



MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN FEDERATION  
Federal state autonomous educational institution  
of higher education  
**«Far Eastern Federal University»**  
(FEFU)

---

**INSTITUTE OF LIFE SCIENCES AND BIOMEDICINE (SCHOOL)**

AGREED

Head of OP

\_\_\_\_\_  
Kalenik T.K.  
(signature) (full name)  
«28» September 2021 г.

APPROVE

Head of VSP

\_\_\_\_\_  
Kalenik T.K.  
(signature) (full name)  
«28» September 2021 г.

**WORKING PROGRAM OF THE DISCIPLINE**

Quality and safety management systems for biological products

Direction of training 19.04.01 «Biotechnology»

(«Agri-Food Biotechnology»)

Form of training full-time

course 2 semester 3

lectures 0 hours.

practical classes 36 h.

laboratory work 00 hours.

including using

total classroom hours 36 hours.

independent work 00 h.

including preparation for the exam 72 hours (if the exam is provided).

control works (quantity) are not provided

term paper / term project are not provided

credit 3 semester

exam not included

The program of the state final certification was compiled in accordance with the requirements of the Federal State Educational Standard in the field of study 19.04.01 Biotechnology, approved by order of the Ministry of Science and Higher Education of the Russian Federation dated August 10, 2021 No. 737.

The program at the meeting of the Academic Council of the Institute of Life Sciences and Biomedicine (School) December 21, 2021

Director of the Department of Food Science and Technology Kalenik T.K.

Compiled by: Kalenik T.K.

**Reverse side of the title page of the RPMU**

**I. The work program was revised at the meeting of the department:**

Protocol dated « \_\_\_\_\_ » \_\_\_\_\_ 20\_\_ № \_\_\_\_\_

Director \_\_\_\_\_  
(signature) (full name)

**II. The work program was revised at the meeting of the department:**

Protocol dated « \_\_\_\_\_ » \_\_\_\_\_ 20\_\_ № \_\_\_\_\_

Director \_\_\_\_\_  
(signature) (full name)

**III. The work program was revised at the meeting of the department:**

Protocol dated « \_\_\_\_\_ » \_\_\_\_\_ 20\_\_ № \_\_\_\_\_

Director \_\_\_\_\_  
(signature) (full name)

**IV. The work program was revised at the meeting of the department:**

Protocol dated « \_\_\_\_\_ » \_\_\_\_\_ 20\_\_ № \_\_\_\_\_

Director \_\_\_\_\_  
(signature) (full name)

## **ABSTRACT**

**Bachelor's degree in** 19.04.01 Biotechnology

**Study profile** «Agrofood biotechnology ».

**Course title: Quality management system and safety of biological products**

Variable part of Block 1, 3 credits

**At the beginning of the course a student should be able to:**

- the ability to search, store, process and analyze information from various sources and databases, to represent it in the required format using the information, computer and network technologies;

- the ability to use modern methods and technologies (including information) in their professional activities.

**Learning outcomes:**

SPC-7 - readiness to organize the work of a team of performers, make executive decisions in a spectrum of opinions, determine the order of work

SPC -10 –ability to development of the system of quality management of biotechnological production according to requirements of the Russian and international quality standards;

SPC -11 –ability to provide technological discipline, sanitary and hygienic working hours of the enterprise, the maintenance of processing equipment in appropriate technical condition;

SPC -16 - ability to carry out effective work of control devices, automation and automated management of production, chemical and technical, biochemical and microbiological control;

SPC -20 - ability to ensure biological safety of raw materials, semi-finished products, finished goods;

SPC -21 - ability to ensure a metrological condition of production and effective functioning of control devices, automation and automated management of production.

**Course description:** The content of the course covers the following range of issues: concepts, the purposes and tasks, policy in the field of quality; objects, subjects, principles and functions of quality management; control facilities quality – normative documents; models for ensuring quality, quality system elements; seven main instruments of quality management; ISO international standards of a series 9000: their appointment, objects, structure; general management of quality of production; stages of life cycle of production; development and deployment of quality systems at the enterprises: organizational structure, duties and powers of the personnel, resources, working procedures, documentation; economic categories of quality, costs of quality, their classification; verification of quality systems: the planning, the program of carrying out correcting actions; certification of quality systems; legal support of quality; concept and ideology of General quality management (TQM); domestic and foreign experience of product quality control.

**Main course literature:**

1. Systems, methods and tools of quality management: a textbook for universities / M. M. Kane, B. V. Ivanov, V. N. Koreshkov [and others]; [ed. M.M. Cane]. St. Petersburg: Peter, 2009, 559 p. (5 copies)

<http://lib.dvfu.ru:8080/lib/item?id=chamo:276431&theme=FEFU>

2. Management in the food industry: a textbook for universities / E. B. Gafforova, T. E. Shusharina, M. V. Tsyplenkova [and others]; Russian Academy of Natural Sciences. - Moscow: Academy of Natural Sciences, 2011. - 195 p. (5 copies.) <Http://lib.dvfu.ru:8080/lib/item?id=chamo:662163&theme=FEFU>

3. Standards and product quality: educational and practical manual for universities / Yu. N. Bernovsky. Moscow: Forum, [Infra-M], 2014. - 255 p. (2 copies) <http://lib.dvfu.ru:8080/lib/item?id=chamo:752776&theme=FEFU>

**Form of final knowledge control:** credit

## 1. Purpose and objectives of mastering the discipline:

**The purpose** of the study of the discipline is to form knowledge about the systemic representation of the quality of products, methods of their formation, evaluation and support, the ability to solve the main problems of optimizing technological processes.

### **Objectives of the discipline:**

1. The study of the concept and principles of quality management, practical models of their application in the activities of enterprises (organizations);

2. The study of the structural content of the nature of product quality and systems of quality indicators, measurement methods and quantitative assessment of quality properties;

3. Acquisition of skills for solving problems and the implementation of procedures for choosing a system of quality indicators, quantitative assessment of quality; developing methods for continuously improving the quality of food products;

4. The study of basic tools for product quality management in the enterprise;

5. The study of quality assurance models;

6. Acquisition of skills to use the basic tools of quality management in practical activities when managing the enterprise.

7. Acquisition of skills to determine the need for documentation for quality management and its development.

As a result of studying this discipline, students form the following professional competencies (elements of competencies).

