ODESA NATIONAL MEDICAL UNIVERSITY
FACULTY OF PHARMACY
Department of organization and
economics of pharmacy

MANUAL

FOR PRACTICAL WORK IN THE ACADEMIC DISCIPLINE

PHARMACEUTICAL AND MEDICAL COMMODITY SCIENCE

Odesa - 2023

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Recommended by the Medical Center for Pharmacy of ONMedU (Minutes No. 1 dated 04/09/2023)

Pharmaceutical and medical commodity science: educational and methodological manual for students of the pharmaceutical faculty of full-time, part-time and distance education / L.M. UNHURIAN, Oksana BIELIAIEVA O.A. STEPANOVA, etc.; under the editorship L. M. UNHURIAN //– Odesa: ONMedU, 2022. - 130 p. - Ukrainian language.

Educational manual with pharmaceutical and methodical of commodity studies include the structure of practical classes, the form and content of monitoring the assimilation of practical and theoretical material in the sequence of presentation of material from the discipline. At the beginning of each topic is a list of control questions, at the end is a list of basic literature and regulatory documents. The manual is recommended for use during the training of specialists for the master's degree in specialty 226 "Pharmacy. Industrial pharmacy"

Topic #1. REGULATORY DOCUMENTATION IN COMMODITY ANALYSIS.

Goal: to acquire knowledge of pharmaceutical and medical development trends commodity science as a field of knowledge and a special field of activity of specialists, knowledge of pro-standardization of medicines and medical products, categories of standards and their designation, structure and content of NTD, terms of validity of standards.

Control questions:

1. The purpose and tasks of commodity science in the system of training pharmacists at thecurrent stage of pharmacy development.
1. Definition of the term "standardization".
2. Principles, levels, subjects and objects of standardization.
3. Main goals and tasks of standardization. Definition of the term "standard". Typesof standards.
4. Designation of regulatory documentation (ND).
5. Structural elements of the national standard, quality control methods(QQM).
6. Rules for construction and presentation of technical conditions (TU).
7. Requirements for marking standards and technical conditions.
8. Procedure for approval and term of validity of regulatory documentation.
9. The concept of a product and its consumer value.
10. Definition of the terms "goods", "assortment of goods".
11. Quality of goods as the main category of commodity science.

Theoretical part

Pharmaceutical and medical commodity science- scientific discipline, which studies consumer properties of medical and pharmaceutical products; their classification and coding; standardization and certification; factors that ensure thequality of goods, its control and evaluation; regularities of product assortment formation and its structure; rules of packaging and labeling, merchandising operations related to the organization of their transportation and storage.

Standardization- activities to establish provisions for the general and reusable in relation to existing or potential tasks and aimed at achieving theoptimal degree of streamlining of activities in certain areas.

Standard- a regulatory document based on consensus was adopted a recognized body that establishes for general and repeated use rules, instructions or characteristics about an activity or its results, and is aimed atachieving an optimal degree of orderliness in a certain area.

Technical regulations- normative legal act in which it is defined product characteristics or related production processes and methods, including relevant administrative regulations, compliance with which is mandatory.

Assignment 1. Define the term "Commodity science"; Open theconcept "Product" and classify it.

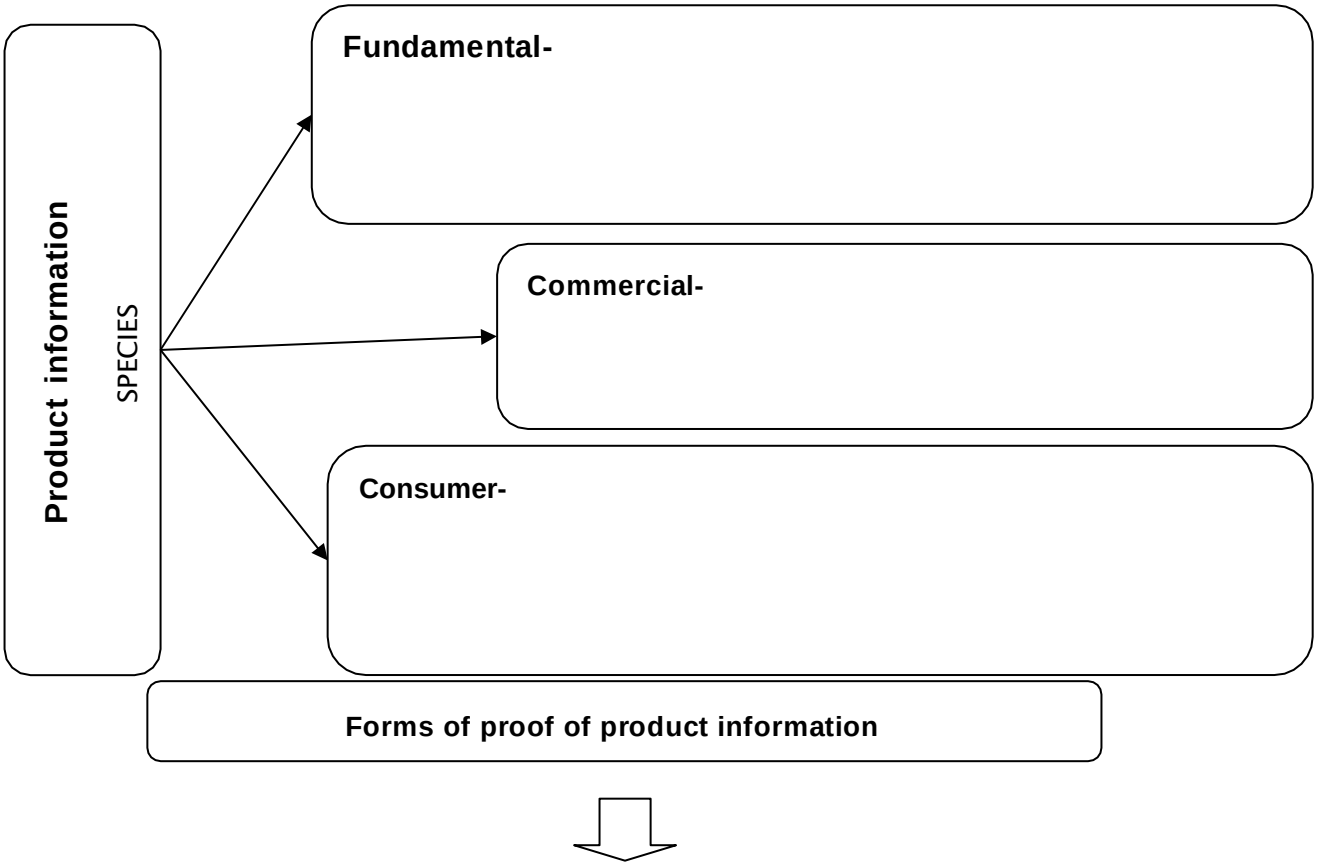
Merchandising-
Goods-

Individual (broad) consumption	**Industrial consumption**
1.	1.
2.	2.
3.	3.
4.	4.

Task 2. List the components that make up the cost of the product. Give itdetermination of "exchange" and "consumer" value of goods.

No	**Product cost components**
1	
2	
3	
4	
5	
6	
7	
Exchange value-	
Consumer value-	

Task 3. Give a description of the types of product information. In detail work out the forms of its delivery to the consumer.



Verbal information	
Digital information	
Visual information	
Symbolic information	
Line information	

Task 4. Explain the essence of the concept of "standardization". Specify species standardization. Mark the objects and subjects of standardization.

Standardization–
International standardization -
Regional standardization -
National standardization

Task 5. Work out this terminology. Make the correct matches. a) regulatory document establishing requirements for medicinal products, their packaging, labeling, storage conditions and terms, quality control methods.
b) a standard adopted by a regional standardization organization and availableto a wide range of users.
c) a document containing a systematic collection or list of any objects and allows finding each object with a certain designation. The catalog may contain characteristics, indicators and other data on the objects included in it.
d) a standard adopted by a national standardization body and available to awide range of users.
e) a document that establishes rules, indicators or characteristics about anactivity or its results.
f) a normative document based on consensus, adopted by a recognized body, which establishes for general and repeated use rules, instructions orcharacteristics about an activity or its results, and is aimed at achieving an optimal degree of order in a certain area.
g) a collection of regulatory documents, which establish modern quality standards for dosage forms, medicinal products and their components, as well as methods of analysis and testing
h) regulatory document that contains recommendations on the practice or procedure of design, manufacture, installation, maintenance or operation ofequipment, structures or products.
i) a standard adopted by an international standardization organization and available to a wide range of users.
k) a regulatory document that establishes technical requirements to which a product, process or service must comply and defines the procedures by which it can be established that such requirements have been met.
L) the standard adopted by the CIS countries that joined the agreement on the implementation of a coordinated policy in the field of standardization, metrology and certification and which is used by them directly.

No	Normative document	Definition
1	Standard	
2	Methods of quality control	

3	Interstate standard	
4	International standard	
5	National standard	
6	Regional standard	
7	Code establishedpractice	
8	Normative document	
9	Specifications	
10	Catalogue	
11	State Pharmacopoeia of Ukraine	

Task 6. List the types of standards depending on the specifics of the object.

