**FEDERAL STATE BUDGET EDUCATIONAL
HIGHER EDUCATION INSTITUTION
"ROSTOV STATE MEDICAL UNIVERSITY"
MINISTRY OF HEALTH OF THE RUSSIAN FEDERATION**

FACULTY OF TREATMENT AND PREVENTION

Appraisal Fund

in the discipline "Hygiene"

Specialty 05/31/01 General Medicine

2023

1. **Form of intermediate certification:** 4th semester - test, 5th semester - exam
2. **Type of intermediate certification.** Credit inIn the 4th semester it is assessed on the basis of a point-rating system according to the Checklist, the exam in the 5th semester is an interview.
3. **List of competencies formed by the discipline or in the formation of which the discipline participates**

Code competencies	Content of competencies (results of mastering OOP)	Contents of elements competencies in the implementation of which the discipline participates
PC 1	ability and readiness to implement a set of measures aimed at preserving and strengthening health and including the formation of a healthy lifestyle, prevention of the occurrence and (or) spread of diseases, their early diagnosis, identification of the causes and conditions of their occurrence and development, as well as environmental factors aimed at eliminating the harmful effects on human health	ability and readiness to implement a set of measures aimed at preserving and strengthening health and including the formation of a healthy lifestyle, prevention the occurrence of diseases... aimed at eliminating the harmful effects of environmental factors on human health.
PK-3	ability and readiness to carry out anti-epidemic measures, organize the protection of the population in foci of especially dangerous infections, if radiation situation, natural disasters and other emergency situations	ability and willingness to participate in anti-epidemic events... in case of deterioration of the radiation situation, natural disasters and other emergency situations

***4.*Stages of developing competencies in the process of masteringeducational programs**

Competence	Disciplines	Semester
PC-1	Epidemiology	10
	Propaedeutics of internal diseases	5.6
	Occupational diseases	8
	general surgery	5.6
	Dentistry	8
PC - 3	Epidemiology	10
	BJD	3
	Emergency Medicine	7
	Infectious diseases	10.11

5. Stages of developing competencies inprocess of mastering the discipline

Sections of the discipline	Codes of formed competencies	
	PC-1	PC - 3

Semester 4		
General hygiene issues	+	+
Human environment factors	+	+
Semester 5		
Hygiene of medical institutions	+	+
Basics of Preventive Medicine	+	+

6. Forms of assessment tools in accordance with the competencies being developed

Code competencies	Forms of assessment tools	
	Current certification	Interim certification
PC-1	Oral questioning, testing, situational and calculation tasks	By current control V in accordance with the checklist for testing; during the exam: interview

7. Current control

Questions for oral questioning by topic

Hygiene as a science. Public health and the environment. Hygiene, objects, objectives and purpose of the study.

1. Sanitation, its purpose and objectives.
2. The nature of public health at various stages of social development.
3. Principles of hygienic regulation of environmental factors.
4. Factor as a hygienic concept, classification of factors.
5. Hygienic regulations for environmental protection.
6. Causes of environmental pollution.
7. Types of environmental pollution.
8. Medical prevention and its types.
9. Primary prevention of occupational diseases.
10. Secondary prevention of occupational diseases.
11. The concept of “Health” in the history of medicine and the definition of the World Health Organization.
12. A system of measures aimed at preserving and strengthening the health of the population.
13. Medical examination of the population as a tool for primary disease prevention.

Factors of the human environment and their influence on the human body (natural, anthropogenic and physical factors)

1. Weather and climate, influence on the human body, prevention of meteorological diseases.
2. Meteosensitivity, factors influencing the formation of meteotropic reactions.
3. Acclimatization. Phases.
4. Physiological mechanisms of acclimatization to various types of climate. Social mechanisms of acclimatization
5. Physical environmental factors, their classification.
6. the concept of microclimate and the factors that shape it.
7. Temperature, humidity: impact on the human body, hygienic regulation, sanitary assessment.

8. Humidity: impact on the human body, hygienic regulation, sanitary assessment.

9. Atmospheric pressure - influence on the human body, hygienic regulation, sanitary assessment.
10. Air mobility: impact on the human body, hygienic regulation, sanitary assessment.