Код и формулировка компетенции	Этапы формирования компетенции	
SPC-7 readiness to organize the work of a team of performers, make executive decisions in a spectrum of opinions, determine the order of work	Knows	requirements of Russian and international quality standards necessary for the development of a quality management system for biotechnological products
	Can	apply the requirements of Russian and international quality standards when developing a quality management system for biotechnological products in
	Owns	principles of developing a quality management system for biotechnological products based on the requirements of Russian and international quality standards

SPC -10 ability to development of the system of quality management of biotechnological production according to requirements of the Russian and international quality standards	Knows	requirements of Russian and international quality standards necessary for the development of a quality management system for biotechnological products
	Can	apply the requirements of Russian and international quality standards when developing a quality management system for biotechnological products in
	Owns	principles of developing a quality management system for biotechnological products based on the requirements of Russian and international quality standards
SPC -11 ability to provide technological discipline, sanitary and hygienic working hours of the enterprise, the maintenance of processing equipment in appropriate technical condition	Knows	rules of technological discipline, sanitary and hygienic regime of the enterprise, maintenance of technological equipment in proper technical condition
	Can	ensure technological discipline, sanitary and hygienic mode of operation of the enterprise, maintenance of technological equipment in proper technical condition
	Owns	the principles of ensuring technological discipline, the sanitary and hygienic regime of the enterprise, the maintenance of technological equipment in proper technical condition
SPC -16 ability to carry out effective work of control devices, automation and automated management of production, chemical and technical, biochemical and microbiological control	Knows	rules for the effective operation of control, automation and automated production control, chemical-technical, biochemical and microbiological control
	Can	to carry out the effective operation of means of control, automation and automated production control, chemical-technical, biochemical and microbiological control
	Owns	the principles and practice of implementing the effective operation of controls, automation and automated production control, chemical-technical, biochemical and microbiological control
SPC -20 ability to ensure biological safety of raw materials, semi-finished products, finished goods	Knows	biological safety of raw materials, semi-finished products, finished products
	Can	ensure the biological safety of raw materials, semi-finished products, finished products
	Owns	principles and practice of ensuring the biological safety of raw materials, semi-finished products, finished products
SPC -21 ability to ensure a metrological condition of production and effective functioning of control devices, automation and automated management of production	Knows	norms and rules for ensuring the metrological state of production and the effective operation of control, automation and automated production control
	Can	ensure the metrological state of production and the effective operation of control, automation and automated production control
	Owns	principles and practice of ensuring the metrological state of production and the effective operation of control, automation and automated production control

2. The complexity of the discipline and types of training sessions in the discipline

The total labor intensity of the discipline is 2 credit units (72 academic hours).

The types of training sessions and work of the student in the discipline can be:

Designation	Types of training sessions and work of the student
Lec	Lectures
Lab	Labs
Pe	Practical exercises
Oc	Online course
SR	Independent work of the student during the period of theoretical training
Control	Independent work of the student and contact work of the student with the teacher during the period of intermediate certification

Discipline structure:

The form of education is full-time.

№	Section name disciplines	Semester	The number of hours by type of training sessions and work of the student						Forms of intermediate certification, current monitoring of progress
			Lec	Lab	Pe	Oc	SR	Control	
1	Lesson 1. Quality control and food safety	3	0		8				Seminar, credit
2	Lesson 2. Quality and safety management in food production and production control	3	0		8				Seminar, credit
	Lesson 3. Domestic and foreign experience in product quality management	3			6				Seminar, credit
	Lesson 4. Development and implementation of quality management systems at the enterprise	3			6				Seminar, credit
	Lesson 5. Methods of product quality management	3			6				Seminar, credit
	Total:		0		36				

### **3. STRUCTURE AND CONTENT OF THE THEORETICAL PART OF THE COURSE**

Not provided by the curriculum

### **4. STRUCTURE AND CONTENT OF THE PRACTICAL PART OF THE COURSE**

#### **Lesson 1. Quality control and food safety.**

1. Organoleptic indicators of the quality of food products of animal origin
2. Physico-chemical indicators of the quality of food products of animal origin
3. Microbiological quality indicators of animal origin of animal origin
4. Safety indicators for food products of animal origin
5. Methods and means of quality control of food products of animal origin
6. The program of production control in the food industry

#### **Lesson 2. Quality and safety management in food production and production control.**

1. Quality management in food production and production control (UKP): concepts, goals and objectives.
2. Objects, subjects, principles and functions of UKP.
3. Funds UKP - regulatory documents.
4. General management of product quality.
5. Stages of the product life cycle.
6. Quality management at various stages of the product life cycle, methods used.
7. Legal support of quality.

#### **Lesson 3. Domestic and foreign experience in product quality management.**

1. Experience in the formation of quality management systems in different countries.



2. 14 principles of Deming.
3. The concept and ideology of Universal Quality Management (TQM).
4. International standards ISO 9000 series: the history of creation, purpose, objects, structure. Connection of ISO 9000 series and TQM standards.
5. 8 fundamental principles. Industry-specific quality assurance models: QS-9000, HACCP, GMP.

#### **Lesson 4. Development and implementation of quality management systems at the enterprise.**

1. Development and implementation of quality systems in enterprises: organizational structure, duties and powers of personnel, resources, work procedures, documentation.
2. Documentation and working procedures. The structure of the enterprise documentation.
3. Ensuring the functioning of the quality management system.
4. Checking the quality management system: planning, implementation program, corrective and preventive actions.
5. Certification of quality systems. The main stages of certification, inspection control of certified quality management systems.

#### **Lesson 5. Methods of product quality management.**

Round table "20 keys to business success" to the topics:

Deployment of product quality function method. Process approach.

Systems approach.

Continuous improvement. Making decisions based on facts. Building mutually beneficial relationships with suppliers.

1. Organizational and administrative (administrative) methods
2. Engineering and technological methods
3. Economic methods
4. Socio-psychological methods
5. Theoretical foundations of statistical methods of process control.
6. Statistical methods of quality control and management.

7. Deployment of the product quality function method.
8. The process approach.
9. A systematic approach.
10. Continuous improvement.
11. Making decisions based on facts.
12. Building mutually beneficial relationships with suppliers.

## **5. TRAINING AND METHODOLOGICAL SUPPORT OF STUDENTS'S INDEPENDENT WORK**

Educational and methodological support for the independent work of students in the discipline "Quality and safety management systems for biological products" is presented in Appendix 1 and includes:

- a schedule of independent work on the discipline, including approximate norms of time to complete each task;
  - characteristics of tasks for independent work of students and guidelines for their implementation;
  - requirements for the presentation and presentation of the results of independent work;
- criteria for evaluating the performance of independent work.

### **Tasks for self-fulfillment**

1. On a given topic of the simulation game, analysis of the discipline under study should be carried out. Based on the developed material, an imitation game should be prepared and presented for discussion.
2. Writing an essay on a topic proposed by the teacher or independently selected by the student and agreed with the teacher.
3. Preparation of presentations using multimedia equipment.

### **Methodological instructions for the implementation of the essay**

#### **The goals and objectives of the essay**

The essay (from lat. Referto - report, report) is a summary of the problems of a practical or theoretical nature with the formulation of certain conclusions on the subject. A student-selected problem is studied and analyzed based on one or more sources. In contrast to the term paper, which is a comprehensive study of the problem, the essay is aimed at analyzing one or more scientific papers.

*The objectives* of writing an essay are:

development of students' skills in finding relevant problems of modern legislation;

- development of skills to summarize the material with highlighting only the most significant points necessary to reveal the essence of the problem;

- development of skills to analyze the material studied and formulate their own conclusions on the selected issue in writing, in a scientific, competent language.

