessment criteria
"Very good" – over 91% correct answers of questions of every level
"Good" – 81-90% correct answers of questions of every level
"Satisfactory" – 71-80% correct answers of questions of every level
"Unsatisfactory" – less than 71% correct answers of questions of every level

Standardized case studies and checklists for the **Б1.О.07 Biology** 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/05.7	Implementation of disease prevention measures for the adult population groups based on age and health status, as well as health and hygiene education of the population and monitoring their effectiveness
I		**READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS**
		A 20 year old woman presents at a genetic consultation with infertility. Appearance of the patient: the patient has a short stature and visually resembles a 9-10-year-old. The cytogenic assay allowed to identify the karyotype of the patient. 
Q	1	Question: Describe the karyotype according to the following

		scheme: 1. Number of chromosomes; 2. Number of autosomes; 3. Number of sex chromosomes; 4. Number of sex chromatin particles/granules; 5. Sex
Q	2	Question: Determine the mutation from the provided idiogram and what hereditary pathology it corresponds to. Name the type of mutation.
Q	3	Question: Give a brief description of the syndrome.
Q	4	Question: What are the possible causes of this syndrome?

Case Study No.1 Checklist

	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/05.7	Implementation of disease prevention measures for the adult population groups based on age and health status, as well as health and hygiene education of the population and monitoring their effectiveness
I		**READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS**
		A 20 year old woman presents at a genetic consultation with infertility. Appearance of the patient: the patient has a short stature and visually resembles a 9-10-year-old. The cytogenic assay allowed to identify the karyotype of the patient. 
Q	1	Question: Question: Describe the karyotype according to the following scheme: 1. Number of chromosomes; 2. Number of autosomes; 3. Number of sex chromosomes; 4. Number of sex chromatin particles/granules; 5. Sex
A		Correct answer 1. Number of chromosomes - 45 2. Number of autosomes - 44 3. Number of sex chromosomes - 1 4. Number of sex chromatin particles/granules - 0 5. Sex - Female
R2	Very good	Full answer given (point 1, 2, 3, 4, 5 are given)
R1	Good/Satisfactory	Incomplete answer given (“Good” grade – 4 out of 5 points are given “Satisfactory” grade – 3 out of 5 points are given)

R0	Fail	Incorrect answer given (no answer given)
Q	2	Question: Determine the mutation from the provided idiogram and what hereditary pathology it corresponds to. Name the type of mutation.
A		Correct answer 1. X chromosome monosomy 2. Turner syndrome 3. genome mutation, aneuploidy
R2	Very good	Full answer given (point 1, 2, 3 are given)
R1	Good/Satisfactory	Incomplete answer given ("Good" grade – points 1 and 2 are given "Satisfactory" grade – 1out of possible 3 points are given)
R0	Fail	Incorrect answer given (no answer given)
Q	3	Question: Give a brief description of the syndrome.
A		Correct answer 1. sex infantilism 2. additional skin folds on the neck 3. deformed elbow joints 4. ovaries, fallopian tubes, and uterus immaturity 5. various congenital malformations of the heart and kidneys
R2	Very good	Full answer given (point 1, 2, 3, 4, 5 are given)
R1	Good/Satisfactory	Incomplete answer given ("Good" grade – 3 or 4 out of 5 points are given "Satisfactory" grade – 2 out of 5 points are given)
R0	Fail	Incorrect answer given (no answer given)
Q	4	Question: What are the possible causes of this syndrome?
A		Correct answer 1. deletion of a short or long arm of the X chromosome 2. isochromosomes, ring chromosomes 3. various types of mosaicism 4. frequency of occurrence 1:2000 – 1:5000
R2	Very good	Full answer given (point 1, 2, 3, 4, 5, 6 are given)
R1	Good/Satisfactory	Incomplete answer given ("Good" grade – 4 or 5 out of 6 points are given "Satisfactory" grade – 2 or 3 out of 6 points are given)
R0	Fail	Incorrect answer given (no answer given)

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/05.7	Implementation of disease prevention measures for the adult population groups based on age and health status, as well as health and hygiene education of the population and monitoring their effectiveness

I		**READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS**
		Neuronal ceroid lipofuscinoses can manifest themselves at different ages (childhood, adolescence, and adulthood) and are considered true storage diseases associated with impaired functions of membrane organoids containing a large number of hydrolytic enzymes. Symptoms include signs of damage to the central nervous system with brain atrophy and eventually seizures. The diagnosis is made during electron microscopy: pathological inclusions are found in the membrane organoids of cells of many tissues.
Q	1	Question: Which organelle's function is affected? What are its systematics and functions?
Q	2	Question: What is the type of this organelle and where is it formed?
Q	3	Question: What is the structure of each type of this organelle?

