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

FACULTY OF TREATMENT AND PREVENTION

Appraisal Fund
in the discipline "Medical Informatics"

Specialty 05/31/01 General Medicine

2023

1.**The form of intermediate certification is a test.**

2.**Type of intermediate certification.**

The credit is given according to the total current rating in accordance with the point-rating system.

3. List of competencies formed by the discipline or in
the formation of which the discipline participates in

Code competencies	Content of competencies (results of mastering OOP)	Contents of elements competencies, in implementation which participates discipline
OK-1	Capable of abstract thinking, analysis, synthesis.	Able to be able to use educational, scientific, popular science literature, the Internet for professional activities; Correctly apply knowledge and skills in the subject matter areas.
OPK-1	Ready to solve standard professional tasks with using informational, bibliographic resources, medical and biological terminology, information-communication technologies and accounting basic requirements informational security	Knows the theoretical foundations of computer science, collection, storage, retrieval, processing, transformation, dissemination of information in medical and biological systems, use information computer systems in medicine and healthcare.
OPK-7	Ready to use basic physical chemical, mathematical and other natural science concepts and methods in solving professional problems	Knows mathematical methods for solving intellectual problems and their application in medicine; Knows basic concepts and methods of mathematics statistics; basic

		physical phenomena and patterns underlying processes, occurring in the human body; characteristics of the impact of physical factors on the body.

4. **Stages of developing competencies in the process of mastering educational program**

Competence	Disciplines	Semester
OK-1	Physics mathematics	1
	Chemistry	1
	Biology	1
OPK-1	Anatomy	1
OPK-7	Physics mathematics	1
	Chemistry	1
	Biology	1
	Anatomy	1

5. **Stages of developing competencies indevelopment process disciplines**

Sections of the discipline	Codes generated competencies		
	OK-1	OPK-1	OPK-7
Semester 2			
Section 1 Concept of information. General characteristics of the processes of collecting, transmitting, processing and storing information. Methods and means of informatization in medicine and healthcare	+	+	
Section 2 Basic information conversion technologies	+	+	
Section 3 Modeling of physiological, morphological, molecular genetic and biochemical processes			+
Section 4 Automated medical and technological systems for clinical laboratory, scientific research and functional diagnostics.		+	+
Section 5 Information systems of medical and preventive institutions		+	+
Section 6 Information support of the diagnostic and treatment process. Telecommunications	+	+	

technologies and Internet resources in medicine. Telemedicine			

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

Code competencies	Forms of assessment tools	
	Current certification	Interim certification
OK-1	Tests Situational tasks Practical skills Oral survey, interview Abstract Report	Credit according to the point-rating system
OPK-1	Tests Situational tasks Practical skills Oral survey, interview Abstract Report	Credit according to the point-rating system
OPK-7	Tests Situational tasks Practical skills Oral survey, interview Abstract Report	Credit according to the point-rating system

7. Current control

Forms of control	Number of exemplary (typical) tasks
Tests	10 questions
Situational tasks	3 tasks with standard answers
Practical skills	5 skills
Oral survey, interview	Test questions on the topics of the section

Test control

1.MICROSOFT WINDOWS IS
    1. password for Internet access
    2. text editor
    3. graphic editor
    4. operating system

2. CONDITIONS OF INFORMATIZATION OF SOCIETY
    1. high level of industrialization
    2. high proportion of employees among the population

3. availability of computer technology
4. developed telecommunication technologies

3. WHAT ENSURES THE COMBINED FUNCTIONING OF ALL COMPUTER DEVICES AND PROVIDES THE USER ACCESS TO RESOURCES?

1. driver
2. operating system
3. application
4. instructions

4. LABEL IS
1. part of the file
2. name of the program and document
3. link to a program or document
4. price tag

5. WHEN OPENING A DOCUMENT FROM DISK, THE USER MUST INVENT
1. file size
2. file type
3. file creation date
4. file name

6. THE BLINKING VERTICAL BAR IN THE MICROSOFT WORD 2007 DOCUMENT IS CALLED
1. cursor
2. tab
3. pixel
4. raster

7. DATA ABOUT THE TOTAL NUMBER OF PAGES IN THE DOCUMENT AND THE NUMBER OF THE CURRENT PAGE IS REFLECTED IN
1. status bar
2. menu bar
3. Formatting tab
4. context menu

8.SELECT CONTEXT MENU COMMANDS:
1. copy
2. delete
3. minimize the window to the taskbar
4. close the window

9. CHANGING THE PARAMETERS OF ENTERED SYMBOLS IS
1. font formatting
2. text formatting
3. style formatting
4. paragraph formatting

10. WHAT IS THE DIFFERENCE OF THE "SAVE AS" COMMAND FROM "SAVE"?
1. allows you to save the file
2. allows you to save the file under a different name and in a different location

3. allows you to save the drawing on your desktop
4. allows you to save a text document
Situational tasks

Task 1.CELL VALUED6 AFTER DELETION OF LINE 5 THERE WILL BE........