*The tasks* of writing an essay are:

- teach the student to convey the opinions of the authors as faithfully as possible, on the basis of which the student writes his essay;

- teach the student to correctly state their position on the problem analyzed in the abstract;

- prepare the student for further participation in scientific - practical conferences, seminars and competitions;

- help the student to determine the topic of interest to him, the further disclosure of which is possible when writing a term paper or diploma;

- to clarify for themselves and state the reasons for their consent (disagreement) with the opinion of one or another author on this issue.

### **The basic requirements for the content of the essay, course project**

The student should use only those materials (scientific articles, monographs, manuals) that are directly related to their chosen topic. Remote reasoning not related to the problem being analyzed is not allowed. The content of the essay should be specific, only one problem should be investigated (several are allowed,

only if they are interconnected). The student must strictly adhere to the logic of presentation (start with the definition and analysis of concepts, go to the problem statement, analyze the ways to solve it and draw the appropriate conclusions). The essay should end with a conclusion on the topic.

*The structure* of the abstract consists of:

1. The title page;
2. Introduction, where the student formulates the problem to be analyzed and investigated;
3. The main text, which consistently reveals the selected topic. Unlike term paper, the main text of the essay involves a division into 2-3 paragraphs without highlighting the chapters. If necessary, the text of the abstract can be supplemented by illustrations, tables, graphs, but they should not "overload" the text;
4. Conclusions, where the student formulates conclusions made on the basis of the main text.
5. The list of used literature. This list refers to those sources that the student refers to in preparing the essay, as well as others that were studied by him during the preparation of the essay.

The essay is 10-15 pages of typewritten text, but in any case should not exceed 15 pages. Interval - 1.5, font size - 14, margins: left - 3 cm, right - 1.5 cm, upper and lower - 1.5 cm. Pages must be numbered. The indent from the beginning of the line is 1.25 cm.

### **The order of delivery of the essay and its assessment**

Essays are written by students during the semester in the terms set by the teacher in a particular discipline, reported by the student and submitted for discussion. The printed version is given to the teacher, leading the discipline.

Based on the results of the check, the student is given a certain number of points, which is included in the total number of student points scored by him during the semester. When evaluating the essay, the correspondence of the content to the chosen topic, the clarity of the work structure, the ability to work with

scientific literature, the ability to pose a problem and analyze it, the ability to think logically, knowledge of professional terminology, and literacy are taken into account.

### **Recommended topics and list of abstracts and reports**

#### 1. Patriarchs in the field of quality. Edward Deming

The path to fame. Message by E. Deming. 14 principles of Deming. "Deadly disease" by Deming. 7-step action plan for Deming. Theory of deep knowledge. Prize to them. Deming for the quality and reliability of products (Deming's Prize). History and mission. Criteria for achieving benefits. Award criteria model. The process of evaluating applicants.

#### 2. Patriarchs in the field of quality. Joseph Juran

"The spiral of quality" (The spiral of Juran). AQI concept (Annual Quality Improvement). The principles of AQI. A set of measures to implement the AQI concept. The Triad of Juran. Classification of quality costs.

#### 3. Patriarchs in the field of quality. Philip Crosby

14 principles of Crosby. ZD system (zero defects). Quality is free. 6 parameters to assess the degree of competence of the enterprise in solving the quality problem. A model for evaluating a leader and the degree of maturity of leaders at different levels.

#### 4. Patriarchs in the field of quality. Armand Feigenbaum

The concept of integrated (total) quality management (TQC) is a leadership style that engenders a new culture of enterprise management. Four "mortal sins" in quality approaches. The system of "cost of quality" Armand Feigenbaum. 4 conditions for continuous improvement (improvement). Full life cycle (FFA) of products according to Feigenbaum.

#### 5. Patriarchs in the field of quality. Kaoru ishikawa

The role of consumers in quality management. The role of senior management in quality management. Theory of integrated quality management. Mugs of quality. A graphical method for analyzing cause-effect relationships, called the Ishikawa diagram (“fish skeleton”, Fishbone Diagram).

#### 6. Patriarchs in the field of quality. Genity Taguchi

The theory of total losses for society (the model of the common good for society). Continuous quality improvement and cost reduction. Experiment planning The concept of "quality engineering". Taguchi methods. Taguchi Message

7. Tayiti Ono. Toyota Production System (TPS - Toyota Production System): kanban, kaizen, just-in-time (exactly on time), five-time “why?” Method, “protection against fool” (“protection against errors”). Seven types of muda (loss).

#### 8. BIP (defect-free production)

Date and place of creation. The main essence of the system. Control criterion. Management object. Application area.

#### 9. SBT (defect-free labor system)

Date and place of creation. The main essence of the system. Control criterion. Management object. Application area.

#### 10. NORM (scientific organization of labor to increase engine life)

Date and place of creation. The main essence of the system. Control criterion. Management object. Application area.

#### 11. KANARSPI (quality, reliability, resource from the first products)

Date and place of creation. The main essence of the system. Control criterion. Management object. Application area.

#### 12. KS UKP (integrated product quality management system)

Date and place of creation. The main essence of the system. Control criterion. Management object. Application area.

#### 13. Deming Application Prize

History and mission. Criteria for achieving benefits. Award criteria model. The process of evaluating applicants.

#### 14. European Quality Award

History and mission. Criteria for achieving benefits. Award criteria model.  
The process of evaluating applicants.

15. M. Baldrige National Quality Award (MBNQA)

History and mission. Criteria for achieving benefits. Award criteria model.  
The process of evaluating applicants.

16. Prize of the Government of the Russian Federation in the field of quality

History and mission. Criteria for achieving benefits. Award criteria model.  
The process of evaluating applicants.

17. Japanese models of quality management.

18. European Models of Quality Management (EFQM).

19. Russian experience in quality management.

20. Product quality and safety management at food industry enterprises

21. Methods of continuous improvement through the prism of the Shekhart cycle

## 6. CONTROL OF ACHIEVING COURSE OBJECTIVES

№	Supervised sections / topics of discipline	Codes and stages of formation of competencies		Evaluation Tools	
				current control	intermediate certification
1	Practice 1-5	SPC-7 SPC-10 SPC-11 SPC-16 SPC-20 SPC-21	Knows how to manage the quality, safety and traceability of the production of biotechnological products	Test	questions for offset 1-8
				Essay	questions for offset 9-22
			Able to apply methods of quality management, safety and traceability of the production of biotechnological		

			products		
			Knows how to manage the quality, safety and traceability of the production of biotechnological products	Colloquium (questions 1-29)	questions for offset 23-50

## 7. LIST OF TRAINING LITERATURE AND INFORMATION AND METHODOLOGICAL SUPPORT OF DISCIPLINE

### Main literature

*(electronic and print editions)*

1. Systems, methods and tools of quality management: a textbook for universities / M. M. Kane, B. V. Ivanov, V. N. Koreshkov [and others]; [ed. M. M. Cane]. St. Petersburg: Peter, 2009, 559 p. (5 copies)

<http://lib.dvfu.ru:8080/lib/item?id=chamo:276431&theme=FEFU>

2. Management in the food industry: a textbook for high schools / E. B. Gafforova, T. E. Shusharina, M. V. Tsyplenkova [et al.]; Russian Academy of Natural Sciences. - Moscow: Academy of Natural Sciences, 2011. - 195 p. (5 copies) <http://lib.dvfu.ru:8080/lib/item?id=chamo:662163&theme=FEFU>

3. Standards and product quality: a training manual for universities / Yu. N. Bernovsky. Moscow: Forum, [Infra-M], 2014. - 255 p. (2 copies)

<http://lib.dvfu.ru:8080/lib/item?id=chamo:752776&theme=FEFU>

### Additional literature

*(electronic and print editions)*

1. Sharipov SV, Tolstova Yu. V. Development and implementation of a quality management system: (Based on international standard ISO 9001: 2000) M.: Dialog-MIFI, 2002, 168 pp.

