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Federal state budgetary educational institution of higher education "North Ossetian state medical academy" of the ministry of health of the Russian Federation

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Department of general hygiene and physical culture

APPROVED
minutes of the meeting
central coordination
educational and methodological council
" 23 " may 2023 No. 5

ASSESSMENT MATERIALS

in the discipline "**HYGIENE**"

main professional educational program of higher education – specialty program in specialty 31.05.01 General Medicine (educational program, partially implemented in English), approved on may 24, 2023

for 2-3 year students (4, 5 semesters)

specialty 31.05.01 General Medicine

Reviewed and approved at a department meeting
From " 18 " may 2023 (protocol No. 10)

Head department of general hygiene and physical culture,
doctor of medical sciences, prof. Kusova A.R.

Vladikavkaz, 2023

STRUCTURE OF ASSESSMENT MATERIALS

1. Title page
2. Structure of assessment materials
3. Reviews of evaluation materials
4. Passport of evaluation materials
5. *Set of assessment materials:*
   - questions for the module
   - questions for the exam
   - bank of situational tasks/business games
   - standards of test tasks (with title page and table of contents)
   - exam papers

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ «СЕВЕРО-ОСЕТИНСКАЯ ГОСУДАРСТВЕННАЯ МЕДИЦИНСКАЯ АКАДЕМИЯ» МИНИСТЕРСТВА ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

РЕЦЕНЗИЯ
на оценочные материалы

по дисциплине **Гигиена**
для студентов **2-3 курсов**
по специальности **31.05.01 Лечебное дело** **(образовательная программа, частично реализуемая на английском языке)**

Оценочные материалы составлены на кафедре общей гигиены и физической культуры на основании рабочей программы дисциплины «Гигиена», утвержденной 24 мая 2023 г., протокол № 8 и соответствуют требованиям ФГОС ВО 3++ по специальности 31.05.01 Лечебное дело (образовательная программа, частично реализуемая на английском языке).

Оценочные материалы включают в себя:
- вопросы к модулю,
- вопросы к экзамену,
- банк ситуационных задач,
- эталоны тестовых заданий (с титульным листом и оглавлением),
- экзаменационные билеты.

Банк ситуационных задач включает в себя сами задания и шаблоны ответов. Все задания соответствуют рабочей программе дисциплины «Гигиена», формируемым при ее изучении компетенциям, и охватывают все её разделы. Банк содержит ответы ко всем ситуационным задачам.

Эталоны тестовых заданий включают в себя следующие элементы: тестовые задания, шаблоны ответов. Все задания соответствуют рабочей программе дисциплины «Гигиена», формируемым при ее изучении компетенциям, и охватывают все её разделы. Сложность заданий варьируется. Количество заданий по каждому разделу дисциплины достаточно для проведения контроля знаний и исключает многократное повторение одного и того же вопроса в различных вариантах. Эталоны содержат ответы ко всем тестовым заданиям.

Количество экзаменационных билетов достаточно для проведения экзамена и исключает неоднократное использование одного и того же билета во время экзамена в течение одного дня. Экзаменационные билеты выполнены на бланках единого образца по стандартной форме, на бумаге одного цвета и качества. Экзаменационный билет включает в себя 3 вопроса. Формулировки вопросов совпадают с формулировками перечня вопросов, выносимых на экзамен. Содержание вопросов одного билета относится к различным разделам рабочей программы дисциплины, позволяющее более полно охватить материал дисциплины.

Дополнительно к теоретическим вопросам предлагается банк ситуационных задач. Ситуационные задачи дают возможность объективно оценить уровень усвоения обучающимся теоретического материала при текущем контроле успеваемости и промежуточной аттестации. Сложность вопросов в экзаменационных билетах распределена равномерно.

Замечаний к рецензируемым оценочным материалам нет.

В целом, оценочные материалы по дисциплине «Гигиена» способствуют качественной оценке уровня владения обучающимися универсальными, общепрофессиональными, профессиональными компетенциями.

Рецензируемые оценочные материалы по дисциплине «Гигиена» могут быть рекомендованы к использованию для текущего контроля успеваемости и промежуточной аттестации по специальности 31.05.01 Лечебное дело (образовательная программа, частично реализуемая на английском языке) у обучающихся 2-3 курсов (4, 5 семестры).

Рецензент:

Председатель ЦУМК
естественно-научных и математических дисциплин
с подкомиссией экспертизы оценочных материалов,
доцент кафедры химии и физики Н.И. Боциева

20.05.2023 г.

ВЕРНО: специалист по кадрам отдела кадров и документооборота
ФГБОУ ВО СОГМА Минздрава России
«___» _____ 20___ г.

Федеральное государственное бюджетное образовательное учреждение высшего образования «Северо-Осетинская государственная медицинская академия» Министерства здравоохранения Российской Федерации
Отдел кадров и документооборота

Passport of assessment materials for the discipline
"HYGIENE"

No. _ _	Name controlled section (topics) d discipline/module	Code of the competence (stage) being formed	Name of assessment material
1	2	3	4
View control	**Incoming knowledge control**	–	Test tasks
View control	**Current progress monitoring**		
1.	Environment and its influence on the body. Air hygiene	UC-1	Test tasks, questions for the module, situational tasks
2.	Environment and its influence on the body Hygiene of water and water supply	UC-1	Test tasks, questions for the module, situational tasks
3.	Nutrition as a factor in maintaining and promoting health	UC-1 GPC-2	Test tasks, questions for the module, situational tasks
4.	Work as an integral part of human existence and its positive and negative impact on health	UC-1 PC-5	Test tasks, questions for the module, situational tasks
5.	Hygiene of medical and preventive organizations	UC-1	Test tasks, questions for the module, situational tasks
6.	Hygienic fundamentals for ensuring normal development and high level of health of the child population	UC-1 GPC-2	Test tasks, questions for the module, situational tasks
7.	Hygiene in extreme situations and disasters	UK-1	Questions for the module, situational tasks
View control	**Interim certification**		
1.	Environment and its influence on the body. Air hygiene	UC-1	Questions for the exam , exam papers, bank of situational problems
2.	Environment and its influence on the body. Hygiene of water and water supply	UC-1	Questions for the exam , exam papers, bank of situational problems
3.	Nutrition as a factor in maintaining and promoting health	UC-1 GPC-2	Questions for the exam , exam papers, bank of situational problems
4.	Healthy lifestyle	GPC-2 PC-5	Questions for the exam , exam papers
5.	Work as an integral part of human existence and its positive and negative impact on health	UC-1 PK-5	Questions for the exam , exam papers, bank of situational problems
6.	Hygiene of medical and preventive organizations	UC-1	Questions for the exam , exam papers, bank of situational problems
7.	Hygienic fundamentals for ensuring norma development and high level of health of the child population	UC-1 GPC-2	Questions for the exam , exam papers, bank of situational problems
8.	Hygiene in extreme situations and disasters	UC-1	Questions for the exam , exam papers, bank of situational problems

Questions for the module

QUESTIONS FOR MODULE No.1
"Environment and its influence on the body. Air hygiene"

1. The role of hygienic and environmental sciences in ensuring preventive health care tasks. Factors shaping population health.
2. History of the development of hygiene. The main stages in the development of hygienic science and practice.
3. Environmental factors, their classification and role in the occurrence and spread of diseases.
4. Hygienic characteristics of the atmosphere. Atmospheric air pollution as the most important hygienic and environmental problem. Sources of air pollution and measures for its protection.
5. Physical properties of air, their hygienic assessment and methods of determination.
6. Heat transfer, types of thermoregulation. The effect of high temperatures on the body. Prevention and first aid for heat stroke.
7. The effect of atmospheric pressure on the body. Caisson disease and preventive measures.
8. Hygienic value of air humidity. Methods for assessing certain types of humidity.
9. The concept of microclimate. Hygienic characteristics of the indoor air environment.
10. Complex influence of meteorological conditions on the body.
11. Climate and weather, their hygienic significance. The concept of acclimatization.
12. Solar radiation and its biological effect. Biological significance of the ultraviolet part of the solar spectrum.
13. The use of artificial ultraviolet radiation for preventive purposes.
14. Natural and artificial lighting of premises. Hygienic requirements, assessment methods.
15. Natural and anthropogenic changes in the environment.
16. Hygienic and environmental problems of the modern city.

QUESTIONS FOR MODULE No.2
"Environment and its influence on the body. Hygiene of water and water supply"

1. Water as a factor in the biosphere and a necessary condition for the existence of life on earth. Ecological and hygienic problems of the hydrosphere.
2. Physiological and hygienic importance of water for humans.
3. Hygienic characteristics of physical water supply sources (saprobity indicators).
4. Water supply systems and their features.
5. Hygienic requirements for drinking water quality.
6. Chemical indicators of water pollution, their hygienic assessment.
7. The influence of the chemical composition of water on public health (endemic and toxicological significance of water).
8. Water as a cause of infectious diseases.
9. Classification of methods for improving the quality of drinking water.
10. Methods of water purification and their characteristics.
11. Methods for disinfecting drinking water.
12. Chlorination of water, types of chlorination. Chlorination with a “normal dose of chlorine”.
13. Ozonation. Advantages and disadvantages.
14. Additional (special) methods for improving the quality of drinking water.

QUESTIONS FOR MODULE No.3
"Nutrition as a factor in maintaining and promoting health"

1. Nutrition as a factor in maintaining and promoting health.
2. Basics of rational nutrition.
3. Dietary and therapeutic nutrition. Therapeutic and preventive nutrition at work and its importance for the body.
4. Assessing the completeness and adequacy of nutrition. Rules for creating menu layouts for various population groups.
5. Basic principles of constructing a food diet.
6. Nutritional and biological value of food products.
7. The role of proteins for the body, their nutritional and biological value. Signs of protein deficiency in children and adults. Protein supplier products. Consumption standards for various population groups.
8. Food fats, their classification and significance for the body. Consumption standards for the population taking into account climatic conditions. Products - suppliers of fats in the diet of children and adults.
9. Carbohydrates, their classification. Importance for the body and consumption rates. Products are suppliers of carbohydrates in the diet of children and adults.
10. Vitamins, their classification. The role of vitamins in population nutrition.
11. Water-soluble vitamins, their importance for the body, sources and consumption rates. Indicators of vitamin deficiency.
12. Fat-soluble vitamins, sources, consumption rates. Indicators of vitamin deficiency.
13. The importance of minerals in human nutrition. Classification, source products, consumption standards.
14. Methods for assessing the quality of food products and their falsification.
15. Ecological problems of human nutrition. The concept of “foreign substances”, “food chain” and biologically active substances.
16. Diseases caused by ingestion of poor quality food products. Classification of food poisoning.
17. Food poisoning of microbial etiology and its prevention.
18. Food poisoning of non-microbial etiology and its prevention. Food for organized groups and its provision. Requirements for the layout, equipment and operation of catering units.

QUESTIONS FOR MODULE No. 4
"Labor as an integral part of human existence and its positive and negative effects on health"

1. Hygiene of mental and physical labor. Occupational hazards and occupational diseases. Main directions of prevention of occupational diseases.
2. Physiological and hygienic foundations of the labor process. The concept of severity and intensity of work, the main evaluation criteria.
3. Classification of working conditions. The main occupational hazards encountered at work.
4. Industrial dust, classification, physicochemical properties, effect on the body.
5. Specific diseases of the lungs and other organs under the influence of industrial dust. Classification of pneumoconiosis.
6. Industrial poisons. Classification, routes of entry and release of poisons from the body, effect on the body.
7. Standardization of industrial poisons in production. Toxicity indicators and their determination. Main directions for the prevention of occupational poisoning.
8. Methods for determining toxic substances in the air.

9. The influence of heavy metals on the body of workers.
10. Toxicological characteristics of fatty hydrocarbons. Measures to prevent poisoning caused by gasoline.
11. Toxicological characteristics of aromatic hydrocarbons. Measures to prevent poisoning caused by benzene, toluene, xylene.
12. Lead, industrial use, effects on the body and preventive measures.
13. Mercury, effects on the body and preventive measures.
14. Carbon monoxide, sources of formation, toxicological characteristics, prevention of poisoning.
15. Physical and hygienic characteristics of noise, vibration, their assessment, main directions of prevention.
16. Ultrasound and its effect on the body. Measures to prevent adverse effects.
17. Non-ionizing electromagnetic radiation and fields, their effect on the body, prevention of adverse effects.
18. Occupational hygiene when working with radioactive substances and sources of ionizing radiation. Principles of protection.
19. Health activities at industrial enterprises.

QUESTIONS FOR MODULE No. 5
"Hygiene of medical and preventive organizations"

1. Treatment and prevention organizations of somatic profile. Hygienic requirements for placement and layout.
2. Infectious diseases departments of the hospital. Requirements for their layout, equipment and operation. Prevention of nosocomial infections.
3. Hygienic requirements for the planning and functioning of children's treatment and preventive organizations.
4. Nosocomial infections. Classification, causes, principles of prevention. Protective regime of medical organizations.
5. Occupational hygiene of physicians. The main occupational hazards in healthcare and their prevention.
6. Features of working conditions for radiologists and radiologists. Principles of protection when working with radioactive substances and sources of ionizing radiation.

QUESTIONS FOR MODULE No. 6
"Hygienic fundamentals for ensuring normal development and high level of health of the children's population"

1. Hygiene of children and adolescents. Subject and tasks. Age periodization.
2. Factors shaping children's health. Hygienic principles for ensuring normal growth and development of a child.
3. Basic patterns of growth and development of the child’s body.
4. Basic patterns of physical development of children and adolescents.
5. Methods for studying and assessing physical development.
6. Assessment of the health status of children and adolescents. Health groups.
7. The role of physical education in ensuring the development of children and adolescents. Medical control over the physical education of schoolchildren.
8. Hardening of children and adolescents. Methods, positive and possible adverse effects.
9. Sanitary and hygienic examination of projects of united preschool institutions. The principle of group isolation.
10. Hygienic requirements for children's clothing and shoes.
11. Hygienic requirements for toys and other children's household items.

12. Determining a child's readiness for school.
13. Sanitary and hygienic examination of school and boarding school projects.
14. Hygienic assessment of school furniture. Requirements for TSO, textbooks and visual aids.
15. Hygiene of classroom activities at school. Organization of the educational process in extended day mode in secondary schools.
16. Hygienic requirements for computer classes. Hygienic aspects of operator work on personal computers.
17. Vocational guidance and medical-professional consultation for children and adolescents. Contents of medical and preventive work of a pediatrician in children's institutions.

QUESTIONS FOR MODULE No. 7
"Hygiene in extreme situations and disasters"

1. Ecological and hygienic problems of populated areas.
2. Emergency situations and their classification.
3. Emergency situations of man-made nature.
4. Risk factors in the event of extreme conditions.
5. Sanitary and hygienic problems of disaster medicine.
6. Hygienic requirements for accommodating people in emergency situations.
7. Sanitary and hygienic requirements for water supply to organized groups in extreme conditions.
8. Medical control over catering in emergency situations.
9. Principles of primary prevention in eliminating health risk factors in disaster areas.
10. The role of the doctor in solving problems arising during emergencies and disasters.

Questions for the exam

1. The role of hygienic and environmental sciences in ensuring preventive health care tasks. Factors shaping population health.
2. History of the development of hygiene. The main stages in the development of hygienic science and practice.
3. Environmental factors, their classification and role in the occurrence and spread of diseases.
4. Hygienic characteristics of the atmosphere. Atmospheric air pollution as the most important hygienic and environmental problem. Sources of air pollution and measures for its protection.
5. Physical properties of air, their hygienic assessment and methods of determination.
6. Heat transfer, types of thermoregulation. The effect of high temperatures on the body. Prevention and first aid for heat stroke.
7. The effect of atmospheric pressure on the body. Caisson disease and preventive measures.
8. Hygienic value of air humidity. Methods for assessing certain types of humidity.
9. The concept of microclimate. Hygienic characteristics of the indoor air environment.
10. Complex influence of meteorological conditions on the body.
11. Climate and weather, their hygienic significance. The concept of acclimatization.
12. Solar radiation and its biological effect. Biological significance of the ultraviolet part of the solar spectrum.
13. The use of artificial ultraviolet radiation for preventive purposes.
14. Natural and artificial lighting of premises. Hygienic requirements, assessment methods.
15. Water as a factor in the biosphere and a necessary condition for the existence of life on earth. Ecological and hygienic problems of the hydrosphere.
16. Hygienic requirements for drinking water quality.
17. Chemical indicators of water pollution, their hygienic assessment.
18. Methods for improving the quality of drinking water.
19. Soil as an environmental factor. Basic properties of soil, hygienic significance. Soil pollution and self-purification.
20. Hygienic principles and requirements for cleaning populated areas.
21. Nutrition as a factor in maintaining and promoting health.
22. Basics of rational nutrition.
23. Dietary and therapeutic nutrition. Therapeutic and preventive nutrition at work and its importance for the body.
24. Assessing the completeness and adequacy of nutrition. Rules for creating menu layouts for various population groups.
25. Basic principles of constructing a food diet.
26. Nutritional and biological value of food products.
27. The role of proteins for the body, their nutritional and biological value. Signs of protein deficiency in children and adults. Protein supplier products. Consumption standards for various population groups.
28. Food fats, their classification and significance for the body. Consumption standards for the population taking into account climatic conditions. Products are suppliers of fats in the diet of children and adults.
29. Carbohydrates, their classification. Importance for the body and consumption rates. Products are suppliers of carbohydrates in the diet of children and adults.
30. Vitamins, their classification. The role of vitamins in population nutrition.
31. Water-soluble vitamins, their importance for the body, sources and consumption rates. Indicators of vitamin deficiency.

32. Fat-soluble vitamins, sources, consumption rates. Indicators of vitamin deficiency.
33. The importance of minerals in human nutrition. Classification, products - sources, consumption standards.
34. Methods for assessing the quality of food products and their falsification.
35. Ecological problems of human nutrition. The concept of “foreign substances”, “food chain” and biologically active substances.
36. Diseases caused by ingestion of poor quality food products. Classification of food poisoning.
37. Food poisoning of microbial etiology and its prevention.
38. Food poisoning of non-microbial etiology and its prevention. Food for organized groups and its provision. Requirements for the layout, equipment and operation of catering units.
39. Hygiene of mental and physical labor. Occupational hazards and occupational diseases. Main directions of prevention of occupational diseases.
40. Physiological and hygienic foundations of the labor process. The concept of severity and intensity of work, the main evaluation criteria.
41. Classification of working conditions. The main occupational hazards encountered at work.
42. Industrial dust, classification, physicochemical properties, effect on the body.
43. Specific diseases of the lungs and other organs under the influence of industrial dust. Classification of pneumoconiosis.
44. Industrial poisons. Classification, routes of entry and release of poisons from the body, effect on the body.
45. Standardization of industrial poisons in production. Toxicity indicators and their determination. Main directions for the prevention of occupational poisoning.
46. Methods for determining toxic substances in the air.
47. The influence of heavy metals on the body of workers.
48. Toxicological characteristics of fatty hydrocarbons. Measures to prevent poisoning caused by gasoline.
49. Toxicological characteristics of aromatic hydrocarbons. Measures to prevent poisoning caused by benzene, toluene, xylene.
50. Lead, industrial use, effects on the body and preventive measures.
51. Mercury, effects on the body and preventive measures.
52. Carbon monoxide, sources of formation, toxicological characteristics, prevention of poisoning.
53. Physical and hygienic characteristics of noise, vibration, their assessment, main directions of prevention.
54. Ultrasound and its effect on the body. Measures to prevent adverse effects.
55. Non-ionizing electromagnetic radiation and fields, their effect on the body, prevention of adverse effects.
56. Occupational hygiene when working with radioactive substances and sources of ionizing radiation. Principles of protection.
57. Health activities at industrial enterprises.
58. Treatment and preventive institutions of somatic profile. Hygienic requirements for placement and layout.
59. Infectious diseases departments of the hospital. Requirements for their layout, equipment and operation. Prevention of nosocomial infections.
60. Hygienic requirements for the planning and functioning of children's medical institutions.
61. Nosocomial infections. Classification, causes, principles of prevention. Protective regime of medical institutions.
62. Occupational hygiene of physicians. The main occupational hazards in healthcare and their prevention.

63. Features of working conditions for radiologists and radiologists. Principles of protection when working with radioactive substances and sources of ionizing radiation.
64. Hygienic and environmental problems of modern large cities.
65. Hygiene of children and adolescents. Subject and tasks. Age periodization.
66. Factors shaping children's health. Hygienic principles for ensuring normal growth and development of a child.
67. Basic patterns of growth and development of the child’s body.
68. Basic patterns of physical development of children and adolescents.
69. Methods for studying and assessing physical development.
70. Assessment of the health status of children and adolescents. Health groups.
71. The role of physical education in ensuring the development of children and adolescents. Medical control over the physical education of schoolchildren.
72. Hardening of children and adolescents. Methods, positive and possible adverse effects.
73. Sanitary and hygienic examination of projects of united preschool institutions. The principle of group isolation.
74. Hygienic requirements for children's clothing and shoes.
75. Hygienic requirements for toys and other children's household items.
76. Determining a child's readiness for school.
77. Sanitary and hygienic examination of school and boarding school projects.
78. Hygienic assessment of school furniture. Requirements for TSO, textbooks and visual aids.
79. Hygiene of classroom activities at school. Organization of the educational process in extended day mode in secondary schools.
80. Hygienic requirements for computer classes. Hygienic aspects of operator work on personal computers.
81. Vocational guidance and medical-professional consultation for children and adolescents. Contents of medical and preventive work of a pediatrician in children's institutions.
82. Healthy lifestyle and personal hygiene issues.
83. Hygienic issues of accommodating people in emergency situations.
84. Medical control over nutrition and water supply of organized population groups in extreme conditions.

BANK OF SITUATIONAL PROBLEMS

"Environment and its influence on the body. Air hygiene"

Federal State Budgetary Educational Institution of Higher Education
"North Ossetian State Medical Academy"
of the Ministry of Health of the Russian Federation

Department of General Hygiene and Physical Culture
Faculty of Medicine **Course** II
Discipline Hygiene

Situational task No.1

In an area with a hot climate, when studying the microclimate of a living space during the warm period of the year, it was established that the windows are oriented to the southwest.

Air temperature, ° C	Relative humidity, %	Air speed, m /s
26	70	0.1

The horizontal air temperature gradient (from the outer to the opposite inner wall) was 2 °C , the temperature difference for each meter of height (vertically) was 3 °C.

Exercise

1. What instruments were used to conduct this study?
2. Compare the obtained microclimate indicators with hygienic standards.
3. Conduct a comprehensive assessment of the microclimate of the living space.
4. Specify preventive measures to optimize the microclimate.

Situational task No.2

When studying the microclimate of a living space with central heating during the cold season, it was established:

Air temperature, ° C	Relative humidity, %	Air speed, m /s
19	50	0.15

The air temperature differences in the horizontal direction (from the outer to the inner wall) were 1.5 °C , in the vertical direction (for each meter of height) - 2.1 °C. Daily temperature fluctuations did not exceed 2.5°C. The difference between the skin temperature of the forehead and hand of people in the room is 3.5°C.

Exercise

1. What instruments were used to conduct this study?
2. Compare microclimate indicators with hygienic standards.
3. Conduct a comprehensive assessment of the microclimate of the living space.

Situational task No.3

Calculate the number of BUV-15 lamps that will be required to sanitize the air in a room with an area of 180 m^3 (in the presence of people).

Situational task No.4

When assessing the microclimate of a four-bed ward in a therapeutic department, the following data were obtained:

Distance from the floor, m	Temperature measurement point, ° C		
	at the outer wall	in the center of the chamber	at the inner wall
0.1	17	18	20
0.8	18	19	20
1.5	18	20	21

Relative air humidity – 80%, air speed – 0.5 m/ s .

The windows of the chamber are oriented to the northeast. SC = 1:7, KEO = 0.7%.

Exercise

Assess the conditions of stay of patients in the ward and determine the nature of the microclimate.

Situational task No.5

The four-bed ward of the nephrology department is oriented to the southwest, SC = 1:5, KEO = 1.2%. Air temperature in the cold season is 17 °C , relative humidity is 75%, air speed is 0.4 m/sec. The horizontal temperature differences were 1.6 °C, and the vertical differences were 1.8 °C.

Exercise

Assess the conditions of stay of patients in the ward and determine the nature of the microclimate.

Situational task No.6

The pulmonology department with 30 beds is located on the 1st floor of the main building of the hospital. The windows of the 4-bed wards are oriented to the southwest. The light coefficient is 1/6, KEO - 0.7%. Fluorescent lamps are used for artificial lighting . Illumination level – 160 lux. The area of the chambers is 22 m2 , height is 3.3 m.

In winter, at the time of examination of the department, the air temperature in the wards was 16°C, temperature differences: vertically - 3.5 °C , horizontally - 3°C. Relative humidity in the rooms is 70%, air speed is 0.45 m/sec. The difference in skin temperature of the sternum and dorsum of the foot in patients reached 5-6°C. There was slight sweating.

In the ward, the concentration of CO_2 was determined to be 0.7-1 l/m^3, oxidability 5 mg/m^3.