11. The influence of air mobility on the living conditions of the population.
12. Use of the “wind rose” in preventive sanitary supervision of the construction of settlements, industrial enterprises, and recreational areas.
13. Hygienic assessment of the human body’s response to temperature exposure indoor air.
14. Hygienic characteristics of high air humidity as a factor in the production environment.

Factors of the human environment and their influence on the human body (natural, anthropogenic and chemical factors)
1. Sources and causes of air pollution.
2. The influence of atmospheric air pollution on the living conditions of the population.
3. Basic measures to protect atmospheric air from pollution by industrial enterprises.

4. Sources of air pollution in industrial premises. Purpose and types of ventilation.

5. Hygienic characteristic production dust, prevention occupational diseases of dust etiology.
6. Natural ventilation, organized and unorganized air exchange, aeration. Factors determining ventilation intensity.
7. Artificial ventilation. Ventilation systems. Features of the organization of ventilation in rooms with the release of excess heat, water vapor, dust, toxic vapors and gases into the air.
8. Hygienic characteristics of ventilation systems of industrial premises.
9. The hygienic importance of artificial lighting as an environmental factor in modern conditions.
10. Basic light quantities and units of measurement
11. The influence of artificial lighting on the functional state of the central nervous system and ability to work.
12. The influence of artificial lighting on vision functions.
13. Visual adaptation. Light, dark and local adaptation.
14. Types of natural lighting and factors that determine it.
15. Comparative hygienic assessment of various sources of artificial lighting (advantages and disadvantages of incandescent lamps and fluorescent lamps).

Factors of the human environment and their influence on the human body (natural, anthropogenic, biological and social factors
1. Sources and causes of contamination of drinking water supplies.
2. Hygienic characteristics of water supply sources.
3. Hygienic characteristics of methods of water supply to populated areas.
4. Hygienic requirements for water quality of centralized drinking water supply systems, ensuring epidemiological safety.
5. Signs and prevention of water epidemics.
6. The chemical composition of drinking water as an etiological factor and risk factor for non-infectious diseases.

7. Ways to improve water quality.
8. Methods of water disinfection.
9. Prevention of diseases associated with the microelement and salt composition of water.
10. The essence of hygienic regulation of harmful chemicals in water.
11. Measures to prevent the negative impact of harmful chemicals entering water bodies on the human body.
12. Methods for improving water quality.

Principles of hygienic regulation. Hygienic regulation of environmental factors

The concept of "healthy lifestyle". Fundamental principles, priority areas, factors and components of a healthy lifestyle.
1. Criteria for assessing the physical state of individual health: somatometric, somatoscopic and physiometric indicators.
2. Food hygiene for the elderly.
3. Food hygiene for children and adolescents.
4. Principles of rational nutrition of the population.
5. Plant fibers in human nutrition.
6. The concept of the classical theory of balanced nutrition.
7. The concept of the theory of adequate nutrition.
8. Classification of nutrients and its significance.
9. The role of proteins, fats, carbohydrates, vitamins and minerals in human nutrition, sources and needs.
10. Quality requirements and sanitary examination of products of animal and plant origin.
11. Biological, nutritional and energy value of food products.
12. Food poisoning and their classification
13. Food poisoning of microbial etiology and prevention.
14. Food poisoning of non-microbial etiology and prevention.
15. Principles of hygienic regulation of population nutrition.

Test control

1.For which disease are the characteristics of the salt composition of water a risk factor?
1) dysentery
2) diabetes
3) urolithiasis+
4) hypertension+
5) hepatitis A

2. What infection can waterfowl eggs bring?
1) staphylococcal intoxication
2) botulism
3) salmonellosis+
4) typhoid fever
5) aflatoxicosis

3.What should be the level of total mineralization of water in order to be called fresh?
1) 300 mg/dm^3+
2) 500 mg/dm^3+
3) 1000 mg/dm^3+

4) 1500 mg/dm3
5) 2000 mg/dm3

4.What is fish oil a source of?
1) ascorbic acid
2) carotene
3) calciferol
4) riboflavin+
5) thiamine