<http://lib.dvfu.ru:8080/lib/item?id=chamo:2142&theme=FEFU>



2. Product quality management. Tools and methods of quality management: a textbook for universities / S. V. Ponomarev, S. V. Mishchenko, V. Ya. Bolobragin [et al.]. Moscow: Standards and Quality, 2005, 243 p.  
<http://lib.dvfu.ru:8080/lib/item?id=chamo:342747&theme=FEFU>
3. Technical regulation: textbook for universities / [I. Z. Aronov, E. V. Belov, V. G. Versan and others]; under the editorship of V. G. Versan, G. I. Elkin. [Moscow]: Economics, 2008, 678 p.  
<http://lib.dvfu.ru:8080/lib/item?id=chamo:351921&theme=FEFU>
4. N.I. Dunchenko, M.D. Magomedov, A.V. Rybin. Quality management in the food industry, Moscow: Dashkov and Co. , 2008, 211 pp.  
<http://lib.dvfu.ru:8080/lib/item?id=chamo:264834&theme=FEFU>
5. The safety of food raw materials and food: a method. instructions for laboratory work and practical exercises for students special 260204 "Technology of fermentation and winemaking" Pts. and extramural forms of training / [comp. S.V. Zhuravleva, T.A. Shepel, L.A. Tekutieva] Vladivostok: Publishing House of the Pacific Economic University, 2009, 32 pp.  
<http://lib.dvfu.ru:8080/lib/item?id=chamo{55860&theme=FEFU>

### **The list of resources of the information and telecommunication network "Internet"**

1. Federal Agency for Technical Regulation and Metrology (Rosstandart) - official website: <https://www.gost.ru/portal/gost/>
2. Agency "Standards and Quality" - official website: <https://ria-stk.ru/>
3. All-Russian Quality Organization - official website: <http://www.mirq.ru/>
4. Primorsky certification center - official website: <http://www.vladcertificate.ru/>

5. The State Regional Center for Standardization, Metrology and Testing in the Primorsky Territory "(FBU" Primorsky TSSM ") - official website: <http://primcsm.ru/>

6. Federal Scientific Center for Food Systems. V.M. Gorbатов Russian Academy of Sciences - official website: <http://www.vniimp.ru/>

### **List of information technology and software**

Using MSOfficePowerPoint Software

## **8. METHODOLOGICAL INSTRUCTIONS FOR THE DEVELOPMENT OF THE DISCIPLINE**

### **Guidelines for organizing an independent study of the discipline**

#### **Abstracts of educational and scientific literature**

The review of educational and scientific literature involves an in-depth study of individual scientific works, which should ensure the development of the necessary skills for working on a book. All this will contribute to expanding the scientific horizons, increasing their theoretical training, the formation of scientific competence.

For abstracting, textbooks, individual monographic studies and articles on issues provided for in the curriculum are offered. When selecting literature on the selected issue, it is necessary to cover the most important areas of development of this science at the present stage. Particular attention should be paid to those literary sources that (directly or indirectly) can assist a specialist in his practical activities. However, this section also includes works and individual studies on issues that go beyond the studied discipline. This literature is recommended to be used if you want to expand your knowledge in any branch of science.

Along with the literature on general issues for undergraduates, literature is supposed to be taken into account independently of the profile of their professional activity. Not all of the proposed literature is equivalent in content and volume, so a different approach to its study is possible. In one case, this may be a general review of several literary sources of various authors devoted to the consideration of the

same issue, in the other case, a detailed study and review of one of the recommended works or even its individual sections, depending on the degree of complexity of the issue (issue). In order to decide what to do in each case, you should consult with the teacher.

The choice of a specific work for abstracting should be preceded by a detailed familiarization with the list of all literature given in the curriculum of the discipline. It is recommended that you first familiarize yourself with the selected work by looking at the subheadings, selected texts, diagrams, tables, general conclusions. Then it is necessary to carefully and thoughtfully (delving into the ideas and methods of the author) read it, making notes along the way on a separate sheet of paper about the main points and key issues. After reading, you should consider the content of the article or a separate chapter, paragraph (if it is a monograph) and write it down briefly. Literally, only strict definitions, formulations of laws should be written out. It is sometimes useful to include one or two examples in a record to illustrate. In the event that there are strange places, it is recommended to read the subsequent statement, as it can help to understand the previous material, and then return again to understanding the previous statement.

The result of work on literary sources is an abstract.

In preparing the essay, it is necessary to highlight the most important theoretical points and justify them independently, paying attention not only to the result, but also to the methodology used in studying the problem. Reading non-fiction should be critical. Therefore, we must strive not only to master the main content, but also the method of proof, to reveal the features of different points of view on the same issue, to evaluate the practical and theoretical significance of the results of the abstracted work. A very desirable element of the essay is the expression by the listener of his own attitude to the ideas and conclusions of the author, supported by certain arguments (personal experience, statements of other researchers, etc.).

Abstracts of monographs, journal articles of a research nature must certainly contain a definition of the problem and specific tasks of the study, a description of

the methods used by the author, as well as the conclusions reached as a result of the study.

## 9. MATERIAL AND TECHNICAL SUPPORT OF DISCIPLINE

Lecture and practical classes are held in the classroom equipped with multimedia equipment. For independent work of students, reading rooms of the FEFU scientific library and computer classes of the School of Biomedicine with free access are used.

Laboratory of General Food  
Biotechnology  
Vladivostok, Russian Island, 10  
Ajax, Building 25.1, aud. M 311.  
The classroom for lectures,  
practical and laboratory classes,  
group and individual consultations,  
ongoing monitoring and interim  
certification.

Training furniture for 25 workplaces, teacher's  
place (table, chair).