Exercise

1. Determine the nature of the microclimate of the chambers.
2. List the mechanisms of physical thermoregulation involved in the formation of uncomfortable subjective sensations in patients.
3. State the advantages of fluorescent lamps over incandescent lamps. Assess the sufficiency of artificial lighting.
4. Assess natural light indicators.
5. Calculate the number of shielded bactericidal lamps BUV-60 in a handling area of 18 m2 , ceiling height 3.3 m.

Situational task No.7

It is necessary to sanitize the air in the library reading room in the presence of people 300 m^3 with an installation with BUV-30 lamps.

Exercise

Calculate how many BUV-30 lamps are required for this.

Situational task No.8

When assessing the natural lighting of a chemistry classroom at a secondary school, the following data was obtained: windows are oriented to the south; natural light coefficient (NLC) on the last desk of the outermost row – 0.9%; depth coefficient (KZ) – 2.8; luminous coefficient (LC) – 1:4; incidence angle - 25°; room area – 65 ^{m2} .

Exercise

Assess the natural lighting conditions in the chemistry classroom.

Situational task No.9

When assessing the natural lighting of a mathematics classroom in a general education school, it was established: the windows are oriented to the southwest, the natural lighting coefficient (NLC) on the last desk of the outermost row is 1.3%; depth coefficient (KZ) – 2.6; luminous coefficient (LC) 1:5; angle of incidence - 28°.

Exercise

Assess the natural lighting conditions in the math classroom.

Situational task No.10

A school classroom with an area of 50 m2 is illuminated by 3 rows of diffused-light ceiling fluorescent lamps LPO12 2×40, with a total of 18 pcs. The lamps use 2 white light fluorescent lamps (BS-40) with a power of 40 watts each.

Exercise

1. Assess the lighting in the classroom.
2. Give recommendations for optimizing lighting.
3. Indicate the difference between standardization of illumination with incandescent lamps and fluorescent lamps.

«Environment and its influence on the body.
"Hygiene of water and water supply"

Federal State Budgetary Educational Institution of Higher Education
"North Ossetian State Medical Academy"
of the Ministry of Health of the Russian Federation

Department of General Hygiene and Physical Culture
Faculty of Medicine **Course** II
Discipline Hygiene

Situational task No.1

Criteria for assessing water quality	Indicators
Water analysis:	
Color, deg	35°
Water temperature at intake, ° C	17°
Sediment	amorphous _ Brown
Turbidity, mg/l	2.2
Odor at 20°, points	musty 4
Taste at 20, points	salty 3
Dry residue, mg/l	720
Chlorides, mg/l	470
Sulfates, mg/l	610
Iron, mg/l	1.2
Total hardness, mmol /l	6.5
Ammonium salts, mg/l	2.1
Nitrites, mg/l	0.8
Nitrates, mg/l (based on NO_3)	70
Oxidability, mg/l	6.7
Fluorine, mg/l	0.6
Thermotolerant coliform bacteria in 100 ml	3.0
Total microbial count in 1 ml	130
Spores of sulfite-reducing clostridia in 20 ml	2.0
Total α-radioactivity, Bq/l	0.17

Exercise

1. Compare water quality indicators with hygienic standards.
2. What source is the water taken from?
3. What sanitary and chemical indicators indicate water contamination with organic compounds.
4. What is the nature of the pollution – recent, old, permanent?
5. Indicate methods for improving water quality.

Situational task No.2

Criteria for assessing water quality	Indicators
Water analysis:	
Color, deg	50
Water temperature at intake, ° C	19
Sediment	amorphous _ brown
Turbidity, mg/l	20.0
Odor at 20°, points	4, swamp
Taste at 20, points	4, muddy
Dry residue, mg/l	640.0
Chlorides, mg/l	10
Sulfates, mg/l	8.0
Iron, mg/l	0.4
Total hardness, mmol /l	6.0
Ammonium salts, mg/l	0.2
Nitrites, mg/l	0.04
Nitrates, mg/l (based on NO_3)	40.0
Oxidability, mg/l	14.0
Fluorine, mg/l	0.1
Common coliform bacteria in 100 ml	10
Total microbial count in 1 ml	12800
Total α-radioactivity, Bq/l	0.12

Exercise

1. Compare water quality indicators with hygienic standards.
2. What source is the water taken from?
3. What sanitary and chemical indicators indicate water contamination with organic compounds.
4. What is the nature of the pollution – recent, old, permanent?
5. Indicate methods for improving water quality.

Situational task No.3

Criteria for assessing water quality	Indicators
Water analysis:	
Color, deg	35
Water temperature at intake, ° C	18
Sediment	absent
Turbidity, mg/l	2.0
Odor at 20°, points	1
Taste at 20, points	1
Dry residue, mg/l	122.0
Chlorides, mg/l	2.0
Sulfates, mg/l	40.0
Iron, mg/l	0.2
Total hardness, mmol /l	2.2
Ammonium salts, mg/l	0.5
Nitrites, mg/l	0.002
Nitrates, mg/l (based on NO_3)	6
Oxidability, mg/l	6.6
Fluorine, mg/l	0.3
Common coliform bacteria in 100 ml	4
Total microbial count in 1 ml	400
Total α-radioactivity, Bq/l	0.15

Exercise

1. Compare water quality indicators with hygienic standards.
2. What source is the water taken from?
3. What sanitary and chemical indicators indicate water contamination?
   organic compounds.
4. What is the nature of the pollution – recent, old, permanent?
5. Indicate methods for improving water quality.

Situational task No.4

Criteria for assessing water quality	Indicators
Water analysis:	
Color, deg	15
Water temperature at intake, ° C	8
Sediment	absent
Turbidity, mg/l	1.2
Odor at 20°, points	1
Taste at 20, points	0
Dry residue, mg/l	600.0
Chlorides, mg/l	200.0
Sulfates, mg/l	108.0
Iron, mg/l	0.8
Total hardness, mmol /l	6.8
Ammonium salts, mg/l	0.02
Nitrites, mg/l	0.001
Nitrates, mg/l (based on NO_3)	28.2
Oxidability, mg/l	4.8
Fluorine, mg/l	1.5
Common coliform bacteria in 100 ml	0
Total microbial count in 1 ml	42
Total α-radioactivity, Bq/l	0.1

Exercise

1. Compare water quality indicators with hygienic standards.
2. What source is the water taken from?
3. What sanitary and chemical indicators indicate water contamination with organic compounds.
4. What is the nature of the pollution – recent, old, permanent?
5. Indicate methods for improving water quality.

Situational task No.5

Criteria for assessing water quality	Indicators
River water	
Water temperature at intake, ° C	14
Color, deg	37
Smell and taste, points	2
Turbidity, mg/l	3.3
pH	6.8
Total hardness, mmol /l	7.5
Ammonium salts, mg/l	0.1
Nitrites, mg/l	No
Nitrates, mg/l (based on NO_3)	No
Iron, mg/l	0.2
Oxidability, mg/l	9.0
Chlorides, mg/l	5.0
Sulfates, mg/l	8.0
Dense residue, mg/l	864.0
Fluorine, mg/l	0.2
Lead, mg/l	0.09
Strontium, mg/l	8.0
Arsenic, mg/l	0.06
Zinc, mg/l	6.0
Copper, mg/l	No
Saprobity	oligosaprobes
Common coliform bacteria in 100 ml	4
Total microbial count in 1 ml	80.0

Exercise

1. Compare water quality indicators with hygienic standards.
2. From what source is the water taken?
3. What sanitary and chemical indicators indicate water contamination? organic compounds.
4. What is the nature of the pollution - recent, old, permanent?
5. Indicate methods for improving water quality.

Situational task No.6

Criteria for assessing water quality	Indicators
River water	
Water temperature at intake, ° C	15
Color, deg	60
Smell and taste, points	2
Turbidity, mg/l	4.0
pH	6.5
Total hardness, mmol /l	1.6
Ammonium salts, mg/l	0.4
Nitrites, mg/l	0.088
Nitrates, mg/l (based on NO_3)	20.0
Iron, mg/l	0.3
Oxidability, mg/l	10.0
Chlorides, mg/l	14.0
Sulfates, mg/l	17.0
Dry residue, mg/l	82.0
Fluorine, mg/l	0.2
Lead, mg/l	1.0
Strontium, mg/l	9.0
Arsenic, mg/l	0.1
Zinc, mg/l	7.0
Copper, mg/l	No
Saprobity	β-mesosaprobes
Common coliform bacteria in 100 ml	10
Total microbial count in 1 ml	800

Exercise

1. Compare water quality indicators with hygienic standards.
2. What source is the water taken from?
3. What sanitary and chemical indicators indicate water contamination with organic compounds.
4. What is the nature of the pollution – recent, old, permanent?
5. Indicate methods for improving water quality.

Situational task No.7

Criteria for assessing water quality	Indicators
Water samples were taken from the laboratory's water supply. TsGSEN. The samples are sealed and delivered to the laboratory. 3 hours after taking.	
Water analysis:	
Color, deg	45
Sediment	yellow, amorphous . brown
Smell, points	2
Flavor, points	2
Chlorides, mg/l	6.6
Sulfates, mg/l	10.0
Iron, mg/l	0.4
Dry residue, mg/l	84
Ammonium salts, mg/l	0.3
Nitrites, mg/l	0.02
Nitrates, mg/l (based on NO_3)	No
Oxidability, mg/l	13.8
Fluorine, mg/l	0.2
Common coliform bacteria in 100 ml	6
Total microbial count in 1 ml	continuous growth
Saprobity	α-mesosaprobes
Giardia cysts	2

Exercise

1. Compare water quality indicators with hygienic standards.
2. What source is the water taken from?
3. What sanitary and chemical indicators indicate water contamination with organic compounds.
4. What is the nature of the pollution – recent, old, permanent?
5. Indicate methods for improving water quality.

Situational task No.8

Criteria for assessing water quality	Indicators
River water	
Water temperature at intake, ° C	17
Color, deg	145
Smell, points	3
Flavor, points	3
Turbidity, mg/l	3.8
pH	5.4
Total hardness, mmol /l	6.8
Ammonium salts, mg/l	0.8
Nitrites, mg/l	0.06
Nitrates, mg/l (based on NO_3)	40.0
Iron, mg/l	1.2
Oxidability, mg/l	14.0
Chlorides, mg/l	120.0
Sulfates, mg/l	118.0
Dry residue, mg/l	360.0
Fluorine, mg/l	0.2
Lead, mg/l	1.1
Strontium, mg/l	8.5
Arsenic, mg/l	0.1
Zinc, mg/l	10.0
Copper, mg/l	6.2
Saprobity	β-mesosaprobes
Common coliform bacteria in 100 ml	15
Total microbial count in 1 ml	1200

Exercise

1. Compare water quality indicators with hygienic standards.
2. From what source is the water taken?
3. What sanitary and chemical indicators indicate water contamination?
   organic compounds.
4. What is the nature of the pollution - recent, old, permanent?
5. Indicate methods for improving water quality.

Situational task No.9

Criteria for assessing water quality	Indicators
Water samples were taken from the laboratory's water supply. TsGSEN. Samples are sealed and delivered 3 hours after being taken to the laboratory.	
Water analysis:	
Color, deg	150
Sediment	yellow
Smell, points	2
Flavor, points	2
Dry residue, mg/l	107
Chlorides, mg/l	22.0
Sulfates, mg/l	26.0
Iron, mg/l	0.3
Ammonia salt, mg/l	0.4
Nitrites, mg/l	0.01
Nitrates, mg/l (based on NO_3)	30.0
Oxidability, mg/l	28.0
Fluorine, mg/l	0.1
Total microbial count in 1 ml	20
Number of saprophytes in 1 ml	continuous growth
Saprobity	α-mesosaprobes
Coliphages in 20 ml	2

Exercise

1. Compare water quality indicators with hygienic standards.
2. What source is the water taken from?
3. What sanitary and chemical indicators indicate water contamination with organic compounds.
4. What is the nature of the pollution – recent, old, permanent?
5. Indicate methods for improving water quality.

Situational task No.10

Criteria for assessing water quality	Indicators
Water samples were taken from the laboratory's water supply. TsGSEN. Samples are sealed and delivered to the laboratory 3 hours after collection.	
Water analysis:	
Color, deg	40
Sediment	yellow-brown
Smell, points	3 swamps.
Flavor, points	3 muddy
Dry residue, mg/l	94
Chlorides, mg/l	12.0
Sulfates, mg/l	12.0
Iron, mg/l	0.5
Ammonium salts, mg/l	0.3
Nitrites, mg/l	0.01
Nitrates, mg/l (based on NO_3)	No
Oxidability, mg/l	15.0
Fluorine, mg/l	0.1
Common coliform bacteria in 100 ml	12
Total microbial count in 1 ml	8000
Saprobity	mesosaprobes
Sulfite-reducing spores . clostridia in 20 ml	1

Exercise

1. Compare water quality indicators with hygienic standards.
2. From what source is the water taken?
3. What sanitary and chemical indicators indicate water contamination?
   organic compounds.
4. What is the nature of the pollution - recent, old, permanent?
5. Indicate methods for improving water quality.

"Nutrition as a factor in maintaining and promoting health"

Federal State Budgetary Educational Institution of Higher Education
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Faculty of Medicine **Course** II
Discipline Hygiene

Situational task No.1

The factory kitchen of the machine-building plant prepared a set lunch for the first shift workers during their lunch break:
- Olivier salad;
- Ukrainian borscht;
- navy-style pasta with meat;
- apricot compote;
- wheat bread.

Calorie content of the complex – 1548 kcal; proteins – 36 g; fat – 45.7 g; carbohydrates – 209.4; calcium 153 mg; phosphorus – 505 mg; magnesium 68 mg; iron – 47 mg; vitamin A – 0.05 mg; carotene – 7.8 mg; vitamin B_1 – 0.8 mg; vitamin B_2 – 0.9 mg; vitamin PP – 11.2 mg; vitamin C – 47.2 mg.

Exercise

1. Give an opinion on the possibility of using this set lunch in the nutrition of enterprise employees if it is known that in the overall structure of daily nutrition in terms of calorie content and composition it is 40%.
2. Are all dishes prepared in a factory kitchen allowed in the public catering system, if not, which ones and why?
3. What nutritional adjustment is necessary for a turner at an enterprise who receives this complex for lunch, which amounts to 40% of the daily ration in terms of calorie content and qualitative composition?

Situational task No.2

The factory kitchen of the machine-building plant prepared a set lunch for the first shift workers during the lunch break: squash caviar, pickle with fish, chopped steak with egg and potatoes, coffee with milk, rye bread.

Calorie content of the complex – 1088 kcal; proteins – 57.4 g; fat – 43 g; carbohydrates - 185 g; calcium – 335 mg; phosphorus – 913 mg; magnesium – 195 mg; iron – 8.6 mg; vit. A – 0.4 mg; carotene – 3.6 mg; vit. B_1 – 0.4 mg; vit. B_2 – 1 mg; vit. RR – 8 mg; vit. C – 53 mg.

Exercise

1. Give an opinion on the possibility of using this set lunch in the nutrition of enterprise employees if it is known that in the overall structure of daily nutrition in terms of calorie content and composition it is 40%.
2. What nutritional adjustment will be required for a mechanic who receives this complex for lunch, which in terms of caloric content and composition is 40% of the daily ration?
3. What foods can be sources of intestinal infections?

Situational task No.3

The factory kitchen of the machine-building plant prepared a set lunch for the first shift workers during their lunch break:

- sauerkraut with green onions;
- potato soup with meat;
- sausages with stewed cabbage;
- carrot juice;
- Borodino bread.

Calorie content of the complex – 1085 kcal; proteins – 41 g; fat – 39 g; carbohydrates – 143.6 g; calcium – 349 mg; phosphorus – 372 mg; magnesium – 79 mg; iron – 9.3 mg; vit. A – 0.05 mg; carotene – 19.5 mg; vit. B_1 – 0.65 mg; vit. B_1 – 0.

Exercise

1. Give an opinion on the possibility of using this set lunch in the nutrition of enterprise employees if it is known that in the overall structure of daily nutrition in terms of calorie content and composition it is 40%.
2. What nutritional adjustment will be required for an engineering and technical employee of an enterprise who receives this complex for lunch, which is 40% of the daily ration in terms of calorie content and composition?

Situational task No.4

Woman, 30 years old, basal metabolic rate (BMR) – 1350 kcal/ day , coefficient physical activity (PFA) – 1.4.

According to the menu layout, the composition of the diet: proteins – 65 g, of which animal – 35 g, fats – 95 g, of which vegetable – 45 g, carbohydrates – 295 g. Three meals a day, distribution of the energy volume of food during the day 25% – 25% – 50%.

Exercise

Assess the adequacy of the woman's nutrition.

Situational task No.5

A sample of beef meat, seized from the canteen of a medical school, was delivered to the laboratory of the Center for Sanitary and Epidemiological Surveillance for the purpose of testing for Finnosis. Upon external examination, the meat has a dry dry crust on the surface . The surface of the meat is slightly moist, not sticky, and brown-red in color. The fat is yellowish and normal. When cut, the meat is dense, elastic, and the hole formed when pressed quickly flattens out. The smell of fresh meat. When cutting deep into the tissue, careful examination revealed oval-shaped bubbles, the size of a grain of wheat. Under microscopy, a formation characteristic of the Finnish bovine tapeworm is noted; the collapsed head of the parasite is visible inside the vesicle. When checking for viability, it was determined that the Finns were in a dead state. 2 Finns were found on an area of 40 cm2 .

Exercise

1. Give a sanitary and hygienic conclusion on a sample of meat based on organoleptic indicators and microscopy data.
2. What methods of meat decontamination are necessary?
3. Indicate the most common places of localization of Finnish tape helminths.
4. What toxic infections can be caused by meat?
5. For what animal diseases is meat conditionally suitable?
6. For what animal diseases is meat unsuitable for food?

Situational task No.6

During a medical examination, most children who are constantly in the home - boarding school, skin hyperkeratosis and multiple petechiae were discovered.

When analyzing menu layouts, a predominance of cereals and pasta, as well as canned foods and food concentrates, is noted; there are no fresh fruits in the diet.

Exercise

1. Suggest a probable mechanism of the disease.
2. Suggest cessation and prevention measures.
3. Describe the main food groups in terms of food intake components.

Situational task No.7

In kindergarten, for lunch, eggplant caviar (canned food produced industrially at one of the collective farm canneries in the Ardonsky district) was given as a snack. After 7 hours, two children developed vomiting, abdominal pain, weakness, difficulty swallowing, and uneven dilation of the pupils. Later, symptoms such as drooping eyelids, hoarseness, and nasal speech appeared. Body temperature remained normal, but tachycardia was noted. The children were consulted by a neurologist and hospitalized in the neurological department with diagnoses of bulbar poliomyelitis and diphtheria polyneuritis. Despite the treatment, both children died within 24 hours. For five more children with similar complaints that appeared after 12-48 hours, a medical commission was organized, which included an infectious disease specialist, a neurologist and a pediatrician. The commission made a diagnosis of microbial food poisoning. It was found that all the sick children received eggplant caviar from the same can during lunch. As a result of the treatment, the last five children were saved.

Exercise

1. Analyze the described case of food poisoning using medical history and clinical data. Justify the diagnosis, indicate what additional laboratory tests are needed to clarify it, what immediate assistance should be for the victims, and suggest specific measures to prevent poisoning of this etiology.
2. List the preventive measures that must be observed in the catering department.

Situational task No.8

In the gastroenterology department of the Central District Hospital, patients of two neighboring wards on Monday morning felt a deterioration in their condition, accompanied by an increase in temperature to 37.5 ºC , dyspeptic symptoms, bloating, as well as disturbances in vision, chewing and swallowing.

During the survey, it turned out that relatives came to one of the patients on the weekend and were given home-canned products in the form of stew and squash caviar. One patient from the next ward was given home-made alcoholic beverages by his relatives. In the absence of control by medical personnel, the donated food and alcoholic beverages were consumed by patients in both wards. Patients in other wards were not injured.

Exercise

1. Suggest a probable mechanism of the disease and an epidemic diagnosis.
2. Who is responsible for organizing transfers in hospitals of medical organizations and how are transfers being made?
3. Suggest cessation and prevention measures.

Situational task No.9

On August 20, 2012, the following food products were delivered to a summer health camp for 450 children:

- milk packaged in 0.5 liter plastic milk bags, with the date stamped on the packaging: best before 08/20/12. Upon examination, it was found that the milk was white with a yellowish tint and had a uniform consistency;
- fresh frozen fish (cod) in the form of briquettes, packed in cardboard boxes that do not have external defects or damage;
- chicken eggs packed in cardboard boxes and packaged in layers in corrugated forms. The boxes have the date of removal of the eggs - 08/05/12.
- beef meat in the form of a frozen carcass without a brand. Upon external examination, the meat is red, the fat is yellow, without any foreign odor.

Exercise

1. Conduct a sanitary examination of incoming products, indicate the timing of their implementation.
2. What document should the attending physician send to the sanitary and epidemiological surveillance center and how soon?
3. List the main preventive measures to prevent food poisoning in a health camp.

Situational task No.10

In the village of K. in mid-August, 84 people fell ill, including 30 men, 27 women and 27 children. All patients were given a preliminary diagnosis: Myopathy with myoglobinuria of unspecified etiology. The spread of the disease is characteristic of families; among the sick, only 4 single men, and 1 woman became ill along with her child. All the sick people work in different places, some men are on leave after their shift, one couple are pensioners. All the sick people live in different places in the village, and for the most part, they don't know each other very well. Earlier in previous years, similar diseases were also observed at the end of summer, but they were isolated.

From the anamnesis, one common feature emerged - all the sick people ate fish (roach, carp, crucian carp, tench) caught in Lake Tukhlog , located 1.5 km from the village. The lake is floodplain, with an area of 3.5 km2 , depth from 0.5 m to 3 m. The lake is characterized by summer algae blooms along the coastline; this year, due to the hot weather, the lake has completely bloomed.

Exercise

1. Suggest a probable mechanism of the disease.
2. Make an epidemic diagnosis.
3. Suggest cessation and prevention measures.

"Labor as an integral part of human existence and its positive and negative effects on health"

Federal State Budgetary Educational Institution of Higher Education
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Discipline Hygiene

Situational task No.1

In order to substantiate measures to improve the performance of paper cutters at one of the printing houses, physiological studies were carried out.

The work of a cutter requires increased attention and tension of the organ of vision (the smallest size of the object of discrimination is 1.5 mm) for 50% of the shift time. 300 kg of paper is transferred in 1 hour.

The work activity of a cutter is carried out in a standing position, with being in an inclined position for 45% of the time of the shift. Work is carried out in 3 shifts of 8 hours each. There are no scheduled breaks.

Workday utilization level 92%; energy consumption – 1064 kJ/ h (254 kcal/h).

The dynamics of indicators of the functional state of a number of body systems are presented in the table (initial level 100%).

Dynamics of some indicators of the functional state of the body during a work shift (in %)

Indicators	**Research time**						
	7.00	9.30	11.30	Dinner	12.00	14.00	15.30
Endurance of the muscles of the right hand	100	99	98	-	97	79	70
Pulse rate	100	108	108	-	101	112	123
Maximum muscle performance of the right hand	100	108	98	-	100	89	82

Exercise

1. Using the “Hygienic assessment criteria and classification of working conditions according to indicators of harmfulness and danger of factors in the working environment, severity and intensity of the labor process” (R 2.2.755-99), determine the class of working conditions based on all available ergometric indicators.
2. Make a general conclusion about the severity and intensity of work, the degree of workload of the working day.
3. Study the nature of changes in the physiological parameters of workers.
4. Indicate which body systems of workers are most stressed (“key” functions).
5. Indicate methods for studying the functional state of the body of workers and name the corresponding devices.
6. Offer recreational activities in the conditions of this production.

Situational task No.2

One source of dust formation in mines is drilling and blasting operations. To assess dust content, samples were taken both at the time of production operations and during breaks between them. The content of free silicon dioxide in mine dust is about 38%. During dry pneumatic drilling, the dust concentration in the breathing zone ranges from 40 to 80 mg/m3 (MPC – 2 mg/m3); 5% of all dust consists of particles 5 microns in size, the bulk of coarse dust either immediately falls on the base of the excavation or settles out of the air after a very short period of time, but dust particles 0.5 - 5.0 microns in size hover in the air for a long time.

During periodic medical examinations of miners , 6 cases of silicosis were identified, 65% of workers had irritation of the mucous membranes of the upper respiratory tract, 25% had irritation of the mucous membranes of the eyes, and 7% had irritation of the skin.

Exercise

1. Give a description of the dust, compare its concentration with the maximum permissible concentration, determine the class of working conditions in this production.
2. Indicate the etiology of the occurrence of this pathology in workers; Explain the role of dust dispersion in the development of pneumoconiosis.
3. Offer a wellness plan.

Situational task No.3

During aluminum production, the alumina dust content in the air of the electrolytic shop ranged from 14 to 95 mg/m ^{3} (MPC – 6 mg/m ^{3}). Dust dispersion: up to 1 micron – about 70%, 1-5 microns – about 24%. The dust also contains aluminum, fluorine, and resinous substances.