No	**Type of standard**	**Essence**
1		
2		
3		

4		
5		
6		
7		
8.		

Task 7. Work out the categories of normative documents in detail. Decipher the conventional designations of the proposed standardization documents.

No	**Normative document**	**Essence**
	National equal:	
1	DSTU	
2	DSTU/ISO	
3	DSTU/EN	
4	DSTU/GOST	
5	DK	
6	GSTU	
	Another level	
1	ISO	
2	GOST	

3	STU	
4	TU U	
5	Secondary school	
6	MKIA	

1) DSTU ISO 9591: 2005 DSTU ISO - index, 9551 - register. number, 2005-year

2) DSTU EN 12021: 2004

3) DSTU

GOST 30765: 2003

4) GOST

16427-93

5) DSTU

21 216-2002

6) TU U

27.1-21987647-001: 2005

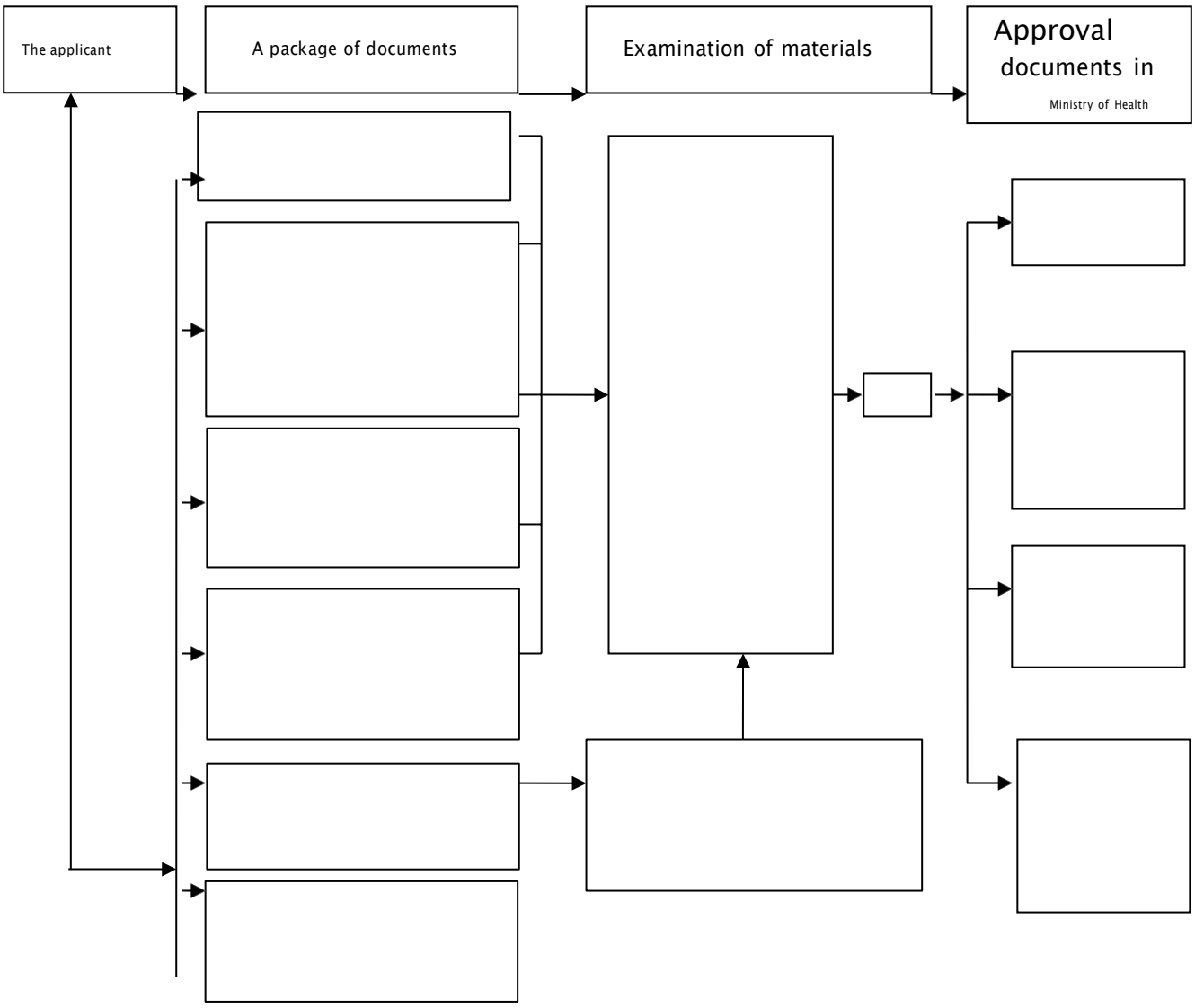
7) GSTU 42-397-95

8) "ST MOZ"

9) "ST-N MOZ"

10) "ST-K-MOZU

Task 8. Prepare the documents for the registration of the LZ and reproduce the scheme registration in the relevant services of the Ministry of Health. To perform the task, it is necessary to use the order of the Ministry of Health of Ukraine datedAugust 26, 2005 No. 426 "On approval of the Procedure for conducting examination of registration materials for medicinal products submitted for state registration (re-registration), as well as examination of materials on making changes to registration materials during the validity of the registration certificate"



Task 9. Name and describe the conformity assessment schemes medical devices in accordance with the Resolution of the CMU No. 753 dated 02.10.2013 "On the approval of the technical regulations regarding medical devices"; Resolution of the CMU No. 754 dated 02.10.2013 "On approval of the Technical Regulations onmedical devices for in vitro diagnostics"; Resolution of the CMU No. 755 dated 02.10.2013 "On approval of the Technical Regulation on active medical devices that implant .

No	Security class medical product	Procedure for evaluation of medicaldevices	Normative document
1.			
2.			
3.			
4.			

Recommended Books:

1. Medical and pharmaceutical commodity science: a textbook for university students. education institutions / I.I. Baranova, S.M. Kovalenko, D.V. Semeniv et al. - Kharkiv: National University of AppliedSciences: Golden Pages, 2017. - 320 p.
2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
3. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. helpfor students higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyka, 2011. - 492 p.
3. Texts of lectures on pharmaceutical and medical commodity science

Regulations :

1. On approval of the Procedure for examination of registration materials for

medicinal products submitted for state registration (re-registration), as well as examination of materials on making changes to registration materials

during the validity of the registration certificate: Order of the Ministry of Health of Ukraine dated August26, 2005. No. 426 (with changes)

URL:https://zakon.rada.gov.ua/laws/show/z1069-05#Text

2. Resolution of the CMU No. 753 "On approval of technical regulations regarding medical devices";https://zakon.rada.gov.ua/laws/show/753-2013-%D0%BF#Text

3. Resolution of the CMU No. 754 "On approval of the Technical Regulations regarding medical devices for in vitro diagnostics";
https://zakon.rada.gov.ua/laws/show/754-2013-%D0%BF#Text

4. Resolution of the CMU No. 755 "On approval of the Technical Regulationon active medical devices that implant . https://zakon.rada.gov.ua/laws/show/755-2013-%D0%BF#Text

Topic #2. CLASSIFICATION OF GOODS. CODING OF GOODS. Goal:to acquire knowledge about the classification of medicines and products medical purpose,categories and types of product coding. **Control questions:**

1. The concept of product classification and its categories.
2. Purpose, purpose, signs and general rules of classification.
3. Types of product classification. Product coding systems
4. Bar coding. Calculation of the control number.

Theoretical part:

Classifier- an official document that represents itself a systematized listof names of objects, each of which is assigned its own unique code.

Position of the classifier- the name and code of the classification group or classification object.*Classifier capacity*- the largest number of positions that theclassifier can contain.

*Object of classification*is an element of the classification set. In commodity science such an element is a product. Consumer goods, goods of industrial purpose and goods of managerial activity are distinguished from the set of all goods accordingto their purpose.

Depth of classification- the number of degrees of classification, that is, thenumber used classification features.

Classification method- a set of techniques for dividing a set of objects into subsets. Thedistribution of the classification is carried out from the highest degree to the lowest. The number of steps will depend on the goals and objectives of the classification, complexity and number of objects.

*Degree of classification*is the stage of dividing the set into constituent parts by one of the signs.

Grouping -distribution of a set of objects (goods) into groups based on only one characteristic.

Task 1. Define the term "classification", list the general ones classificationbuilding rules

Classification –

Classification construction rules

1.	
2.	
3.	
4.	
5.	