	IN	WITH	D
3	3	5	0.1
4	=B3*D3	= C3*D3	
5	=5+C3	=5*D3	= C3*B3
6	=SUM(B3:B5)	=SUM(C3:C5)	=SUM(D3:D5)
7			=MIN(B6:D6)

Answer: 0.1

Task 2. The "Departments" database is presented. How many records, fields, text fields, number fields?

Department	Number of employees	Head_department
310a	27	Shpak
101a	26	Antonov
215	thirty	Chebotarev
101g	18	Rakitsky
112	24	Kabanov

Number of records – __, fields __, text fields__, numeric fields ___

Answer: Answer: Number of records -5, fields - 3, text fields - 2, number fields -1

Task 3. There is a database. How many fields, records, text fields, numeric fields does it have? fields?

No.	Surname	Name	Surname	date birth	Class	School
1	Sidorov	Paul	Ilyich	05/12/1990	7	105
2	Smirnov	Stanislav	Alexeyevich	09/07/1991	9	49
3	Efremov	Basil	Olegovych	04/13/1990	eleven	2
4	Katin	Andrey	Nikitich	12/12/1991	10	5

Number of records – __, fields __, text fields__, numeric fields ___

Answer: Number of records – 4, fields - 7, text fields - 5, number fields - 0

Practical skills

1. Create and save a document for working with text. Learn to find and open a text file.
2. Type the text, format the text font and hyphenate it.
3. Set the printable area of the document.
4. Use the Format Painter command to edit text headings.

5. Sort the list in ascending and descending order.

Interview

List of check questions on the topics of the section

1. Define the program.
2. How are programs classified?
3. Highlight the functions of system programs.
4. What are application programs?
5. What is considered basic software?
6. What is an operating system? Functions of operating systems.
7. List the types of operating systems.
8. Highlight the features and benefits of the operating system Windows 7, Windows 8, Windows 10.
9. What types of threats to information exist? Give the concept of threat.
10. Describe methods for protecting information.
eleven. What is the purpose of cryptographic methods for protecting information? List these methods. 12.
Give the concepts of authentication and digital signature. What is their essence?
13. What are the problems of information security in networks, and what are the possibilities for resolving them?
14. Difference between a word processor and a text editor.
15. Functionality of the word processor Word 2007.
16. Copy, move, delete and format text.
17. Working with windows and styles.
18. Creating tables.
19. Editing formulas in MS Word.
20. Capabilities and characteristics of computer presentation technology.
21. Basic elements of Microsoft Power Point.
22. Power Point program interface.
23. General scheme for creating a presentation.
24. Basic modes of the Power Point program and their purpose.
25. Slide color scheme, possibilities for changing it.
26. Sequence of actions when animating a graphic object or text.
27. Sequence of actions when setting up a change of presentation slides.
28. Purpose and interface of spreadsheets.
29. Basic elements of spreadsheets.
30. How is data entered into cells and areas selected in the table?
31. Tell us about creating and editing a spreadsheet document.
32. How the operations of moving, copying and filling cells are performed. What is autocomplete?
33. Name ways to create charts based on data entered into a table. How are charts edited and formatted? What types of diagrams and designs are there?

34. Links. Built-in functions. Statistical functions.
35. How are mathematical calculations performed?
36. Filtering (selecting) data from the list. Logic functions. Date and time functions.
37. How is data sorted?

38. Give the concept of a database, database management system.

39. Classification of databases.

40. Classification of databases according to data organization structure

41. Tell us about the purpose and interface of Microsoft Access. How is a database created?

42. Creating tables.

43. Creating relationships between tables.

44. Explain about editing table data.

45. How is the table structure edited?

46.   Creating queries.

47. How are forms created?

48. Reporting.

49. Modeling is a method of understanding the world around us.

50. Model definition. Classification of models by area of   use, branch of knowledge, purposes of use, method of presentation.

