

Документ подписан простой электронной подписью

Информация о владельце:

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MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION

Federal State Autonomous Educational Institution

Higher Education

"NORTH CAUCASUS FEDERAL UNIVERSITY"

APPROVED BY

Acting Director of the Institute

Advanced Engineering

Cand. Tech. Sci., Associate Professor

A.A. Porokhnya

DISCIPLINE ASSESSMENT TOOLS FUND

"Computer Communications and Networking"

Field of study	11.03.02 Infocommunication Technologies and Communication Systems
Profile	Intelligent Data Processing in Infocommunication Systems and Networks
Year of start of training	2026
Form of study	Full-time
Implemented in a semester	4

Introduction

1. Purpose

The Fund of Assessment Tools for the discipline "Computer Communications and Networking" is intended for an objective assessment of the level of competence formation.

2. FOS is an appendix to the program of the discipline "Computer Communications and Networking".

3. The developer is D.V. Gaichuk, Associate Professor of the Department of Digital, Robotic Systems and Electronics of the Institute of Advanced Engineering.

4. An examination of the FOC was carried out.

Members of the expert group:

Chairman: V.P. Mochalov, Professor of the Department of Digital, Robotic Systems and Electronics of the Institute of Advanced Engineering.

Members of the Commission:

S.V. Yakovlev, Associate Professor of the Department of Digital, Robotic Systems and Electronics of the Institute of Advanced Engineering.

S.V. Melnikov, Senior Researcher of the Interdisciplinary Training and Research Center for Agricultural Technologies, Associate Professor of the Department of Digital, Robotic Systems and Electronics of the Institute of Advanced Engineering.

Representative of the employer's organization:

Mironov V.A., General Director of Orintex LLC.

Expert opinion: The FAT for the discipline allows you to assess the level of competence formation. Start approbation.

5. The validity period of the FAT is determined by the period of implementation of the educational program.

Description of the criteria for assessing competence at various stages of their formation, description of assessment scales

Competency(s), indicator(s)	Levels of competence formation(s),			
	The minimum level has not been reached (Unsatisfactory) 2 points	Minimum level (satisfactory) 3 points	Intermediate level (good) 4 points	High level (excellent) 5 points
Competency: OPK-4				
Learning outcomes in the discipline (module): <i>Indicator:</i> ID-1 OPK-4 uses information and communication technologies to search for the necessary information	Unable to complete tasks related to this competency achievement indicator	Performs tasks at the reproductive level related to this indicator of competence achievement	Performs tasks related to this indicator of competence achievement in standard situations, making minor mistakes	Fully performs tasks related to this indicator of competence achievement, including in non-standard situations
Learning outcomes in the discipline (module): <i>Indicator:</i> ID-3 OPK-4 understands modern interactive software systems and basic methods of processing experimental data, including the use of standard software, general and special-purpose software packages.	Unable to complete tasks related to this competency achievement indicator	Performs tasks at the reproductive level related to this indicator of competence achievement	Performs tasks related to this indicator of competence achievement in standard situations, making minor mistakes	Fully performs tasks related to this indicator of competence achievement, including in non-standard situations
Learning outcomes in the discipline (module): <i>Indicator:</i> ID-4 OPK-4 uses the capabilities of computer technology and software to solve	Unable to complete tasks related to this competency achievement indicator	Performs tasks at the reproductive level related to this indicator of competence achievement	Performs tasks related to this indicator of competence achievement in standard situations, making minor mistakes	Fully performs tasks related to this indicator of competence achievement, including in non-standard situations

problems of control and algorithmization of information processing processes.				
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Criteria for assessing competencies

An "excellent" grade is given to a student if he/she fully and accurately performs the tasks of assessment tools in the discipline related to this competence (indicators of competence achievement), while demonstrating at a high level the ability to solve standard and non-standard applied practical problems of the physical foundations of telecommunications.

