

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 OF HIGHER
EDUCATION
"NORTH CAUCASUS FEDERAL UNIVERSITY"

APPROVED BY
Acting Director of the Institute
Advanced Engineering
A.A. Porokhnya

DISCIPLINE ASSESSMENT TOOLS FUND
"Automatic Control Theory"

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	5

Introduction

1. Purpose

The Fund of Assessment Tools for the discipline "Theory of Automatic Control" is intended for an objective assessment of the level of competence formation.

2. FOS is an appendix to the program of the discipline "Fundamentals of Automatic Control".

3. Developer G.I. Linets, 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: N.Y. Bratchenko, Chairman of the CMT of the Institute of Advanced Engineering, Associate Professor of the Department of Digital, Robotic Systems and Electronics of the Institute of Advanced Engineering.

Members of the Commission:

V.P. Mochalov, 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 indicators and assessment criteria 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: PK-2				
Learning outcomes in the discipline (module): <i>Indicator:</i> ID-1PK-2 understands the basics of electrical engineering, network technologies, principles of operation, indicators of the use and functioning of telecommunication equipment, the requirements of technical regulations, international and national standards and other regulatory documents in the field of assessing the quality indicators of information and communication equipment.	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-2PK-2 complies with the requirements of programs and methods for conducting experimental tests of communication facilities and systems (information and communication equipment).	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-3PC-2 works with software used in the processing of information of infocommunication systems and their components, technical means of data collection and processing, with various information systems and databases.	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-4PK-2 controls the quality	Unable to complete tasks related to this competency achievement	Performs tasks at the reproductive level related to this indicator of	Performs tasks related to this indicator of competence	Fully performs tasks related to this indicator of competence

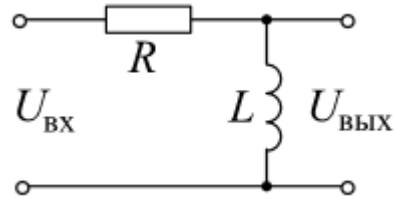
indicators of the operation of information and communication equipment in accordance with their standard indicators.	indicator	competence achievement	achievement in standard situations, making minor mistakes	achievement, including in non-standard situations
Learning outcomes in the discipline (module): <i>Indicator:</i> ID-5PK-2 to conduct experimental studies on the existing programs and methods of testing objects and communication systems (information and communication equipment) in order to assess their quality performance	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

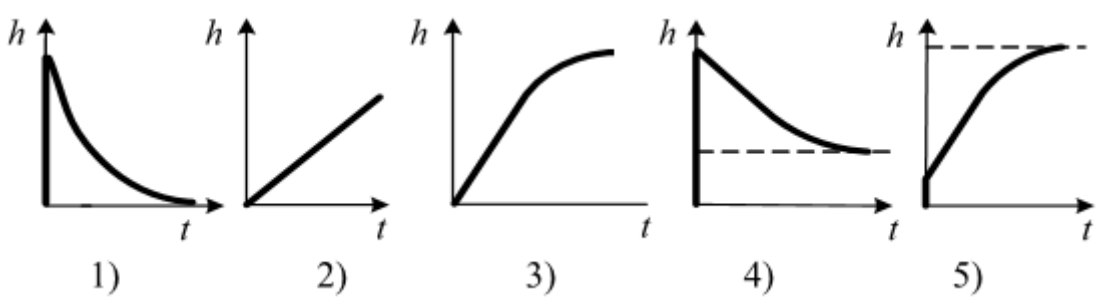
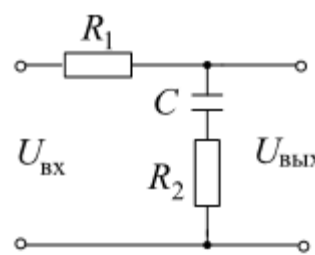
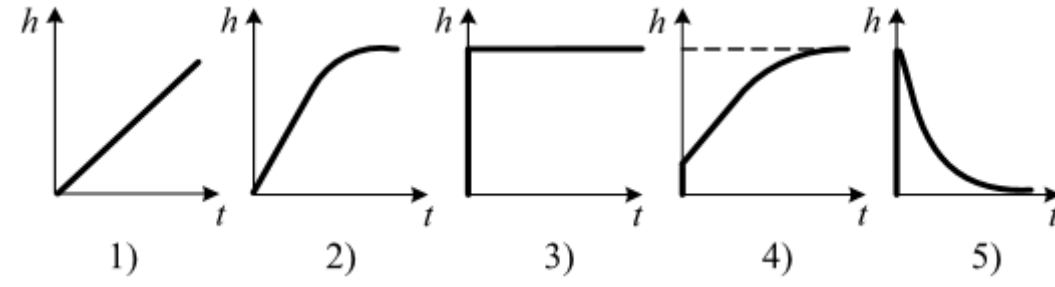
ASSESSMENT TOOLS FOR CHECKING THE LEVEL OF COMPETENCE FORMATION