During a medical examination, the majority of workers were found to have changes in the upper respiratory tract such as atrophic rhinitis, laryngitis and pharyngitis, chronic bronchitis (in 15% of cases) in combination with pneumosclerosis (aluminosis) grades 1 and 2, as well as damage to the gums, teeth and bones, changes in the liver.

Exercise

1. Give a description of the dust, compare its concentration with the maximum permissible concentration, determine the class of working conditions in this production.
2. Indicate the etiology of the occurrence of this pathology in workers; Explain the role of dust dispersion in the development of pneumoconiosis.
3. Offer a wellness plan.

Situational task No.4

At a limestone mine, the health status of machinists aged 27-50 years, with 5 or more years of underground work experience, exposed to fine limestone dust in concentrations from 40 to 560 mg/m3 (MPC - 6 mg/m3) was studied. the content of free silicon dioxide is 0.5-6%.

In 42 patients, pathology of the upper respiratory tract was detected , in 8% - chronic bronchitis of occupational etiology, which occurred in some patients with symptoms of bronchospasm , and in 2% of cases with the subsequent development of bronchial asthma; 20 people fibrotic changes in the lungs were detected, and in 3 of them at the ages of 39, 40 and 43 years with work experience of 13, 14 and 17 years, respectively, these changes were regarded as pneumoconiosis. In addition, in 52% of those examined, a clear dependence was found on the percentage of pain in the epigastric region and right hypochondrium on work experience (less than 3 years - 25%, 10-15 years - 52%, 15 or more years - 77%), impaired gastric secretion and increased incidence of gastritis and gastroduodenitis.

Exercise

1. Give a description of the dust, compare its concentration with the maximum permissible concentration, determine the class of working conditions in this production.
2. Indicate the etiology of the occurrence of this pathology in workers; Explain the role of dust dispersion in the development of pneumoconiosis.
3. Offer a wellness plan.

Situational task No.5

At a machine-building plant in the small-product processing area, operating equipment creates constant noise.

The duration of noise exposure for workers is 5 hours 30 minutes per shift.

the harvester's workplace : at sound pressure level
(average of three measurements), dB

Octave bands with geometric mean frequencies, Hz									Equivalent sound level , dBA
31.5	62	125	250	500	1000	2000	4000	8000	
95	80	92	87	95	90	83	79	80	87

During a medical examination of 63 workers with 10-20 years of work experience, it was found that workers complained of headaches (40%), poor sleep, fatigue (49%), tingling in the heart area (21%). An objective examination revealed asthenovegetative syndrome with neurological reactions in 66% of workers . Higher morbidity levels for hypertension, gastric and duodenal ulcers were revealed in comparison with factory indicators.

revealed cochlear neuritis in three workers (20 years of work experience in this area).

Exercise

1. Assess the noise using the Sanitary Standards - “Noise in workplaces, in residential and public buildings and in residential areas” (SN 2.2.4/2.1.8.562-96).
2. Determine the class of working conditions.
3. Assess the workers' health status.
4. Indicate recreational activities.

Situational task No.6

In cable production, the wire twisting area creates constant noise, the duration of which workers are exposed to for 5 hours per shift.

the twister's workplace . Sound pressure levels
(average of three measurements), dB

Octave bands with geometric mean frequencies, Hz									Equivalent sound level , dBA
31.5	62	125	250	500	1000	2000	4000	8000	
120	91	96	93	93	87	89	88	S4	94

During a medical examination of 63 workers with 10-20 years of work experience, the following was discovered: workers complained of increased fatigue, headaches in the forehead, sweating (35-45%). In 65% of workers, astheno -vegetative syndrome with neurological reactions is detected: emotional lability, sleep disturbance. Slight tremor of the fingers of outstretched arms and staggering in the Romberg position , the hands are moderately cyanotic, pronounced axillary hyperhidrosis , the palms and soles are moist.

An audiometric study revealed mild hearing loss in two programmers (10 years of experience).

When comparing the incidence of temporary disability of programmers with general plant values, it was found that the surveyed workers had higher rates of hypertension and gastric ulcers.

Exercise

1. Assess the noise using the Sanitary Standards - “Noise in workplaces, in residential and public buildings and in residential areas” (SN 2.2.4/2.1.8.562-96).
2. Determine the class of working conditions.
3. Assess the workers' health status.
4. Indicate recreational activities.

Situational task No.7

Working conditions of cutters at a metallurgical plant were studied .

The main technological operation is to remove defects from the surface of pipe blanks using pneumatic hammers . The hammers are not equipped with vibration protection devices.

Vibration velocity levels on the pneumatic hammer handle, dB

Dot measurements	Geometric mean frequencies of octave bands, Hz						
	16	31.5	63	125	250	500	1000
Hammer handle	120	120	120	118	113	110	107

The equivalent adjusted vibration velocity level was 120 dB.

The total working time of a cutter with a hammer reaches 38% of the shift time. Workers have a 40-minute lunch break , there are no other regulated breaks. When examining 17 workers with more than 5 years of work experience, the following was revealed: complaints of stiffness in the hands after sleep, dull, mild pain in the muscles of the arms after overwork , chilliness of the fingers in the cold. Objectively: 50% have a slight impairment of pain sensitivity on the fingers, less often on the entire hand; increasing the vibration sensitivity threshold by 5-7 dB (compared to the base curve). The brushes are warm and of normal color . The muscles are well developed and painless.

Exercise

1. Assess the conditions of workers using the sanitary standards “Industrial vibration, vibration in residential and public buildings” (SN 2.2.4/2.1.8.566-96) and the sanitary rules and standards “Hygienic requirements for hand tools and work organization” (SanPiN 2.2.2.540-96).
2. Determine the degree of harmfulness of working conditions based on the vibration factor in accordance with guidelines R 2.2. 755-99 “Hygienic assessment criteria and classification of working conditions according to indicators of harmfulness and danger of factors in the production environment , severity and intensity of the labor process.”
3. Analyze data on the health status of workers .
4. Suggest measures to improve working conditions.

Situational task No.8

The working conditions of drillers were studied. The main operations are: drilling, extracting the hammer drill. The time spent working with a rotary hammer takes up 50% of the work shift.

The results of measuring vibration velocity levels on the handle of a pneumatic hammer drill are presented in the table.

Vibration velocity levels , dB

Measuring point	Geometric mean frequencies of octave bands, Hz							
	8	16	32	63	125	250	500	1000
Hammer handle	110	128	128	120	120	115	105	100

The equivalent adjusted vibration velocity level was 114 dB.

The surveyed drillers had 10-15 years of work experience (age up to 40 years). 50% of workers complain of severe pain in the arms, more often in the hands and wrist joints, a feeling of numbness and whiteness fingertips of both hands. During capillaroscopy , in 45% of cases there is spasm of the capillaries of the fingers of both hands. In 21% of people, the skin temperature on the fingers is reduced to 21-23°C. 15% have hyposthesia hands, another 15% have a sensitivity disorder in the form of “gloves”. 10% of workers have changes in the elbow and shoulder joints.

Exercise

1. Assess the conditions of workers using the sanitary standards “Industrial vibration, vibration in residential and public buildings” (SN 2.2.4/2.1.8.566-96) and the sanitary rules and standards “Hygienic requirements for hand tools and work organization” (SanPiN 2.2.2.540-96).
2. Determine the degree of harmfulness of working conditions based on the vibration factor in accordance with guidelines R 2.2. 755-99 “Hygienic assessment criteria and classification of working conditions according to indicators of harmfulness and danger of factors in the production environment , severity and intensity of the labor process.”
3. Analyze data on the health status of workers .
4. Suggest measures to improve working conditions.

Situational task No.9

The working conditions of iron ore quarry excavator operators were studied . The noise in the excavator cabins did not exceed the maximum limit. Drivers are exposed to vibration up to 88% of their shift time.

Vibration velocity levels at the driver's workplace (along the Z axis), dB

Measurement location	Geometric mean frequencies of octave bands, Hz					
	2	4	8	16	32	63
Seat	117	115	106	104	104	
Cabin floor	112	110	105	96	99	
Pedals			118	114	110	110

The equivalent adjusted vibration velocity level was 119 dB.

During a medical examination of machinists (age 30–45 years, work experience more than 10 years), it was found that from 16 to 20% complained of numbness and paresthesia of the extremities, slight weakness in them during work, pain along the spine, periodic headaches , irritability, sleep disturbance. Objectively, 6% of drivers had mild central paresis of the facial nerve, installation nystagmus, and 5% had a decrease in pain sensitivity of the arms and legs of the polyneuritic type. Dermographism is perverted in 15%. During rheoencephalography, 20 % showed an increase in the tone of cerebral vessels and a decrease in their elasticity.

Exercise

1. Assess the conditions of workers using the sanitary standards “Industrial vibration, vibration in residential and public buildings” (SN 2.2.4/2.1.8.566-96) and the sanitary rules and standards “Hygienic requirements for hand tools and work organization” (SanPiN 2.2.2.540-96).
2. Determine the degree of harmfulness of working conditions based on the vibration factor in accordance with guidelines R 2.2. 755-99 “Hygienic assessment criteria and classification of working conditions according to indicators of harmfulness and danger of factors in the production environment , severity and intensity of the labor process.”
3. Analyze data on the health status of workers .
4. Suggest measures to improve working conditions.

Situational task No.10

A noise study was carried out at the milling operator's workplace. Noise is generated during machine operation constantly and affects the worker for 6 hours per shift. The overall equivalent sound level is 85 dBA (maximum level is 90 dBA).

At the same time , the maximum values in modes with time corrections I (impulse) and S (slow), Lp,AImax and Lp,ASmax, respectively, are 75 and 95 dBA , in addition, pronounced tonal noise is detected at a frequency of 8000 Hz with a level of 30 dB .

Exercise

1. Assess the safety of the workplace.
2. Determine the nature of the noise.
3. Suggest measures to reduce its impact.

Situational task No.11

In the laboratory of the diagnostic department of the oncology hospital in the city of N. they work with β- emitting isotopes (tritium). 250 cm2 of the laboratory floor surface was flushed. After a radiometric study, radioactive contamination of the washout was discovered equal to 7.5 × 105 particles/min.

Exercise

1. Give an opinion on the level of radioactive contamination of the floor surface in laboratories.
2. List the methods for decontamination of environmental objects and, in the case. If necessary, give recommendations for decontamination of the laboratory floor.
3. What is the difference between "open" and "closed" sources of radioactive radiation and list the principles of protection when working with radioactive sources in the open form.

Situational task No.12

In the workshop for packaging potassium chloride into small containers, an air sample was taken with an electric aspirator and the main microclimate parameters were measured. Room temperature – 24 ºC , relative humidity – 30%, air mobility – 0.6 m/sec; the content of potassium chloride in the air is 20 mg/m3.

Technological features of production organization: Work in terms of energy consumption intensity belongs to category II b (201 – 250 kcal/h). Packaging is carried out using special dosing devices in polyethylene containers. After the bags are accumulated from the dosing cup, they are conveyed along a conveyor belt to the sealing machine. The dosing machines are not equipped with ventilation devices; the workshop has general ventilation. When filling bags and transporting them, product spills occur . The premises are cleaned regularly using wet and dry methods.

Workers work in overalls without gloves or respirators. Some workers indicate occasional skin itching and redness of exposed parts of the body, dry skin of the hands and forearms.

Exercise

1. Assess the working conditions.
2. Mark the main harmful production factor.
3. Suggest measures to optimize working conditions.

"Hygiene of medical and preventive organizations"

Federal State Budgetary Educational Institution of Higher Education
"North Ossetian State Medical Academy"
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Department of General Hygiene and Physical Culture
Faculty of Medicine **Course** III
Discipline Hygiene

Situational task No.1

During a bacteriological study of the air in the intensive care unit of the city hospital in the city of K, 250 liters of air were sucked out using a Krotov device. For sowing, standard Petri dishes with solid nutrient media were used. After incubation in a thermostat for 48 hours at a temperature of 36-370C, colonies were counted and their number was recalculated per 1 m3 of room air. The total bacterial contamination of the air was 1500 colonies, the number of Staphylococcus aureus was 8, Pseudomonas aeruginosa was 1.

(Regulatory documents: SanPiN 2.1.3.1375 – 03 "Hygienic requirements for the placement, design, equipment and operation of hospitals, maternity hospitals and other medical hospitals".

Exercise

Give a hygienic conclusion on the bacterial pollution of the air in the intensive care unit of a hospital.

Situational task No.2

A comprehensive city hospital with 300 beds will be located near a green area, away from sources of noise and air pollution. The following zones are provided on the site: a landscaping zone (40%), a zone of medical non-infectious buildings, a zone of medical infectious buildings, a zone of a pathological building, and an economic zone. There will be three entrances to the hospital territory, one of which is intended for access to the infectious diseases building and the pathology department.

The hospital has a therapeutic department, consisting of two ward sections. The set of premises of each ward section includes: wards, a place for daytime stay of patients, a treatment room, a pantry-dining room, a doctor's office, the offices of the head nurse and the hostess sister, toilet rooms, and a ward corridor **.**

Regulatory documents : SanPiN 2.1.3.1375 – 03 "Hygienic requirements to placement , device , equipment _ And operation hospitals , maternity houses and others _ medicinal hospitals . "

Exercise

Give a hygienic conclusion on the given situation.

Situational task No.3

The land plot allocated for the construction of the hospital is located in the residential area of the city. A clean, well-lit area with calm terrain, located on the windward side (taking into account the wind rose) relative to industrial enterprises. The area is rectangular in shape with an aspect ratio of 1:3. The garden and park area occupies 45% of the land area.

Exercise

1. Assess the suitability of the site for the construction of a hospital.
2. Note the shortcomings regarding the shape of the site and the area of the garden and park area.

Situational task No.4

An ultrasound diagnostic room is equipped in the basement of a residential apartment building as part of a commercial medical center. The office consists of two rooms - a reception room with an area of 8 m2 and a diagnostic room with an area of 16 m2. There is no ventilation, no natural light. Entrance is directly to the reception area from the entrance of the residential building. There is no waiting room.

In the diagnostic room, the air temperature is 15 °C , humidity is 85%, air mobility is less than 0.05 m/s. The entire height of the walls is covered with ceramic tiles. Patients are examined on a hard, high couch; the doctor is forced to stand during diagnostic procedures. The noise level generated by the equipment is 60 dBA . Artificial lighting of the diagnostic room is provided by a table lamp on the doctor's table; there is no general lighting.

Exercise

1. Evaluate the possibility of placing an ultrasound diagnostic room in a residential apartment building home.
2. Assess compliance with hygiene requirements.
3. Determine the working conditions of the ultrasound diagnostic doctor.

Situational task No.5

On the territory of the hospital's land plot there are buildings: the main one, the obstetrics and gynecology department, the infectious diseases department, as well as a clinic and outbuildings. The area of the hospital's land plot is 42,000 m2 , the total building area is 5,398 m2; landscaping area – 25,000 m2.

Exercise

1. Propose an optimal construction system for this hospital.
2. Calculate and evaluate the building density of the hospital land plot and its percentage landscaping.

Situational task No.6

In the ward section of the therapeutic department there is a central corridor with partial two-sided construction, which makes up 40% of its length. The width of the corridor is 2.4 m. The duty nurse's post is located in the center of the section. Next to the post there are 1- and 2-bed wards for seriously ill patients.

Exercise

Give a hygienic assessment of the corridor layout of the ward section.

Situational task No.7

The width of the ward in the therapeutic department for adults is 4 m, depth is 7 m, height is 3 m. The ward has 6 beds, 3 on each wall, with the head facing the window. The room has a sink with hot and cold water supply, bedside tables, a table, and chairs.

Exercise

Give a hygienic assessment of the conditions of patients’ stay in the ward - height of the ward, area per bed, arrangement of beds.

Situational task No.8

Before starting work in the aseptic dressing room of the surgical department, the CFU was 450 per 1 m3 of air.

Exercise

Assess microbial air pollution in the dressing room.

Situational task No.9

The operating unit is located in a dead-end part of the building. The general surgical operating room has an area of 36 m2 , a height of 3.5 m, and the width of the corridor in the operating block is 3 m.

Exercise

Give a hygienic assessment of the placement and layout of the operating unit.

Situational task No.10

When assessing the sanitary and hygienic regime of the surgical department of the hospital, it was established: general cleaning of the department's premises is carried out according to a schedule of 1 time per month - walls, floors, equipment, inventory, and lamps are treated. General cleaning of the operating unit and dressing room is carried out once every 10 days. No operations are carried out on the day of general cleaning. Cleaning equipment (buckets, mops) is marked indicating the room and type of cleaning work. Log entries recording the operating mode of the bactericidal irradiators indicate that the total operating time of the BUV lamps in the operating unit is 1800 hours. The lamps were turned on at night during non-working hours, 1 hour before the start of work in the operating room for 10 minutes.

Exercise

Note violations of the sanitary and hygienic regime of the department.

Situational task No.11

During the influenza epidemic, a patient with symptoms of acute respiratory viral infection (ARVI) was hospitalized in a 4-bed ward of the therapeutic department, in which two patients were completing their course of treatment.

Exercise

Determine groups of measures to prevent the spread of ARVI in the department.

"Hygienic fundamentals for ensuring normal development and high level of health of the children's population"

Federal State Budgetary Educational Institution of Higher Education
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Discipline Hygiene

Situational task No.1

The girl, born on February 19, 1994, underwent a medical and psychophysiological examination (March 20, 2000) to determine her readiness for school.

The girl has the following somatometric indicators: body length – 124 cm, body weight – 24.6 kg, chest circumference – 55 cm. Number of permanent teeth – 4. Subjective complaints: rapid fatigue with minor exertion, frequent headaches. During the last calendar year I was sick 4 times (2 times ARVI, tonsillitis, chicken pox).

Irasek test with a score of 6 points. No sound pronunciation defects were identified.

Exercise

1. Determine the exact age of the child.
2. Evaluate the presented medical and psychophysiological criteria for readiness to study at school.
3. Determine your health group.
4. Give a conclusion on the training opportunity and recommendations for the upcoming summer period.

Situational task No.2

In a 4-year elementary school, a class schedule is drawn up in the first quarter of the school year. For 4 "A" class it looks like this:

Day of the week	Items	Points
Monday	Russian language, mathematics, physical education, foreign language	33
Tuesday	Mathematics, labor, labor, foreign language, Russian language	37
Wednesday	Natural history, Russian language, mathematics, foreign language	34
Thursday	Mathematics, foreign language, history, Russian language, literature	43
Friday	Russian language, drawing, physical education, mathematics	25
Saturday	Mathematics, Russian language, music, history	27

Three weeks after the start of classes, parents of students began to contact the school principal with complaints about their children’s excessive fatigue and a decline in their performance. Teachers noticed worsening discipline in the classroom.

Exercise

1. Evaluate the school schedule for grade 4 “A”.
2. Make changes to your schedule to make it more optimal.
3. What is the maximum permissible weekly workload for 4th grade students with a 6-day school week?
4. Are double lessons allowed in primary schools?

Situational task No.3

The secondary educational school of Vladikavkaz, designed for 464 students, is located on the territory of the microdistrict within the block at a distance of 50 m from the interblock passages. On the windward side, 100 m from the school, there is a class 2 industrial enterprise.

The land plot is rectangular in shape, the total area is 2.1 hectares. The following zones are allocated on the site: physical education and sports, educational and experimental, recreation area and utility yard area with a separate entrance from the street. The area of green spaces is 12,000 m.

The school building has a block layout: there are 3 two-story educational blocks (A, B, C) and an administrative building.

Classrooms for the lower grades (4 grades) are located on the first floor of block A. The area of the classrooms is 53.5 m2 (7.6 x 7.04 m), the windows are oriented to the south side of the horizon. On the second floor there are classrooms for middle and high school students: a classroom for mathematics, literature, Russian language (area 53.5 m2) , drawing and painting (74.8 m2) and military training (62.8 m2 with laboratory and weapons storage room). Laboratories for physics, chemistry and biology are located on the first floor of block B. The area of the laboratories is 73-74 m2 , there are laboratory assistants (17-18 m2) with a separate entrance from the corridor. In the third training block (B), the first floor is occupied by a gym measuring 9 x 13 m (117 m2) , as well as two locker rooms with showers and toilets, a training room and an instructor's room. On the second floor there is a combined metal and wood processing workshop (52.3 m2) , a master's room and a tool room.

In addition to the above, the school has facilities for organizing extended days, a library, an assembly hall, a canteen and a medical center.

Exercise

Evaluate the presented architectural and planning solution for the school site and building in accordance with sanitary and hygienic requirements.

Situational task No.4

By the beginning of the school year, it is necessary to equip a classroom for first graders. According to the exchange cards, students of the future class have the following height:

107 cm – 3 people	134 cm – 2 people
112 cm – 3 people	135 cm – 7 people
120 cm – 5 people	140 cm – 3 people
125 cm – 5 people	141 cm – 5 people
130 cm – 1 person	146 cm – 1 person
131 cm – 4 people	

Three children with a height of 112 cm, 135 and 141 cm have impaired visual acuity, and one child with a height of 115 cm has a hearing impairment.

To illuminate a classroom with an area of 50 m2, 10 lamps are provided . Network voltage is 220 V. Linear distribution coefficient - e = 2.5.

In the classroom, the light coefficient is 1:5; KEO - 1.5%, natural light illumination on the desk - 600 lux.

Exercise

1. Submit a request for desks for your future class.
2. Develop instructions for the teacher on arranging desks and seating students.
3. Assess the lighting in the classroom using natural light.
4. Violations of lighting levels and improper seating of schoolchildren during lessons are associated with the risk of what health problems in schoolchildren?

Situational task No.5

A preschool institution - a nursery/kindergarten in Vladikavkaz - is located on the border of the microdistrict and is located 100 m from a 3rd class industrial enterprise. The land plot of the preschool institution has a corner location in the microdistrict. There are residential buildings in the immediate surroundings. There are two entrances to the site: one entrance for children with parents and staff; the second is the entrance to the catering unit.

nursery-kindergarten site , designed for 240 children (10 groups), there are: group playgrounds, numbering 10, equipped with canopies and sandboxes; general physical education area; economic site. Group playgrounds are separated by green spaces (shrubs). The area of green spaces is 30%.

The nursery garden is located in a standard building, the main façade faces south. The building is 2-storey, consists of premises for pre-school children , for pre-school children and administrative and utility premises. Premises for preschool children (nurseries) and administrative and utility rooms are located on the 1st floor, and premises for preschool children on the 2nd floor. Children are divided into 10 groups according to age (nursery and preschool).

Premises for toddlers have an external common entrance to the building for
2 groups, and for preschool children - 4 groups.

The premises for toddlers include: a reception room, a playroom, a bedroom, a pantry, and a toilet. The premises for preschool children include: a dressing room, a group room, a bedroom, a pantry, and a toilet. The windows of the playing and group rooms have a southern orientation.

The light coefficient in playing and group rooms is 1:5, the depth coefficient is 1:2.5.

On the 1st floor of the building there is a music hall with an area of 100 ^{m2} ; rooms for classes on speech development and manual labor; a medical center consisting of a medical room, a treatment room and an isolation ward. The catering unit and service premises are located on the 1st floor, isolated from children's groups.

Exercise

Evaluate the conditions of placement and layout of the nursery/garden.

Situational task No.6

The secondary school has a computer class for 20 workstations with a total area of 60 m2 and a height of 3 m. All computers have safety certificates and are equipped with liquid crystal displays. Computer desks are arranged in 2 rows one behind the other, with 10 tables in each row. The distance between work tables in a row is 1 m, the distance between rows is 1 m. Work stations are not isolated from each other, the height of work tables is 600 mm. Monitor screens are located at a distance of 50 cm from the eyes.

Natural lighting - side left, orientation to the east, KEO is 0.8%. Artificial lighting is provided by 2 rows of lamps with fluorescent lamps. Artificial illumination on the surface of the tables is 150 lux.

Air temperature 25°C, relative humidity 25%, no ventilation system into the room. No measurements of electric and magnetic field parameters were carried out.

Exercise

1. Give a hygienic conclusion on the possibility of using this cabinet.
2. List the factors that negatively affect the body of schoolchildren when working at computer.
3. What is the acceptable duration of working with a computer for educational purposes?

Situational task No.7

General plan of a comprehensive school:

- the school has a block construction system;
- the total area of the site is 20,000 ^{m2};
- built-up area – ^{2110m2};
- landscaping area – ^{12000m2};
- number of floors – 3;
- the physical culture and sports zone occupies 45% of the site;
- garbage bins are located at a distance of 30 m from the school.

Exercise

Assess the master plan of a comprehensive school.

Situational task No.8

A 6-year-old boy is being examined by a pediatrician at a preschool institution. From the anamnesis it is known that the boy was desired, from young, healthy parents. Social conditions are good. Parents are engineers. He grew and developed according to his age. In the 1st year of life, he was observed by a neurologist for perinatal damage to the central nervous system and a syndrome of motor disorders. Until the age of three, he was registered at the dispensary as a frequently ill child, and subsequently he was practically not ill. Over the past year, he suffered from acute nasopharyngitis once .