Analytical and technological equipment  
(M311): Milk centrifuge with heating IJIM 1-  
12; Liquid thermostat LOIP Lt-208a, volume  
8l, 120x150 / 200mm; Analyzer of milk quality  
Lactan 1-4 mod. 230; PH-millivoltmeter with  
tripod pH-150MI; VSP 1.5-2-3T scales;  
Refrigerator "Ocean-RFD-325B"; Drying  
cabinet, stainless steel chamber. steel, 58l;  
electric stove 111CH 101-226589; PE-6110  
magnetic stirrer with heating; VNZh-0,3-KhS3  
viscometer (d-1.41) glass capillary; Tripod PE-  
2710 lab. for burettes.

Multimedia equipment: Monoblock Lenovo  
C360G-i34164G500UDK; Screen with electric  
236 \* 147 cm Trim Screen Line; DLP  
projector, 3000 ANSI Lm, WXGA 1280x800,  
2000: 1 EW330U Mitsubishi; Subsystem of  
specialized hardware mounts CORSA-2007  
Tuarex; Video Switching Subsystem: DVI  
DXP 44 DVI Pro Extron matrix switcher;  
Extender DVI over twisted pair DVI 201 Tx /  
Rx; Subsystem of audio switching and sound  
reinforcement; ceiling mount speaker SI 3CT  
LP Extron; Sennheiser EW 122 G3 UHF  
Microphone Lavalier Radio System with a  
wireless microphone and receiver; DMP 44 LC  
Extron digital audio processor; Extron IPL T  
S4 Network Management Controller; Wireless  
LANs for students are provided with a system  
based on 802.11a / b / g / n 2x2 MIMO (2SS)  
access points.

Reading rooms of the FEFU  
Scientific Library with open access

Reading room equipment for the FEFU  
Scientific Library: HP All-in-One 400 All-in-

to the fund  
Vladivostok, Russian island, 10  
Ajax, building A - level 10

One Monoblock 400 All-in-One 19.5  
(1600x900), Core i3-4150T, 4GB DDR3-1600  
(1x4GB), 1TB HDD 7200 SATA, DVD +/-  
RW, GigEth, Wi-Fi, BT, usb kbd / mse,  
Win7Pro (64-bit) + Win8.1Pro (64-bit), 1-1-1  
Wty Internet access speed of 500 Mbps.  
Workplaces for people with disabilities are  
equipped with braille displays and printers;  
equipped with: portable devices for reading  
flat-printed texts, scanning and reading  
machines with a video enlarger with the ability  
to control color spectra; magnifying electronic  
magnifiers and ultrasonic markers

Computer class  
Vladivostok, Russian Island, 10  
Ajax, Building 25.1, aud. M621.  
The classroom for lectures,  
practical classes, group and  
individual consultations, ongoing  
monitoring and interim  
certification.

Training furniture for 17 workplaces, teacher's  
place (table, chair),  
Monoblock Lenovo C360G-i34164G500UDK  
19.5 "Intel Core i3-4160T 4GB DDR3-1600  
SODIMM (1x4GB) 500GB Windows Seven  
Enterprise - 17 pcs; Wired LAN - Cisco 800  
series; Wireless LAN for students with a  
system based on 802.11a / b access points / g /  
n 2x2 MIMO (2SS).

## 10. VALUATION FUNDS

Код и формулировка компетенции	Этапы формирования компетенции	
SPC-7 readiness to organize the work of a team of performers, make executive decisions in a spectrum of opinions, determine the order of work	Knows	requirements of Russian and international quality standards necessary for the development of a quality management system for biotechnological products
	Can	apply the requirements of Russian and international quality standards when developing a quality management system for biotechnological products in
	Owns	principles of developing a quality management system for biotechnological products based on the requirements of Russian and international quality standards
SPC -10 ability to development of the system of quality management of biotechnological production according to requirements of the Russian and international quality standards	Knows	requirements of Russian and international quality standards necessary for the development of a quality management system for biotechnological products
	Can	apply the requirements of Russian and international quality standards when developing a quality management system for biotechnological products in
	Owns	principles of developing a quality management system for biotechnological products based on the requirements of Russian and international quality standards
SPC -11 ability to provide	Knows	rules of technological discipline, sanitary and hygienic regime of the enterprise, maintenance of technological

technological discipline, sanitary and hygienic working hours of the enterprise, the maintenance of processing equipment in appropriate technical condition		equipment in proper technical condition
	Can	ensure technological discipline, sanitary and hygienic mode of operation of the enterprise, maintenance of technological equipment in proper technical condition
	Owns	the principles of ensuring technological discipline, the sanitary and hygienic regime of the enterprise, the maintenance of technological equipment in proper technical condition
SPC -16 ability to carry out effective work of control devices, automation and automated management of production, chemical and technical, biochemical and microbiological control	Knows	rules for the effective operation of control, automation and automated production control, chemical-technical, biochemical and microbiological control
	Can	to carry out the effective operation of means of control, automation and automated production control, chemical-technical, biochemical and microbiological control
	Owns	the principles and practice of implementing the effective operation of controls, automation and automated production control, chemical-technical, biochemical and microbiological control
SPC -20 ability to ensure biological safety of raw materials, semi-finished products, finished goods	Knows	biological safety of raw materials, semi-finished products, finished products
	Can	ensure the biological safety of raw materials, semi-finished products, finished products
	Owns	principles and practice of ensuring the biological safety of raw materials, semi-finished products, finished products
SPC -21 ability to ensure a metrological condition of production and effective functioning of control devices, automation and automated management of production	Knows	norms and rules for ensuring the metrological state of production and the effective operation of control, automation and automated production control
	Can	ensure the metrological state of production and the effective operation of control, automation and automated production control
	Owns	principles and practice of ensuring the metrological state of production and the effective operation of control, automation and automated production control

### Student Examination Criteria

Points required to evaluate the final test	Credit score	Requirements for completed competencies in the student's oral response
85-100	Excellent	Grade «Excellent» exhibited to a student who has strong knowledge of quality management systems and bio-product safety. He knows the methods of processing current production information, performing analysis of the obtained data for use in product quality management
75-85	"good"	Grade "good" is given to a student who knows a significant part of the program material, does not make significant mistakes, but hesitantly performs practical work
61-75	"satisfactorily"	The grade is "satisfactory" is given to a student who knows a

		significant part of the program material, but makes significant mistakes, uncertainly with great difficulties performs practical work
60-0	“unsatisfactory”	The grade “unsatisfactory” is given to a student who does not know a significant part of the program material, makes significant mistakes, hesitantly performs practical work with great difficulties and cannot continue his studies without additional classes in the relevant discipline.

## Приложение 1

### Questions for the credit

1. Give a definition of the quality category, describe its main aspects in relation to the products of food industry enterprises.
2. What determines the need and what is the importance of improving quality for food industry enterprises?
3. Uncover the link between improving quality and increasing economic efficiency of production.
4. Define quality management. What place does it occupy in the general management system of food industry enterprises?
5. What is the essence, basic components and principles of the overall quality management of TQM?
6. What are the stages of the product life cycle? Which of them require quality management activities?
7. Do you agree with the following statement: “Quality management is first and foremost quality control of finished products”? Justify your judgment.
8. Describe the main milestones in the development of quality management abroad and in our country.
9. Define the concepts of “indicator of product quality” and “level of product quality”. What is the difference?
10. What is the essence of assessing the level of product quality? How is the measurement of quality different from its assessment?
11. List the main groups of quality indicators. Which of them are applicable to products of food enterprises? What product characteristics do they characterize?