A grade of "good" is given to a student if he/she, making minor mistakes, performs the tasks of assessment tools in the discipline related to this competence (indicators of competence achievement), while demonstrating at an average level the ability to solve only standard applied practical problems of the physical foundations of telecommunications.

A "satisfactory" grade is given to a student if he/she performs the tasks of assessment tools in the discipline related to this competence (indicators of competence achievement), while demonstrating at a minimum level the ability to solve standard applied practical problems of the physical foundations of telecommunications.

An "unsatisfactory" grade is given to a student if he/she, performing the tasks of assessment tools in the discipline, does not reach the minimum level of competence formation ((indicators of competence achievement), while not demonstrating the ability to solve standard applied practical problems of the physical foundations of telecommunications, makes gross mistakes that he cannot correct even with the help of leading questions from the teacher.

** in accordance with the results of mastering the discipline and types of tasks*

ASSESSMENT TOOLS TO CHECK THE LEVEL OF FORMATION OF COMPETENCIES

Job Number	Correct answer	Content of the question	Competence
1.	A SET OF EQUIPMENT ROOMS	Telecommunication networks are _____ and software that ensure the transmission of information messages between subscribers with specified quality parameters	OPK-4
2.	1)	In networks with _____, a connection between subscribers is preliminarily established, then messages are transmitted over the created connection. <i>Choose one of the 3 answer options:</i> 1) channel switching 2) packet switching 3) message switching	OPK-4
3.	2)	Is the statement true: Since the communication channel is completely allocated to a pair of subscribers, it is impossible to set the required parameters and characteristics for it, providing latency values and latency variations <i>Choose one of the 2 answer options:</i> 1) Yes 2) No	OPK-4
4.	1-a 2-b	Compare the definitions <i>Specify a match for all 2 answer options:</i> 1) belong to users (subscribers) 2) address devices, usually interfaces of telecommunication nodes and subscriber devices a) __ Logical addresses b) __ Physical addresses	OPK-4
5.	A ROUTE IS BEING	Virtual channel technologies pre-connect the end nodes (source and destination) with a	OPK-4

	PLOTTED	_____ (virtual channel) over which data is then transmitted.	
6.	1-a 2-b	Indicate what is typical for the technologies under consideration <i>Specify a match for all 2 answer options:</i> 1) the receipt of data is confirmed by the receiving party. 2) Separate parts of a large message can be transmitted along different routes and the loss of a separate part of the message can go unnoticed a)___ Virtual Channel Technologies b)___ Datagram technology	OPK-4
7.	PRE-CONNECTION	In datagram technology, there is no _____ end nodes	OPK-4
8.	1-a 2-b 3-c 4-d 5-e 6-f 7-g	Map the functional purpose of the levels <i>Match all 7 answer options:</i> 1) operates with the most common unit of data - a message. At this level, the control of common access to the network, data flow, network services (protocols), such as FTP, TFTP, HTTP, SMTP, SNMP, etc., is implemented. 2) the data is converted into the generally accepted ASCII format. When receiving data, the reverse process occurs. At this level, data is also encrypted and compressed (MPEG, JPEG protocols). 3) determines which computer is the master and which is the slave, sets the transmission time for the transmitting party. 4) The layer ensures reliable delivery of packages. 5) addresses the message, determines the route along which the data packet will be sent 6) At this level, a checksum is added to the transmitted data, determined using a cyclic code algorithm. On the receiving end, errors are determined by the checksum. 7) transmits a stream of bits through the appropriate physical medium (electrical or	OPK-4

		optical cable, radio channel) through the appropriate interface. a)___ Application Layer 7 b)___ Presentation Layer 6 c)___ Session Layer 5 d)___ Transport Layer 4 e)___ Network Layer 3 f)___ Data Link 2 g)___ Physical 1	
9.	1-a 2-b 3-c 4-d	Map data encapsulation elements <i>Match all 4 answer options:</i> 1) Segment 2) data 3) Package 4) frame (a)___ Transport layer (b)___ Application layer (c)___ Network layer d)___ Channel level	OPK-4
10.	1-a 2-b 3-c	Map the types of address and protocol data blocks <i>Match all 3 answer options:</i> 1) Port numbers 2) logical IP addresses 3) physical addresses a)___ Segment b)___ Package (c)___ Data frame	OPK-4