On examination: condition is satisfactory. The skin is pale and clean. Mucous membranes are clean. Nasal breathing is free, there is no discharge . Lymph nodes are palpated in main groups and are not enlarged. NPV – 22 per minute. Breathing is vesicular, no wheezing. Heart sounds are clear, rhythmic, no murmurs. Heart rate - 88 beats/min. Blood pressure - 95/50 mm Hg. Art. The abdomen is soft and painless. Parenchymal organs are not enlarged. Physiological functions are normal.

Anthropometry : height 117 cm, weight 22.5 kg.

Behavioral characteristics: in a kindergarten group, he willingly plays with children, does not quarrel, makes up a story with a plot based on a picture, can long jump 75 cm from a standstill, carefully and quickly paints a circle with a diameter of 2 cm, is attentive, knows poetry according to his age. When communicating with adults, he easily comes into contact. He adapted well to kindergarten.

Exercise

1. Assess the child's physical development indicators.
2. What indicators of NPD need to be assessed in a child at 4 years of age? Rate neuropsychic development of the child.
3. Assess the child's resistance.
4. Determine the functional state of the child's organs and systems.
5. Determine the child's health group.

Situational task No.9

A child aged 6 years 7 months before entering school has the following characteristics: body length - M+ σ, has grown by 4 cm over the year, the number of permanent teeth is 5. The Kern-Irazek test is 10 points, the result of the motometric test is negative. He has chronic tonsillitis and suffered from ARVI 4 times during the year.

Exercise

1. List the main criteria for "school maturity."
2. Name what pattern of growth and development of children is taken into account when rationing parameters of functional maturity.
3. Is this child ready for school? If not, what will yours be? Recommendations for preparing it for the start of the school year?
4. List the risk factors in the intra-school environment of general education institutions for the health of students.

Situational task No.10

In kindergarten, a group of newly admitted children was formed at the age of 4-5 years, who had not previously been hardened. In terms of health and physical development, children are at the same level. Conditions for carrying out hardening procedures are available.

Exercise

1. Give recommendations on organizing the hardening process.
2. What is meant by hardening?
3. What is the basis of hardening?
4. Can all children undergo the hardening process?

Situational task No.11

Decide on the child's readiness to study at school if his biological age is ahead of his passport age. The child has disharmonious physical development due to a lack of body weight, health group 4, performs the Kern- Irazek test with 12 points and has a positive result on the motometric test.

Exercise

1. Define the concept of "school maturity."
2. List the main criteria of functional maturity.
3. Assess the morphofunctional state of the child before entering school.
4. Provide recommendations, if required, to the child's parents.

Situational task No.12

The mother of a 6-year-old boy, Igor, contacted the district pediatrician with a complaint that he After taking a sunbath in kindergarten, my son developed a headache, nausea, facial flushing, and the temperature rose to 37.8 C. The duration of the sunbath was 20 minutes (first session).

Exercise

1. Indicate what mistakes were made by the kindergarten staff when organizing sunbathing.
2. Give a diagram of the correct procedure.
3. Name the hardening groups.

Situational task No.13

Dmitry B.:

1. date of birth – 07/05/2006;
2. date of examination – 09/08/2016;
3. height – 140 cm, body weight – 41 kg, chest circumference – 70 cm;
4. annual height increase – 4 cm;
5. number of permanent teeth – 15;
6. degree of development of secondary sexual characteristics –Ax_0P_0

Exercise

1. Assess the level and harmony of the child's physical development:
   - sigma deviation method ;
   - centile method.
2. Give a comprehensive assessment of physical development using the regression method, ndicating biological age without taking into account functional indicators .

"Hygiene in extreme situations and disasters"

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Situational task No.1

In the city of P., Vladimir region, with a population of 100,000 people, there is a plant for the production of medical equipment (thermometers and pressure gauges), as well as warehouses for storing bleach (about 50 thousand tons). The main source of water supply for the city is the river flowing nearby industrial zone.

During the spring flood, which was caused by heavy rains and a hurricane, a significant part of the city was flooded, which led to the destruction of part of the plant, city warehouses and sewers. As a result, wastewater was discharged into the river without preliminary treatment, which created an additional threat to the health of the local population.

As a result of the flooding of a large part of the area, more than 5 thousand people were injured. Health authorities have registered more than 50 cases of intestinal infectious diseases.

Exercise

Give analysis situation that arose V city P. , and her hygienic appraisal .

Situational task No.2

The flood almost completely destroyed a settlement of 1,500 people. The population is housed in a tent camp in USB tents with the possibility of heating (there is a stove). There is a supply of water and food, but the need for water is much greater, so water has been obtained on site: using a military installation MTK-2m (shallow tube well), a well was drilled to a depth of 10 m. Water analysis was not carried out, however, given the flood, water contamination by pathogenic microorganisms can be assumed.

Exercise

A. Give a hygienic conclusion on the given situation.
B. Answer the following questions:
1. What are the features of water supply in extreme conditions?
2. How much water does a person need to drink?
3. What are the requirements for water in an extreme situation?
4. Standard means of water purification and disinfection in the field.
5. Disinfection of individual water supplies.

Situational task No.3

After the enemy used nuclear weapons, the regimental medical center, located in a sealed shelter with a volume of 650 m3, switched to complete isolation mode. At this time, 25 sick people and 5 medical personnel were not present. The management of the medical post contacted the command by radio and requested data on the tactics of their behavior in the near future. In turn, the command received a request - how long the medical center can hold out in the shelter before carbon dioxide accumulates in it to levels that are life-threatening for people.

Exercise

Give a hygienic conclusion on the given situation. Calculate how long a medical center can operate in the presented situation?

SAMPLE CONDUCT

business game "Investigation of a case of food poisoning"

Student A – patient
Student B – emergency medical doctor
Student B and G are members of the patient's family
Student D – general practitioner at the clinic
Students E and J – doctor and nurse at the clinic's day hospital
Student Z is an expert giving an opinion on the situation

1. Student B comes to call students A , B and D. Student B examines the patient, finds out complaints, anamnesis and epidemiological history .
2. Students A , B and D answer the doctor's questions. It turns out that the patient, along with all family members, ate beef cutlets and boiled potatoes during lunch, and after 6 hours he felt nausea and weakness, and gastrointestinal discomfort.
3. Students C and D answer that they feel fine.
4. Student B finds out that some of the prepared lunch is still left and asks Students C and D to put potatoes and cutlets in a container for research in the appropriate laboratory.
5. As a result of the examination, the emergency doctor advises the patient to perform gastric lavage and refrain from eating until visiting the clinic.
6. The next day in the morning the patient comes to see the local therapist at the clinic. His health has improved somewhat. Student D examines student A, finds out complaints, anamnesis and epidemiological anamnesis , makes an entry in the outpatient card and sends the patient to the clinic laboratory for clinical tests. In addition, student A is sent by student D to the day hospital of the clinic.
7. Student E prescribes to student A: g emodez 400.0 ml, ascorbic acid - 5% 2.0 IV drops. Student F fulfills the specified assignments.
8. Towards the end of the next day after the poisoning incident, student A comes to the clinic to see student D and notes that nothing bothers him. Student D recommends student A to follow a diet until the end of the week (do not eat spicy, fried, salty, fatty foods, refrain from strong coffee, chocolate, carbonated drinks and juices).
9. Student D, having received a conclusion from the laboratory, makes a final diagnosis.
10. Student Z makes a remark to the emergency doctor: an emergency notification about the case of food poisoning was not sent to the appropriate department of Rospotrebnadzor. He has no comments about the therapist at the clinic.

SAMPLE CONDUCT

business game "Case Investigation" occupational disease"

Student A – lead workshop worker
Student B – shop general practitioner
Student B – gastroenterologist
Student G – occupational pathologist
Student D – hospital doctor
Student E is an expert giving an opinion on the situation

1. Student A comes to student B for an appointment. Student B finds out the patient's complaints: general weakness, frequent headaches, decreased performance, frequent increases in blood pressure, pain in the right hypochondrium, dry mouth. Next, he examines the patient and writes him a referral for laboratory and instrumental examinations: general blood test, general urinalysis, lead content in urine, ultrasound of the abdominal organs. In this case, the doctor asks the patient to take tests the next day in the morning and come for an appointment 2 days later.
2. Student A comes back for an examination. Student B informs the patient about the results of the examination: the presence of lead intoxication is not confirmed, the lead content in the urine is normal. It is recommended to consult a gastroenterologist based on abdominal ultrasound data.
3. Student A visits a gastroenterologist, who, after reviewing the examination results, advises the patient to consult an occupational pathologist . Student A returns to Student B in order to receive an appropriate referral.
4. Student A comes to see student D. Student D listens carefully to student A, studies the results of his examinations and then clarifies how the urine sample was prepared to determine the lead content. It turns out that the patient passed his morning urine sample. Student G writes out a second referral to determine the lead content in urine and warns the patient that it is necessary to collect urine during the day and isolate 100-120 ml from the total amount for research. Student D also writes out a referral for student A to determine indicators characterizing liver function and asks to come back for an appointment 2 days after the tests.
5. When visiting the doctor again, student A learns that he has chronic lead poisoning and again comes to his shop therapist with the results of the examination.
6. Student B receives student A and gives him a referral to the hospital.
7. After being treated in a hospital, student A receives an extract from the medical history with a referral for rehabilitation treatment at a sanatorium-preventorium and recommendations for the management of the enterprise about his temporary transfer to a job that does not involve exposure to lead.
8. Student E comments on the tactics of students B , C , D, D and finds out who made mistakes and at what stage of this investigation.

No. LD-21

Federal State Budgetary Educational Institution of Higher Education "North Ossetian State Medical Academy" of the Ministry of Health of the Russian Federation

Department of General Hygiene and Physical Culture

Standards of test tasks

in the discipline "**HYGIENE**"

main professional educational program of higher education - specialty program 31.05.01 General Medicine (educational program, partially implemented in English), approved May 24, 2023

for 2-3 year students

specialty 31.05.01 General Medicine

Vladikavkaz, 2023

Table of contents

Incoming control

1. The greenhouse effect is associated with an increase in concentration in the atmosphere:
a. sulfur oxides;
б. nitrogen oxides;
в. carbon dioxide;
г. ozone

2. Optimal relative air humidity in a residential area in %:
a. 15 – 20%;
б. 20–30%;
в. 40 – 60%;
г. 80 – 90%

3. Part of the solar spectrum that has a bactericidal effect:
a. visible light;
б. infrared rays;
в. ultra-violet rays;
г. all of the above are true

4. Instrument used for continuous recording of air temperature:
a. barograph;
б. thermograph;
в. psychrometer;
г. hygrograph

5. Getting contaminated soil into a human wound can cause the development of:
a. cholera;
б. salmonellosis;
в. botulism;
г. gas gangrene

6. Find the correct conclusions: hard water has the following properties:
a. may lead to swelling;
б. increases appetite;
в. speeds up cooking;
г. slows down cooking

7. Death is caused by the body losing the amount of water in %:
a. 3 – 5%;
б. 7–10%;
в. 15–20%;
г. 25–30%

8. Daily human need for protein (in grams):
a. 15–20;
б. 30–40;
в. 50–70;
г. 80–100

9. Daily human need for fat (in grams):
a. 30–40;
б. 50–70;
в. 80–100;
г. 100–120

10. Daily human need for carbohydrates (in grams):
a. 50 – 80;
б. 150–200;
в. 400–500;
г. 500–700

11. Vitamin “C” is found most in :
- а. cabbage;
- б. carrots;
- в. black currant;
- г. rosehip

12. Lack of vitamin A in the body causes:
- а. decreased bone strength;
- б. "night blindness";
- в. reduces blood clotting;
- г. reduces capillary permeability

13. Check the correct statement:
- а. botulism occurs when eating fried mushrooms;
- б. botulism occurs when consuming canned mushrooms;
- в. botulism occurs when eating fresh mushrooms;
- г. botulism occurs when eating cooked mushrooms

14. The main routes by which poisons enter the body at work are:
- а. gastrointestinal tract;
- б. airways;
- в. skin;
- г. mucous membranes of the mouth, eyes.

15. From a hygienic point of view, the optimal heating system for residential premises is:
- а. air;
- б. panel;
- в. water;
- г. steam

16. Ions that cause water hardness:
- а. iron, chlorine;
- б. calcium, magnesium;
- в. sodium, calcium;
- г. copper, magnesium

17. The main functional role of proteins as nutrients:
- а. energy;
- б. plastic;
- в. lytic;
- г. catalytic

18. The main sources of phosphorus are the following products:
- а. dried apricots;
- б. peas;
- в. beef liver;
- г. cottage cheese

19. Check the correct statement:
- а. staphylococcal poisoning often occurs with a normal temperature;
- б. staphylococcal poisoning often occurs with low-grade fever;
- в. staphylococcal poisoning often occurs with high fever;
- г. staphylococcal poisoning often occurs with high blood pressure

20. Acid rain is caused by elevated concentrations in the atmosphere. substances:
- а. sulfur oxides;
- б. ozone;
- в. oxygen;
- г. nitrogen

21. Soil factor of transmission of infectious diseases:
- а. tuberculosis;
- б. flu;
- в. cholera;
- г. anthrax

22. The main functional role of water-soluble vitamins:
- а. caloric;
- б. catalytic;
- в. plastic;
- г. energy

23. Chemical compounds that cause destruction of the ozone layer:
- а. sulfur oxides;
- б. freons;
- в. carbon oxides;
- г. iron oxides

24. The following have an antirachitic effect:
- а. infrared rays;
- б. blue rays;
- в. ultra-violet rays;
- г. red rays

25. Dental caries is caused by the absence or small amount of microelements:
- а. lead;
- а. selena;
- б. zinc;
- в. fluoride

26. Endemic goiter causes a lack of microelements in water:
- а. zinc;
- б. copper;
- в. arsenic;
- г. iodine

27. The appearance of cracks in the skin and mucous membranes is a sign of hypovitaminosis:
- а. vitamin "B2" ;
- б. vitamin "A" ;
- в. vitamin "PP";
- г. vitamin "E"

28. The greatest source of vitamin A in food is:
- а. fish;
- б. bread;
- в. vegetable oil;
- г. fish liver

29. Optimal distribution of caloric content of food in% with 3 meals a day:
- а. 30–45–25;
- б. 15–50–35;
- в. 20–60–20;
- г. 25–50–25

30. Duration of active attention in children 7-10 years old:
- а. 10 minutes;
- б. 15 minutes;
- в. 20 minutes;
- г. 30 minutes

31. “School” diseases include:
a. strabismus;
б. nephropathy;
в. scoliosis;
г. color blindness

32. The main danger for medical personnel during x-ray examinations:
a. external irradiation;
б. blinding effect of the x-ray beam;
в. internal irradiation;
г. dunfavorable microclimate

33. Optimal standards for the microclimate of dwellings, in contrast to acceptable ones :
a. do not depend on age and climatic region;
б. do not depend on age and depend on the climatic region;
в. idepend on age and do not depend on the climatic region;
г. depend on age and depend on the climatic region.

34. In what disease does the bread crumb darken, become sticky and viscous, with an odor? valerian:
a. bread pigmentation;
б. chalk disease;
в. potato disease;
г. molding .

35. Average loss of vitamin C during cooking (in%):
a. 10–15;
б. 30;
в. 40;
г. 50.

36. The ratio of proteins, fats and carbohydrates in the diet of people doing heavy lifting physical labor should be:
a. 1–0.8–3;
б. 1–1.3–6;
в. 1–1–4;
г. 1–1–5.

37. What should be the ratio of proteins, fats and carbohydrates in the diet of people engaged in mental work:
a. 1–1–5;
б. 1–1–4;
в. 1–0.8–3;
г. 1–1,3–6.

38. Aquatic organisms living in natural layers and the thickness of the bottom of reservoirs are:
a. plankton;
б. benthos;
в. nekton;
г. periphyton.

39. Aquatic organisms living in the water column and capable of actively moving regardless of currents are:
a. benthos;
б. periphyton;
в. nekton;
г. plankton.

40. Decompression sickness occurs as a result of changes in blood concentration :
- а. nitrogen;
- б. carbon monoxide;
- в. sulfur compounds;
- г. oxygen.

41. A chemical compound in high concentrations that causes pulmonary edema:
- а. hydrogen sulfide;
- б. nitrogen oxides;
- в. photooxidants ;
- г. carbon dioxide.

42. Instrument used for continuous recording of air temperature:
- а. barograph;
- б. thermograph;
- в. psychrometer;
- г. hygrograph

43. The infectious diseases department of a hospital should be located:
- а. in the main building;
- б. on the upper floors of the medical building;
- в. in a separate building;
- г. in a separate wing of the medical building.

44. Recommended orientation of operating room windows:
- а. southern;
- б. northern;
- в. eastern;
- г. western

45. Optimal distribution of caloric content of food in% with 3 meals a day:
- а. 30–45–25;
- б. 15–50–35;
- в. 20–60–20;
- г. 25–50–25

46. Check the correct statement:
- а. staphylococcal poisoning often occurs with a normal temperature;
- б. staphylococcal poisoning often occurs with low-grade fever;
- в. staphylococcal poisoning often occurs with high fever;
- г. staphylococcal poisoning often occurs with high blood pressure.

47. From a hygienic point of view, the optimal heating system for residential premises is:
- а. air;
- б. panel;
- в. water;
- г. steam

48. Beri disease - Beri occurs when there is a lack of vitamin in the body:
- а. B1;
- б. PP;
- в. Д;
- г. К

49. Daily human need for carbohydrates (in grams):
- а. 50–80;
- б. 150–200;
- в. 400–500;
- г. 500–700

50. Lethal outcome is caused by the body losing the amount of water in %:
- а. 3–5%;
- б. 7–10%;
- в. 15–20%;
- г. 25–30%

51. Excess of a microelement causing dental fluorosis and other bone changes:
- а. copper;
- б. arsenic;
- в. fluorine;
- г. iodine

52. The greatest danger of developing silicosis is in:
- а. explosives;
- б. drivers;
- в. locksmiths;
- г. city of sandblasters.

53. Aquatic organisms living in natural layers and the thickness of the bottom of reservoirs are:
- а. plankton;
- б. benthos;
- в. nekton;
- г. periphyton.

54. Permissible water hardness:
- а. 3.5 mg/l;
- б. 7.0 mg/l;
- в. 10 mg/l;
- г. 14 mg/l.

55. Chemical substance - used as a coagulant in water treatment:
- а. chlorine;
- б. sodium hypochloride ;
- в. aluminum sulfate;
- г. manganese

56. Which of the following chemical compounds of water cause dyspepsia:
- а. fluorides;
- б. sulfates;
- в. nitrates;
- г. chlorides

57. Increased content of nitrates in the soil with a low amount of chlorides testifies:
- а. about long-standing soil contamination;
- б. about constant soil pollution;
- в. about recent soil contamination;
- г. about periodic soil pollution

58. The cause of the development of methemoglobinemia in humans may be the introduction into the soil of:
- а. potash fertilizers;
- б. nitrogen fertilizers;
- в. phosphate fertilizers;
- г. pesticides.

59. The outer shell of the earth, in which all its living matter is concentrated:
a. lithosphere;
б. noosphere;
в. biosphere;
г. stratosphere

60. Relative air humidity is measured in:
a. in mm.r t.st.;
б. in degrees;
в. in nanometers;
г. in percentages

61. Indicate the physiological significance of carbon dioxide:
a. organic matter oxidizer;
б. oxygen diluent;
в. stimulation of the respiratory center;
г. ventilation efficiency indicator

62. The action of gastric juice enzymes is carried out in:
a. neutral environment;
б. acidic environment;
в. alkaline environment;
г. does not depend on the acidity of the environment

63. Colon bacteria are necessary for the digestion of:
a. nucleotides;
б. glycogen;
a. fat;
в. fiber

64. Digestion of most nutrients occurs in:
a. oral cavity;
б. stomach;
в. small intestine;
г. large intestine

65. Digestion is possible already in the oral cavity:
a. proteins;
б. fat;
в. carbohydrates;
г. nucleotides

66. An early manifestation of vitamin A deficiency is:
a. rickets;
б. diabetes;
в. night blindness;
г. kwashiorkor

67. Infrasound is:
a. electrical vibrations with a frequency higher than sound;
б. mechanical vibrations and waves with a frequency of less than 16 Hz;
в. mechanical vibrations and waves with a frequency of more than 20 kHz.

68. The human hearing organ perceives the range of vibrations:
a. below 16 Hz;
б. above 20,000 Hz;
в. from 16 to 20,000 Hz

69. Vibration is:

a. mechanical vibrations with different frequencies and amplitudes;
б. mechanical vibrations with different frequencies;
в. mechanical vibrations with different amplitudes

70. Fatigue is:

a. physiological state of the human body that occurs during physical or mental work;
б. the state of the body is close to pathological;
в. pathological condition of the body

71. Human adaptation by its nature can be:

a. genotypic, phenotypic;
б. genotypic, genetic;
в. phenotypic, genetic

"Environment and its influence on the body. Air hygiene "

1. **Acclimatization is:**
   a. the process of adaptation to climatic factors;
   б. the process of adaptation to weather conditions;
   в. changes in the body during the adaptation process;
   г. meteoneurotic reaction;
   д. meteorological disease.

2. **Composition of atmospheric air:**
   a. nitrogen – 81%, oxygen – 18%, carbon dioxide – 1%;
   б. nitrogen – 75%, oxygen – 21%, carbon dioxide – 4%;
   в. nitrogen – 78%, oxygen – 21%, carbon dioxide – 1%;
   г. nitrogen – 78%, oxygen – 21%, carbon dioxide – 0.03%;
   д. nitrogen – 79%, oxygen – 19%, carbon dioxide – 0.04%.

3. **The occurrence of meteotropic reactions in humans is associated with changes in:**
   a. weather conditions;
   б. climate;
   в. indoor microclimate.

4. **The body function most sensitive to changes in microclimatic conditions is:**
   a. thermoregulation;
   б. breath;
   в. digestion;
   г. activity of the cardiovascular system.

5. **Diseases that occur in humans during sudden decompression:**
   a. altitude sickness;
   б. decompression sickness;
   в. altitude sickness.

6. **The mechanism of development of decompression sickness:**
   a. rapid removal of nitrogen from the blood through the lungs;
   б. rapid saturation of blood and tissues with nitrogen;
   в. release of nitrogen gas in tissues and blood;
   г. circulatory disorders as a result of gas embolism of blood vessels.

7. **High air temperatures are easier to tolerate:**
   a. at high humidity;
   б. at low humidity.

8. **In low temperatures, a person loses more heat:**
   a. in dry air;
   б. in humid air.

9. **The permissible horizontal air temperature difference in a living room is:**
   a. 1 °C ;
   б. 2 °C ;
   в. 3 °C ;
   г. 4°C.

10. **Air speed from 1 to 50 m/ sec is measured:**
    a. cup anemometer;
    б. vane anemometer;
    в. aspiration psychrometer;
    г. catathermometer.

11. **Dew point is:**
    a. the elasticity of water vapor currently in the air;
    б. the elasticity of water vapor in a state of complete saturation of the air with it;
    в. the temperature at which absolute humidity becomes maximum.

12. **The concept of relative air humidity:**
    a. the ratio of absolute humidity to maximum, expressed in %;
    б. difference between maximum and absolute humidity;
    в. the elasticity of water vapor currently in the air.

13. **To directly measure relative humidity, the following device is used:**
    a. hygrometer;
    б. psychrometer;
    в. hygrograph;
    г. barometer;
    д. thermometer.

14. **catathermometry method takes into account the effect on a person's thermal well-being:**
    a. humidity and radiant heat;
    б. radiative heat and air velocity;
    в. air speed and temperature.

15. **Which part of the solar spectrum causes sunstroke:**
    a. ultraviolet;
    б. visible ;
    в. shortwave infrared;
    г. long wave infrared.

16. **Prevention of photoophthalmia when irradiating people in fotariums:**
    a. use of dark glass glasses;
    б. use of glasses with metal mesh.

17. **Maximum thermometers:**
    a. mercury;
    б. alcohol

18. **Relative humidity standards in residential and public buildings:**
    a. 20-40%;
    б. 30-40%;
    в. 30-60%;
    г. 50-60%;
    д. 50-70%.

19. **Dew point is measured in :**
    a. %;
    б. mm.r t.st .; _
    в. °C;
    г. m /sec.

20. Instruments for measuring radiant heat:

а. thermometers;
б. actinometers;
в. catathermometers;
г. hygrometers.

21. When the air temperature is higher than the temperature of human skin, heat transfer occurs mainly through:

a. thermal radiation;
б. evaporation;
в. heat conduction (convection).

22. Saturation deficit is:

a. the difference between maximum and absolute air humidity;
б. the difference between the maximum humidity at a temperature of 37 °C and absolute humidity.

23. Infrared rays have greater penetrating power:

а. shortwave;
б. long wave.

24. Air humidity is normalized:

а. absolute;
б. minimal;
в. relative.

25. Fluctuations in the average daily air temperature in the room should not exceed:

а. 1 °C;
б. 2 °C;
в. 3 °C;
г. 4°C.

26. The normal air speed in residential premises is:

а. 0.4-0.6 m/sec;
б. 0.1-0.3 m/sec;
в. 0.02-0.04 m/sec;
г. 0.05-0.1 m/sec;
д. 1-1.5 m/sec.