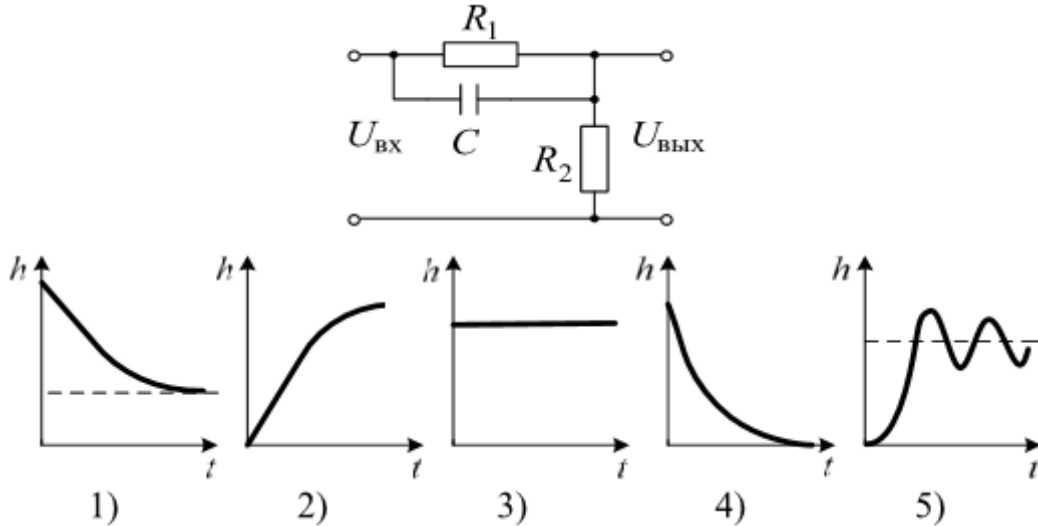
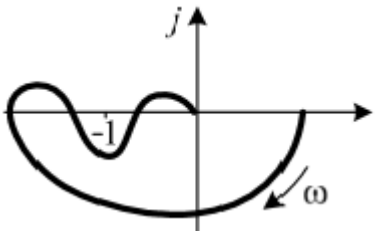
Job Number	Correct answer	Content of the question	Competence
Semester <u>5</u> .			
		Typical functional diagrams of ACS.	PC-2
		Open-loop control systems.	PC-2
		Compensation for disturbances.	PC-2
		Closed-loop control systems.	PC-2
		Mathematical description of elements and systems of automatic control.	PC-2
		Transfer functions of automatic control systems.	PC-2
		Criteria for the stability of self-propelled guns. Condition for the stability of self-propelled guns.	PC-2
		Concepts of controllability and observability of systems.	PC-2
		Criteria of controllability and observability of systems.	PC-2
		Transients and resilience.	PC-2
		Algebraic criteria of stability.	PC-2
		Mikhailov's frequency criterion.	PC-2
		Nyquist stability criterion.	PC-2
		Margin of stability.	PC-2
		Critical Gain	PC-2
		Root method.	PC-2
		Method of root hodographs.	PC-2
		Standard transient response method.	PC-2
		Method of logarithmic amplitude characteristics.	PC-2
		Safety margin requirements	PC-2
	е, ж, з, и	What are the characteristics of the lower type of administrations: а) A pametric past; б) perealgoritmization; в) Correction of structuring connections; г) sta6ilization; д) Thermal administration; е) kneeling;	PC-2

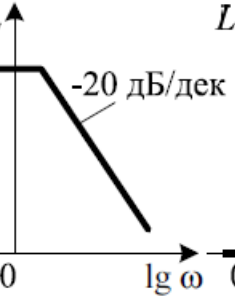
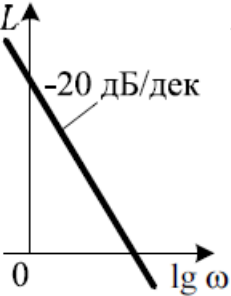
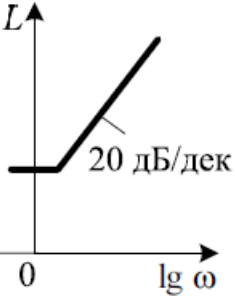
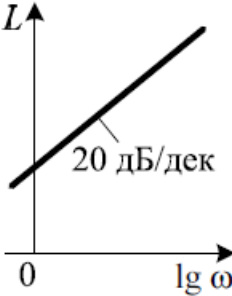
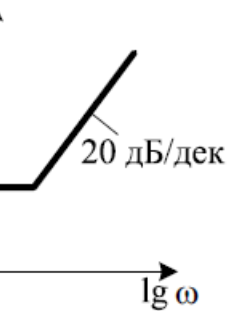
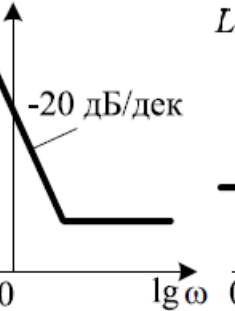
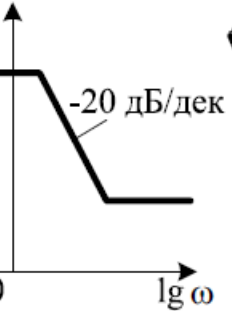
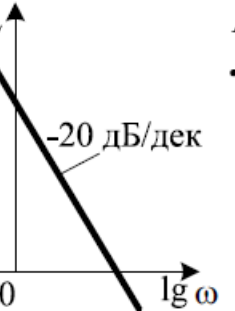
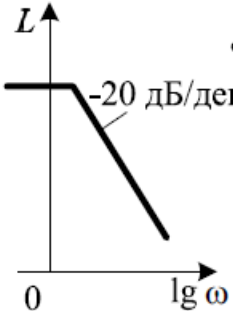
		(g) Final Effect; (h) A plan of action; i) Extraordinary administration Do you feel about the results of the process?	
	b, c, e	What are the main lower levels: a) programmable administration; (b) Adaptive use; c) numerical use; d) Stabilization; e) Thermal administration; (e) автоматическое управление; ~~g) f)~~ (s) Extrusive government Not related to the typical cases of administration?	PC-2
	a)	What (or how) are the types of the lower types of the administrations: a) stabilization; b) congestion; c) Programmable Administration; (d) Final Effect; e) Thermal administration; Does the auto file of the Fire Ship Machine after the Land Movement on the Left Route of the Field?	PC-2
	1	In the case of which values is the use of a hard object with the aim of supporting its equal first $y(t)$ at the level $y_s = \text{cost}$ when it is perturbed $f(t)$? 1) $u = u(y_s)$; 2) $u = u(y, t)$; 3) $u = u(y_s, y, t)$; 4) $u = u(y_s, f, t)$; 5) $u = u(y_s, y, f)$	PC-2
	1	Is it possible to implement the principle of the Regulation of the Response, which does not have any current information about the relevant information on the actions of the o6 project? 1) possible; 2) nelzya;	PC-2