51. Conditions under which the modeling method is used.

52. Types of models in medicine.

53. Types of mathematical models in medicine.

54. Goals of mathematical modeling in medicine.

55. Stages of building models. Elements of the modeling process.

56. Advantages of using models in medicine. The concept of molecular modeling.

57. Practical application of mathematical models of the cardiovascular system

58. Scheme of the cardiovascular system and cardiac cycle.

59. Measurement of pressure in the left ventricle and aorta in systole and diastole.

60. Frank's model.

61. Systems of equations for phases 1 and 2 in the Frank model and their solution regarding pressure in large vessels.

62. Application of the Frank model to study the dependence of pressure in large vessels on the properties of the system.

63. The concept of an information system and a medical automated information system (MIS).

64. Purpose, objectives and functions of MIS.

65. Classification of MIS.

66. Basic level MIS.

67. MIS of medical institutions.

68. MIS at the territorial level.

69. Federal MIS.

70. Principles of creating MIS.

71. Requirements and conditions for the construction of MIS.

72. Stages of building an MIS

73. Structure of MIS.

74. Scheme of interaction of component modules in MIS.

75. The concept of a doctor's automated workstation (AWS)

76. Principles of creating automated workstations.

77. Requirements for an automated doctor's workstation.

78. Examples of automated workplaces.

79. Describe the functional purpose of the medical information system "Polyclinic".

80. General concept of electronic registry MIS

81. MIS electronic registry modules

82. Technical requirements for electronic registration of MIS

83. Scheme of operation of the electronic registry

84. Making an appointment with a doctor via the Internet

85. Automation of the registry and/or reception department

86. Advantages of the MIS electronic registry

87. What is the diagnostic sensitivity of the test, and how is it calculated?

88. count?

89. What is the diagnostic specificity of a test, and how is it calculated?

90. count?

91. What is the diagnostic accuracy of a test, and how is it calculated?

92. What is the predictive value of a positive test result, and how is it calculated?

93. What is the predictive value of a negative test result, and how is it calculated?

94. How to assess the predictive value of a laboratory test method, adjusted for the prevalence of the disease?

95. How to estimate the performance of a diagnostic test using the likelihood ratio?

96. What is the relative risk of an event, and how to calculate it?

97. What is the odds ratio of an event, and how to calculate it?

98. What are the requirements for medical computer monitor systems?

99. Name the types of computer monitor systems depending on the use case and design option.

100. Tell us about the purpose of collective, operating rooms, individual and computer monitor systems.

101. Indicate the configuration features of computer monitor systems for various uses.

102. List the controlled physiological parameters of the body using computer monitoring systems.

103. Describe the software of computer provision medical monitor systems.

104. Describe methods for analyzing heart rate variability.

105. What are expert systems (ES)?

106. What is special about ES?

107. Why are ES created?

108. Name the advantages and disadvantages of ES.

109. List the properties of the ES.

110. Provide a diagram of the generalized structure of the ES, explain the main components of this structure.

111. Tell us about the use of ES in psychodiagnostics.

112. Describe the main tasks of computer systems functional diagnostics.

113. List the main components of computer functional diagnostic systems

114. Name the stages of automated electrophysiological research.

115. Describe the purpose of a bioamplifier and an analog-to-digital converter.

116. Describe automated ECG analysis systems.

117. Explain time domain methods for estimating RR-variability ECG intervals.

118. Explain frequency domain methods for estimating RR variability

ECG intervals.

Essay topics to receive bonus points

1. Computer systems for object recognition in laboratory and biopsy diagnostics.

2. Telemedicine: experience in conducting medical video conferencing using high-speed digital communication channels.
3. Neural network technologies in medical practice.
4. Application of Internet information resources in the system of indirect support for making informed decisions.
5. Methods for constructing automated information systems for medicine and health care authorities using the example of network computer systems of territorial compulsory health insurance authorities.
6. Structure of distributed databases. Application of distributed databases in the practice of health authorities.
7. Systems for long-term continuous monitoring of electrophysiological parameters and systems for a unified interpretation of disorders in the diagnosis and treatment of diseases.
8. Current state of the problem of automation of healthcare and medicine
9. Electronic registration. First information about modern use.

10. Review of modern medical information systems.
11. Review of modern predictive expert systems.
12. Simulation modeling. Concept and benefits of use in medicine.

13. Electronic medical history.

8. Interim certification

Interim certification forms	Number of exemplary (typical) tasks
Test	According to the point-rating system

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

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

Competency assessment indicators and rating scales

Grade "unsatisfactory" (not accepted) or absence formation competencies	Grade "satisfactorily" (passed) or satisfactory (threshold) level of development competencies	Rated "good" (passed) or sufficient level development competencies	Excellent rating (passed) or high level development competencies
failure to student on one's own demonstrate knowledge when solving assignments, lack independence in application of skills. Absence availability confirmation formation competencies indicates negative development results academic discipline	student demonstrates independence in application of knowledge skills and abilities to solve educational tasks in full According to sample given teacher, by tasks, solution of which there were shown teacher, it should be considered that competence formed on satisfactory level.	student demonstrates independent application of knowledge, skills and abilities when deciding tasks, tasks similar samples that confirms Availability formed competencies for higher level. Availability such competence on sufficient level indicates sustainable fixed practical skill	student demonstrates ability to full independence in choosing a method solutions non-standard assignments within disciplines with using knowledge, skills and skills, received as in development progress of this discipline, and adjacent disciplines should count competence formed on high level.