27. Air speed from 0.5 to 15 m/ sec is measured:

а. cup anemometer;
б. vane anemometer;
в. aspiration psychrometer;
г. catathermometer.

28. Carbon dioxide from atmospheric air is involved in :

а. stimulation of the respiratory center;
б. heat transfer ;
в. digestion ;
г. energy metabolism ;
д. dilution .

29. **Depending on the nature of their effect on the body, chemical air pollutants are divided into substances:**
    a. predominantly reflex action;
    б. predominantly resorptive action;
    в. reflex-resorptive action;
    г. leading to sanitary and hygienic discomfort;
    д. carcinogens.

30. **In a state of thermal comfort, heat loss by radiation is:**
    a. 15.3%;
    б. 29.1%;
    в. 35.3%;
    г. 55.6%.

31. **Absolute humidity gives an idea of:**
    a. degree of air saturation with water vapor;
    б. content of water vapor in the air.

32. **To directly measure relative humidity, the following device is used:**
    a. hygrometer;
    б. psychrometer;
    в. hygrograph;
    г. barometer;
    д. thermometer.

33. **Under normal (room) temperatures, the main heat loss occurs through :**
    a. skin;
    б. lungs;
    в. with physiological functions.

34. **Low atmospheric pressure causes:**
    a. mountain sickness;
    б. load when moving;
    в. decompression sickness;
    г. radiation injuries;
    д. noise sickness

35. **Microclimate is:**
    a. a natural sequence of meteorological processes that stands out in long-term weather regime in a given area;
    б. combination of meteorological conditions indoors;
    в. combination of meteorological conditions in the ground layer of small areas of the earth surfaces.

36. **The concept of maximum air humidity:**
    a. the elasticity of water vapor saturating the air at a given temperature;
    б. elasticity of water vapor saturating the air at 0 °C ;
    в. the amount of water vapor (in grams) required to saturate 1 m3 of air at given temperature.

37. To dynamically monitor the air temperature in a room, use:
- а. hygrograph;
- б. barograph;
- в. thermograph;
- г. catathermometer;
- д. anemometer.

38. The speed of air movement in enclosed spaces is determined using the device:
- а. cup anemometer;
- б. vane anemometer;
- в. catathermometer;
- г. barometer;
- д. hygrometer.

39. Optimal temperature, humidity and air speed:
- а. 20 °C ; 50%; 2.5 m/sec;
- б. 15 °C ; 60%; 4 m/sec;
- в. 25 °C ; thirty%; 5 m/sec;
- г. 18 °C ; 70%; 1 m/sec;
- д. 20 °C ; 50%; 0.5 m/sec.

40. Atmospheric air takes part in :
- а. breathing ;
- б. formation of indoor air environment;
- в. hardening ;
- г. digestion ;
- д. maintaining body cleanliness.

41. Conditions under which a person may be exposed to increased atmospheric pressure:
- а. diving work;
- б. caisson works;
- в. construction of underwater tunnels;
- г. mountain climbing;
- д. flights on aeronautical vehicles.

42. Hyperthermia of the body is promoted by:
- а. heat;
- б. low air mobility;
- в. high air mobility;
- г. low humidity;
- д. high humidity.

43. The air temperature in the room is measured:
- а. thermograph;
- б. thermometer;
- в. hygrograph;
- г. Assmann psychrometer.

44. В интегральном потоке солнечного спектра выделят области:
- а. ультрафиолетового излучения;
- б. видимого света;
- в. инфракрасного излучения;
- г. космического излучения.

45. Indications for preventive irradiation with artificial UV radiation:
a. presence of signs of hypovitaminosis D ;
б. work in conditions of isolated sunlight;
в. living in northern latitudes;
г. increased atmospheric pressure.

46. The leading air pollutants in populated areas are:
a. suspended solids;
б. carbon monoxide;
в. carbon dioxide;
г. sulfur dioxide;
д. trioxide .

47. Climate formation is influenced by:
a. geographical location of the region;
б. cyclonic activity;
в. the nature of the underlying surface of the earth;
г. intensity of solar radiation;
д. human economic activity.

48. Signs of a northern cold climate:
a. low temperatures of air and surrounding surfaces;
б. high air humidity;
в. low air humidity;
г. strong hurricane winds;
д. electromagnetic air atmospheres.

49. Signs of a hot, dry climate:
a. high temperature of air and surrounding objects;
б. low air humidity;
в. high air humidity;
г. intense solar radiation;
д. hurricane winds.

50. Successful acclimatization of a person in northern, cold conditions is facilitated by:
a. food with high energy value;
б. increasing the amount of vitamin C ;
в. warm clothes and rational housing;
г. a clear regime of work and rest during the polar night;
д. daily physical activity.

51. Successful acclimatization of a person in a hot climate is facilitated by:
a. rational diet;
б. lightweight clothing and rational housing;
в. reduction in the amount of animal proteins;
г. capital housing;
д. animal products in the diet.

52. Unfavorable weather leads to :
a. exacerbation of chronic diseases;
б. seasonal diseases;
в. meteorological diseases;
г. decreased appetite.

53. Conditions under which a person may be exposed to low atmospheric pressure:

а. diving work;
б. caisson works;
в. construction of underwater tunnels;
г. mountain climbing;
д. flights on aeronautical vehicles.

54. The main factors affecting humans in mountain climates are:

a. low atmospheric pressure;
б. reduced air temperature;
в. increased UV radiation ;
г. reduced partial pressure of oxygen;
д. increased atmospheric pressure.

55. The factors determining the microclimate are:

a. illumination;
б. air temperature;
в. air humidity;
г. air speed;
д. barometric pressure.

56. Biological effect of solar radiation at the surface of the earth:

a. stimulating immunity;
б. immunosuppressant;
в. erythema- tan;
г. antirachitic;
д. bactericidal.

57. Biological significance of the visible part of the solar spectrum:

a. has a general stimulating effect on the body;
б. determines the possibility of visual function of the eye;
в. has an erythemal effect.

58. Possible adverse effects of solar radiation:

a. sunstroke;
б. sensitization;
в. hyperthermia;
г. erythema;
д. radiation sickness.

59. Reasons for the decrease in natural UV radiation in the north:

a. low position of the sun above the horizon;
б. constant cloudiness;
в. low air temperature;
г. a small number of sunny days per year.

60. Ecological and hygienic problems of large cities:

a. environmental pollution;
б. waste collection and disposal;
в. toxic mists.

61. High air temperature causes:
- а. sunstroke;
- б. convulsive illness;
- в. disruption of circadian rhythms;
- г. heatstroke;
- д. drying of mucous membranes.

62. Hypothermia of the body is promoted by:
- а. low air temperature;
- б. low air mobility;
- в. high air mobility;
- г. low air humidity;
- д. high air humidity.

63. Biological effect of the infrared part of the solar spectrum:
- а. causes heating of the skin;
- б. increases body temperature;
- в. dilates skin vessels;
- г. has a bactericidal effect.

64. Signs of heat erythema:
- а. clear boundaries of the irradiation zone;
- б. blurred boundaries of the irradiation zone;
- в. absence of a latent period of occurrence;
- г. transition of erythema to tan;
- д. transition of erythema to burn.

65. Factors influencing the intensity of natural UV radiation:
- а. transparency of the atmosphere;
- б. solar Activity;
- в. the height of the sun above the horizon;
- г. height of the area above the sea surface;
- д. amount of green space.

66. Changes that occur in the chemical composition of indoor air during prolonged burning of artificial sources of UV radiation :
- а. formation of nitrogen oxides;
- б. decreased amount of oxygen;
- в. ozone formation;
- г. formation of carbon monoxide.

67. Main measures to protect the urban environment:
- а. planning;
- б. technological;
- в. sanitary and technical;
- г. organizational.

68. Conditions under which a person may be exposed to low atmospheric pressure:
- а. diving work;
- б. caisson works;
- в. construction of underwater tunnels;

г. mountain climbing;
д. flights on aeronautical vehicles.

69. Biological effect of the UV region of the solar spectrum:
а. tan;
б. vitamin-forming;
в. erythema;
г. bactericidal;
д. thermal

70. Signs of ultraviolet erythema:
а. clear boundaries of the irradiation zone;
б. transition of erythema to tan;
в. blurred boundaries of the irradiation zone;
г. the presence of a latent period of occurrence;
д. no latent period of occurrence.

71. Contraindications to preventive irradiation with artificial UV radiation:
а. active form of tuberculosis;
б. thyroid diseases;
в. pronounced atherosclerosis;
г. chronic liver and kidney diseases in the acute stage;
д. malignant neoplasms.

72. For the formation of photochemical fog, the presence in the atmosphere must be:
а. nitrogen dioxide;
б. ultraviolet radiation of a certain wavelength;
в. infrared radiation of a certain wavelength;
г. hydrocarbons;
д. carbon dioxide.

"The environment and its influence on the body. Hygiene of water and water supply"

1. **Ways to reduce “water hunger” on Earth:**
   a. creation of reservoirs;
   б. replenishment of underground water horizons with surface water;
   в. injection of industrial wastewater into deep underground horizons;
   г. organization of recycling water supply at industrial enterprises;
   д. use of desalinated waters of seas and oceans.

2. **Low microbial contamination is typical for water sources :**
   a. artesian;
   б. ground;
   в. superficial.

3. **Dry residue and hardness of groundwater with depth:**
   a. decrease;
   б. increase;
   в. do not change.

4. **The organoleptic properties of water include:**
   a. smell, taste;
   б. smell, taste, color;
   в. smell, taste, color, turbidity;
   г. smell, taste, color, turbidity, hardness.

5. **The most favorable drinking water temperature is:**
   a. less than 7 ˚C ;
   б. 7-12 ˚C ;
   в. more than 12˚C.

6. **Ways to reduce “water hunger” on earth:**
   a. creation of reservoirs;
   б. replenishment of groundwater horizons with surface water;
   в. injection of industrial wastewater into deep underground horizons;
   г. organization of recycling water supply at industrial enterprises;
   д. use of desalinated waters of seas and oceans.

7. **Consumption of water with a fluoride content of less than 1 mg/l contributes to the occurrence of the disease:**
   a. fluorosis;
   б. caries;
   в. hyperkeratosis;
   г. urolithiasis .

8. **Cause of endemic goiter:**
   a. drinking water low in iodine;
   б. drinking water high in iodine;
   в. eating foods low in iodine;
   г. eating foods high in iodine.

9. **Biological film is:**
   a. colloidal structure enveloping sand grains;
   б. salt deposits;
   в. biocenosis of representatives of zoophytoplankton and microorganisms.

10. **The most common method of disinfecting drinking water at a waterworks:**
    a. chlorination;
    б. UV irradiation ;
    в. ozonation.

11. **When disinfecting drinking water with chlorine-containing preparations, the organoleptic properties of water can:**
    a. improve;
    б. deteriorate;
    в. don't change.

12. **Frequency of control of residual chlorine in drinking water:**
    a. 1 time per day;
    б. 1 time per shift;
    в. 1 time per hour;
    г. depending on the type of water supply source.

13. **When choosing a source for centralized drinking water supply, the greatest preference is given to the following waters:**
    a. ground;
    б. interstratal;
    в. under-channel ;
    г. superficial.

14. **The taste of drinking water depends on :**
    a. water temperature;
    б. temperature of water and dissolved gases;
    в. temperature of water, dissolved gases and salts.

15. **The taste of tap water should be no more than:**
    a. 3;
    б. 2;
    в. 0.

16. **The quality of water in the distribution (water supply) network complies with the requirements of SanPiN "Drinking Water" if:**
    a. smell and taste 0 points, color 10°, turbidity 2.5 mg/l;
    б. smell and taste 3 points, color 30°, turbidity 1.5 mg/l;
    в. smell and taste 2 points, color 20°, turbidity 1.5 mg/l;
    г. smell and taste 3 points, color 10°, turbidity 2.0 mg/l.

17. **Hygienic requirements for the chemical composition of drinking water apply to the following substances:**
    a. natural origin;
    б. natural origin and reagents used for water treatment;
    в. natural origin;
    г. reagents used for water treatment;
    д. anthropogenic source water pollutants.

18. **Hard drinking water is one of the etiological factors in the development of:**
    a. endemic goiter;
    б. fluorosis;
    в. urolithiasis .

19. **The dry (dense) residue in tap water should not exceed, mg/l:**
    a. 350;
    б. 500;
    в. 1000.

20. **Long-term consumption of water with a high concentration of nitrates causes the disease:**
    a. fluorosis;
    б. methemoglobinemia ;
    в. caries;
    г. urolithiasis .

21. **Viral disease spread by water:**
    a. parotitis;
    б. polio;
    в. typhoid fever;
    г. tularemia;
    д. giardiasis .

22. **Approximate chlorine dose values for chlorination at normal doses:**
    a. 1-5 mg/l;
    б. 10-15 mg/l;
    в. 20-30 mg/l.

23. **Presence of residual chlorine in a concentration corresponding to hygienic requirements, secondary pollution in the distribution network:**
    a. hinders;
    б. does not interfere;
    в. depends on the degree of bacterial contamination.

24. **When disinfecting drinking water with ozone, its organoleptic properties:**
    a. worsen;
    б. do not change;
    в. are improving.

25. **The least reliable water sources from a sanitary point of view are:**
    a. superficial;
    б. interlayer free-flow;
    в. artesian.

26. **Long-standing and constant contamination of a water source is characterized by the presence of:**
    a. ammonia and nitrates;
    б. ammonia and nitrites;
    в. nitrates;
    г. ammonia, nitrites, nitrates.

27. **Endemic goiter is a consequence of:**
    a. lack of fluoride;
    б. excess fluoride;
    в. iodine deficiency;
    г. excess iodine.

28. Infection caused by protozoa and spread by water:
а. giardiasis ;
б. cholera;
в. hepatitis A ;
г. typhoid fever;
д. parotitis.

29. High efficiency of water purification using slow filters is ensured by:
а. large thickness of the loading layer;
б. slow filtration;
в. presence of biological film;
г. preliminary coagulation of water.

30. During normal chlorination, the dose of chlorine consists of the following components:
а. chlorine absorption + residual chlorine;
б. chlorine demand + residual chlorine.

31. Advantages of ozone over chlorine when disinfecting drinking water:
а. improves the organoleptic properties of water;
б. improves the organoleptic properties of water and requires less contact time;
в. improves the organoleptic properties of water, requires less contact time, and is more effective against pathogenic protozoa.

32. When disinfecting drinking water with UV radiation, the organoleptic properties of water can:
а. improve;
б. deteriorate;
в. don't change.

33. Bacterial infection spread by water:
а. giardiasis ;
б. cholera;
в. hepatitis A ;
г. amoebic dysentery;
д. parotitis.

34. Bacteriological indicators of groundwater quality with depth:
а. worsen;
б. are improving;
в. do not change.

35. The age of contamination is indicated by the content of ammonia salts in water:
а. fresh;
б. middle age;
в. a long time ago

36. Content of free residual chlorine after completion of the chlorination process:
а. 0.1-0.2 mg/l;
б. 0.3-0.5 mg/l.

37. Groups of indicators for assessing the quality of drinking water according to SanPiN 2.1.4.1074-01:

а. epidemic water safety;
б. harmlessness of the chemical composition;
в. optimal content of microelements in water;
г. ensuring favorable organoleptic properties of water;
д. suitability of water for fish farming.

38. Sources of anthropogenic pollution of surface water bodies in the urban environment:

a. domestic wastewater;
б. industrial waste;
в. storm drains;
г. geochemical composition of the soil;
д. shipping.

39. The mineral composition of the water may be the main reason:

a. water fever;
б. convulsive illness;
в. fluorosis;
г. endemic goiter;
д. caries.

40. Hygienic value of hardness salts:

a. create difficulties when using water for domestic purposes and in production;
б. have a toxic effect;
в. change the organoleptic properties of water.

41. Excess iron in drinking water:

a. worsens the organoleptic properties of water;
б. causes irritation of the mucous membranes of the oral cavity;
в. limits the use of water for domestic purposes.

42. The following can be transmitted through water:

a. typhoid fever;
б. typhus;
в. tularemia;
г. hepatitis A ;
д. Hepatitis B.

43. The efficiency of the coagulation process is controlled by water quality indicators:

a. turbidity;
б. color;
в. total microbial count;
г. thermotolerant and common coliform bacteria;
д. residual amounts of reagents used to clarify water.

44. Physical methods for disinfecting drinking water include:

a. use of hydrogen peroxide;
б. Ural Federal District;
в. boiling;
г. UZK;
д. oligodynamic effect of silver.

45. Special methods for improving the quality of drinking water:
а. deactivation;
б. lightening;
в. deodorization;
г. degassing;
д. cleaning

46. The waters of surface reservoirs differ from interstratal waters:
а. greater mineralization ;
б. high oxygen content;
в. higher bacterial contamination;
г. more stable chemical composition;
д. greater tendency to “bloom”.

47. Hygienic standardization of water quality is carried out according to :
а. organoleptic indicators;
б. microbiological indicators;
в. chemical indicators;
г. biochemical parameters;
д. physiological indicators.

48. Substances and indicators indicating water contamination with organic substances:
а. ammonia;
б. nitrites;
в. nitrates;
г. oxidability;
д. iron.

49. The reason for the development of water-nitrate methemoglobinemia :
а. drinking water high in nitrites;
б. drinking water high in nitrates;
в. drinking water with high ammonia content.

50. Characteristic signs of water epidemics:
а. slow rise of the incidence curve;
б. rapid rise in the incidence curve;
в. a short stay of the curve at a high level and a rapid decline;
г. connection of diseases with the use of water from a certain source;
д. attachment of a “contact tail” in outbreaks caused by a contagious pathogen.

51. Methods for disinfecting drinking water:
а. coagulation ;
б. chlorination;
в. fluoridation;
г. ozonation;
д. treatment with ultraviolet rays.

52. Indications for the use of the chlorination method with preammonization are:
а. high microbial contamination;
б. prevention of odor provocation;
в. unfavorable epidemiological situation for intestinal infections;
г. inability to provide sufficient contact time between water and chlorine.

53. Drinking water should:
a. have favorable organoleptic properties;
б. do not contain salts;
в. be harmless in chemical composition;
г. be safe in terms of epidemics;
д. be radiation safe.

54. Indicators determined for the epidemiological assessment of drinking water with centralized water supply:
a. coliphages ;
б. Giardia cysts;
в. common coliform bacteria;
г. thermotolerant coliform bacteria;
д. sulfite-reducing clostridia ;
е. nitrogen salts.

55. The main indicators of organic pollution of water bodies are:
a. oxidability;
б. content of ammonia salts, nitrites, nitrates;
в. common coliform bacteria;
г. thermotolerant bacteria;
д. coliphages .

56. Disorders that occur when drinking water with high chloride content
а. decreased gastric secretion;
б. decreased intestinal secretion;
в. increased motor function of the stomach and intestines;
г. inhibition of renal excretory function;
д. violation of the feeling of thirst quenching.

57. The main ways to improve the quality of drinking water:
a. disinfection;
б. desalination;
в. fluoridation;
г. lightening;
д. deferrization.

58. Disinfection methods that prevent the formation of odors in drinking water or ensure their elimination:
a. ozonation;
б. UV irradiation ;
в. simple chlorination;
г. chlorination with preammonization .

59. Sources of anthropogenic pollution of surface water bodies:
a. domestic wastewater;
б. industrial waste;
в. storm drains;
г. geochemical composition of the soil;
д. shipping.

60. Underground water supply sources include:
а. rivers;
б. groundwater;
в. interstratal free-flow waters;
г. precipitation;
д. artesian waters.

61. Artesian waters are characterized by:
а. constancy of salt composition;
б. favorable organoleptic properties;
в. low mineralization;
г. lack of dissolved oxygen;
д. low bacterial contamination.

62. Water supply systems for populated areas:
а. mixed;
б. water supply;
в. combined;
г. centralized;
д. decentralized.

63. Features of the salt composition of water are a risk factor for :
а. dysentery;
б. diabetes;
в. urolithiasis;
г. hypertension;
д. hepatitis A.

64. Water clarification is accompanied by:
а. liberation of water from suspended substances;
б. liberation of water from colloidal substances;
в. sedimentation of microbial suspension;
г. removal of salts and gases.

65. Reagents used for coagulation:
а. chlorine;
б. ferric chloride;
в. aluminum sulfate;
г. iron sulfate.

66. Special methods for improving the quality of drinking water include:
а. fluoridation;
б. desalination;
в. chlorination;
г. coagulation;
д. deferrization.

67. Preventive sanitary supervision of water supply involves the allocation of the following zones of sanitary protection of water bodies:
а. high security zone;
б. restriction zone;
в. current control zone;
г. disinfection zone;
д. observation zone.

68. Natural sources of water used to supply drinking water supply systems:
а. atmospheric waters;
б. open waters;
в. desalinated sea water;
г. interstratal waters;
д. groundwater.

69. Hygienic requirements for the quality of drinking water include indicators and their standards characterizing:
а. epidemiological safety;
б. parasitological safety;
в. harmlessness of the chemical composition;
г. favorable organoleptic properties;
д. physiological usefulness.

70. Methods for clarifying drinking water:
а. chlorination;
б. settling;
в. filtration;
г. coagulation.

71. Physical methods for disinfecting drinking water:
а. boiling;
б. exposure to UV rays ;
в. chlorination;
г. exposure to gamma rays;
д. exposure to ultrasound.

72. Indirect indicators of biogenic pollution of water bodies:
а. general water mineralization;
б. content of ammonium salts, nitrites, nitrates;
в. fluorine and iodine concentration;
г. water oxidability;
д. saprobity of the reservoir.

73. Indicators indicating organic water pollution:
а. ammonia;
б. nitrites;
в. nitrates;
г. oxidability;
д. chlorides.

74. Minimum contact time of chlorine with water during chlorination with normal doses:
а. 30 min. in summer;
б. 1 hour in summer;
в. 30 min. in winter;
г. 1 hour in winter.

75. Chemical methods for disinfecting drinking water:
а. boiling;
б. chlorination;
в. UV irradiation ;
г. ozonation;
д. use of the oligodynamic action of metals.

76. Methods for chlorinating drinking water:

а. chlorination with post-turnover doses;
б. chlorination with ammoniation ;
в. chlorination in normal doses;
г. hypochlorination ;
д. hyperchlorination .

77. Prevention of waterborne diseases includes:

а. rational choice of water supply source;
б. creation of sanitary protection zones;
в. standardization of water quality and compliance with hygiene standards;
г. efficient water treatment at waterworks;
д. use only interstratal water sources as water supply sources groundwater.

"Nutrition as a factor in maintaining and promoting health"

1. **Optimal distribution of calorie content of food into individual meals with three meals a day (in percentage):**
   a. 30-45-25;
   б. 15-50-35;
   в. 20-60-20.

2. **Caloric ratio of proteins and carbohydrates:**
   a. 3 kcal/g;
   б. 4 kcal/g;
   в. 5 kcal/g;
   г. 6 kcal/g.

3. **Recommended percentage of vegetable fats in daily fat content:**
   a. 10-15;
   б. 25-30;
   в. 40-50.

4. **Foods that are rich sources of well-absorbed calcium:**
   a. milk and dairy products;
   б. vegetables and fruits;
   в. leguminous products;
   г. meat and meat products;
   д. fish and fish products.

5. **Diseases associated with B1 $_{\text{vitamin}}$ deficiency:**
   a. scurvy;
   б. rickets;
   в. alimentary polyneuritis;
   г. fatty infiltration of the liver;
   д. hemeralopia.

6. **How will the specific gravity of skim milk change?**
   a. Will not change;
   б. will rise;
   в. will decrease.

7. **What to do with a batch of cattle meat if more than 3 Finns are found per 40 $^{\text{cm2}}$?**
   a. use for food purposes after neutralization by cooking in an autoclave for 1.5 hours;
   б. use for nutritional purposes without restrictions;
   в. transfer for technical disposal;
   г. use for nutritional purposes after freezing to minus 12 °C in the thickness of the muscles.

8. **The physical activity coefficient reflects the ratio:**
   a. total energy expenditure with the value of basal metabolism;
   б. energy expenditure on physical and mental activity.

9. **Of the total amount of protein, animal proteins in the diet of the adult population should be:**
   a. 35%;
   б. 45%;
   в. 55%;
   г. 60%.

10. Violation of collagen synthesis in the human body occurs due to vitamin deficiency:
- а. A;
- б. WITH;
- в. E;
- г. D.

11. What is the ratio of calcium to phosphorus in milk?
- а. 1:2;
- б. 1:4;
- в. 1:0.8.

12. Helminthiasis, in which meat in all cases is subject to technical disposal:
- а. taeniasis;
- б. echinococcosis;
- в. fascioliasis ;
- г. trichinosis.

13. The causative agent of botulism is:
- а. aerobic;
- б. anaerobic.

14. The incubation period for staphylococcal toxicosis usually lasts up to :
- а. 10 hours;
- б. 8 ocloc'k;
- в. 6 hours.