12. What groups are divided into methods for determining the values of quality indicators? Name these methods and reveal their essence.

13. Name and describe the main methods for assessing the level of quality.

14. What role does qualimetry play in quality assessment? What does it serve for? Give a sequence of qualimetric quality assessment on the example of a specific product.

15. Formulate definitions of basic concepts related to reliability. What properties determine the reliability of technical products? What indicators are used to quantify it?

16. What are the requirements for technology sets ergonomics? What is the reason for the need to comply with them in the food industry?

17. What role does control play in the quality management system, what is its essence?

18. On what grounds are classified types of control? List them.

19. What are the fundamental differences between continuous and selective quality control? What advantages and disadvantages are inherent in these types of control?

20. What is meant by the terms “error of the first kind” and “error of the second kind”? Are these errors possible during continuous monitoring? Justify your answer.

21. What are the criteria for statistical acceptance control? Highlight its features depending on them.

22. Formulate the concept of a control plan. What types of control plans exist, how are they implemented?

23. List seven key tools and methods for quality control, analysis, and management. Give a brief description of each of them, disclose their contents and indicate the purpose.

24. What is the system of international standards ISO 9000 family, what requirements does it contain?

25. Expand the concept of a quality management system. What goals does it serve, what advantages does the company have with a certified quality management system?



26. What principles are the basis for building quality management systems in accordance with international standards ISO 9000?
27. What is the composition of documents of quality management systems, disclose their content and purpose.
28. What is a quality policy? By whom and for what purposes is it formed, what questions does it reflect?
29. List the mandatory documented procedures for quality management systems. What do they serve, how do they act?
30. What actions are necessary and possible to take to manage inappropriate products at food enterprises?
31. For compliance with the requirements of which regulatory documents, are quality management systems certified? Expand the contents of its stages.
32. Describe the most famous special systems for managing the quality and safety of food products, their principles, features.
33. What areas of activity in relation to quality are regulated by technical regulation? What are its goals, objectives, principles, legislative framework, national authority?
34. What documents establish mandatory and voluntary requirements for food products?
35. What are the goals and principles of conformity assessment?
36. What forms of conformity assessment are used in our country? What are their differences?
37. Give a definition of the concept of standardization. What does it serve for, what documents are included in its system in our country?
38. What are the preferred numbers? What does their system have to do with standardization? Describe the main directions of development of standardization.
39. What cost groups are included in the total cost of quality, what elements do they consist of?
40. How is the relationship between the cost of quality level of its provision?
41. Give the contents of the stages of the functional-cost analysis.

42. What is the index method for analyzing the costs associated with quality, what is its essence in relation to food enterprises?

43. Describe the basic methods of comparative assessment of the level of quality. What are they? For what purposes are they used in the food industry?

44. What are the main types of marriage. What is its negative impact on production efficiency and economic performance of the enterprise? What caused the economic losses from it?

45. List the main indicators of the economic analysis of marriage and losses from it, disclose their content and purpose.

46. Describe the essence of the methods of physico-chemical assessment of meat freshness.

47. What is the frequency of monitoring organoleptic and physico-chemical parameters of meat freshness.

48. List the requirements of the current regulatory and technical documentation for the quality indicators of sausages and smoked meats.

49. List the reasons for the mismatch of physico-chemical parameters. Ways to prevent or eliminate defects.

50. To justify the need for standardization of sanitary and hygienic indicators and their list.

**Questions for colloquiums, interviews on discipline**  
«Quality and safety management systems for biological products»

**Questions for the first milestone certification**

1. Give a definition of the quality category, describe its main aspects in relation to the products of food industry enterprises.
2. What determines the need and what is the importance of improving quality for food industry enterprises?
3. Uncover the link between improving quality and increasing economic efficiency of production.
4. Define quality management. What place does it occupy in the general management system of food industry enterprises?
5. What is the essence, basic components and principles of the overall quality management of TQM?
6. What are the stages of the product life cycle? Which of them require quality management activities?
7. Do you agree with the following statement: “Quality management is first and foremost quality control of finished products”? Justify your judgment.
8. Describe the main milestones in the development of quality management abroad and in our country.
9. Define the concepts of “indicator of product quality” and “level of product quality”. What is the difference?
10. What is the essence of assessing the level of product quality? How is the measurement of quality different from its assessment?
11. List the main groups of quality indicators. Which of them are applicable to products of food enterprises? What product characteristics do they characterize?
12. What groups are divided into methods for determining the values of quality indicators? Name these methods and reveal their essence.
13. Name and describe the main methods for assessing the level of quality.

14. What role does qualimetry play in quality assessment? What does it serve for? Give a sequence of qualimetric quality assessment on the example of a specific product.

15. Formulate definitions of basic concepts related to reliability. What properties determine the reliability of technical products? What indicators are used to quantify it?

16. What are the requirements for technology sets ergonomics? What is the reason for the need to comply with them in the food industry?

17. What role does control play in the quality management system, what is its essence?

18. On what grounds are classified types of control? List them.

19. What are the fundamental differences between continuous and selective quality control? What advantages and disadvantages are inherent in these types of control?

20. What is meant by the terms “error of the first kind” and “error of the second kind”? Are these errors possible during continuous monitoring? Justify your answer.

21. What are the criteria for statistical acceptance control? Highlight its features depending on them.

22. Formulate the concept of a control plan. What types of control plans exist, how are they implemented?

23. List seven key tools and methods for quality control, analysis, and management. Give a brief description of each of them, disclose their contents and indicate the purpose.

24. What is the system of international standards ISO 9000 family, what requirements does it contain?

25. Expand the concept of a quality management system. What goals does it serve, what advantages does the company have with a certified quality management system?

26. What principles are the basis for building quality management systems in accordance with international standards ISO 9000?

27. What is the composition of documents of quality management systems, disclose their content and purpose.

28. What is a quality policy? By whom and for what purposes is it formed, what questions does it reflect?

29. List the mandatory documented procedures for quality management systems. What do they serve, how do they act?

### **Questions for the second benchmark certification**

1. Expand the concept of a quality management system. What goals does it serve, what advantages does the company have with a certified quality management system?

2. What are the principles for building quality management systems in accordance with international standards ISO 9000?

3. What is the composition of documents of quality management systems, disclose their content and purpose.

4. What is a quality policy? By whom and for what purposes is it formed, what questions does it reflect?

5. List the mandatory documented procedures for quality management systems. What do they serve, how do they act?

6. What actions are necessary and possible to take to manage inappropriate products at food enterprises?

7. For compliance with the requirements of which regulatory documents, are quality management systems certified? Expand the contents of its stages.

8. Describe the most famous special systems for managing the quality and safety of food products, their principles, features.