Task 2. Work out the proposed terminology, give the correctcorrespondences.

a) A set of ways of dividing a set of objects into subsets

b) ordered distribution of goods by classes and smaller subdivisions, independent of each other, or located in a logical sequence and subordination,based on certain characteristics.

c)Properties or characteristics of the object of classification, according to which the classification is carried out.

d) Number of degrees of classification

e) An element of the classification set. In commodity science, the object is goods, their properties, quality indicators, raw materials and materials, methods of evaluation and quality control

f) Subset of objects obtained as a result of classification

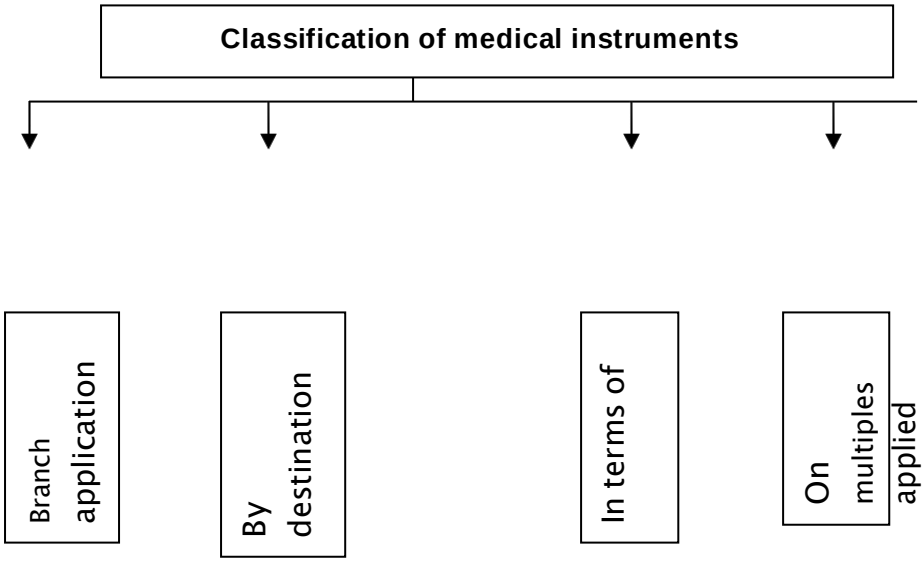
1	Object of classification	
2	Classification sign	
3	Depth of classification	
4	Classification groups	
5	Classification method	
6	Product classification	

Task 3. Carry out a comparative characteristic of hierarchical and faceted classification methods. Analyze these methods on the examples suggested by theteacher.

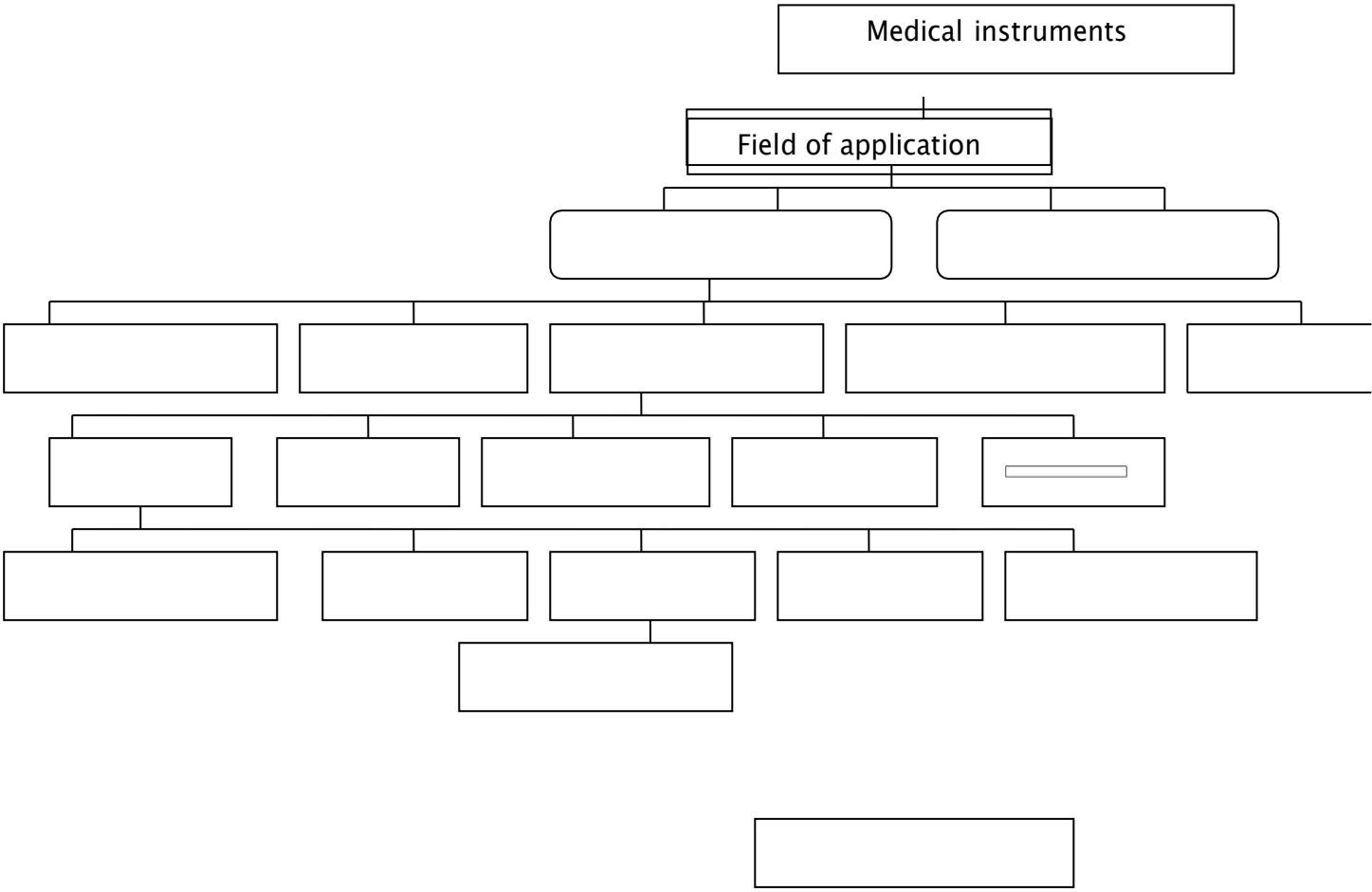
Hierarchical method -
Facet method -

Method classification	**Advantages**	**Disadva ntages**
Hierarchical method		
Facet method		

An example of the faceted method of classification.



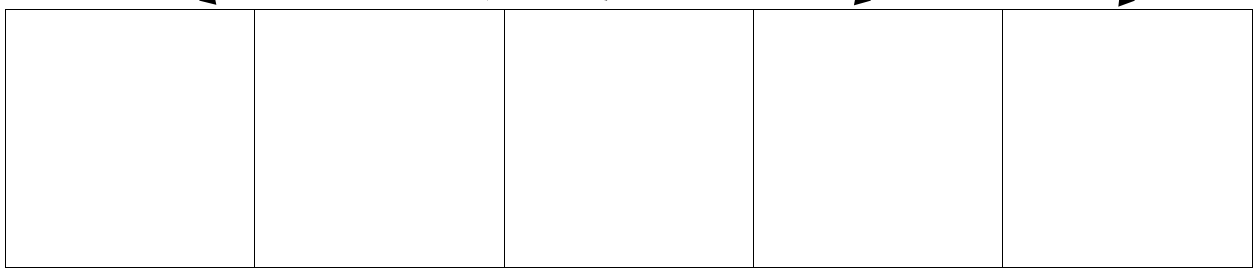
An example of a hierarchical classification method.



Task 6. Define the term "classifier", indicate its levels.

Classifier–

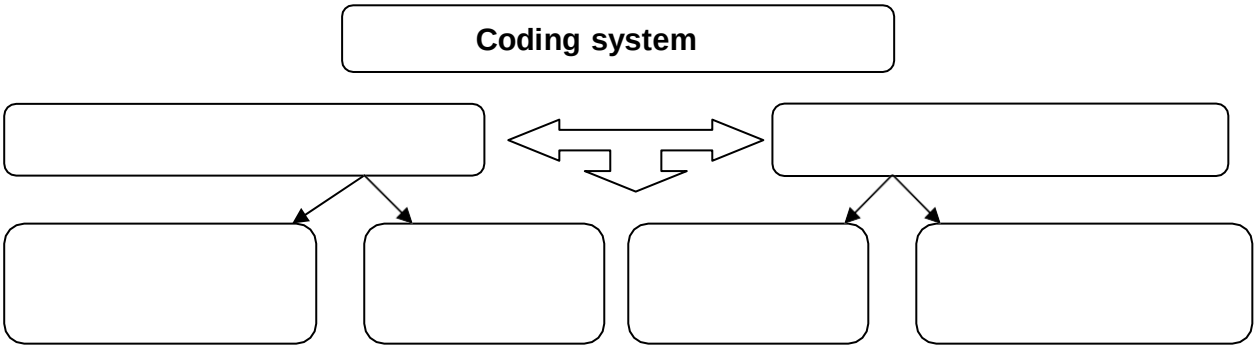
Levels of classifiers



Task 4. Define the following terms. Give a description coding systems.