15. The most favorable ratio in the diet of an adult between calcium and phosphorus salts is:
- а. 1:0.8 – 1.0;
- б. 1:0.8 – 1.2;
- в. 1:1 – 1.5;
- г. 1:1.2 – 1.5.

16. Effect of magnesium on the human body:
- а. antispastic;
- б. anti-inflammatory and desensitizing;
- в. participation in hemoglobin synthesis;
- г. participation in thyroid function;
- д. influence on the state of nervous tissue.

17. Determining the time of dark adaptation characterizes the body's supply of vitamins:
- а. A;
- б. D ;
- в. WITH.

18. The normal specific gravity of milk is:
- а. 1.028-1.034;
- б. 1.009-1.018;
- в. 1.039-1.052.

19. The main source of pathogens of staphylococcal toxicosis is:
- а. cattle;
- б. small cattle;
- в. human.

20. The main preventive measure for toxic infections:
- a. correct storage conditions;
- б. compliance with implementation deadlines;
- в. compliance with personal hygiene rules by catering staff;
- г. prevention of food contamination;
- д. proper cooking.

21. The main method of studying organized nutrition is:
- a. laboratory;
- б. statistical.

22. Caloric ratio of fats:
- a. 6 kcal\g;
- б. 7 kcal\g;
- в. 8 kcal\g;
- г. 9 kcal\g.

23. The main energy function in the body is performed by:
- a. vitamins;
- б. carbohydrates;
- в. proteins;
- г. fats;
- д. minerals.

24. Effect of phosphorus on the human body:
- a. antiseptic;
- б. anti-inflammatory and desensitizing;
- в. participation in hemoglobin synthesis;
- г. participation in thyroid function;
- д. influence on the state of nervous tissue.

25. The oxidation of unsaturated fatty acids in cell membranes increases with vitamin deficiency:
- a. A;
- б. WITH;
- в. E;
- г. D.

26. Vitamin involved in carbohydrate metabolism:
- a. A;
- б. WITH;
- в. B_1;
- г. E.

27. Milk acidity level:
- a. 12-16º Turner;
- б. 16-22º Turner;
- в. above 23ºTurner.

28. The normal porosity of wheat bread made from flour 96% yield should be:
- a. not less than 55%;
- б. not less than 68%;
- в. at least 80%.

29. Caused by burns or infected wounds on the hands of food service workers?
a. botulism;
б. staphylococcal intoxication;
в. toxicoinfection caused by Cl . Perfringens ;
г. salmonellosis.

30. Disturbances in the metabolism of calcium and phosphorus in the body occur due to vitamin deficiency:
a. A;
б. WITH;
в. E;
г. D.

31. Effect of iron on the human body:
a. antispastic;
б. anti-inflammatory and desensitizing;
в. +participation in hemoglobin synthesis;
г. participation in thyroid function;
д. influence on the state of nervous tissue.

32. The quality of the protein component of food products reflects the following concept:
a. the nutritional value;
б. biological value;
в. biological effectiveness;
г. energy value.

33. Is milk from animals with severe symptoms of tuberculosis of the udder and other organs allowed for food?
a. allowed after boiling;
б. allowed after pasteurization;
в. not allowed.

34. Meat is a major source of the following nutrients except:
a. proteins;
б. fats;
в. carbohydrates;
г. minerals.

35. Causal factors of microbiological bombing of canned food:
a. violation of the seal of the can;
б. development of residual microflora;
в. the effect of the acidic environment of the product on the walls of the jar.

36. Vegetables and fruits in human nutrition are sources of:
a. proteins, fats, carbohydrates;
б. carbohydrates, dietary fiber, vitamins, minerals;
в. proteins, dietary fiber, vitamins.

37. In the pathogenesis of foodborne toxic infections , the main role is played by:
a. live microbes that have multiplied in food;
б. toxins formed in food as a result of the proliferation of microbes.

38. The role of iodine in the life of the human body:

а. antiseptic;
б. anti-inflammatory and desensitizing;
в. participation in hemoglobin synthesis;
г. participation in thyroid function;
д. influence on the state of nervous tissue.

39. Vitamin E is involved:

a. in the formation of bone tissue;
б. in antioxidant protection;
в. in hematopoiesis .

40. An increase in the specific gravity of milk indicates:

a. diluting milk with water;
б. skimming ;
в. soda impurities.

41. More than 20% of protein comes from plant foods:

a. bread;
б. legumes;
в. oilseeds

42. Osteoporosis is caused by vitamin deficiency:

a. A;
б. B_1 ;
в. WITH;
г. D ;
д. E.

43. The main source of vitamin E in the diet:

a. vegetable oil;
б. dairy products;
в. fruits.

44. the least heat resistance during cooking is:

a. A;
б. B_1 ;
в. WITH;
г. D. _

45. Causal factors of chemical bombing of canned food:

a. development of residual microflora;
б. violation of the seal of the can;
в. the effect of the acidic environment of the product on the walls of the jar.

46. The optimal ratio of proteins, fats and carbohydrates in the diets of the adult working population is:

a. 1:1:4;
б. 1:0.8:5;
в. 1:1,1:4,8;
г. 1:0.8:3;
д. 1:1:6.

47. Grain processing products are deficient in vitamins:
a. group B ;
б. E.

48. In a food product containing the causative agent of botulism, when boiled for 15 minutes, the following may remain:
a. microbes;
б. toxins;
в. disputes.

49. Rational nutrition means:
a. sufficient energy value of the diet as a result of adequate requirements for the supply of proteins, fats and carbohydrates;
б. compliance of the enzyme set with the chemical structure of the food;
в. optimal ratio of nutritional and biologically active substances;
г. optimal diet.

50. What indicators can be used to assess the adequacy of individual nutrition:
a. correspondence of actual body weight to ideal;
б. compliance of energy expenditure with the energy value of the daily diet;
в. absolute quantity and ratio of nutrients and biologically active substances in the diet;
г. the good quality of the products included in the diet.

51. What quantities make up the daily energy expenditure?
a. basal metabolism;
б. specific dynamic action of food;
в. energy expended on various activities;
г. working time.

52. Unsaturated fatty acids include:
a. oleic;
б. linoleic ;
в. arachidonic ;
г. stearic

53. Disorders that occur with protein deficiency:
a. development of fatty liver infiltration;
б. changes in the chemical composition and morphological structure of bones;
в. changes in the endocrine glands and a decrease in their functional ability;
г. decrease in the immunobiological reactivity of the body.

54. Places of permanent residence of botulism pathogens:
a. the soil;
б. water of rivers, lakes;
в. animal intestines;
г. fish intestines;
д. human intestines;
е. air environment.

55. The main preventive measure for toxic infections :
a. correct storage conditions;
б. compliance with implementation deadlines;
в. compliance with personal hygiene rules by catering staff;
г. prevention of food contamination;
д. proper cooking.

56. The concept of “diet mode” includes:
a. frequency of meals;
б. intervals between meals;
в. distribution of energy value among meals;
г. the nature of the products consumed during the week.

57. Biological role of proteins:
a. are plastic material;
б. participate in the synthesis of hormones;
в. participate in the synthesis of enzymes;
г. participate in the synthesis of antibodies;
д. participate in the synthesis of hemoglobin.

58. The nutritional value of vegetables and fruits is determined by:
a. high content of plant proteins;
б. lack of palatability ;
в. good organoleptic properties;
г. mineral content;
д. vitamin content.

59. Biological role of calcium:
a. participates in the formation of skeletal bones;
б. participates in the process of blood clotting;
в. necessary to maintain normal neuromuscular excitability;
г. promotes the absorption of proteins.

60. Deficient nutrition is associated with :
a. gastritis, enteritis, colitis;
б. nutritional dystrophy;
в. hypovitaminosis;
г. gout.

61. The amount of basal metabolism depends on:
a. from the floor;
б. from age;
в. from body weight;
г. from physical activity.

62. The concept of “menu layout” includes:
a. the name of the dishes indicating their weight;
б. the name of the dishes and their recipes;
в. name of dishes, their chemical composition and energy value;
г. distribution of dishes among meals.

63. Grain products are a dietary source of:
a. vegetable protein;
б. fats;
в. carbohydrates;
г. minerals;
д. vitamin C.

64. Eliminates the possibility of using bombarded canned food:
a. bacteriological;
б. physical;
в. chemical.

65. Symptoms of food poisoning from toadstool:
а. lacrimation, drooling, increased sweating;
б. sharp pain in the abdomen;
в. vomiting like “coffee grounds”;
г. cholera-like stool mixed with blood;
д. excruciating thirst.

66. Total daily energy expenditure consists of energy expenditure:
а. for basal metabolism;
б. on the specific dynamic effect of food;
в. for physical activity;
г. for heat exchange.

67. The most deficient essential amino acids are:
а. tryptophan;
б. arginine;
в. lysine;
г. methionine

68. Foods that are rich sources of polyunsaturated fatty acids:
а. butter;
б. vegetable oils;
в. lamb fat;
г. fish fat.

69. Biological role of carbohydrates:
а. are a rich source of energy;
б. are a structural element of cells and tissues;
в. are a source of vitamin C.

70. Factors influencing the absorption of calcium in the human body:
а. calcium to fat ratio;
б. calcium to phosphorus ratio;
в. calcium to carbohydrate ratio;
г. calcium to magnesium ratio;
д. calcium to protein ratio.

71. Seasons of the year in which C-hypovitaminosis is more common:
а. autumn;
б. winter;
в. spring.

72. With a deficiency of vitamin PP in the diet, symptoms are observed:
а. diarrhea;
б. loose gums;
в. dermatitis;
г. dementia.

73. Cereal products mainly contain:
а. Sahara;
б. starch;
в. glycogen;
г. pectin;
д. cellulose.

74. Products that are rich sources of complete protein:
а. cereals and products of their processing;
б. meat and meat products;
в. milk and dairy products;
г. fish and fish products;
д. vegetables and fruits.

75. Biological role of polyunsaturated fatty acids:
а. participate in carbohydrate metabolism;
б. promote the release of cholesterol from the body;
в. increase the elasticity of the walls of blood vessels.

76. Products are the main sources of vitamin P :
а. cranberry;
б. potato;
в. cowberry;
г. black currant;
д. cherry.

77. What helminthiasis can be transmitted to humans through fish?
а. diphyllobothriasis;
б. opisthorchiasis;
в. taeniasis.

78. Characteristic signs of food poisoning as opposed to intestinal infections:
а. mass character;
б. sudden onset;
в. contagiousness ;
г. connection of the disease with food intake;
д. short incubation period.

79. Foods that are most likely to cause botulism:
а. homemade salted fish;
б. canned mushrooms and vegetables;
в. home-cooked pork (salted, smoked);
г. industrially produced canned vegetables in tomato filling.

80. A balanced diet implies:
а. sufficient energy value of the diet as a result of adequate intake of proteins, fats and carbohydrates;
б. compliance of the enzyme set with the chemical structure of the food;
в. optimal ratio of nutritional and biologically active substances;
г. optimal diet.

81. Unsaturated fatty acids include:
а. oleic;
б. linoleic ;
в. arachidonic ;
г. stearic

82. Animal products are rich sources of vitamin B_1 :
а. pork;
б. liver;
в. butter;
г. eggs;
д. beef.

83. People's need for vitamin C increases with diseases:
a. infectious;
б. tuberculosis ;
в. gastrointestinal;
г. cardiovascular

84. 2 Trichinella are found on the compressorium?
a. declare meat unsuitable for food purposes;
б. send for technical disposal;
в. accept as fit without restrictions.

85. Microorganisms – causative agents of food intoxication:
a. enterotoxigenic staphylococcus;
б. C 1 . perfringens ;
в. E. coli;
г. C1. botulinum ;
д. salmonella.

86. Diseases associated with vitamin D deficiency in the body:
a. rickets;
б. osteoporosis;
в. osteomalacia;
г. cirrhosis of the liver.

87. What to do with a batch of cattle meat if 3 Finns are found per 40 ^{cm2} ?
a. use for food purposes after neutralization in an autoclave for 1.5 hours at 110 °C ;
б. use for nutritional purposes without restriction;
в. transfer for technical disposal;
г. use for nutritional purposes after freezing to minus 12 °C in the thickness of the muscles;
д. use for nutritional purposes after neutralization by boiling in pieces up to 2 kg for 2 hours.

88. Products and dishes that are most often associated with staphylococcal intoxication:
a. eggs;
б. minced meat products;
в. cakes and quiches;
г. milk and dairy products;
д. canned fish in oil with row packing.

89. To calculate energy and nutrient requirements, the following are taken into account:
a. the severity of labor;
б. age, gender;
в. BX;
г. climatic and geographical features of residence;
д. physical activity.

90. The biological effectiveness of vegetable fats is due to:
a. good digestibility;
б. high energy value;
в. good organoleptic properties;
г. high content of vitamins A and D ;
д. content of polyunsaturated fatty acids.

91. Amanitin is found in:
а. wild meadow grasses ;
б. weeds of cereal crops;
в. poisonous mushrooms ;
г. sprouted potatoes ;
д. bitter kernels of stone fruits.

92. The most characteristic clinical symptoms of staphylococcal toxicosis:
а. repeated diarrhea;
б. repeated debilitating vomiting;
в. epigastric pain ;
г. difficulty swallowing;
д. nausea.

93. Mushrooms that cause food poisoning:
а. death cap;
б. russula;
в. lines;
г. fly agarics.

94. Nutrients that enter the body along with fats:
а. polyunsaturated fatty acids;
б. phosphatides ;
в. tocopherols and sterols;
г. calcium salts;
д. fat-soluble vitamins.

95. By what indicators is milk freshness assessed?
а. by organoleptic properties;
б. by acidity;
в. by dry residue;
г. by reductase test;
д. by coagulability when boiling.

96. Microsymptoms of A-vitamin deficiency:
а. loose gums;
б. dryness and flaking of the skin;
в. hyperkeratosis;
г. dark adaptation disorder .

97. Symptoms of vitamin D deficiency:
а. anemia;
б. diarrhea;
в. softening of bones;
г. bone deformation.

98. Indicators characterizing the state of vitamin C metabolism :
а. total serum protein;
б. vitamin in urine and plasma;
в. dark adaptation;
г. capillary resistance.

99. Lactic acid drinks are used for medicinal purposes because they contain:
a. lactic acid;
б. pentonized protein;
в. lactic acid bacteria;
г. ascorbic acid.

100. Microscopic analysis of meat in fingerprint smears determines:
a. total number of bacteria (cocci and rods);
б. species of bacteria;
в. degree of muscle tissue breakdown;
г. foreign inclusions.

101. The most characteristic clinical symptoms of botulism:
a. visual impairment;
б. nausea;
в. aphonia;
г. vomit;
д. difficulty swallowing.

102. Symptoms of food poisoning from fly agarics:
a. vomiting like “coffee grounds”;
б. lacrimation, drooling, increased sweating;
в. hallucinations, delirium, convulsions;
г. constriction of the pupils;
д. headaches, dizziness.

103. When assessing the nutritional value of products, the following are taken into account:
a. organic composition (proteins, fats, carbohydrates);
б. organoleptic properties;
в. content of vitamins and minerals;
г. harmlessness.

104. The nutritional value of fermented milk products is determined by:
a. high consumer properties;
б. good digestibility;
в. high content of ascorbic acid;
г. calcium and phosphorus content;
д. content of B vitamins.

105. The nutritional value of cottage cheese is determined by:
a. high digestibility;
б. high content of complete protein and fat;
в. pleasant taste;
г. the ability to prepare a wide range of dishes;
д. high calcium content

106. Meat products can be considered as sources of minerals:
a. calcium;
б. potassium;
в. gland;
г. phosphorus;
д. magnesium

"Labor as an integral part of human existence and its positive and negative effects on health"

1. All harmful production factors are divided into :

а. mechanical factors;
б. physical factors;
в. chemical factors;
г. biological factors;
д. factors of the labor process that characterize the severity of physical labor and labor intensity.

2. Working conditions are divided into :

а. optimal;
б. acceptable;
в. unfavorable;
г. harmful;
д. dangerous.

3. Principles of optimization of the labor process during intellectual activity:

а. gradual entry into work and maintaining an optimal rhythm of work;
б. performing intellectual work mainly in the morning;
в. compliance with a certain sequence of operations and correct alternation of work and rest;
г. using tea and coffee to stimulate intellectual activity;
д. uniform and systematic activity.

4. Health activities at industrial enterprises:

а. legislative, administrative, organizational;
б. technological;
в. sanitary and technical;
г. use of personal protective equipment;
д. therapeutic and prophylactic.

5. Fatigue is:

а. violation of the production dynamic stereotype;
б. temporary decrease in performance caused by work;
в. functional changes in organs and systems of the body;
г. the occurrence of congestive inhibition in the centers of the brain.

6. Using the dynamometry method, the following are determined:

а. maximum voluntary strength;
б. number of touches per unit of time;
в. endurance to static stress;
г. number of movements per shift.

7. The criteria for labor intensity are:

а. the amount of manual cargo turnover;
б. number of stereotypic movements;
в. duration of focused attention;
г. density of incoming signals per hour;
д. number of body tilts;
е. monotone;
ж. nervous-emotional tension.

8. Dynamic negative work is work

а. body maintenance
б. by moving a load in the direction of gravity
в. by moving a load against gravity

9. Objective signs of fatigue are:
а. fatigue;
б. reduction in quantitative indicators of labor activity;
в. an increase in the number of defects in the work performed;
г. increase in the number of days of temporary disability;
д. changes in indicators of the functional state of organs and systems of the worker.

10. The relationship between the severity of work and the degree of activation of intra-shift rest:
а. straight;
б. reverse.

11. The criteria for the severity of work are:
а. power of external work;
б. monotone;
в. amount of RAM;
г. maximum weight of transported cargo;
д. duration of concentrated observation;
е. working posture;
ж. moving around the workshop.

12. The relationship between the severity of work and the duration of the regulated break:
а. straight;
б. reverse.

13. The main measures to combat monotony are:
а. increasing the number of elements in labor operations;
б. reducing the number of elements in labor operations;
в. increasing the number of repetitions of operations;
г. reduction in the number of repetitions of operations;
д. constant pace and rhythm of operations;
е. changing rhythm and tempo of operations performed;
ж. change of operations performed;
з. no change in operations performed.

14. The concept of "active recreation" is most correctly and fully defined as:
а. a physiologically based measure to accelerate the restoration of performance, which has decreased due to fatigue;
б. a means of maintaining performance at a constant level;
в. ensuring consistency of dynamic stereotype processes;
г. ensuring improvement of labor skills.

15. Quantitative indicators of decreased performance due to fatigue include:
а. decreased labor productivity;
б. increasing the time required to complete operations;
в. reduction of defects in work;
г. decreased speed of movement.

16. Signs of fatigue when performing physical work are:
а. increased muscle strength;
б. decreased muscle strength;
в. increasing endurance;
г. decreased endurance;
д. decrease in minute volume of breathing;
е. increase in minute volume of breathing;
ж. decrease in tremorometry ;
з. increase in tremorometry ;
и. decrease in stroke volume of the heart;
к. increase in stroke volume of the heart.

17. The universal chronoreflexometer determines:

а. latent period of visual-motor reaction;
б. Memory;
в. concentration;
г. latent period of auditory -motor reaction;
д. latent time of tendon reflexes.

18. The most common types of mental work activity are:

а. managerial work;
б. camera work;
в. labor of teachers and health workers;
г. labor of pupils and students;
д. labor of transport workers;
е. creative work;
ж. labor activity when working on a computer.

19. The most characteristic conditions for productive mental work are:

а. gradual entry into work;
б. interior decoration with “cold” colors;
в. consistency and systematicity in work;
г. alternation of work and active rest.

20. Operator work is characterized by:

а. significant physical stress;
б. significant neuro-emotional stress;
в. frequent switching of attention;
г. perception and processing of a diverse flow of information.

21. Regulated breaks during the shift are introduced:

а. in the middle of the high performance phase;
б. at the beginning of a decline in performance;
в. at the end of the work-in phase;
г. in the “final impulse” phase.

22. The endurance indicator is:

а. the time during which the operation of a given condition can be performed;
б. weight that a worker can lift in a period of time;
в. the body's ability to withstand stressful situations.

23. The main forms of scientific organization of labor:

а. rationalization of work activity;
б. rationalization of the work and rest regime;
в. saving effort;
г. creation of a favorable sanitary and hygienic environment;
д. choosing the optimal working posture.

24. The following work can be classified as static:

а. to maintain the body in position to perform production operations;
б. by moving the load in the direction of gravity;
в. to keep the load stationary;
г. by moving a load against gravity.

25. Using the method of timing studies, the following is determined:
- а. duration of individual operations;
- б. time of sensorimotor reactions;
- в. workload;
- г. hourly labor productivity;
- д. time for personal distractions.

26. A sharp increase in oxygen consumption after the end of static work is called:
- а. Sechenov phenomenon;
- б. Lindhard phenomenon ;
- в. Hansen effect .

27. Fatigue is a sign of tiredness:
- а. subjective;
- б. objective.

28. Qualitative indicators of decreased performance due to fatigue include:
- а. drop in labor productivity;
- б. the appearance of defects in work;
- в. slower pace of work;
- г. lengthening the time required to complete individual work operations.

29. During heavy muscular work, blood sugar can drop to :
- а. 60 mg%;
- б. 100 mg%;
- в. 150 mg%.

30. To prevent fatigue of workers in production, it is necessary to universally implement the following measures:
- а. rationalization of the work and rest regime;
- б. ensuring a favorable external environment;
- в. the use of neurogenic and metabolic stimulants;
- г. proper equipment and workplace organization.

31. The concept of industrial microclimate includes the following factors:
- а. air temperature;
- б. air humidity;
- в. air speed;
- г. atmospheric pressure;
- д. infrared radiation.

32. Name the periods of exposure to increased atmospheric pressure on the body during caisson work:
- а. compression;
- б. being in conditions of high atmospheric pressure;
- в. decompression;
- г. being in a pressure chamber.

33. The permissible microclimate parameters (temperature, humidity, air speed) of the working area are established taking into account the degree of:
- а.severity of work;
- б. work stress;
- в. heaviness and intensity of work.

34. Name the methods of specific prevention of altitude sickness:

а. cabin sealing;
б. compliance with the work and rest regime;
в. use of oxygen devices;
г. food and drinking regime.

35. People working in a heating microclimate experience:

a. increased temperature of exposed skin areas;
б. lowering the temperature of exposed skin areas;
в. increased moisture loss ;
г.reduction of moisture loss ;
д. constriction of skin blood vessels;
е. dilation of skin blood vessels.

36. People working in a cooling microclimate experience:

a.increased temperature of exposed skin areas;
б. lowering the temperature of exposed skin areas;
в. constriction of skin blood vessels;
г. dilation of skin blood vessels.

37. When working in a cooling microclimate, workers in refrigerators and fish factories may experience the following occupational diseases:

а. encephalopathy;
б. convulsive illness;
в. obliterating endarteritis;
г. angioneurosis (vegetative- sensory polyneuropathy);
д. polyradiculoneuropathy .

38. When working in a heating microclimate, workers may develop the following occupational diseases:

a. hyperthermia;
б. polyradiculoneuropathy ;
в. obliterating endarteritis;
г. convulsive illness;
д. encephalopathy.

39. Causes of mountain sickness:

a. decrease in partial pressure of nitrogen;
б. exercise stress;
в. lack of oxygen and physical activity;
г. reduction in the partial pressure of air components.

40. To prevent overheating in workers working in a heating microclimate, the following are used:

a. rest rooms with cooling panels;
б. radiant-heated lounges;
в. personal protective equipment for the body, arms, legs;
г. hydro procedures;
д. salted sparkling water for drinking.

41. To prevent hypothermia in workers working in a cooling microclimate, the following are used:

а. personal protective equipment for the body, arms, legs;
б. hydro procedures;
в. radiant-heated lounges;
г. salted sparkling water for drinking;
д. regulated intra-shift breaks.

42. Dust is a concept that characterizes:

а. physical state of a substance (its fragmentation into small particles from several tens to fractions of microns);
б. chemical properties of the substance;
в. electrical charge of particles.

43. Industrial dust causes:

а. dermatitis, conjunctivitis;
б. rhinitis, pharyngitis, pneumonia;
в. asthmatic bronchitis, bronchial asthma;
г. psoriasis;
д. pneumoconiosis.

44. Pneumoconiosis, depending on the effect of the active dust, is divided into :

а. silicosis;
б. anthracosis;
в. pneumoconiosis from highly fibrogenic and moderately fibrogenic dust;
г. pneumoconiosis from slightly fibrogenic dust;
д. pneumoconiosis from aerosols of toxic-allergenic action.

45. Aerosols of predominantly fibrogenic action (APFA) are classified:

а. by origin;
б. by method of education;
в. by particle size.

46. Dust aerosols have the greatest fibrogenic activity:

а. highly soluble;
б. poorly soluble.

47. Silicates include nosological forms :

а. asbestosis ;
б. manganoconiosis ;
в. talcosis ;
г. baritosis ;
д. siderosis.

48. Dust aerosols have the greatest fibrogenic activity:

а. free of silicon dioxide;
б. containing free silicon dioxide.