Case Study No.2 Checklist

	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/05.7	Implementation of disease prevention measures for the adult population groups based on age and health status, as well as health and hygiene education of the population and monitoring their effectiveness
I		**READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS**
		Neuronal ceroid lipofuscinoses can manifest themselves at different ages (childhood, adolescence, and adulthood) and are considered true storage diseases associated with impaired functions of membrane organoids containing a large number of hydrolytic enzymes. Symptoms include signs of damage to the central nervous system with brain atrophy and eventually seizures. The diagnosis is made during electron microscopy: pathological inclusions are found in the membrane organoids of cells of many tissues.
Q	1	Which organelle's function is affected? What are its systematics and functions?
A		Correct answer: 1. Lysosome 2. Common type organelle 3. Single-membrane organelle 4. Digestive function
R2	Very good	Full answer given (point 1, 2, 3, 4 are given)
R1	Good/Satisfactory	Incomplete answer given (“Good” grade – points 1 and 2 / 3 and 4 are given “Satisfactory” grade – points 1 and either 2, 3, or 4are given)

R0	Fail	Incorrect answer given (no answer given)
Q	2	Question: What is the type of this organelle and where is it formed?
A		Correct answer: 1.Primary 2. Secondary: autophagosomes and heterolysosomes 3. Residual corpuscle or telolysosomes 4. Primary lysosomes are formed in the Golgi complex
R2	Very good	Full answer given (point 1, 2, 3 are given)
R1	Good/Satisfactory	Incomplete answer given ("Good" grade – points 1, 2, and 4 / 1, 2, and 3 are given "Satisfactory" grade – 1out of possible 4 points are given)
R0	Fail	Incorrect answer given (no answer given)
Q	3	Question: What is the structure of each type of this organelle?
A		Correct answer: 1. Primary (inactive) – vesicles containing enzymes and no substrate 2. Secondary (active) – the result of fusion of primary lysosomes and substrate (pinocytosis or phagocytosis vesicles) 3. Residual bodies contain undigested substrate residues 4. Decrease in the activity of enzymes involved in the digestion of substances up to the complete absence
R2	Very good	Full answer given (point 1, 2, 3, 4 are given)
R1	Good/Satisfactory	Incomplete answer given ("Good" grade – points 1, 2, and 4 / 1, 3, and 4 are given "Satisfactory" grade – 1out of possible 4 points are given)
R0	Fail	Incorrect answer given (no answer given)

Practical Skills Assessment Checklist

Practical Skill Name "Identifying structural components of the cell on an electron micrograph"

C	GPC-5	Is able to assess morphofunctional status, physiological states, and pathological processes in the human body when working to achieve objectives of professional activity		
F	A/05.7	Implementation of disease prevention measures for the adult population groups based on age and health status, as well as health and hygiene education of the population and monitoring their effectiveness		
WA	Work activities as part of the function Formation of healthy lifestyle programs, including programs aimed at reducing alcohol and tobacco consumption, prevent and combat non-medical use of narcotic drugs and psychotropic substances			
	Action		Performed	Not Performed
1.	Identify components of the cell		1 point	-1 point
2.	Determine the period of the life cycle of the cell		1 point	-1 point
3.	Identify organelles		1 point	-1 point
4.	Give morphological characteristics of organelles: indicate the features of their structure		1 point	-1 point
5.	Describe the functions of all structures		1 point	-1 point
	Total		5 points	

Practical Skills Assessment Checklist

Practical Skill Name "Microscopy skills and description of a microscope slide"

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/05.7	Implementation of disease prevention measures for the adult population groups based on age and health status, as well as health and hygiene education of the population and monitoring their effectiveness		
WA	Work activities as part of the function Formation of healthy lifestyle programs, including programs aimed at reducing alcohol and tobacco consumption, prevent and combat non-medical use of narcotic drugs and psychotropic substances			
	Action		Performed	Not Performed
1.	Turn on the microscope, set up the optical system, find the object of the microscope slide		1 point	-1 point
2.	Give morphological characteristics of organelles: indicate the features of their structure		1 point	-1 point
3.	Identify the object of the microscope slide		1 point	-1 point
4.	Describe its functional significance		2 points	-2 points
	Total		5 points	

Assessment criteria:

"Pass" –71% or more of actions performed correctly

"Fail" – 70% and less

4. Assessment criteria for learning outcomes

For graded test:

"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