Coding-

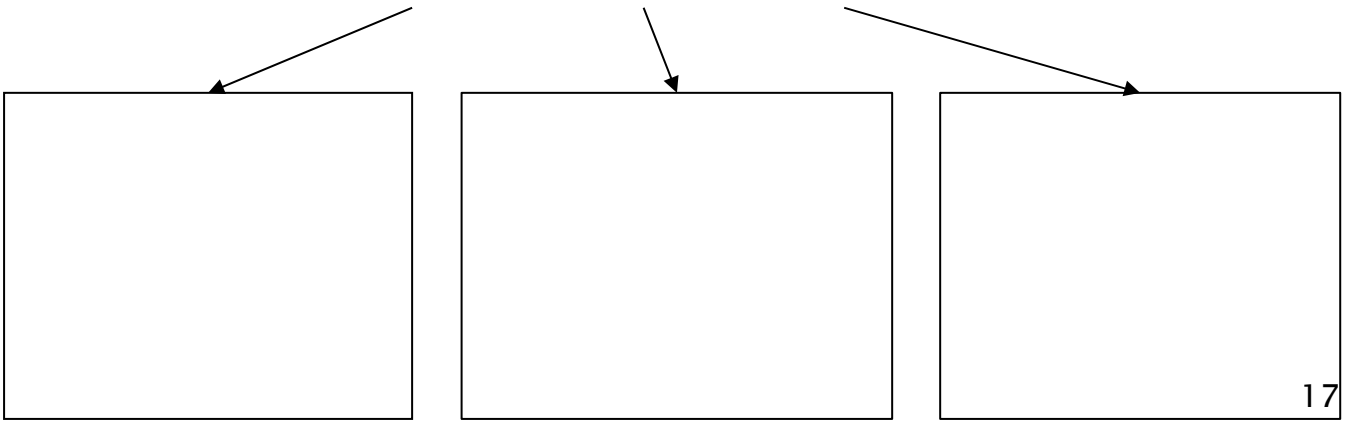
Code –



Registration coding–
Ordinal encoding method
Serial - ordinal

Task 7. Study the structure of the State Classifier of Products and Services of the DCP 016: 210. Indicate with which international and national classifiers itis coordinated.

DCP–
Structure of the State Classifier of Products and Services



DKPP SCHEME 016:2010

XX	
XX.X	
XX. XX	
XX.XX. H	
XX.XX. XX	
XX.XX.XX.XX	
XX.XX.XX.XX.X	
XX.XX.XX.XX.XX	

International classifiers	
CPA	
PRODCOM	

Task 8. Using an electronic resource https://dkpp.rv.ua/index.php?search=21.20&type=code Decipher the provided codes of DCPP 016:2010. (Section C)

		21.20.12.60.00
Section	21	
Class	21.20	
Category	21.20.1	
Subcategory	21.20.12.	
Subtype	21.20.60.00	

		21.20.21.40.00
Section	21.	
Class	21.20	
Category	21.20.2	
Subcategory	21.20.21.	
Subtype	21.20.21.40.00	

		21.20.24.40.00
Section	21.	
Class	21.20	

Category	21.20.2	
Subcategory	21.20.24.	
Subtype	21.20.24.40.00	

		21.20.13-60.00
Section	21	
Class	21.20	
Category	21.20.1	
Subcategory	21.20.13.	
Subtype	21.20.13.60.00	

Task 9. Describe the linear and two-dimensional bar symbols codes Analyzethe structure of the European and American coding system.

Linear stroke code	
Two-dimensional dash-code	

Coding systems	**Types**
European coding system.	
American coding system	

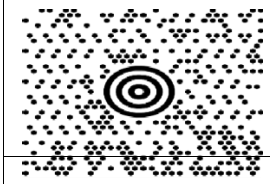
Structure three-code EAN-13	
The structure of the dash-code EAN-8	

Task 10. Calculate the control number in the proposed ones samples ofmedicine packages.

The name of the medicinal product	Calculation of the control number
1. 2.	
3.	

Task 11. Carry out a comparative characteristic2D barcodes.

2D bar types codes	Description
	
	

Recommended Books:

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2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
3. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. helpfor students higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyka, 2011. - 492 p.
3. Texts of lectures on pharmaceutical and medical commodity science

Regulations:

1. State classifier of products and services**DK016:2010** https://zakon.rada.gov.ua/rada/show/v457a609-10#Text .
2. CMU Resolution No. 653 of July 24, 2019. "On the introduction of a pilotproject on marking with control (identification) signs and monitoring the circulation of medicinal products"
https://zakon.rada.gov.ua/laws/show/653-2019-%D0%BF#Text

Topic No. 3. FUNDAMENTALS OF COMMODITY ANALYSIS OF MEDICAL AND PHARMACEUTICAL GOODS. PACKAGING, LABELINGAND TRANSPORTATION OF MEDICAL GOODS.

Goal: Familiarize yourself with the basic concepts of commodity analysis of medical productsand pharmaceutical products. To study the goals, tasks, features, stages and methods of commodity analysis. To form professional knowledge and skills in conducting commodity analysis of various groups of goods.

Control questions:

1. Classification of medical products depending on storage conditions: according to physical and chemical properties, method of application, expiration date, types and methods of packaging.
2. Organoleptic quality indicators, requirements for the quality of medical products.
3. Packaging and its functional purpose. packaging properties

4. Packaging, labeling and transportation of medical products.
5. Definition of the terms "analysis", "commodity analysis", "commodity examination".
6. Functions, goals and tasks of commodity analysis.
7. Features of commodity analysis of medical and pharmaceutical products.
8. The main stages of commodity analysis. Requirements for medical andpharmaceutical products.
9. Basic properties (physical, chemical, technological, etc.) that ensure the qualityof goods.

Theoretical part:

Input control- quality control of medicinal products upon their receipt by the subject management, which is carried out by visual inspection or laboratory

research on the quality of medicinal products.

Quality characteristics of goods- a set of intraspecific consumers properties that have the ability to satisfy various needs. *Quality*- a set of characteristicsof the object related to its ability meet specific and planned needs.

Quantitative characteristics of goods -a set of certain intraspecies properties expressed using physical quantities and their measurement units

Normative documentation of AND / MKY- regulatory documents that determine qualitative and quantitative characteristics of the medicinal product, their permissible limits and testing methods, establish requirements for packaging, labeling, storage and transportation conditions, the shelf life of the medicinal product, approved duringthe registration of the medicinal product in Ukraine.

Certificate of Compliance- a document that certifies the compliance of the object requirements of technical regulations, provisions of standards or terms of contracts. The form of the certificate of conformity is approved by the body of executive power and technical regulation.

Certificate of quality of the medicinal product series- the document that is issued the manufacturer(for imported medicinal products - the importer (the manufacturer or a person representing the manufacturer of medicinal products on the territory of Ukraine)) and who certifies the compliance of the series of the medicinal product with the requirements of the AN / MKY established at the time of its registration in Ukraine.

Task 1.*Define the following concepts.*

Analysis
Commodity analysis
Quantitative characteristics of goods

Quality characteristics of goods
Commodity examination -

Task 2. Describe the types of commodity analysis.