49. The most pathogenic for lung tissue are disintegration aerosols with particle sizes:

а. 0.3-0.4 microns;
б. 1-2 to 5 microns;
в. more than 5 microns.

50. The maximum permissible concentration for dust containing silicon dioxide from 10 to 70% is:

а. 1 mg/ ^{m3} ;
б. 2 mg/ ^{m3} ;
в. 3 mg/ ^{m3} ;
г. 10 mg/ ^{m3} .

51. The aggressiveness of dust increases with high content:

а. asbestos;
б. coal dust;
в. talc;
г. free silicon dioxide.

52. The main changes in the X-ray picture in silicosis:

а. strengthening and deformation of the pulmonary pattern;
б. small nodular formations;
в. compaction of the roots of the lungs;
г. “ chopped off ” roots of the lungs;
д. fibrosis.

53. The most common complications of silicosis are:

а. emphysema;
б. chronical bronchitis;
в. pleurisy;
г. spontaneous pneumothorax;
д. pulmonary tuberculosis.

54. Radiologically, there is an increase in the pulmonary pattern, deformation of the vascular-bronchial pattern, and the appearance of nodules less than 1 mm in diameter. What stage of silicosis?

а. I;
б. II;
в. III.

55. The patient complains of chest pain, shortness of breath appears with habitual physical activity. Cough with sputum production. Objectively: pulmonary emphysema, unilateral or bilateral fibrous pleurisy, initial signs of cardiopulmonary failure. What stage of silicosis are these complaints and symptoms characteristic of?

а. I;
б. II;
в. III.

56. Which of the following types of pneumoconiosis occurs due to exposure to organic dust?

а. siderosis;
б. byssinosis;
в. silicosis;
г. asbestosis.

57. Which of the named pneumoconiosis is the most aggressive?

а. siderosis;
б. amylosis;
в. silicosis;
г. asbestosis .

58. In what cases is tuberculosis as a concomitant disease more aggressive?

а. with silicatosis ;
б. with silicosis;
в. with anthracosis;
г. with amylosis.

59. According to the clinical course, occupational diseases can be:

а. only spicy;
б. only chronic;
в. acute and chronic.

60. The most well-known occupational carcinogens that cause skin cancer in workers belong to the class of chemical compounds:

а. polycyclic aromatic hydrocarbons;
б. aromatic amines;
в. halogenated hydrocarbons.

61. Give the correct definition of DL 50 (CL 50):

а.the value, the influence of which kills more than 50% of the animals in the group;
б. a value that causes less than 50% of the animals in the group to die;
в. dose (concentration), determined by calculated statistical methods using the results of acute experiments, when administered, the death of 50% of experimental animals is likely.

62. Aniline and nitrobenzene methemoglobin formers:

а. are;
б. are not.

63. The main route of entry of lead and its compounds into the body under industrial conditions is:

а. digestive tract;
б. absorption through intact skin;
в. airways.

64. Indicate the organs that are of leading importance in the detoxification and transformation of chemical compounds in the body:

а. kidneys;
б. liver;
в. endocrine glands;
г.lungs;
д. gastrointestinal tract;
е. spleen.

65. Chronic occupational disease (poisoning) is a disease that occurs :

а. after a single exposure, for no more than one shift, harmful occupational factors ;
б. after repeated, during no more than one shift, exposure to harmful professional factors ;
в. after repeated and prolonged (more than one work shift) exposure harmful occupational factors .

66. The cumulation coefficient (C cum) is the ratio:

а. DL 100 to DL 50;
б. Lim ac to Limch ;
в. DL 50 with repeated administration to DL 50 with single administration.

67. All industrial poisons, according to their predominant effect, can be divided into compounds, mainly:

а. low toxic;
б. neurotoxic and hematotoxic effects;
в. hepatotoxic and nephrotoxic effects;
г. substances that damage the respiratory system;
д. highly toxic.

68. Chronic lead poisoning is characterized by the following changes:

a. inhibition of cholinesterase ;
б. violation of porphyrin metabolism;
в. development of pneumoconiosis;
г. decrease in hemoglobin, number of red blood cells.

69. Specify indicators characterizing acute toxicity:

a. DL 50;
б. Lim ac;
в. Lim ch;
г. Ccum;
д. Zac.

70. The smaller the zone of chronic action, the substance:

a. more dangerous with chronic exposure;
б. less dangerous with chronic exposure;
в. the zone size is not;
г.an indicator of the degree of danger.

71. Liver damage due to chronic lead intoxication manifests itself as:

a. toxic hepatitis;
б. chronic cholecystitis.

72. Hematological changes during lead intoxication are expressed:

a. in leukocytopenia;
б. in reticulocytosis;
в. in thrombocytopenia;
г. in the basophilic granularity of erythrocytes.

73. In industrial conditions, lead poisoning most often occurs:

a. spicy;
б. chronic.

74. Contraindications to working with lead are:

a. low levels of hemoglobin in the blood;
б. bladder cystitis;
в. chronic diseases of the peripheral nervous system;
г. osteocondritis of the spine.

75. In industrial conditions, manganese poisoning most often occurs:

a. spicy;
б. chronic.

76. According to the rate of evaporation, all organic solvents are divided into :

а. gaseous;
б. highly volatile;
в. medium volatile;
г. low-volatile ;
д. non-volatile.

77. The most typical during industrial contact with such organic solvents such as benzene and its derivatives is their action:

а. for blood;
б. on the organ of vision;
в. on hematopoietic organs;
г. to the gonads.

78. Mercury compounds are used:

а. in the production of medicines;
б. in the production of pesticides;
в. in dentistry;
г. in the printing industry;
д. in steel production.

79. The following must take part in conducting periodic medical examinations of workers who have contact with mouth water:

а. dermatologist;
б. neurologist;
в. therapist;
г.ophthalmologist.

80. By the nature of their action, poisons that cause acute health problems and death of the body include:

а. to dangerous;
б. to harmful.

81. In case of chronic manganese poisoning, the foci of its accumulation in the body (depot) are:

а. bones;
б. liver;
в. gonads;
г. nails and hair;
д. kidneys

82. that are harmful by nature include:

а. causing acute health problems and death of the body;
б. having a negative impact on performance and causing the development of occupational diseases or other negative consequences.

83. Chemically harmful and dangerous production factors include gases, vapors and aerosols that have the following effects:

а. general toxic;
б. annoying;
в. sensitizing;
г. fibrogenic ;

д. carcinogenic;
е. mutagenic;
ж. influence on reproductive function.

84. Saturnism is a chronic poisoning:
а. lead;
б. mercury;
в. manganese

85. Mercurialism is a chronic poisoning:
а. lead;
б. mercury;
в. manganese

86. When exposed to high temperature under production conditions, sorption of toxic substances:
а. increases through the respiratory tract;
б. decreases through the respiratory tract;
в. increases through the skin;
г. decreases through the skin.

87. The main route of entry of industrial poisons into the body is:
а. respiratory system;
б. gastrointestinal tract;
в. intact skin;
г. damaged skin.

88. Give the most correct definition of material cumulation:
а. accumulation of chemicals in the body that do not cause changes in tissues;
б. deposition of chemicals in tissues , causing irreversible changes;
в. strong binding of chemicals to tissues, causing irreversible changes.

89. Chronic sulfur dioxide intoxication is characterized by:
а. atrophy of the mucous membranes of the upper respiratory tract, rhinitis, bronchitis;
б. parkinsonism;
в. tooth decay;
г. acidosis.

90. By distribution in tissues and penetration into cells of chemicals can be divided into:
а. responsive and non-responsive;
б. electrolytes and non-electrolytes;
в. soluble and insoluble.

91. In case of chronic manganese poisoning, the following nervous system disorders are observed:
а. paresis, paralysis;
б. impaired sensitivity of the limbs;
в. fatigue, drowsiness, memory loss;
г. gait disturbance, stiffness of movements;
д. Amymia, emotional lability.

92. Carbon monoxide poisoning is possible:
а. when working in boiler houses, foundries;
б. when using nitro paints;
в. when working with leaded gasoline;
г. in the production of sulfuric acid;
д. when operating engines, in garages, buses.

93. What does the effect of substances with material accumulation depend on?
а. doses;
б. physical state of the substance;
в. duration of action.

94. Manifestations of chronic benzene intoxication:
а. neurotic and asthenic syndromes;
б. paresis and paralysis;
в. hemorrhagic syndrome;
г. irritability, tearfulness;
д. bronchitis.

95. Which body system is most sensitive to the effects of industrial poisons?
а. cardiovascular;
б. nervous;
в. respiratory system;
г. gastrointestinal tract.

96. Lead intoxication develops:
а. encephalopathy;
б. hemorrhagic syndrome;
в. anemia, reticulocytosis, basophilic granularity of erythrocytes;
г. Raynaud's syndrome ;
д. polyneuritis of peripheral nerves.

97. Lead is deposited mainly:
а. in the liver;
б. in the bones;
в. in the kidneys;
г. in erythrocytes.

98. In hygienic practice, ultrasound is assessed by:
а. by oscillation frequency in kHz;
б. by ultrasound intensity in W/ ^{cm2} ;
в. by sound pressure level in dB.

99. The biological effect of exposure to radiofrequency EMF depends on :
а. vibration frequencies;
б. duration of exposure;
в. field intensity;
г. thermal radiation;
д. irradiation mode.

100. Working under conditions of exposure to electromagnetic fields of the radio frequency range can cause the following disorders:

а. nervous system;
б. cardiovascular system;
в. gastrointestinal tract;
г. respiratory system;
д. water-salt metabolism.

101. The main physical parameters of EMF are characterized by:

а. wavelength;
б. magnetic permeability;
в. dielectric constant;
г. vibration frequency;
д. effective temperature.

102. Target organs for laser radiation:

а.leather;
б. Bone marrow;
в. eyes;
г.gonads;
д. brain.

103. Illuminance unit:

а. luxury;
б.candela;
в.stilb;
г. lumen.

104. To combat noise, it is more rational to reduce noise:

а.in the source of education;
б. along the path of distribution;
в. through the use of personal protective equipment.

105. Noises are classified according to the nature of the spectrum as follows:

а. mechanical;
б. broadband;
в. tonal;
г. permanent;
д. fickle.

106. Give the most correct and complete definition of industrial ventilation:

а. indoor air exchange to remove excess heat, moisture and other harmful substances in order to ensure acceptable meteorological conditions and air purity;
б. automatic maintenance in enclosed spaces of all or individual air parameters (temperature, relative humidity, cleanliness, speed of movement) in order to ensure, mainly, optimal meteorological conditions, the most favorable for the well-being of people, maintaining the technological process, and ensuring the preservation of cultural values.

107. The effects of industrial noise on the body (“noise disease”) are characterized by:

а. cardiovascular system disorders ;
б. nervous system disorder;
в. polyneuritis.

108. In production conditions, infrasound is usually combined:

а. with dust of predominantly fibrogenic action;
б. with chemical factors;
в. with low frequency noise;
г. with low frequency vibration.

109. Industrial vibration sources:

а. drill hammers;
б. pneumatic riveting hammers;
в. platforms for vibration compaction of concrete;
г. conveyor;
д. motor transport.

110. What we call noise:

а. a random combination of sounds of varying intensity and frequency;
б. mechanical vibrations with a frequency from 16 to 20,000 Hz ;
в. periodic alternation of tones of a certain frequency and strength.

111. In addition to the hearing aid, occupational noise can affect:

а. on the central nervous system;
б. on the cardiovascular system;
в. to the visual and vestibular analyzers;
г. on the adrenal glands, pituitary gland, thyroid gland;
д. on the thymus, spleen, liver.

112. The main manifestations of vibration disease from local vibration:

а. neurovascular disorders;
б. muscle disorders;
в. deformation of the osteoarticular apparatus;
г. thyroid disorders;
д. pancreatic disorders.

113. Name the place of ventilation in the system of health measures:

а. technological (designed to prevent the formation of harmful substances);
б. sanitary means of collective protection (removal and attenuation of harmful factors according to maximum permissible concentrations);
в. technical (preventing the release of harmful substances into the production environment).

114. What physical properties of noise determine the strength of its harmful effects?

а. intensity;
б. frequency;
в. spectrum;
г. constant exposure.

115. When exposed to noise on the body, the following syndromes are characteristic:

а. vegetative-vascular dysfunction;
б. astheno -vegetative syndrome;
в. diecephalic syndrome;
г. bilateral hearing loss;
д. polyneuritis.

116. Infrasonic vibrations are characterized by :

a. long wavelength;
б. short wavelength;
в. low oscillation frequency;
г. high vibration frequency;
д. diffraction phenomena (bending around obstacles).

117. Vibration sensitivity thresholds for those working with vibrating tools are usually:

a. reduced;
б. elevated.

118. When exposed to vibration transmitted to the hands, the worker experiences :

a. pronounced spasm of capillaries;
б. increased vibration sensitivity;
в. decreased vibration sensitivity;
г. decreased muscle strength;
д. increasing static endurance;
е. severe pain in the hands.

119. General measures to prevent vibration disease:

a. technical control of vibration installations ;
б. timely repair of vibrating tools ;
в. use of shock absorbers;
г. changing the design of tools;
д. use of remote controls;
е. good ventilation.

120. The stability of clear vision is the ability of the eye:

a. distinguish the brightness of adjacent objects;
б. distinguish details in the shortest period;
в. hold a clear image of the part in question.

121. The sounds that are more irritating to the hearing organ are:

a. low frequency;
б. high frequency.

122. Biological effect of infrasound:

a. emotional sphere, feeling of fear;
б. musculoskeletal system;
в. autonomic support systems (cardiovascular , respiratory, neuroendocrine);
г. digestive organs.

123. Individual measures to prevent vibration disease:

a. self-massage, massage, warm baths;
б. use of gloves with pads;
в. use of headphones;
г. use of respirators;
д. 10 minute breaks after 1 hour of work.

124. Hearing sensitivity can be measured:

a. chronoflexometer ;
б. tuning fork;
в. tone audiometer.

125. Personal noise protection equipment:

а. respirators;
б. insert plugs;
в. headphones;
г. aviation helmets.

126. With systematic exposure to airborne ultrasound, the most characteristic changes in the body are:

а. occupational hearing loss;
б. vegetative-vascular dystonia;
в. polyneuritis;
г. asthenic syndrome.

127. Basic hygienic requirements for rational artificial lighting:

а. adequacy;
б. uniformity;
в. lack of light and shade.

128. Noise with a predominant frequency of more than 1000 Hz belongs to the noise class:

а. low frequency;
б. mid-frequency;
в. high frequency.

129. Occupational hearing loss occurs more quickly if the noise is of the following nature:

а. constant;
б. fickle;
в. low frequency;
г. high frequency.

130. Infrasound is sound vibrations with frequencies:

а. below 20 Hz;
б. 20 Hz to 20 kHz;
в. above 20 kHz.

131. Vibration as an industrial hazard is:

а. mechanical vibrations of the air environment perceived by a person in the process of production activities;
б. mechanical vibrations of the air environment, perceived by a person upon contact with an oscillating body in the process of production activities;
в. electromagnetic vibrations perceived by a person in the process of production activities.

132. The adverse effects of vibration are enhanced in combination with :

а. noise;
б. heating microclimate;
в. cooling microclimate;
г. physical overstrain.

133. The symptom of vestibulopathy is most often observed in workers exposed to vibration:

а. local;
б. general

134. With the development of vibration pathology in workers , temperature and tactile sensitivity is impaired:
a. rarely;
б. often.

135. Contrast sensitivity is the ability of the eye:
a. distinguish the brightness of adjacent objects;
б. distinguish details in the shortest period;
в. hold a clear image of the part in question.

136. When the noise level changes during a work shift by no more than 5 dBA , it is called:
a. broadband;
б. permanent;
в. fluctuating over time;
г. tonal.

137. Noise with a predominant frequency of 150 – 300 Hz belongs to the noise class:
a. low frequency;
б. mid-frequency;
в. high frequency.

138. When exposed to intense general vibration, workers may experience:
a. extrapyramidal syndrome;
б. vestibulopathy ;
в. polyneuropathy of the lower extremities;
г. osteocondritis of the spine;
д. celebral -peripheral angiodystonic syndrome.

139. Ultrasound represents mechanical vibrations of an elastic medium in the frequency range:
a. below 20 Hz;
б. above 20 Hz;
в. 45-11000 Hz.

140. The most characteristic changes in the body of workers exposed to contact ultrasound:
a. impaired sensitivity of the hands;
б. changes in the composition of peripheral blood;
в. vegetomyofasciculitis of the hands;
г. visual impairment.

141. Brightness unit:
a. luxury;
б. candela;
в. stilb;
г. lumen.

142. Factors that determine the degree of harmful effects of noise on the body:
a. duration of exposure;
б. noise intensity;
в. frequency characteristics;
г. individual susceptibility of the body;
д. body fatigue.

143. General preventative measures in production areas with intense noise:

а. sound insulation of noisy units;
б. wall cladding with sound-absorbing materials;
в. use of remote controls;
г. good room ventilation;
д. change in production technology.

144. The complex of therapeutic and preventive measures for the prevention of vibration disease in workers includes:

a. foot baths;
б. vitaminization (C, B);
в. hydro treatments for hands;
г. self-massage of hands;
д. preventive examinations.

“Hygiene of medical and preventive organizations”

1. **A favorable medical and protective regime, effective prevention of nosocomial infections, and accessibility for patients to use hospital parks are ensured by the hospital development system:**
   a. free;
   б. decentralized;
   в. polyblock ;
   г. block;
   д. centralized.

2. **Good natural ventilation and illumination are ensured by the internal layout of the ward section:**
   a. two-corridor ;
   б. compact;
   в. single corridor one way;
   г. single-corridor double-sided;
   d. corner.

3. **The hospital situation plan addresses the following issues:**
   a. placement of a hospital on the territory of a populated area;
   б. the presence of a green area and favorable natural factors;
   в. placement of hospitals and “harmful” enterprises, taking into account the wind rose;
   г. good transport connections between the population and hospitals;
   д. placement of the hospital on the territory of the hospital site.

4. **The placement of the operating unit is rational:**
   a. in a separate building of the hospital;
   б. on one of the floors of the ward department;
   в. on the same floor with the diagnostic and treatment department;
   г. isolated from the ward departments, in the form of an independent block;
   д. on the first floor of the reception building.

5. **Sanitary standards provide for entrances to the hospital territory:**
   a. general entrance and entrance to the economic zone;
   б. the number of entries is determined by the hospital administration;
   в. no more than two entries;
   г. one central entrance;
   д. to each building.

6. **Optimal microclimate indicators for therapeutic department wards:**
   a. air temperature 18 °C , relative humidity 80%, air mobility 0.1 m/s;
   б. air temperature 25 °C , relative humidity 25%, air mobility 0.4 m/s;
   в. air temperature 24 °C , relative humidity 75%, air mobility 0.5 m/s;
   г. air temperature 18 °C , relative humidity 45%, air mobility 0.2 m/s.

7. **Does a four-bed ward for therapeutic patients with an area of 20 m2 meet hygienic standards :**
   a. Yes;
   б. No;
   в. suitable for rural hospitals only;
   г. suitable for small-bed hospitals;
   д. suitable for multi-bed hospitals.

8. **Occupational hazards in the work of medical personnel are associated with:**
   a. with features of treatment technology;
   б. with insufficient premises for doctors and medical staff;
   в. with violation of hygienic conditions;
   г. with the peculiarities of labor processes;
   д. with violation of the work regime.

9. Occupational hazards in the work of medical personnel are associated with:

а. with features of treatment technology;
б. with insufficient premises for doctors and medical staff;
в. with violation of hygienic conditions;
г. with the peculiarities of labor processes;
д. in violation of the work regime.

10. In open source departments, the protection of medical personnel should be carried out in the following areas:

a. monthly medical monitoring of staff health;
б. use of personal protective equipment;
в. correct planning solution for the department;
г. protection from external radiation;
д. protection of respiratory organs and skin from radioactive substances.

11. A sanitary checkpoint for personnel is provided in the following departments:

a. maternity and operating rooms ;
б. maternity and surgical;
в. infectious and children's;
г. pediatric and surgical.

12. Compact placement of departments, modernization of treatment and diagnostic - departments, effective management of the work of medical personnel is ensured by the hospital development system:

a. free;
б. block;
в. decentralized;
г. polyblock ;
д. centralized.

13. The ward section includes:

a. corridor and hall;
б. offices for medical personnel;
в. toilet rooms;
г. medical and auxiliary premises;
д. chambers.

14. The box area for 1 bed should be:

a. 27m2 ;
б. 25 ^{m2};
в. 22m2 ;
г. 18 ^{m2};
д. 9 ^{m2}.

15. The infectious diseases department of a multi-bed hospital should be located :

a. on any floor of any building if there is a gateway on the corridor side and separate elevator;
б. in a separate building;
в. in the main building;
г. in a separate wing of the medical building;
д. on the upper floors of the medical building.

16. Construction of a general admission department for medical and surgical patients:
а. not allowed;
б. allowed;
в. allowed in multi-bed hospitals;
г. allowed after thorough disinfection;
д. allowed only in small-bed hospitals.

17. Maximum insolation regime is recommended:
а. in operating rooms;
б. in the preoperative room;
в. in sanitary treatment areas;
г. in the wards of the recovery and rehabilitation department;
д. in intensive care wards.

18. The most rational layout of the hospital section for infectious patients is:
а. single corridor one way;
б. box;
в. two-corridor ;
г. compact;
д. single-corridor double-sided.

19. Occupational diseases of medical personnel of infectious nature:
а. tuberculosis;
б. HIV infection;
в. syphilis;
г. acute viral respiratory diseases;
д. hepatitis A , B, C.

20. Premises intended for receiving non-infectious patients should be used for discharge of patients:
а. it is forbidden;
б. Can;
в. possible in multi-bed hospitals;
г. possible in small-bed hospitals;
д. possible on different days of the week according to the administration's schedule.

21. The box includes:
а. ward, sanitary room, entrance for staff and patients from the corridor departments;
б. ward, sanitary room, entrance from the street for the patient;
в. ward, sanitary room, airlock for staff, separate entrance from the street for sick;
г. set of boxing premises
д. depends on the profile and bed capacity of the hospital.

22. The microclimate of a hospital room is determined by:
а. relative humidity;
б. air temperature;
в. barometric pressure;
г. air mobility;
д. natural light.

23. When hygienically assessing natural light in hospital premises, the following are taken into account:
а. room depth coefficient;
б. natural light factor;
в. number of bacteria in 1 m^3 of air;
г. luminous coefficient.

24. The production process in medical institutions is associated with the risk of exposure to:
a. prolonged forced position of the body;
б. microbial and biological factors;
в. medicines and medical gases;
г. unfavorable microclimate of production premises;
д. X-ray radiation and radionuclides.

25. Basic principles of protecting medical personnel from external radiation:
a. use of protective suits;
б. protection by distance;
в. protection by numbers;
г. screen protection;
д. protection by time.

26. Over the course of 10 years of work, a radiologist can receive the maximum total radiation dose:
a. 500 mSv ;
б. 400 mSv ;
в. 300 mSv ;
г. 200 mSv ;
д. 100 mSv .

27. Universal indicator of anthropogenic (biogenic) air pollution in hospital wards:
a. ammonia;
б. air oxidation;
в. indole;
г. phenol;
д. carbon dioxide.

28. Occupational diseases of medical personnel associated with work characteristics:
a. diseases of the cardiovascular system;
б. chronic inflammatory diseases of the gastrointestinal tract;
в. drug allergies;
г. diseases of the musculoskeletal system;
д. overwork.

29. Optimal orientation of operating room windows:
a. south;
б. north;
в. west;
г. east.

30. Sources of air pollution in hospital premises with gaseous substances:
a. people (anthropogenic factor);
б. medicines and medicinal gases;
в. polymer materials;
г. dry cleaning of premises;
д. disinfectants.

31. The main danger for medical personnel during x-ray examinations is:
a. external irradiation;
б. irradiation of arms and body;
в. internal irradiation;
г. unfavorable microclimate;
д. blinding effect of the x-ray beam.

32. When assessing the quality of polymer materials for medical purposes of the first group, it is necessary to apply:

а. sanitary and toxicological assessment of long-term consequences;
б. sanitary microbiological research;
в. sanitary-physical methods of sanitary-hygienic research;
г. assessment of biological compatibility with body tissues;
д. sanitary-chemical methods of sanitary-hygienic research.

33. Maximum permissible carbon dioxide content in the air of hospital wards:

а. 0.3%;
б. 0.2%;
в. 0.1%;
г. 0.07%;
д. 0.03%.

34. Wards for the joint stay of postpartum women and newborns can be provided in postpartum departments:

а. physiological;
б. pregnancy pathologies;
в. observational;
г. in all listed branches

35. One ward section in therapeutic departments is designed to :

а. 60 beds;
б. 25–30 beds;
в. 50 beds;
г. regulated only in city hospitals;
д. not regulated.

36. The ward section includes:

а. corridor and hall;
б. offices for medical personnel;
в. toilet rooms;
г. medical and auxiliary premises;
д. chambers.

37. In infectious diseases departments there must be ventilation:

а. mechanical supply;
б. supply and exhaust with a predominance of exhaust;
в. supply and exhaust with a predominance of inflow;
г. can be any depending on the design features of the department building;
д. natural through.