5.What measures are taken to prevent myopia in schoolchildren?
1) rational general artificial lighting+
2) control over the correct seating of schoolchildren+
3) correspondence of educational furniture to height group+
4) local lighting on desks
5) rational classroom layout+

6.What are the main ways to prevent the adverse effects of chemicals on the human body?
1) prohibition of the production and use of harmful substances+
2) hygienic standardization of permissible content of chemicals in environmental objects+
3) establishment of environmental standards
4) prohibition of exposure to the population or workers, prohibition of emissions and discharges into the environment+
5) replacing hazardous chemicals with less dangerous ones+

7.What types of working conditions are divided into?
1) optimal+
2) acceptable+
3) unfavorable
4) harmful+
5) dangerous+

8.What are the responsibilities of medical doctors?
1) provision of qualified medical care to workers and employees+
2) preventive monitoring of the health status of workers+
3) supervision of the implementation of preventive measures and compliance with safety regulations together with the labor protection department+
4) control over the content of toxic substances in the air of the working area
5) sanitary and educational work+

9. What does hygiene mean as a science? (indicate all correct answers)
1) Health science that studies the influence of various environmental factors on the human body
2) Medical science of preventive direction+
3) Science, the purpose of which is to preserve the human environment, thereby preventing harmful effects on the body
4) Hygiene studies the influence of all environmental factors on the health of a healthy person+
5) Develops activities aimed at enhancing the positive impact of the factors being studied and reducing or eliminating their harmful effects+

10. How do the waters of surface reservoirs differ from interstratal waters?
1) greater mineralization
2) content of ammonium salts+
3) higher bacterial contamination**+**
4) more stable chemical composition
5) greater tendency to “bloom”

11.What does a balanced diet mean?
1) sufficient energy value of the diet as a result of adequate intake of proteins, fats and carbohydrates
2) compliance of the enzyme set with the chemical structure of the food
3) optimal ratio of nutritional and biologically active substances
4) optimal diet

Situational and calculation tasks

Task No. 1

Erythema dose for patient 4 min. The PRK-7 lamp is installed at a distance of 3 m from it. How long must a patient stay in the photaria to receive a prophylactic dose?

Standard for solving problem No. 1

In this problem, the specified distance coincides with the standard one = 3 meters; The time to receive one biodose for PRK-7 lamps is found in the table

Time to receive one biodose from different radiation sources

Sources		Time to receive one biodose (min) per standard distance (m) from the lamp		
Name	Power, W	1	2	3
PRK-4 lamp	220	6	21.6	45
PRK-2 lamp	375	3.5	13.6	26.8
PRK-7 lamp	1000	0.5	1.8	3.7

Time is 3.7 minutes. X= (3/3)2
· 3 .7**· 1** /8=0.9 minutes.
Answer:Prophylactic dose =0.9 minutes.

Task No. 2

Calculate the light coefficient if the glazed area of the window in the room is 2.5 m_2, floor area - 25 m_2. ***Standard for solving problem No. 2***

Luminous coefficient (LC) refers to calculation methods for assessing illumination. He represents the ratio of the glazed surface of windows, taken as a unit, to the floor area of the room. To determine it, the glazed area of windows (excluding the area of frames and window sashes) is divided by the floor area.

$SK = \frac{S_1,}{S_2}$

where S_1- glazed window area; S_2- floor area.

$SK = \frac{2.5}{25} = \frac{1}{10}$ =1-10

Answer:*SK=1:10*

Task No. 3

The volumetric rate of air sampling is 25 l/min, the duration (time) of sampling (aspiration) is 20 minutes, the air temperature is 0°C, the atmospheric pressure is 760 mm Hg. Art. The weight of the filter before sampling was (m_1) 0.1244 g, after selection (m_2)

- 0.1245 g. Determine the concentration of dust in the air.

Standard for solving problem No. 3

1. Calculate the volume of the air sample taken for testing

V_t= 25 l/min. × 20 min. = 500 l or 0.5 m_3.

2. We bring the air to normal conditions, knowing the air temperature and atmospheric temperature, we calculate V_0according to the formula:

$$V_0 = \frac{V_t \times 273 \times B}{(273+t) \times 760},$$

where:V_t– volume of air at actual air temperature and atmospheric pressure; t – air temperature during air sampling;

B – atmospheric pressure during air sampling; 760 is normal atmospheric pressure.