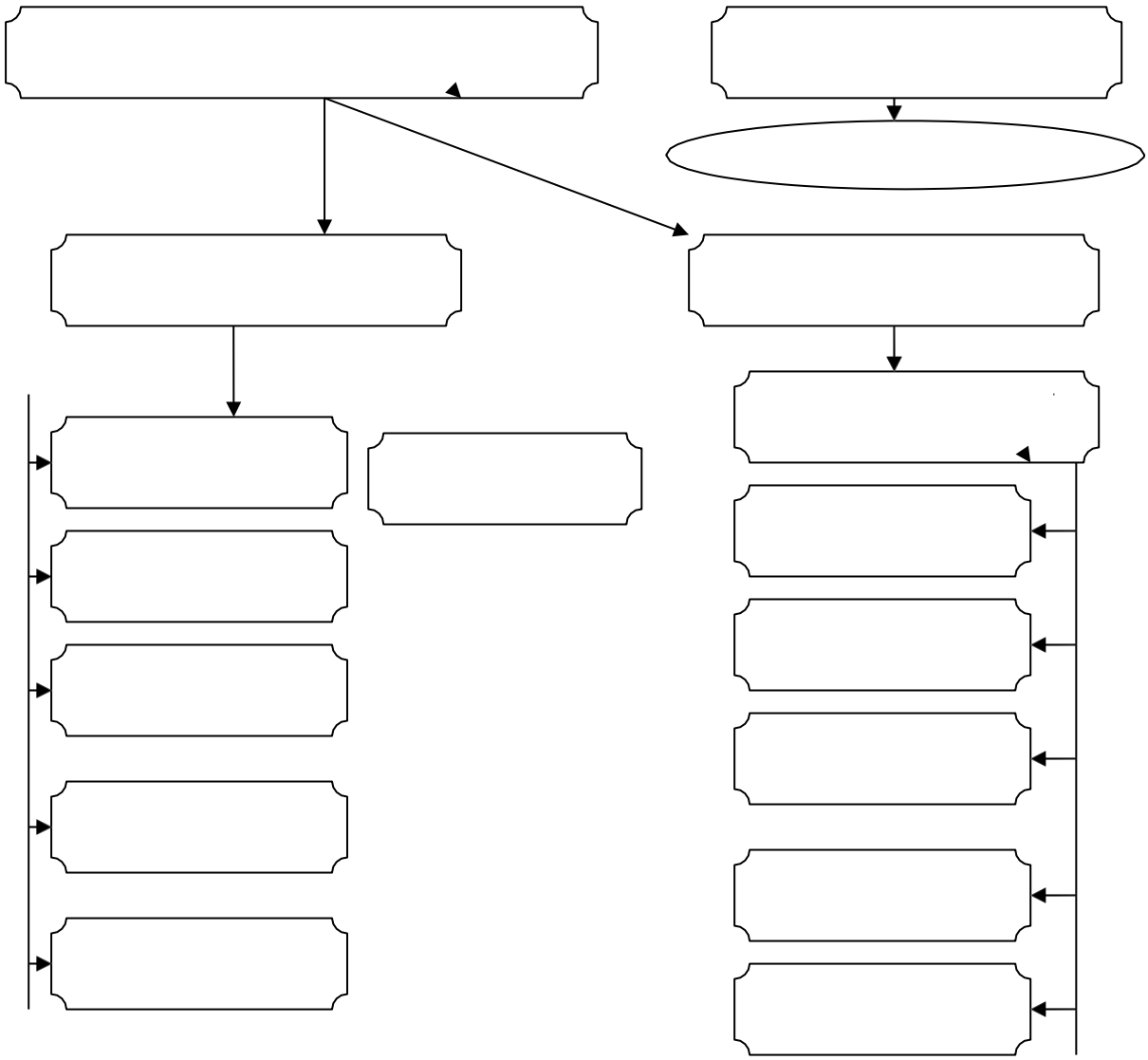
Types of commodity analysis

1.	Documentary	
2.	Qualitative	
3.	Quantitative	
4.	Assortment	
5.	Complex	

Task 3. List the indicators that determine the quality of pharmaceutical andmedical products.

Indicators determining the quality of pharmaceutical and medical products		
1.	Security	
2.	Functional properties	
3.	Reliability	
4.	Environmental friendliness	
5.	Aesthetics	
6.	Resource consumption	

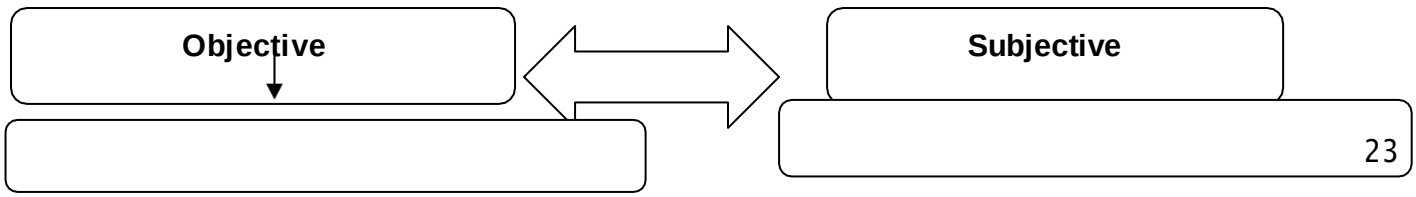
Task 4. Specify the methods of commodity analysis in the form of a block diagram.

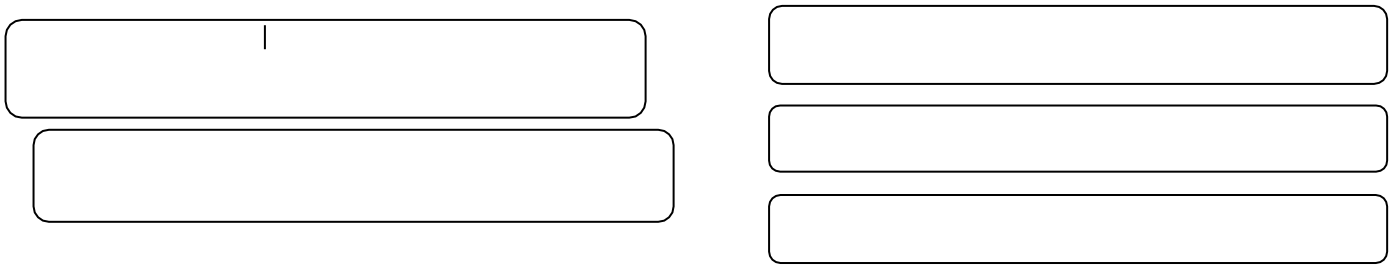


Task 5. Describe the concept of "quality" as the main category commodityanalysis. List the factors affecting product quality.

The quality of the medicinal product–
The quality of the medical product-

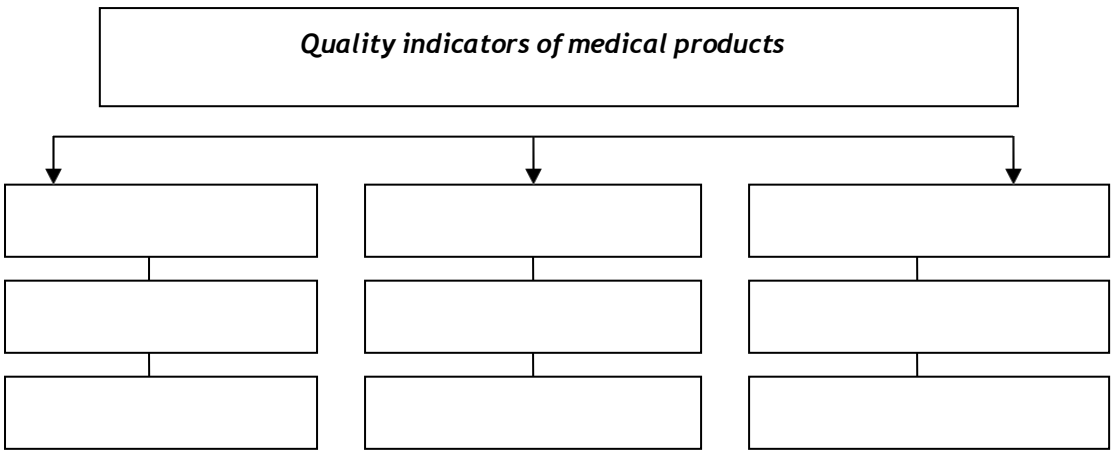
Factors affecting product quality





Task 7. Specify the main quality criteria of medicines and medical products products Submit the data in the form of a table.

No	Indicators of the quality of medicinal products
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	



Task 8. Define the term "shipping documents". Classify the shippingdocuments.
Shipping documents (TSD) –