9. What areas of activity in relation to quality are regulated by technical regulation? What are its goals, objectives, principles, legislative framework, national authority?

10. What documents establish mandatory and voluntary requirements for food products?
11. What are the goals and principles of conformity assessment?
12. What forms of conformity assessment are used in our country? What are their differences?
13. Define the concept of standardization. What does it serve for, what documents are included in its system in our country?
14. What are the preferred numbers? What does their system have to do with standardization? Describe the main directions of development of standardization.
15. What cost groups are included in the overall composition of quality costs, what elements do they consist of?
16. How is the relationship between the cost of quality level of its provision?
17. Give the content of the stages of the functional-cost analysis.
18. Why is the index method for analyzing the costs associated with quality, what is its essence in relation to food enterprises?
19. Describe the basic methods of comparative assessment of the level of quality. What are they? For what purposes are they used in the food industry?
20. What are the main types of marriage. What is its negative impact on production efficiency and economic performance of the enterprise? What caused the economic losses from it?
21. List the main indicators of the economic analysis of marriage and losses from it, disclose their content and purpose.
22. What is the essence, basic components and principles of the overall quality management of TQM?
23. What are the stages of the product life cycle? Which of them require quality management activities?
24. Do you agree with the following statement: “Quality management is first and foremost quality control of finished products”? Justify your judgment.
25. Describe the main milestones of the development of quality management abroad and in our country.

26. Define the concepts of "indicator of product quality" and "level of product quality." What is the difference?

27. What is the essence of assessing the level of product quality? How is the measurement of quality different from its assessment?

28. List the main groups of quality indicators. Which of them are applicable to products of food enterprises? What product characteristics do they characterize?

29. What groups are divided into methods for determining the values of quality indicators? Name these methods and reveal their essence.

30. Name and describe the main methods of assessing the level of quality.

31. What role does qualimetry play in quality assessment? What does it serve for? Give a sequence of qualimetric quality assessment on the example of a specific product.

## TESTS

### VARIANT 1

1. The experience of the widest application of statistical methods of quality control to control production processes, detect and prevent product defects has:

- a) USA;
- b) Japan;
- c) Western Europe;
- d) Russia.

2. The concept of the "Triad of Quality" belongs to:

- a) J. Juran;
- b) A. Feigenbaum;
- c) E. Deming;
- d) F. Crosby.

3. What is unacceptable for the head of an enterprise implementing a quality management system?

- a) the requirement of strict adherence to quality management methods;
- b) listening to opinions regarding the inefficiency of the elements of the quality system;
- c) sole decision-making on the basis of the evidence presented on the state of production and own experience;
- d) the development of competition (rivalry) between units, the search for role models.

4. Scatterplots are useful for solving problems because they:

- a) represent a decisive majority;
- b) exclude the trivial majority;
- c) show the relationship between factors;
- d) highlight the important causes of deviations.



5. A tool for collecting data and automatically sorting them, used to facilitate the further use of the collected information:

- a) a checklist;
- b) a histogram;
- c) Pareto diagram;
- d) scatter chart.

6. Definition of the concept of “quality” in accordance with the standard GOST R ISO 9000-2001 “Quality management systems. Requirements ”:

- a) compliance with regulatory requirements;
- b) the set of characteristics of the object related to its ability to satisfy the established and expected needs;
- c) the degree of compliance of the inherent characteristics with the requirements;
- d) the degree of compliance with the requirements of consumers and the value of performance indicators of the organization.

7. Which of the models for determining the cost of quality belongs to G. Taguti?

- a) cost model of the process;
- b) the model of "total losses for society";
- c) PAF model: “Warning - assessment - failure”;
- d) a model of mixed costs.

8. The sequence in the cycle of E. Deming:

- a) P-D-C-A;
- b) D-P-C-A;
- c) P-C-A-D;
- d) C-A-D-P.

9. Which of the situations with customer satisfaction is most characteristic with a high degree of monopolization of production?

a)  $cs = v \uparrow / c \downarrow$ ; (v is the value of the product)

б)  $cs = v \uparrow / c \uparrow$ ; (c - the cost of production)

в)  $cs = v \downarrow / c \uparrow$ ; (cs – customer satisfaction)

г)  $cs = v \downarrow / c \downarrow$ .

10. The costs of preventive actions do not include:

a) assessment of the state of the process;

b) rating assessment of suppliers;

c) control of products during production;

d) the cost of monitoring the state of production in production.

## VARIANT 2

1. The control card is used directly for:
  - a) establishing tolerances and limits;
  - b) comparison of operations;
  - c) determining the stability of the process;
  - d) acceptance or rejection of a batch of material.
  
2. The author of the theory of TQC (integrated quality management):
  - a) J. Juran;
  - b) A. Feigenbaum;
  - c) E. Deming;
  - d) F. Crosby.
  
3. A tool that allows you to distribute efforts to resolve problems and identify the main reasons for starting to act:
  - a) Pareto diagram;
  - b) the method of stratification;
  - c) the scatter chart;
  - d) Ishikawa diagram.
  
4. The Pareto chart is often regarded as:
  - a) control card quality sign;
  - b) Rule 80-20;
  - c) scattering diagram;
  - d) planning - action - verification - implementation.
  
5. What is not typical for estimating quality costs in accordance with the cost model?
  - a) process identification;
  - b) the establishment of expense items for operations;

- c) allocation of costs for preventive actions and control;
- d) analysis of the data.

6. The customer satisfaction index can be calculated by the formula:

- a)  $cs = v / c$ ;
- б)  $cs = c / v$ ;
- в)  $cs = h c / v$ ;
- г)  $cs = c / h v$ .

7. At what stage in the product life cycle are the seven new quality management tools most commonly used?

- a) marketing;
- b) design / planning;
- c) production;
- d) control.

8. Considering the cause and effect diagram on the example of the production process, the whole variety of reasons for the inconsistencies of which can be considered using:

- a) 5W+1H;
- б) 5S;
- в) 5M;
- г) 5G.

9. The concept of the “Triad of Quality” belongs to:

- a) J. Juran;
- b) A. Feigenbaum;
- c) E. Deming;
- d) F. Crosby.

10. For which country, quality has become a national idea:

a) the USA;

b) Japan;

c) Switzerland;

d) Germany.

### VARIANT 3

1. The "triad of quality" consists of:

- a) three quality-oriented processes - quality planning, quality control, quality improvement;
- b) the three components of the product life cycle - marketing, quality assurance and corrective measures;
- c) the three principles of quality management - customer orientation, the leading role of management, continuous improvement;
- d) three quality indicators - profit, number of defects, customer satisfaction.

2. The author of the famous aphorism: "Quality is free" (Quality is Free):

- a) F. Crosby;
- b) K. Ishikawa;
- c) J. Juran;
- d) E. Deming.

3. Considering the cause and effect diagram on the example of the production process, the whole variety of reasons for the inconsistencies of which can be considered using:

- a) 5W+1H;
- б) 5S;
- в) 5M;
- г) 5G.