38. A woman in labor with pregnancy pathology was admitted to the maternity hospital. On admission: temperature 37.8 °C , small rash in the chest and inner arms. The woman in labor should be directed:

а. to the pregnancy pathology department;
б. to the physiological department;
в. to the observation department;
г. in the delivery room of the infectious diseases department.

39. The following requirements apply to operating units:

а. isolation of the operating unit;
б. natural ventilation devices;
в. placement of anesthesia and sterilization rooms separately from operating rooms;
г. separation of “clean” and “purulent” operating rooms;

40. The hospital master plan addresses the following issues:

а. placement of a hospital complex on the territory of a hospital site;
б. placement of a hospital on the territory of a populated area;
в. zoning of the hospital site taking into account the functional significance of the elements hospital complex;
г. building density of the hospital site;
д. placement of access roads at the hospital site.

41. following functional areas are located on the hospital site :

а. area of the pathological building;
б. boiler room and laundry area;
в. area of the main medical building;
г. green area;
д. utility yard area.

42. Occupational hazards associated with the work characteristics of medical personnel:

а. uncomfortable working posture;
б. vertical body position;
в. overstrain of individual organs and systems;
г. nervous-emotional tension;
д. prolonged forced position of the body.

"Hygienic fundamentals for ensuring normal development and high level of health of the children's population"

1. **Biological age is:**
   a. the period lived by the child from birth to the time of examination;
   б. a set of morphofunctional properties of an organism, depending on individual rate of growth and development;
   в. the period from conception to the moment of examination;
   г. the period from conception to birth.

2. **What is meant by physical development?**
   a. a set of morphological and functional properties of an organism, characterizing its growth and development at each age stage;
   б. a complex of morphological properties of an organism characterizing its growth and development at every age stage.

3. **A generalizing method for studying the physical development of children and adolescents is:**
   a. assessment of an individual's physical development;
   б. study of the physical development of the same groups of children over the course of
   в. period of growth and development;
   г. study of the physical development of large groups of children in a relatively short period of time term.

4. **Components of a preschool site:**
   a. group sites;
   б.berry garden;
   в. green area;
   г. rest zone.

5. **Tables and chairs in preschool institutions are marked:**
   a. colored spots or stripes;
   б. serial numbers;
   в. individual pictures;
   г. the names of those sitting .

6. **The most informative in preschool age (4-6 years) are the following indicators of biological development:**
   a. body length;
   б. annual increase in body length;
   в. number of permanent teeth;
   г. change in body proportions;
   д. degree of development of secondary sexual characteristics.

7. **Features of the course of basic nervous processes in children of primary school age:**
   a. predominance of inhibition over excitation;
   б. predominance of excitation over inhibition;
   в. irradiation of excitation.

8. Basic principles of rational school planning:

а. isolated arrangement of blocks for junior and senior classes;
б. planning of hall-type recreational premises;
в. allocation of the gymnasium into a separate block;
г. isolated location of workshops for polytechnic training.

9. The best noise and dust protection effect of institutions for children and adolescents by green spaces is created by:

а. with a sufficient percentage of landscaping on the site;
б. for perimeter landscaping with tall trees;
в. with perimeter landscaping with a width of at least 1.5 m, and on the side of driveways and highways - with a width of at least 4 m;
г. with perimeter landscaping with coniferous and evergreen trees with a width of at least 1.5 m, and on the side of driveways and highways with a width of at least 4 m;
д. with perimeter three-tiered landscaping with a width of at least 1.5 m, and on the side of driveways and highways - with a width of at least 4 m.

10. The principles of organizing a graded regime for first-graders are:

а. reducing lesson duration to 30 minutes throughout the school year;
б. gradual increase in lesson duration from 30 to 45 minutes throughout school year;
в. reducing the number of lessons to 3;
г. gradual increase in the number of lessons;
д. gradual shortening of changes.

11. What indicator is taken into account when selecting desks for students?

а. age;
б. shin length;
в. height.

12. Spinal curvatures that occur in children when the furniture does not match their height:

а. lordosis;
б. kyphosis;
в. scoliosis.

13. Conditions that contribute to the development of myopia in children and adolescents:

а. insufficient lighting of the workplace;
б. uneven lighting;
в. glare;
г. incorrect landing.

14. The indication for the beginning of physical education minutes in the lesson is:

а. 20th minute of a 45 minute lesson;
б. 30th minute of a 45 minute lesson;
в. the appearance of initial signs of fatigue in individual students;
г. the appearance of initial signs of fatigue in most students.

15. A professionally fit teenager is a teenager who:

а. can successfully master a profession during the training allotted by the training program;
б. knows the requirements of the profession and has no medical contraindications to work and training;
в. can master a profession during training and improve in it while working;
г. can master a profession during training, improve and work for a long time without harm to health.

16. The basic principles of hardening include:

a. taking into account health status and degree of hardening;
б. gradualism;
в. systematic;
г. complexity;
д. creating positive motivation;
е. low labor intensity of the organization;
ж. availability.

17. The main phases of the performance curve are:

а. workability phase;
б. phase of stable performance;
в. the phase of decreased performance is the zone of initial compensation for the decline in performance;
г. the phase of decreased performance is the zone of final impulse;
д. phase of decreased performance - a zone of progressive decline in performance;
е. recovery phase.

18. The following indicators indicate the hygienically effective conduct of physical education classes for preschoolers:

а. maximum increase in heart rate - 50%, recovery time - 2 minutes, after exercise there are no signs of fatigue;
б. maximum increase in heart rate - 80%, recovery time - 3 minutes, slight fatigue after exercise;
в. maximum increase in heart rate - 40%, recovery by the end of the lesson, no signs of fatigue;
г. maximum increase in heart rate - 60%, recovery by the end of the lesson, no signs of fatigue.

19. Transfer of a student from a special medical group to a preparatory group is carried out on the basis of:

а. course of the underlying disease;
б. results of meeting physical fitness standards;
в. results of functional tests.

20. Please indicate which health group your child belongs to . During a medical examination of Ivanov I. with the participation of specialists, it was revealed: a stooped posture. Physical and mental development corresponds to age, harmonious. In the year preceding the examination, he suffered 3 acute respiratory viral infections:

а. 1st group;
б. 2nd group;
в. 3rd group;
г. 4th group;
д. 5th group.

21. The age period is the period of time within which:

a. the processes of growth and development are completed, and reactions to stimuli do not differ;
б. the processes of growth and development, the physiological characteristics of the body are identical, and reactions to stimuli are unambiguous;
в. the physiological characteristics of the body do not differ significantly;
г. the child attends child care institutions of the same type.

22. What groups of characteristics are used to study physical development?

a. somatometric ;
б. physiometric ;
в. psychophysiological;
г. somatoscopic .

23. What is meant by acceleration of physical development?

a. improvement of physical development indicators;
б. accelerating growth and development.

24. A comprehensive method for assessing the physical development of children allows:

a. take into account heteromorphism and heterochrony of development;
б. take into account the timeliness of physical development;
в. make interrelated assessments of body length and weight;
г. take into account the asymmetry in the distribution of a number of signs of physical development.

25. Placement of a land plot for a preschool institution:

a. intra-block;
б. corner;
в. removal outside the city limits.

26. Required number of group playgrounds on the site of a preschool institution:

a. equal to the number of groups;
б. one site for two groups;
в. common area for all groups.

27. Compliance with the principle of group isolation in a preschool institution is ensured by:

a. the presence of a complex of isolated premises for each group;
б. the presence of a separate entrance for each nursery group;
в. the presence of separate lockers for clothes;
г. allocation of isolated walking areas on the territory of a preschool institution;
д. individual marking of tableware and teaware in a group cell.

28. The daily motor activity of a preschooler is replenished to a greater extent during:

a. morning exercises;
б. classes in sports sections;
в. outdoor games;
г. physical education classes according to the preschool program.

29. The selection of 6-year-old children for systematic schooling should be made taking into account:

а. morphofunctional maturity of the organism;
б. gender;
в. health conditions;
г. age;
д. parents' wishes.

30. Components of the school site:

а. sports area;
б. utility yard;
в. green area;
г. training and experimental zone;
д. group areas.

31. When designing schools, it is necessary to provide for:

а. a separate section for 1st grade students;
б. a separate section for students in grades 2-4;
в. a separate section for students in grades 1-4;
г. sections for grades 5-11.

32. The hygienic rationality of lesson organization is determined by the following indicators:

а. lesson density;
б. number, duration and rotation of activities;
в. psychological climate in the classroom;
г. availability of physical education minutes;
д. alternating student poses.

33. Factors that have an adverse effect on physical development:

а. alcoholism and drug addiction of parents;
б. insufficient and malnutrition;
в. chronic diseases;
г. physical education;
д. unfavorable social conditions.

34. The most informative in high school age (14-17 years) are the following indicators of biological development:

а. body length;
б. annual increase in body length;
в. number of permanent teeth;
г. change in body proportions;
д. degree of development of secondary sexual characteristics.

35. The main requirements for regulation and organization of change are:

а. 10-minute breaks between lessons, after the 3rd lesson there is a 30-minute break;
б. 5-minute breaks between lessons, after the 2nd lesson there is a break in 20 minutes ; the opportunity to change the type of activity;
в. outdoor games of the student's choice;
г. outdoor games in recreation under the guidance of a teacher.

36. Satisfaction of schoolchildren's biological need for movement is achieved when students' physical activity is at least:

а. 90 minutes per week;
б. 4 hours per week;
в. 1 hour per week;
г. 1 hour daily;
д. 2 hours daily.

37. The staffing of a special medical group is carried out taking into account:

а. age;
б. gender;
в. clinical diagnosis;
г. physical performance;
д. degree of development of physical indicators;
е. progress in physical education.

38. The basic principles of hardening include:

а. taking into account health status and degree of hardening;
б. gradualism;
в. systematic;
г. complexity;
д. creating positive motivation;
е. low labor intensity of the organization;
ж. availability.

39. Independent work of teenagers is allowed:

а. from 13 years old;
б. from 14 years old;
в. from 15 years old;
г. from 16 years old;
д. from 17 years old;
е. from 18 years old.

40. Please indicate which health group your child belongs to. During a medical examination of Ivanov I. with the participation of specialists, no chronic diseases or morphofunctional abnormalities were revealed. Physical and mental development corresponds to age, harmonious. In the year preceding the examination, he suffered from ARVI, chicken pox, and rubella measles:

а. 1st group;
б. 2nd group;
в. 3rd group;
г. 4th group;
д. 5th group.

41. Acceleration includes :

а. acceleration of growth and development;
б. increase in life expectancy;
в. increasing the duration of the reproductive period;
г. increase in definitive body size;
д. change in the structure of morbidity.

42. What is meant by biological age?

a. compliance of the child's physiological and functional indicators with age standards;
б. the achieved level of maturation of individual organs, systems and functions of the child's body.

43. Physiometric signs of physical development:

a. vital capacity of the lungs;
б. hand muscle strength;
в. chest circumference;
г. back strength;
д. blood pressure value, pulse rate.

44. When does a foot print indicate a normal arch?

a. if the isthmus is up to 50% of the length of the perpendicular;
б. if the isthmus is up to 50 - 60% of the length of the perpendicular; if the isthmus is more than 60% of the length of the perpendicular.

45. Hygienic standards when designing institutions for children and adolescents are carried out taking into account:

a. sensitivity and reactivity of children and adolescents different from the adult body ;
б. changes in the level of morphofunctional maturity and adaptive capabilities of the child's body with age;
в. the nature of the educational process;
г. climatic and geographical features;
д. ongoing changes in the system of upbringing and education;
е. national and historical traditions.

46. The basic principle of the internal layout of a preschool institution:

a. the principle of individual isolation;
б. principle of group isolation.

47. Tables and chairs in preschool institutions are marked:

a. colored spots or stripes;
б. serial numbers;
в. individual pictures;
г. the names of those sitting .

48. Percentage of landscaping of the land plot of a preschool institution:

a. 20;
б. 50;
в. 70.

49. To determine the readiness of children for systematic learning at school, you should use:

a. Wechsler test;
б. Irasek test ;
в. motometric circle cutting test;
г. Harvard Step Test;
д. study of the purity of sound pronunciation.

50. Main premises in the school:
а. classrooms, study rooms;
б. workshops;
в. gym;
г. catering unit;
д. laboratories.

51. What indicator is taken into account when selecting desks for students?
а. age;
б. shin length;
в. height.

52. Duration of active attention in children 7-10 years old:
а. 10 minutes;
б. 15-20 minutes;
в. 30 minutes.

53. The basic principles of standardizing activities in the hygiene of children and adolescents are taking into account:
а. morpho-functional maturity of the organism;
б. gender;
в. health conditions;
г. functional state of the body;
д. biorhythmic characteristics of the body;
е. the need for a developing, training role of activity;
ж. the need to achieve a certain labor productivity.

54. The greatest health-improving effectiveness of physical education classes in kindergarten is ensured by:
а. correct structure of the lesson;
б. maintaining hygienic conditions in the hall;
в. conducting classes on the physical training ground;
г. use of sports equipment.

55. Carrying out hygiene measures aimed at preventing overwork is advisable:
а. in the development phase;
б. in the phase of stable performance;
в. in the phase of decreased performance - the zone of initial compensation for the decline in performance;
г. in the phase of decreased performance - the zone of final impulse;
д. in the phase of decreased performance - the zone of progressive decline in performance;
е. in the recovery phase.

56. Classes for students of the preparatory group of physical education are organized:
а. together with the main one, according to the same program, but without passing the standards;
б. together with the main one, according to the same program, but with a reduced load and without passing standards;
в. together with the main one, but according to its own program;
г. outside the schedule, according to your program.

57. Absolute contraindications to water hardening are:

а. frequent colds;
б. acute inflammatory processes;
в. chronic inflammatory kidney diseases;
г. heart defects in the subcompensation stage ;
д. convalescence after colds.

58. Please indicate which health group your child belongs to. During a medical examination of Volkov I. with the participation of specialists, it was diagnosed: chronic gastritis in the acute stage. Physical development corresponds to age, disharmonious due to lack of body weight. Mental development corresponds to age, harmonious. In the year preceding the examination, I suffered 3 acute respiratory viral infections and parainfluenza :

а. 1st group;
б. 2nd group;
в. 3rd group;
г. 4th group;
д. 5th group.

59. Age periodization:

а. necessary for organizing educational activities for children of different ages;
б. necessary to determine the age of a child's admission to a child care institution and the start of work;
в. necessary for hygienic regulation of environmental factors;
г. is based on uneven growth and development;
д. is based on the phenomenon of acceleration of growth and development.

60. Somatoscopic signs of physical development :

а. state of posture;
б. spine shape;
в. shape of legs, feet;
г. chest shape;
д. degree of sexual development.

61. To measure diameters use:

а. stadiometer;
б. anthropometer;
в. thick compass;
г. sliding compass;
д. caliper

62. The structure of the building of institutions for children and adolescents must ensure:

а. maximum division of the team into separate age groups;
б. allocation of premises that are a source of noise and air pollution;
в. convenient and short connection to the land plot;
г. the possibility of isolating certain groups of children;
д. allocation into one block of premises with a similar nature of activity (classrooms, offices).

63. Recommended orientation of group rooms in preschool institutions:

а. South;
б. Northeast;
в. Southeast;
г. West.

64. The most effective ways to increase the physical activity of children in preschool institutions are:

а. inclusion of additional physical education classes in the hall;
б. activation of physical activity during walks;
в. conducting physical education classes outdoors;
г. organization of additional classes with trainers on a self-supporting basis.

65. When teaching senior schoolchildren in a 5-day work week, a simplified lesson schedule should be:

a. monday;
б. tuesday;
в. wednesday;
г. thursday;
д. friday.

66. What to consider when seating students correctly in the classroom:

а. the length of the student's body, the condition of the hearing and vision organs, the tendency to colds;
б. student's body length, tendency to catch colds, academic performance;
в. the length of the student's body, diseases of the organs of hearing and vision, tendency to colds, academic performance, desire of the student.

67. Hygienic requirements for organizing labor lessons in secondary schools are:

а. lesson density 60-80%;
б. lesson density 80-90%;
в. number of main operations - 1-2;
г. number of main operations - 3-5;
д. predominance of the static component;
е. predominance of the dynamic component.

68. Basic hygiene requirements for workshops:

а. sufficient area;
б. isolated placement;
в. sufficient lighting;
г. correct placement of equipment;
д. presence of one entrance to the carpentry workshop.

69. In general, the greatest influence on the health of children and adolescents is exerted by:

а. environmental pollution;
б. natural and climatic conditions;
в. activities of health authorities;
г. lifestyle and social and hygienic factors.

70. The difficulty of the subject for students is determined by:

а. volume and content;
б. novelty;
в. individual characteristics of students;
г. place in the schedule.

71. Analysis of the distribution of children by health group is important:

а. to prescribe individual recommendations for the treatment and prevention of diseases;
б. for individual rationing of physical and mental stress;
в. to assess the health status of the team;
г. to identify risk groups for developing diseases.

72. Please indicate which health group your child belongs to. During a medical examination of Volkov I. with the participation of specialists, it was diagnosed: chronic tonsillitis, decompensated form. Physical and mental development corresponds to age, harmonious. In the year preceding the examination, he suffered 4 acute follicular tonsillitis, influenza, and a peritonsillar abscess:

a. 1st group;
б. 2nd group;
в. 3rd group;
г. 4th group;
д. 5th group.

73. Biological age can be determined using the following data:

а. body length and its annual increases;
б. body weight and its correspondence to average age indicators;
в. development of secondary sexual characteristics;
г. vital capacity;
д. the presence of ossification points;
е. number of permanent teeth.

74. An individualizing method for studying the physical development of children and adolescents is:

а. assessment of an individual's physical development
б. study of the physical development of the same groups of children during the period of growth and development;
в. study of the physical development of large groups of children in a relatively short period of time;
г. a one-time study of the physical development of children.

75. Somatometric indicators of physical development:

а. length, body weight, chest circumference;
б. back strength, hand muscle strength;
в. development of subcutaneous fat;
г. development of secondary sexual characteristics.

76. Features of the course of basic nervous processes in children of primary school age:

а. predominance of inhibition over excitation;
б. predominance of excitation over inhibition;
в. irradiation of excitation.

77. The group cell of a preschool institution should include:

а. locker room;
б. group;
в. toilet;
г. combined bedroom-game room ;
д. pantry;
е. pantry for storing bedding;
ж. storage room for boots and skis;
з. bedroom.

78. From a hygienic point of view, the optimal for secondary schools is:

а. capacity 1960 seats;
б. capacity 844 seats;
в. service radius up to 1.5 km;
г. service radius up to 3 km;
д. placement on intra-block passages;
е. placement on inter-block passages;
ж. intra-block placement.

79. General requirements for school furniture:

a. matching student growth;
б. painting in light colors;
в. ease;
г. painting in dark colors;
д. hygienic coating, easy to clean.

80. Is the process of fatigue a physiological process?

a. Yes;
б. No.

81. Deviations in the health of students that may arise as a result of incorrect selection of furniture:

a. poor posture;
б. scoliosis;
в. myopia;
г. flat feet;
д. compression of the chest and abdominal organs.

82. A physical education lesson characterized by the following indicators is hygienically effective for schoolchildren of the main medical group :

a. motor density - 60%, maximum increase in heart rate - 50%, its restoration by the end of the lesson;
б. motor density - 80%, maximum increase in heart rate - 110%, its restoration in the 3rd minute after the lesson;
в. motor density - 80%, heart rate increase - 110%, its restoration in the 7th minute after exercise;
г. motor density - 50%, heart rate increase - 100%, its restoration in the 6th minute after exercise.

83. The distribution of schoolchildren into main, preparatory and special groups is carried out taking into account:

а. gender;
б. health conditions;
в. physical fitness;
г. the wishes of the student or his parents;
д. staffing schedule for physical education teachers.

84. To measure lengths, use:

а. stadiometer;
б. anthropometer;
в. thick compass;
г. sliding compass;
д. caliper

85. Please indicate which health group your child belongs to. During a medical examination of Volkov I. with the participation of specialists, the following was diagnosed: flat feet; physical and mental development corresponds to age, harmonious; in the year preceding the examination, he suffered 3 acute respiratory viral infections and parainfluenza:

а. 1st group;
б. 2nd group;
в. 3rd group;
г. 4th group;
д. 5th group.

86. The patterns of growth and development of children's bodies include:

а. uneven rates of growth and development;
б. increase in specific energy expenditure of the body;
в. heterochrony ;
г. sexual dimorphism;
д. conditioning of growth and development by heredity and environmental factors;
е. biological reliability of functional systems and the body as a whole;
ж. acceleration of growth and development.

87. Basic hygiene requirements for the classroom:

а. sufficient area;
б. orientation: south, southeast, east;
в. orientation: west, southwest;
г. sufficient level of natural light;
д. painting the walls in light colors.

88. Features of lesson design in elementary school:

а. variety of activities;
б. visibility;
в. emotionality;
г. conducting physical education.

89. The main method of studying the organization of classes is:

а. study of the latent period of the visual-motor reaction before and after classes;
б. study of mental performance using proofreading tests before and after classes;
в. lesson timing;
г. studying the survival of knowledge after the lesson.

90. A hygienically complete schedule should, first of all, be drawn up:

а. for 1st grades;
б. for 3rd grade;
в. for 5th grade;
г. for 7th grade;
д. for 11th grades.

91. The characteristics of adolescents' body reactions to physical activity and their causes include:

а. longer run-in period;
б. rapid achievement of a high level of performance;
в. relatively short period of high performance;
г. relatively long period of high performance;
д. longer recovery period;
е. faster recovery;
ж. age-related physiological characteristics of skeletal muscles and muscle contraction.

92. Please indicate which health group your child belongs to. During a medical examination of Ivanov I. with the participation of specialists, no chronic diseases or morphofunctional abnormalities were revealed. Physical and mental development corresponds to age, harmonious. In the year preceding the examination, I suffered 3 acute respiratory viral infections and parainfluenza :

а. 1st group;
б. 2nd group;
в. 3rd group;
г. 4th group;
д. 5th group.

93. The biological reliability of functional systems and the body as a whole is based on:

а. on redundancy of control elements;
б. on homeostasis;
в. on duplication and interchangeability of regulatory elements;
г. on a perfect and rapid return to a state of relative constancy;
д. on hereditary characteristics;
е. on the dynamic interaction of system links.

94. For what purpose are data on physical development used:

а. as an objective criterion for assessing the health of the child population;
б. to develop preventive measures to protect children's health and teenagers;
в. for the design of children's furniture and clothing.

95. Optimal from a hygienic point of view for preschool institutions is:

а. capacity – 620-740 seats;
б. capacity – 280-320 seats;
в. service radius up to 0.3 km;
г. service radius up to 0.5 km;
д. intra-block placement;
е. placement on intra-block passages;
ж. placement on inter-block passages.

96. Ensuring the principle of group isolation when designing a preschool institution is achieved by:

а. sufficient area of the site, playgrounds and physical training grounds;
б. the presence of a playground for each group;
в. sufficient area of the main premises for children;
г. each group has a cell with a full set of premises;
д. availability of gaming and sports equipment;
е. the use of a centralized building composition with one entrance;
ж. each child has a locker for clothes;
з. the use of green spaces as site separators;
и. the use of a block composition of the building with a separate entrance for each group.

97. Optimal orientation for secondary school classrooms:

а. North;
б. West;
в. Southwest;
г. Northeast;
д. Southeast.

98. The optimal schedule for 1st grade students on Tuesday is:

а. physical education, mathematics, reading, Russian language;
б. reading, Russian language, mathematics, physical education;
в. mathematics, reading, physical education, Russian language;
г. mathematics, physical education, Russian language, reading.

99. Analysis of the timing of a labor lesson allows us to determine the following indicators:

a. duration of the lesson and its components;
б. number of operations, their duration and alternation;
в. physiological “price” of the lesson;
г. production rate.

100. The most accessible and effective system in preschool institutions is a system of hardening activities, including:

а. air baths during physical education in the gym and walks, dousing the body;
б. air baths during outdoor exercise, walks with outdoor games, rubbing;
в. air baths during outdoor physical education, walks with outdoor games, creating thermal comfort by matching children's clothing to the indoor microclimate.

101. The characteristics of adolescents’ body reactions to physical activity and their causes include:

а. longer run-in period;
б. rapid achievement of a high level of performance;
в. relatively short period of high performance;
г. relatively long period of high performance;
д. longer recovery period;
е. faster recovery;
ж. age-related physiological characteristics of skeletal muscles.

102. Basic requirements for the gym:

а. isolated placement;
б. availability of changing rooms and showers;
в. sufficient area;
г. smooth artificial floor covering.

103. Please indicate which health group your child belongs to. During a medical examination of Ivanov I. with the participation of specialists, no chronic diseases were revealed. Physical development lags behind passport age, harmonious. Mental development corresponds to age, harmonious. In the year preceding the examination, he suffered from pneumonia, rubella measles, and acute catarrhal otitis media:

а. 1st group;
б. 2nd group;
в. 3rd group;
г. 4th group;
д. 5th group.