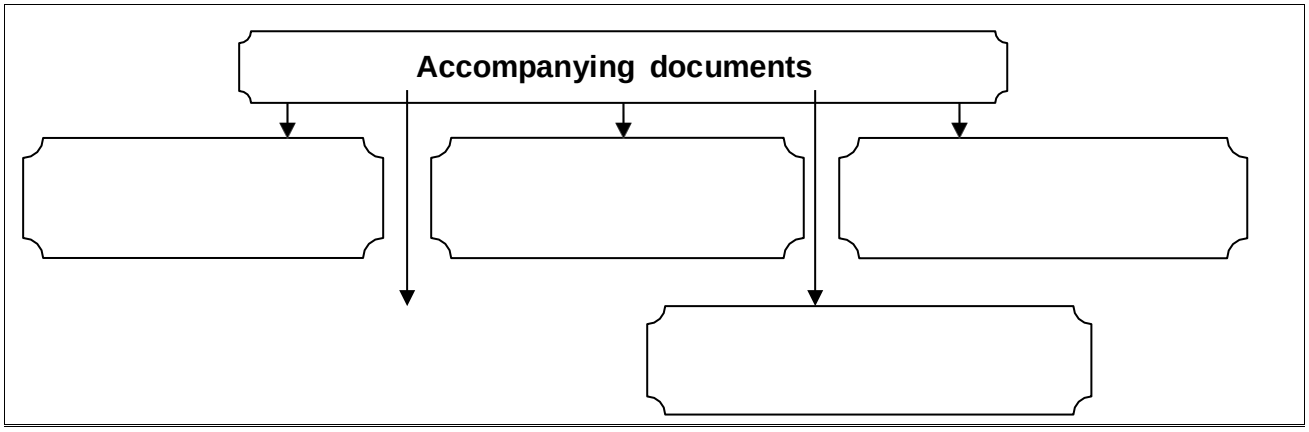
_____

_____

_____

_____

_____



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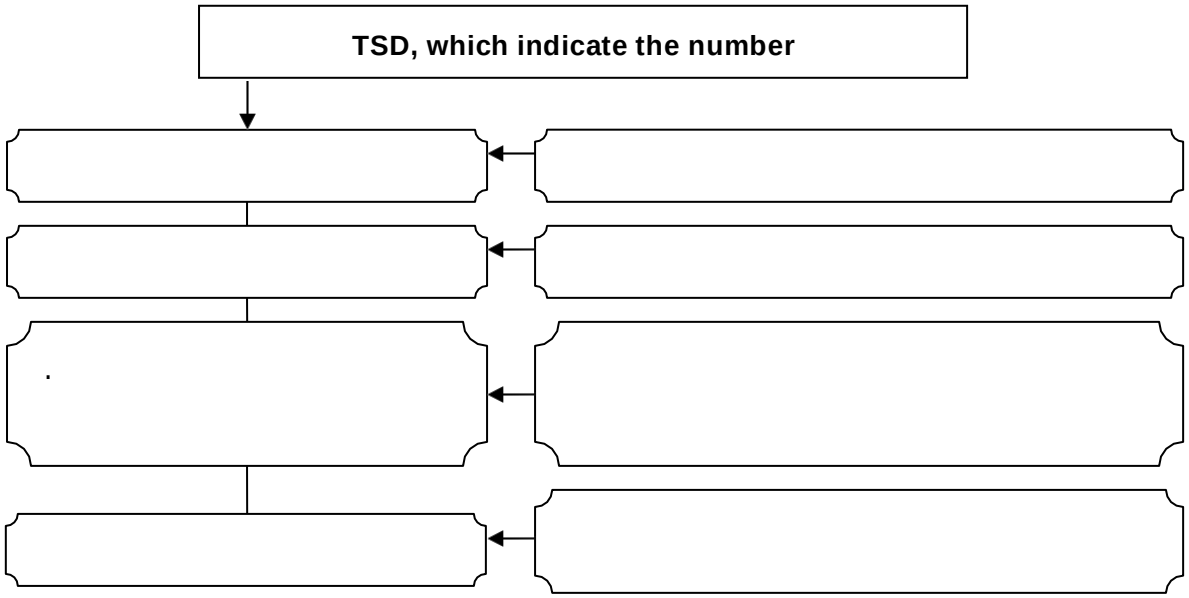
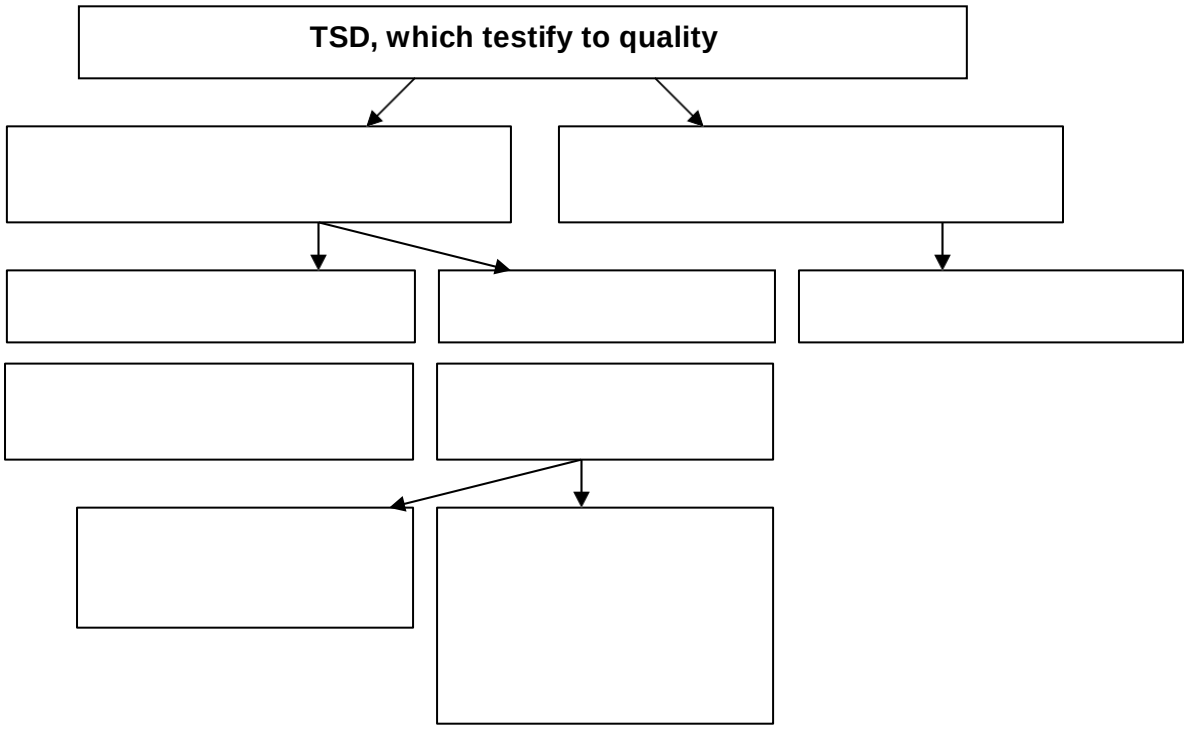


documents



Task 9. List the stages of commodity analysis of medical andpharmaceutical products.

I stage	
II stage	
III stage	
IV stage	
V stage	
VI stage	
VII stage	
VIII stage	

Task 10. Conduct an organoleptic analysis of medical hygroscopic cotton wool. (GOST 5556). List the organoleptic indicators for the specified product.

1.	
2	
3.	
4.	

Conclusion_____
_____
_____
_____

Recommended Books:

1. Medical and pharmaceutical commodity science: a textbook for university students. education institutions / I.I. Baranova, S.M. Kovalenko, D.V. Semeniv et al. - Kharkiv: National University of AppliedSciences: Golden Pages, 2017. - 320 p.
2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
3. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. helpfor students higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyka, 2011. - 492 p.
3. Texts of lectures on pharmaceutical and medical commodityscience

Regulations:

1. Order dated 07.12.2012 No. 1008 "On Approval of the Procedure for Certificationof the Quality of Medicinal Products for International Trade and Confirmation for Exported Active Pharmaceutical Ingredients"
https://zakon.rada.gov.ua/laws/show/z2218-12#Text
2. On the approval of the Procedure for quality control of medicinal products during wholesaleand retail trade: Order of the Ministry of Health of Ukraine No. 677 of 09/29/2014 [Electronic resource]. - Access mode:https://www.zakon5.rada.gov.ua/laws/show/z1515-14
3. GOST 5556-81 Hygroscopic medical cotton wool. Technical conditions
http://helpnik.college.ks.ua/standart/gost/Catalog/Index/13/13732.htm

TOPIC No. 4. PACKAGING, LABELING AND TRANSPORTATION OFFINISHED MEDICINES. CLOSURES FOR FINISHED MEDICINES ANDPARAPHARMACEUTICAL PRODUCTS.

Goal:to acquire knowledge about the basics of packaging, labeling and transportation finished medicines; to know the classification, range of transport containers, to learn how to use NTD and reference literature on theuse of containers for pharmaceutical use, transport containers. To study the classification of sealing means by purpose, structural features, fixing methods, materials and production methods; learn to use NTD and referenceliterature on the use of modern packaging materials.

Control questions:

1. Classification of pharmaceuticals depending on the storage conditions: according to pharmacological action, physicochemical properties, method of application, expiration dates, method of obtaining, aggregate state, types and methods of packaging and organoleptic quality indicators, requirements for the quality of dosage forms.
2. Packaging and its functional purpose.
3. Classification of pharmaceutical packaging (primary, secondary, group, consumer andtransport), packaging properties.

4. Packaging, labeling and transportation of pharmaceuticals.
5. Concepts of "container", container for pharmaceutical use" and "packaging".
6. Classification of containers.
7. Assortment of consumer packaging.
8. Transport marking. Basic, additional and informative inscriptions. Manipulative signs.
9. Classification of sealing means by purpose, design features, fixingmethods, materials, production methods.
10. Requirements for sealing means
11. Packaging materials and requirements for them.
12. Classification, assortment, storage of packaging materials.

Theoretical part:

Marking- text, conventional designation (signs) or picture applied to packaging and/or goods, as well as other auxiliary means intended for identification of the goodsor some of its properties, providing the consumer with information about the manufacture (executors), quantitative and qualitative characteristics of the goods.

Container- a product for placing products for the purpose of their storage or transportation from the supplier to the consumer. A container is aclassification unit with a defined geometric shape and structural features. A container performs the functions of packaging independently or together with auxiliary packaging means (capping, sealing and cushioning elements, labels, etc.)

Consumer packaging- packaging that comes to the consumer with products; not performsthe function of a transport container.

Clogging agent- this product is intended for sealing packaging andsaving its content.

Ready medicines **(**GLZ, medicinal products, drugs, medicines) - dosed medicinal products in the form of a certain dosage form that have passed alltechnological stages, including packaging and labeling.

Medicines– substances or their mixtures of natural, synthetic, of biotechnological origin, intended for diagnosis, prevention and treatment ofhuman or animal diseases.

Task1 . Define what "ready-made medicinal products" are. List them generalrequirements for these dosage forms.

Ready medicines-

No	**Medicinal form**	**Requir ements**
1	Tablets	

2	Dragee	
3	Pellets	
4	Capsules	
5	Powders	
6	Medicinal liquids forms (tinctures, syrups, extracts)	
7	Eye drops	
8	Ointments, creams, pastes, gels, liniments	
9	Solutions for injections and infusions	
10	Suppositories	

Task 2. *Define the functions of the packaging of finished medicines*

No	Functions
1	
2	
3	
4	
5	

Task 3. Consider the classification of the packaging of finished medicines

No	**Kind packaging**	**Definition**	**Appointment**	**Example**
1				
2				
3				
4				

Task 4. *List the requirements for primary and secondary packagingmedicine*

Requirements for primary packaging	***Applications for secondary packaging***

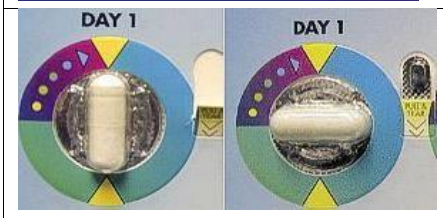
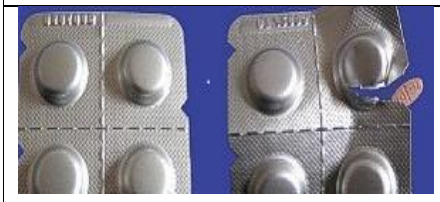
Task 5. *Classify containers according to different classification systemssigns*

No		**A sign of classification**	

1.		By functional destination	
2.		By frequency of use	
3.		According to the material of manufacture	
4.		According to the method of receipt	
5.		By form	

6.	By the ability to store initial form	
7.	By capacity	
8.	By functional destination	
9.	For single use	
10.	According to the material of manufacture	

Task 6. *Describe modern types of GLS packaging:*

Image	Type of packaging	Description
		
		
		
		

		
		
		
		
		
		
		.