4. What is the usual sequence of problem solving methods listed below?

- 1) Selection of a problem in need of improvement.
- 2) Data collection.
- 3) Implementation of solutions.
- 4) Determining if a project is good.
- 5) Studying current procedures.

6) Identification of candidates for data collection.

7) Data analysis.

8) Solving the problem.

a) 1, 4, 5, 6, 3, 8, 2, 7;

b) 1, 5, 4, 6, 2, 7, 8, 3;

c) 1, 5, 6, 2, 4, 8, 7, 3;

d) 4, 1, 5, 6, 2, 7, 8, 3.

5. E. Deming has 14 key principles - the commandments. Find not entering them.

a) the constancy of purpose;

b) a new philosophy;

c) establish leadership;

d) enter arbitrary tasks.

6. What is the basis for creating ISO standards for the 9000 series of the 2000 version?

a) the concept of universal quality management;

b) the concept of universal quality management;

c) the concept of the common good of quality;

d) the concept of total quality control.

7. A paper form, in which the controlled parameters are entered in advance, according to which you can enter data using notes or simple characters:

a) control card;

b) a checklist;

c) Pareto diagram;

d) a causal diagram.

8. What is the principle of TQM implemented using seven quality control tools?

- a) the involvement of all staff;
- b) making decisions based on facts;
- c) leadership leadership;
- d) customer orientation.

9. The main responsibility for the quality of products lies with:

- a) the head of the enterprise;
- b) quality manager:
- c) production manager;
- d) direct executor.

10. Which of the quality mentors has the idea of a control card?

- a) V. Shukhart;
- b) E. Deming;
- c) F. Taylor;
- d) J. Juran.



## VARIANT 4

1. On his initiative, in 1962, quality control circles began to develop:

- a) E. Deming;
- b) J. Juran;
- c) K. Ishikawa;
- d) F. Crosby.

2. A tool that allows classification of data sets into several groups, taking into account their characteristic features:

- a) Pareto diagram;
- b) a histogram;
- c) the method of stratification;
- d) control card.

3. Whose mistakes, in the opinion of J. Juran, determine quality problems?

- a) top management errors;
- b) errors of the contractors;
- c) errors of raw material controllers;
- d) errors of product controllers.

4. Buyers complain that piece baked goods produced by the company often differ in size and weight. In order to verify the validity of these complaints, management should use:

- a) a checklist;
- b) a control card;
- c) the Ishikawa diagram;
- d) bundle diagram.

5. The collection of data on the costs of quality, in the absence of a formalized quality system with the distribution of responsibilities for quality assurance, carries out:

- a) employee of the financial department;
- b) a representative of the quality department;
- c) each employee performing any quality assurance functions at his workplace;
- d) the head of the unit.

6. The argument in favor of the participation of the enterprise in the competition for a quality award is all of the following, with the exception of:

- a) allow you to get an objective assessment of your own company in comparison with the best;
- b) stimulates work on continuous quality improvement;
- c) receiving a prize is necessary for advertising products;
- d) increases the image of the enterprise.

7. Who is required to ensure the development of a Quality Policy in accordance with the requirements of ISO 9000 series, version 2000 standards?

- a) quality department;
- b) top management;
- c) all levels of enterprise management;
- g) staff units.

8. The founder of the application of statistical methods in quality management in mass production:

- a) V. Shukhart;
- b) E. Deming;
- c) F. Taylor;
- d) J. Juran.

9. The control card is used directly for:

- a) establishing tolerances and limits;
- b) comparison of operations;
- c) determination of process stability;
- d) acceptance or rejection of a batch of material.

10. A quality management tool that provides a systematic way to resolve an existing problem:

- a) tree diagram;
- b) matrix diagram;
- c) arrow chart;
- d) matrix of priorities.

## VARIANT 5

1. Which of the situations with customer satisfaction is most characteristic with a high degree of monopolization of production?

- a)  $cs = v \uparrow / c \downarrow$ ; (v – product value)
- б)  $cs = v \uparrow / c \uparrow$ ; (c - cost of production)
- в)  $cs = v \downarrow / c \uparrow$ ; (cs – customer satisfaction)
- г)  $cs = v \downarrow / c \downarrow$ .

2. Introduced into the world practice a new original graphic method for analyzing cause-effect relationships, called the “Fish bone Diagram”:

- a) J. Juran;
- b) K. Ishikawa;
- c) E. Deming;
- d) F. Crosby.

3. Raw materials were put into production without input control. From the point of view of ISO 9000 international standards, this is possible if:

- a) the supplier of raw materials is well known;
- b) a batch of products released from this raw material is marked accordingly;
- c) the raw material was accompanied by a document on the quality of the supplier;
- d) all of the above is true.

4. For the effective organization of the seminar at the enterprise, it is advisable to apply:

- a) tree diagram;
- b) a block diagram;
- c) a diagram of connections;
- d) swept diagram.

5. A preliminary assessment of the cost of quality showed that in accordance with the PAF model they are:

- warning - 10%;
- rating - 30%;
- internal failures - 40%;
- external failures - 20%.

In this situation, the following is necessary, with the exception of:

- a) reduce the cost of evaluation;
- b) to analyze the main causes of marriage using the Pareto chart;
- c) develop a plan of preventive measures and finance them;
- d) provide additional training for workers in critical operations.

6. The main responsibility for the quality of products lies with:

- a) the head of the enterprise;
- b) quality manager;
- c) production manager;
- d) direct executor.

7. This quality control tool allows you to monitor the status of the process over time, as well as influence the process before it gets out of control:

- a) the method of stratification;
- b) a causal diagram;
- c) a checklist;
- d) control card.

8. The quality standard according to F. Crosby:

- a) measurement of quality by material values;
- b) absence of defects or zero costs;
- c) compliance with specified requirements;
- d) customer satisfaction.

9. The arguments for asserting that “quality is worth nothing” can be all of the following, with the exception of:

- a) with the release of quality products, the basic costs of eliminating defects are constantly reduced;
- b) satisfied consumers return again, sales and profits increase;
- c) when producing quality products, control costs are excluded;
- d) everything is true.

10. What is unacceptable for the management of an enterprise implementing a quality system?

- a) the requirement of strict adherence to quality management methods;
- b) listening to opinions regarding the inefficiency of the elements of the quality system;
- c) the sole decision-making on the basis of the evidence on the state of production
- d) the development of competition (competition) between units for quality.

## Table of correct answers

Task №	Variant №				
	B 1	B 2	B 3	B 4	B 5
1	B	C	A	C	B
2	A	B	A	C	B
3	D	A	C	A	B
4	C	B	C	B	D
5	A	C	D	B	A
6	C	A	A	C	A
7	B	B	B	B	C
8	A	C	B	A	C
9	B	A	A	C	C
10	D	B	A	A	D

## Scale and rules for evaluating results

10 correct answers - 5 points;

8 correct answers - 4 points;

5 - 7 correct answers - 3 points.