		3) small data.	
	1	Current information on what are the necessary prerequisites for the implementation of the control process? 1) on the regulated; 2) on the internal events; 3) on administrative buildings; 4) on the regulated first and most important events; 5) on the remedial and governing buildings.	PC-2
	1	Which of the prived. 1.3 schematics corresponds to disturbance control? <u>схема 1</u> <u>схема 2</u> 1) схема 1; 2) схема 2; 3) схемы 1 и 2; 4) ни одна из них	PC-2
	3	What condition should be <i>added to the</i> scope of the act of the object and the act of the act of the object which is to be provided by the system of the automatic control of all the outputs of the object? 1) $m = n$; 2) $m \leq n$; 3) $m \geq n$; 4) мало данных.	PC-2
	4	What is the nature of the change in time of variables y of discrete automatic regulation systems? (1) All of the variables are in the correct order. 2) all the variables according to the level; 3) all variable quarters on time and on time;	PC-2

		4) at least one internal or exited transient quarter on the level or on time.	
	5	What is the pre-operative function of the linear non-linear system with one input and one output? 1) the connection of the exit to the exit; 2) the attitude of the exit to the first conditions of the first conditions; 3) the connection of the Laplac to the Laplac of the Exited System; 4) the connection of the Laplac of the exited to the consecration of the Laplac of the exit; 5) Treatment of the Final Label To the Laplacy Survey in the First Place, there were no new initial conditions.	PC-2
	2	From which the polus of the system is determined, the description of the first function $W(s) = B(s)/A(s)$ 1) $B(s) + A(s) = 0$; 2) $A(s) = 0$; 3) $B(s) = 0$ 4) Small data.	PC-2
	3	From what equation are the zeros of the system described by the transfer function determined? $W(s) = B(s)/A(s)$ 1) $B(s) + A(s) = 0$; 2) $A(s) = 0$; 3) $B(s) = 0$ 4) small data.	PC-2
	1	Which transient function graph corresponds to the four-pole diagram shown in the figure 	PC-2

		 1) 2) 3) 4) 5)	
	4	Which transient function graph corresponds to the four-pole diagram shown in the figure   1) 2) 3) 4) 5)	PC-2
	1	Which transient function graph corresponds to the four-pole diagram shown in the figure	PC-2

			
	1	Is a closed ACS stable with a single negative feedback and the amplitude-phase hodograph shown in the figure in an open state?  1) stable; 2) unstable; 3) on the border of stability; 3) little data	PC-2
	5	Which graph of the approximated LAC corresponds to the link of pure lag?	PC-2

		 1) 2) 3) 4) 5)	
2	Which LACH schedule corresponds to the integrating link?  1) 2) 3) 4) 5)	PC-2	
3	What does it mean to be fully manageable in a linear continuous system? 1) the possibility of its transfer from the zero initial state to any other state; 2) the ability to transfer it from any initial state to the zero initial state; 3) the possibility of its transfer from any initial state to any other state;	PC-2	
1	Does the full controllability of a linear stationary continuous system mean that it is fully achievable at the same time? 1) yes; 2) no;	PC-2	

		3) Little data	
	3	Does the complete controllability of a linear non-stationary continuous system mean that it is fully achievable at the same time? 1) yes; 2) no; 3) Little data	PC-2

Description of the grading scale

Students' progress in each discipline is assessed during current control and intermediate certification.

Rating assessment of knowledge is not provided.

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.