Task 7.Determine which type of container the listed options belong to, give an example of a medicinal product or a medical product.

Glass bottle made of dark glass, cardboard box, polymer bottle, glass bottle for blood and infusion solutions, bag made of film material, dropper bottle made of dark glass, glass ampoule, tube, cardboard pencil case,

aerosol can, blister, cardboard pack, glass penicillin bottle, sachet, nebula.

Primary container	Example	Secondary packaging	Example

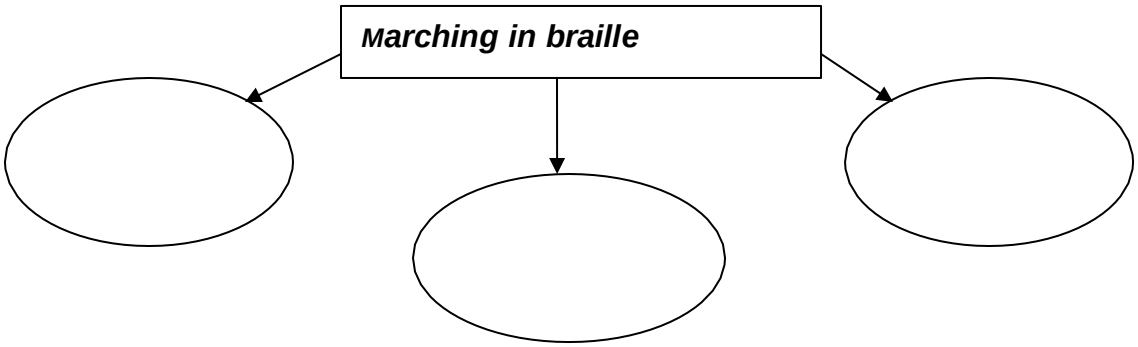
Task 8. Using these samples of GLZ, determine their registration number, number of dosage forms and dosage.

Name GLS	Registration number	Number medicinal forms	Number dosage

Conclusion:_____
_____
_____
_____

Task 9.List the points that must be indicated on the outer packaging medicinal product when labeled in Braille. Specify where Braille is prohibited.

Braille is not placed:



1. _____ _____
2. _____ _____
3. _____ _____
4. _____ _____
5. _____ _____

Task 10.Specify the type of transport container and decode the markings

Type of transport container

_____

1	6	11
2	7	12
3	8	13
4	9	14
5	10	15
16	17	18
19		

Task 11.Familiarize yourself with GOST14192-96 "Cargo Marking", define the features of transport container marking. Show the main manipulation signs.

"Carefully! fragile
»_____
_____

"Protect from ingress of moisture"_____

"Above! Not edging"!_____

"Protect from direct sunlight" _____

"Do not allow freezing below - 30 C _____

Task 12. Using the input data, distribute the types of clogs means according to classification features. Submit the results in the form of a table. *according to purpose, according to design features, cover, cap, according to the method of fastening to the container, plug, bushings, crown plug, according to material, capping device with additional functional device, screw-on, inserted, glass, plastic, pull, with control of the first opening . openings fixed by welding or gluing, hood No*

Classification sign	Types of sealing means
1.	
2.	
3.	
4.	
5.	
6.	

Task 13. Define the types of sealing means and give examples. Enter the results in the table.

Clogging means	**Name**	**Examples of LZ or MV**
		
		
		

Task 14. *Describe the proposed occlusion means for parapharmaceutical application and give examples of application*

Image	Name	Application examples
		
		
		
		
		
		

Task 15. Following the classification criterion "material of manufacture", list the packaging materials known to you.

No	Material manufacturing	Name	Appointment
1	paper		
2	Cardboard		
3	Cellulose		
4	Plastic materials		
5	Metal		
6	Combined		

Task 17. Conduct a merchandising analysis of the proposed packaging medicinal product. Enter the results in the table.

Merchandising analysis of medicinal product packaging

Packaging						
Primary				Secondary packaging	Registration number	Markuvann Term suitability
Container	Clogging means	Packing material	Auxiliary means			
2	3	4	5	6	7	8

ik	Marking Enterprise - producer 11	Trademark manufacturer 12	Name and concentration substances 13	Storage conditions 14

Task 18. Give an assessment of the storage conditions of sealing means and packaging materials in the warehouse of the manufacturing plant. Indicate violations, if any. Make a conclusion about the suitability of materials for use. ***Storage conditions: temperature 10-15 C, humidity 83%, distance from heating devices 2 meters, volatile substances are stored nearby, the room is protected from direct sunlight.***

Conclusion:_____

_____

_____

_____

_____

_____

Recommended Books:

1. Medical and pharmaceutical commodity science: teaching manual for foreign students of universities of the Ministry of Health of Ukraine, studying in the Russian language / I.I. Baranova,
S.N. Kovalenko, Yu.A. Bespalaya, T.V. Dyadyun, S. A. Mamedova. - Kh.: NFaU; Original, 2017. - 328 p.

2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
3. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. help for students higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyka, 2011. - 492 p.
3. Texts of lectures on pharmaceutical and medical commodity science

Regulations:

1. On the approval of the Procedure for examination of registration materials for medicinal products submitted for state registration (re-registration), as well as examination of materials on making changes to registration materials during the validity of the registration certificate: Order of the Ministry of Health of Ukraine dated August 26, 2005. No. 426 (with changes) [Electronic resource] – Mode of access https://zakon.rada.gov.ua/laws/show/z1069-05#Text
2. On medicinal products: Law of Ukraine No. 123/96 dated 04.04.1996[Electronic resource]. - Access mode:https://www.zakon3.rada.gov.ua/laws/show/123/96-%D0%B2%D1%80
3. On the approval of the Procedure for labeling medicinal products in Braille: NDecree of the Ministry of Health of Ukraine dated August 25, 2010 No. 722,[Electronic resource]. - Access mode:https://www.zakon.rada.gov.ua/laws/show/z1044-10 .

Topic No. 5. RUBBER AND PRODUCTS FROM IT. COMMODITY ANALYSIS OF RUBBER PRODUCTS AND PATIENT CARE ITEMS.

Goal:to know the classification of rubber, the technological process of manufacturing rubber products, rubber aging; to be able to use NTD and reference literature on issues of acceptance, quality, storage and release of rubber products.

Control questions:

1. The concept of rubber. Classification of rubber.
2. Production of rubber.
3. The concept of the technological process of manufacturing rubber products.
4. Aging of rubber. Storage and restoration of rubber products.
5. Requirements for rubber quality, labeling, packaging, storage,
6. Designation of rubber products and patient care items.
7. Empty rubber products obtained by the molding method.
8. Tubular elastic products
9. Elastic products for anesthesia and artificial respiration Latex product:
10. Subjects of patient care.
11. Packaging, labeling, storage, transportation.
12. Disinfection and sterilization.

Theoretical part:

Rubber(lat.Resina-resin) - a product of vulcanization of rubber, which is a composite material - a rubber mixture, containing up to 15-20 ingredients that perform various functions.

Natural rubber- polymer of plant origin, by vulcanization from which rubber is obtained. Commodity rubber is obtained from the milky juice - latex of Brazilian Hevea, which grows on plantations in Indonesia, Indochina, Ceylon and some African countries. In the Crimea and Central Asia, kok-sagiz is cultivated, which can also be a source of industrial rubber production.

Latex- a milky white liquid, which is a polydisperse colloid a system that contains 34-37% rubber, 52-60% water, 2-2.7% proteins, 1.65-3.4% resins, 1.5-4.2% sugar and 0.2-0, 7% mineral salts. The composition of the latex depends on the age of the tree, climatic conditions, and the time of extraction.

*Vulcanization of rubber*is the process of converting rubber into rubber, by heating it with gray.

Task 1.Define the proposed terms

Rubber-
Rubber -
Vulcanization-
Latex-

Task 2.List the main consumer requirements for rubber products.

1	
2	
3	
4	
5	
6	
7	

Task 3**.**Explain the essence of the methods of forming rubber products and group them offered products according to the method of receipt.

Nipples, dipping method, condoms, heating pads, jute, syringes, mold method, ice packs, vessels, extrusion method, examination gloves, probes, sticks, catheters

Method receiving	Description	Rubber products
Dipping method		
Form method		
Extrusion method		

Task 4.Give the rules for storing rubber products, according to the Instructions for organization of storage in pharmacy institutions of various groups of medicines and medical products, approved by the order of the Ministry of Health of Ukraine No. 44 dated 16.03.93.