11.		Fundamentals of network technologies: telecommunication network, channel and packet switching, data flows, NGN networks, addressing.	OPK-4
12.		Classification of data transmission networks	OPK-4
13.		Seven-Level Model of Open Systems Interoperability	OPK-4
14.		Data Encapsulation	OPK-4
15.		TCP/IP model.	OPK-4
16.		Copper Cables	OPK-4
17.		Fiber optic cables	OPK-4
18.		Wireless Environment: Technologies and Standards	OPK-4
19.		LLC and MAC sub-layers. Ethernet frame format.	OPK-4
20.		Ethernet Ethernet LANs	OPK-4
21.		Switches in Local Networks: Algorithm of Operation, Switching Modes	OPK-4
22.		Order of communication in the local network: transmission of packets in the local network, transmission of packets outside the local network	OPK-4
23.		ARP Overview	OPK-4
24.		ARP Protocol Issues	OPK-4
25.		Network-level tasks	OPK4
26.	1) 2) 3)	Specify which layers of the OSI model correspond to the TCP/IP Model Application layer <i>Choose several of the 7 answer options:</i> 1) Applications 2) representations 3) session 4) transport 5) Network 6) Channel 7) physical	OPK-4
27.	4	The UTP cable _____ pairs of twisted copper wires.	OPK-4
28.	2)	Which type of twisted pair provides the best protection of the transmitted signal from interference.	OPK-4

		Choose one of the 2 answer options: 1) UTP 2) STP	
29.	1) 2) 3)	Straight cable is used for connections: Choose several of the 6 answer options: 1) Switch with router 2) Switches with computers or servers 3) A hub with computers or servers 4) Commutator with Commutator 5) Router with computer 6) Computer to Computer	OPK-4
30.	1) 2) 3)	Crossover cable is used for connections: Choose several of the 6 answer options: 1) Switch with Switch 2) Router with Router 3) Computer to Computer 4) Switch with router 5) Switches with computers or servers 6) A hub with computers or servers	OPK-4
31.	CONSOLE CABLE	To configure a switch or router, they are connected to the serial COM port (RS-232) of a personal computer. In this case, _____	OPK-4
32.	FIBER TWISTS	The advantage of fiber-optic cable is that there is no need to _____ or shield them, because there are no problems of crosstalk and electromagnetic interference from external sources.	OPK-4
33.	CYLINDRICAL	Optical fiber is a two-layer _____ in the form of a core (optical fiber) and a	OPK-4

	STRUCTURE	shell.	
34.	1-a 2-b	Compare <i>Specify a match for all 2 answer options:</i> 1) the diameter of the core is relatively large 2) the beam of light propagates along the core along the axis of the fiber a) __ Multimode Fiber (b) __ Single-mode fibre	OPK-4
35.	1550	Optical fiber transparency windows are located at wavelengths of 850 nm, 1310 nm, and ____ nm	OPK-4
36.		Characteristics of the Internet Protocol (IP)	OPK-4
37.		IPv4 Packet	OPK-4
38.		IPv6 Packet	OPK-4
39.		IPv4 Network Addresses	OPK-4
40.		IPv6 network addresses	OPK-4
41.		Routers in Network Technologies	OPK-4
42.		Routing Principles	OPK-4
43.		Routing Tables	OPK-4
44.		Transport Layer Features	OPK-4
45.		Transport layer protocols	OPK-4
46.		Transport Layer Ports	OPK-4
47.		TCP communication	OPK-4
48.		Reliability and flow control with TCP	OPK-4
49.		UDP communication	OPK-4
50.		Application layer: Email transfer protocols, HTTP protocol, FTP and TFTP protocols, DNS protocol, Telnet protocol, DHCP protocol.	OPK-4