Continuing the example, let's calculate V_0. To speed up the calculation, we will use the coefficients given in the table:

Temperature, °C	273 / (273+t)	Atmosphere pressure, mmHg.	IN / 760
- 4	1.015	741	0.975
- 3	1.011	742	0.976
- 2	1.007	743	0.978
- 1	1.004	744	0.979
0	**1,000**	745	0.980
1	0.996	746	0.982
2	0.993	747	0.983
3	0.989	748	0.984
4	0.983	749	0.986
5	0.982	750	0.987
6	0.979	751	0.988
7	0.975	752	0.989
8	0.972	753	0.991
9	0.968	754	0.992
10	0.965	755	0.993
eleven	0.961	756	0.995
12	0.958	754	0.996
13	0.955	758	0.997
14	0.951	759	0.999
15	0.948	**760**	**1,000**

V_0= 0.5 x 1 x 1 =0.5 m_3.

3.Next, by dividing the difference in the mass of the filters by the volume of air reduced to under normal conditions, the dust concentration is calculated in mg per 1 m^3:

$$C = \frac{m_2 - m_1}{V_0}$$

where: C is the desired concentration; m_1 – weight of the filter before sampling; m_2 – weight of the filter after sampling;

V_0 – volume of air sample reduced to normal conditions.

Considering that: m_1= 0.1244 g; m_2= 0.1245 g; V_0= 0.5 m^3.

$$C = \frac{0.1245 - 0.1244}{0.5} = 0.2 \text{ mg/m}^3.$$

Answer: The concentration of dust in the air is0.2 mg/m^3.

Task No. 4

Calculate the actual air exchange rate in the room if the area of the open window is 2 m^2, the speed of air movement in the window opening is 0.7 m/s, during each hour the window opens for 15 minutes (15 min./hour), the area of the room is 75 m^2, the height of the room is 3 m.

Calculation can be presented in the form of one formula, but for understanding it is better to do it sequentially.

We define *volumetric air velocity* in the opening of an open window.

V = 0.7 m/s × 2 m^2= 1.4 m^3/With.

We calculate which *air volume* enters this room *within one hour* . Since the window opens for 15 minutes every hour, during this time someone will enter the room.

1.4 m^3/s × 60 min. × 15 min. = 1260 m^3/hour.

This is the volume of ventilation.

\Calculate the volume of the room.

V = 75 m^2× 3 m = 225 m^3.

To calculate the air exchange rate, all that remains is to divide the ventilation volume by the volume of the room. We determine the air exchange rate (Cr.v.o).

$$\text{Kr.v.o.} = \frac{1260 \text{ м}^3/\text{час}}{225 \text{ м}^3} = 5{,}6 \text{ обмена воздуха за 1 час.}$$

Answer: Kr.v.o =5.6 times in one hour

Problem #5

Calculate the relative humidity if the absolute air humidity is 10 mmHg and the maximum humidity is 20 mmHg.

Relative humidity is calculated using the formula:

$$R = \frac{A \cdot 100\%}{F} \quad (2)$$

Where:

R - relative humidity;

A - absolute humidity; F -
maximum humidity Thus

R= 10x100/20 = 50%

Answer: relative air humidity =50%

6.**Interim certification -**The test in the 5th semester is awarded on the basis of a point-rating system according to the Checklist.
Interim certificationV6th semester – exam (interview). **Interview Questions:**