Evaluation criteria for the test

Mark	Descriptors		
	strength of knowledge	**ability to explain** the essence of phenomena, **processes, do** conclusions	**logic and subsequence** answer
passed	solid knowledge of the basic processes of the studied subject area, the answer differs in depth and completeness of the topic; possession terminological apparatus	ability to explain essence, phenomena, processes, events, draw conclusions and generalizations, give reasoned answers, give examples	logic and subsequence answer
not accepted	insufficient knowledge subject matter being studied areas, unsatisfactory disclosure of the topic; weak knowledge of basic issues of theory, Allowed serious mistakes in content of the answer	weak analysis skills phenomena, processes, events, inability give reasoned answers given the examples are wrong	lack of logic and consistency answer

Criteria for evaluating forms of control:

Interviews:

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

	apparatus; free mastery of monologue speech, but one or two inaccuracies in the answer are allowed	examples; however one or two inaccuracies in the answer are allowed	
satisfactory strictly	satisfactory process knowledge subject matter being studied areas, answer, different insufficient depth and completeness of the topic; knowledge of basic theoretical issues. Several are allowed errors in content answer	satisfactory ability to give reasoned answers and provide examples; satisfactorily formed analysis skills phenomena, processes. Several are allowed errors in content answer	satisfactory logic and subsequence answer
unsatisfactory strictly	poor knowledge of the subject area being studied, shallow opening Topics; poor knowledge basic theoretical issues, poor analysis skills phenomena, processes. Serious errors in content answer	inability to give reasoned answers	lack of logic and consistency answer

Test control grading scale:

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

Situational tasks:

Mark	Descriptors			
	understanding Problems	analysis situations	skills solutions situations	professional thinking
Great	complete implication problems. All requirements, submitted to adania, completed	high benefit analyze situation, draw conclusions	high benefit select method solutions problems faithful solution skills situation	high level professional thoughts
Fine	complete implication problems. All	benefit analyze situation,	benefit select method solutions	residual level professional thoughts.

		draw conclusions	problems faithful solution skills situation	drops one or two precision in the answer
satisfactory strictly	astastic implication problems. majority requirements declared to adania, completed	satisfactory Naya benefit analyze situation, draw conclusions	satisfactory skills solutions situation	residual level professional thoughts. falls more a bunch of inaccuracies in reply
unsatisfactory strictly	misunderstanding problems. legs requirements, submitted to I hope not completed. No Tveta. Did not have experiments to solve hello	izkaya benefit analyze situation	insufficient solution skills situation	missing

Skills:

Mark	Descriptors		
	consistency theoretical knowledge	knowledge of the methodology execution practical skills	performance practical skills
Great	system stable theoretical knowledge about services and contraindications, possible complications, regulations, etc.	stable knowledge implementation methods practical skills	independence and correctness fulfillment practical skills skills
Fine	system stable theoretical knowledge about services and contraindications, possible complications, regulations, etc., some are omitted preciseness that independently are detected quickly cope	stable knowledge implementation methods practical skills; some are omitted preciseness that independently are detected quickly cope	independence and correctness fulfillment practical skills skills
satisfactory strictly	satisfactory theoretical knowledge about services and contraindications, possible complications, regulations, etc.	knowledge of the basic principles of implementation methodology practical skills	independence fulfillment practical skills skills, but go down some mistakes, which are being corrected with help tutor

unsatisfactory emphatically	low level of knowledge services contraindications, possible complications, regulations, etc. and/or can't do it on its own demonstrate tactical skills or fulfills them, allowing common mistakes	O izky level And methods execution practical skills knowledge	epossibility independent performing the skill whether skills

Abstract

Mark	Descriptors			
	Disclosure Problems	**Performance**	**Decor**	**Answers to questions**
Great	Problem revealed fully. Analysis carried out problems with involving additional literature. conclusions justified.	Represented information systematized consistent and logically connected. Used more than 5 professional terms.	Wide used informational technologies. None errors in represented information.	Answers to questions complete with ghost examples and/or explanations.
Fine	Problem revealed. Analysis carried out no problems attracting additional literature. Not all conclusions made and/or justified.	Represented information systematized and consistent. Used more than 2 professional terms.	Used informational technologies. No more than 2 errors in the submitted information	Answers to complete questions and/or partially full
Satisfactorily	Problem not disclosed fully. The conclusions are not made and/or conclusions are not justified.	Represented no information systematized and/or not consistent. Used 1-2 professional term.	Used informational technologies partially. 3-4 errors per represented information.	Only answers to elementary questions.
Unsatisfactory	The problem is not revealed. None conclusions.	Represented information logically not connected. Not used	Not used informational technologies. More than 4 errors	No answers to questions.