1. Hygiene, objects, objectives and purpose of the study.
2. Sanitation, its purpose and objectives.
3. The nature of public health at various stages of social development.
4. Principles of hygienic regulation of environmental factors.
5. Factor as a hygienic concept, classification of factors.
6. Hygienic regulations for environmental protection.
7. Causes of environmental pollution.
8. Types of environmental pollution.
9. Medical prevention and its types.
10. Primary prevention of occupational diseases.
11. Secondary prevention of occupational diseases.
12. The concept of “Health” in the history of medicine and the definition of the World Health Organization.
13. A system of measures aimed at preserving and strengthening the health of the population.
14. Medical examination of the population as a tool for primary disease prevention.
15. Weather and climate, influence on the human body, prevention of meteorological diseases.
16. Meteosensitivity, factors influencing the formation of meteotropic reactions.
17. Acclimatization. Phases.
18. Physiological mechanisms of acclimatization to various types of climate. Social mechanisms of acclimatization
19. Physical environmental factors, their classification.
20. The concept of microclimate and the factors that form it.
21. Temperature, humidity: influence on the human body, hygienic regulation, sanitary assessment.
22. Humidity: influence on the human body, hygienic regulation, sanitary assessment.
23. Atmospheric pressure - influence on the human body, hygienic regulation, sanitary assessment.
24. Air mobility: impact on the human body, hygienic regulation, sanitary assessment.
25. The influence of air mobility on the living conditions of the population.
26. Use of the “wind rose” in preventive sanitary supervision of the construction of settlements, industrial enterprises, and recreational areas.
27. Hygienic assessment of the human body’s response to temperature exposure indoor air.
28. Hygienic characteristics of high air humidity as a factor in the production environment.

29. Sources and causes of air pollution.
30. The influence of atmospheric air pollution on the living conditions of the population.
31. Basic measures to protect atmospheric air from pollution by industrial enterprises.

32. Sources of air pollution in industrial premises. Purpose and types of ventilation.

33. Natural ventilation, organized and unorganized air exchange, aeration. Factors determining ventilation intensity.
34. Artificial ventilation. Ventilation systems. Features of the organization of ventilation in rooms with the release of excess heat, water vapor, dust, toxic vapors and gases into the air.
35. Hygienic characteristics of ventilation systems of industrial premises.

36. The hygienic importance of artificial lighting as an environmental factor in modern conditions.
37. Basic light quantities and units of measurement
38. The influence of artificial lighting on the functional state of the central nervous system and ability to work.
39. The influence of artificial lighting on vision functions.
40. Visual adaptation. Light, dark and local adaptation.
41. Types of natural lighting and factors that determine it.
42. Comparative hygienic assessment of various sources of artificial lighting (advantages and disadvantages of incandescent lamps and fluorescent lamps).
43. Sources and causes of contamination of drinking water supplies.
44. Hygienic characteristics of water supply sources.
45. Hygienic characteristics of methods of water supply to populated areas.
46. Hygienic requirements for water quality in centralized drinking water supply systems that ensure epidemiological safety.
47. Signs and prevention of water epidemics.
48. The chemical composition of drinking water as an etiological factor and risk factor for non-infectious diseases.
49. Ways to improve water quality.
50. Methods of water disinfection.
51. Prevention of diseases associated with the microelement and salt composition of water.
52. The essence of hygienic regulation of harmful chemicals in water.
53. Measures to prevent the negative impact of harmful chemicals entering water bodies on the human body.
54. Methods for improving water quality.
55. Organization and conduct of production control.
56. Electromagnetic radiation, its classification and sources in the environment.
57. Infrared, visible (natural and artificial): biological action, hygienic regulation, sanitary assessment.
58. Ultraviolet radiation: biological effect, hygienic regulation, sanitary assessment.

59. Noise, vibration: biological effect, hygienic regulation, sanitary assessment.

60. Ultrasound, infrasound: biological action, hygienic regulation, sanitary assessment.

61. Occupational hygiene of workers in pharmacies and pharmaceutical enterprises, objects, tasks and purpose of the study.
62. The concept of occupational hazards.

63. The concept of occupational diseases and their prevention.
64. Fatigue and tiredness, prevention of fatigue, hygienic measures aimed at increasing human performance.
65. The severity and intensity of labor, criteria for their evaluation.
66. The concept of “healthy lifestyle”. Fundamental principles, priority areas, factors and components of a healthy lifestyle.
67. Criteria for assessing the physical state of individual health: somatometric, somatoscopic and physiometric indicators.
68. Food hygiene for the elderly.
69. Food hygiene for children and adolescents.
70. Principles of rational nutrition of the population.
71. Plant fibers in human nutrition.
72. The concept of the classical theory of balanced nutrition.
73. The concept of the theory of adequate nutrition.
74. Classification of nutrients and its significance.
75. The role of proteins, fats, carbohydrates, vitamins and minerals in human nutrition, sources and needs.
76. Quality requirements and sanitary examination of products of animal and plant origin.
77. Biological, nutritional and energy value of food products.
78. Food poisoning and their classification
79. Food poisoning of microbial etiology and prevention.
80. Food poisoning of non-microbial etiology and prevention.
81. Principles of hygienic regulation of food for the population.

7. Description of indicators and criteria for assessing competencies at the stages of their formation, description of assessment scales

	Levels of competency development		
	Threshold	***Sufficient***	***High***
Criteria	Competence formed. Demonstrated threshold, satisfactory sustainable level practical skill	Competence formed. Demonstrated enough level independence, sustainable practical skill	Competence formed. Demonstrated high level independence, high adaptability practical skill

Competency assessment indicators and rating scales

Grade "unsatisfactory" (not accepted) or absence formation competencies	Grade "satisfactorily" (passed) or satisfactory (threshold) level of development competencies	Rated "good" (passed) or sufficient level development competencies	Excellent rating (passed) or high level development competencies
failure to student on one's own demonstrate	student demonstrates independence in application of knowledge	student demonstrates independent application	student demonstrates ability to full

knowledge when solving assignments, lack independence in application of skills. Absence confirmation availability formation competencies indicates negative development results academic discipline	skills and abilities to solve educational tasks in full According to sample given teacher, by tasks, solution of which there were shown teacher, it should be considered that competence formed on satisfactory level.	knowledge, skills and skills at solving tasks, similar samples that confirms Availability formed competencies for higher level. Availability such competence on sufficient level indicates sustainable fixed practical skill	independence in choosing a method solutions non-standard assignments within disciplines with using knowledge, skills and skills, received as in development progress given disciplines and adjacent disciplines should be considered competence formed at a high level.

Evaluation criteria for the test

Evaluation criteria

Mark	Description
passed	the student scored 60 or more points based on the provisions of the BRS and the checklist
not accepted	the student scored less than 60 points

Criteria for evaluating forms of control:

Interviews:

Mark	**Descriptors**		
	strength of knowledge	**ability to explain the essence of phenomena, processes, do conclusions**	**logic and subsequence answer**
Great	strength of knowledge, knowledge of basic processes of the studied subject area, the answer is different depth and completeness disclosure of the topic; possession terminological apparatus; logic and consistency answer	high skill explain the essence phenomena, processes, events, do conclusions and generalizations, give reasoned answers, give examples	high logic and subsequence answer
Fine	solid knowledge main processes subject matter being studied	ability to explain essence, phenomena, processes, events,	logic and subsequence answer

	area, different depth and completeness disclosure of the topic; possession terminological apparatus; free possession monologue speech, however one is allowed - two inaccuracies in the answer	draw conclusions and generalizations, give reasoned answers, give examples; however one or two inaccuracies in the answer are allowed	
satisfy flax	satisfactory process knowledge subject matter being studied areas, answer, different insufficient depth and completeness of disclosure Topics; knowledge of basic theoretical issues. Several are allowed errors in content answer	satisfactory ability to give reasoned answers and provide examples; satisfactorily formed analysis skills phenomena, processes. Allowed several errors in content of the answer	satisfactory logic and subsequence answer
dissatisfy strictly	poor knowledge of the subject area being studied, shallow opening Topics; poor knowledge main issues theories, weak skills analysis of phenomena, processes. Allowed serious mistakes in content of the answer	inability to give reasoned answers	absence logic and sequences answer

Testing:

percentage of correct answers	Marks
91-100	Great
81-90	Fine
71-80	satisfactorily
Less than 71	unsatisfactory

CHECKLIST FOR EXAMINATION PROCEDURE

(checklist for the second (commission) retake in case if the study of the discipline ends with a pass

No.	Examination event*	Points
1	Interview	100
Total maximum number of points for the examination procedure:		100

*Specific types, stages of the examination procedure, points for each stage are indicated, based on a maximum of 100 points in total for the examination procedure.