Rules for storage of rubber products

Task 5.*Describe the methods by which the regeneration of thin- and thick- walled products*

Methods of regeneration	

Task 6.*Conduct a product analysis of medical syringes.*

Appointment syringes	
Building	
Types syringes	*A* -
	B -

Definition volume syringes	
Basic quality indicator	

Task 7.*Conduct a product analysis of medical heating pads.*

Warmer medical	*type A*	*type B*
Appointment		
volume		
Completeness h	1	1
	2	2
		3
		4
		5
		6
The main ones requirements		

Task 8.Bubbles for special ice have arrived at the LPU warehouse purpose: bladders for the female and male heart. Check their tightness in accordance with the requirements of ND. (DSTU 2909-94 (GOST 3302-95) "Rubber bubbles for ice. Technical conditions".)

Name of the product	Normative documentation	The method of checking tightness
Bubbles for female and male hearts		

Conclusion

_____ _____

_____

_____

_____

Task 9.Classify medical gloves by classification signs and the proposed list of products.
Disposable, anatomical, reusable, surgical, smooth, diagnostic, latex, dental, with roller, nitrile, powdered, universal, vinyl, sterile, without roller, textured, powder-free, polychloroprene, polyisoprene, micro- rough, lubricated with special lubricants, vinyl

Classification sign	Product types
1. According to the material of manufacture	
2. By form	
3. By surface treatment	
4. According to the presence or absence of mitigating substances putting on gloves	
5. For multiplicity of application	
6. On the presence or absence of a roller	
7. In the presence of prior sterilization	
8. By purpose and areas of application	

Task 10. Work out the classification of baby nipples. To complete the task use the following data. Submit the results in the form of a table

0+ (Mini or Mini Regular flow)	Rubber	Oval nipples
3+ (Medium Flow)	Classic, round nipples	Silicon
6 + (Fast Flow)	Latex	U-shaped
Anti-colic nipples	Multithreading	X-shaped

Material for manufacturing		
1. The shape of the nipple		
	Simulates the mother's breast, which allows you to maximize the feeding process to a natural one	
	They have an anatomical shape, contribute to the correct development of the palate and lower jaw	
	equipped with a valve that reduces the volume of trapped air, which significantly reduces the frequency of belching and colic attacks in babies	
	Similar to a drop, suitable for bottles with a narrow neck	
The shape of the hole in the nipple		
	for juices	
	for liquid porridges	
4. Flow rate and age of the child		
	allows the child to regulate the speed of food intake	
	nipple with a minimum flow rate; has one hole; for newborns	
	nipple with free flow; has 2 holes; for babies from 1 month	
	4-hole fast-flow teat, for babies from 6 months	
	nipple with medium flow and 3 holes; children from 6 months	
	nipple, in which you can set the desired flow rate: free, medium or fast; for children from 3 months	

Recommended Books:

1. Medical and pharmaceutical commodity science: a textbook for university students. education institutions / I.I. Baranova, S.M. Kovalenko, D.V. Semeniv et

al. - Kharkiv: National Academy of Sciences: Golden Pages, 2017. - 320 p.
2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
3. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. help for students higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyka, 2011. - 492 p.
3. Gromovyk B. P. Workshop on medical and pharmaceutical commodity science. Part 2. Pharmaceutical commodity science: a study guide for teachers / B.P. Gromovyk, N.B. Yarko, I.Ya. Horodetska - Lviv: Prostir M, 2018.-139 p.
4. Texts of lectures on pharmaceutical and medical commodity science

Regulations:

1. Law of Ukraine 124-VIII "O,n technical regulations and conformity assessment" https://zakon.rada.gov.ua/laws/show/124-19#Text
2. On the approval of the Technical Regulation on medical devices: Resolution of the Cabinet of Ministers of Ukraine dated 02.10.2013 No. 753: http:// zakon2.rada.gov.ua/laws/show/753-2013-п
3. DSTU 2909-94 (GOST 3302-95) "Rubber bubbles for ice. Specifications".) http:// ksv.do.am/publ/dstu/dstu_2909_94/3-1-0-1112

Topic No. 6. MARKET ANALYSIS OF SUTURE MATERIAL AND PIERCING SURGICAL NEEDLES.

Goal:get acquainted with the purpose, nomenclature of surgical needles and suture material; to be able to use NTD and reference literature on receiving, quality, storing and issuing needles of surgical and suture material.

Control questions:

1. Suture materials and their purpose.
2. Classification of suture materials.
3. Technical requirements for suture materials. Sterilization of suture materials. Packaging, labeling, transportation and storage of suture materials
4. Surgical needles. Classification of needles by purpose. Product types. Classification of needles depending on their design: by shape, degree of curvature, cross-section and point, shape of the eye, size.
5. Needles are atraumatic. Ligature needles and forks. Conventional designations of needles. Technical requirements for needles.
6. Packaging, marking, transportation and storage. Methods of sterilization of surgical needles, forks and ligature needles. Methods of determining quality.
7. Suturing surgical devices.

Theoretical part:

*Suture material*intended for ligation of individual blood vessels bleeding, as well as for applying surgical sutures when suturing individual anatomical structures (skin, bones, muscles).

Surgical needles -intended for stitching body tissues with surgical operations and anatomical dissections.

Needles are atraumatic- needles with a rigidly fixed suture are pierced material intended for suturing body tissue during surgical operations.

Ligature needles- intended for feeding suture material (ligatures) under blood vessels and ducts.

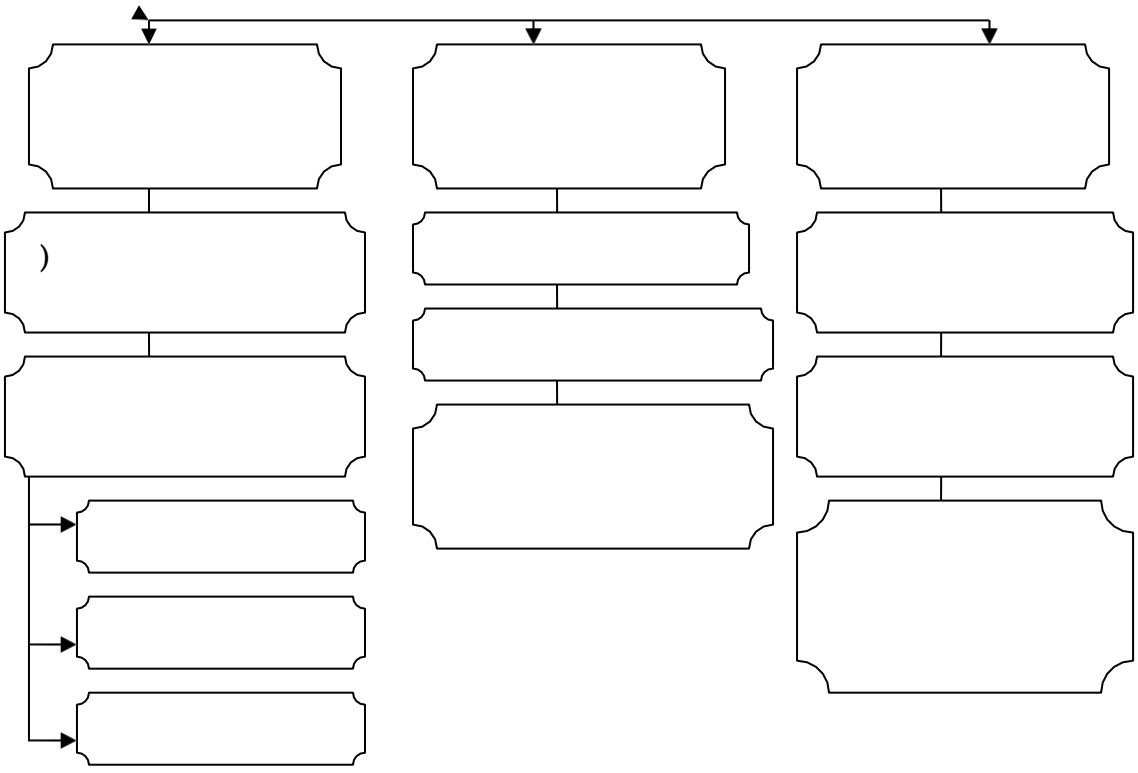
Ligature forks- a tool for lowering the ligature knot during ligation vessels in hard-to-reach places and deep cavities.

Wickingness- the ability of thread fibers to pass water, which then seeps through the gaps between the fibers and if the wound is infected, microbes can move through the micropores to healthy, uninfected parts of the tissue, causing an inflammatory process.

Task 1.Define the term "surgical suture material" Work out the classification of suture material.

Surgical suture material -

Suture materials



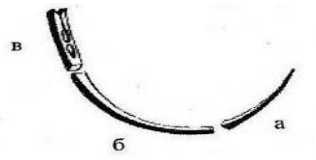
Task 2.State the main technical requirements for suture material

1.	
2	
3	
4	
5	
6	
7	
8	

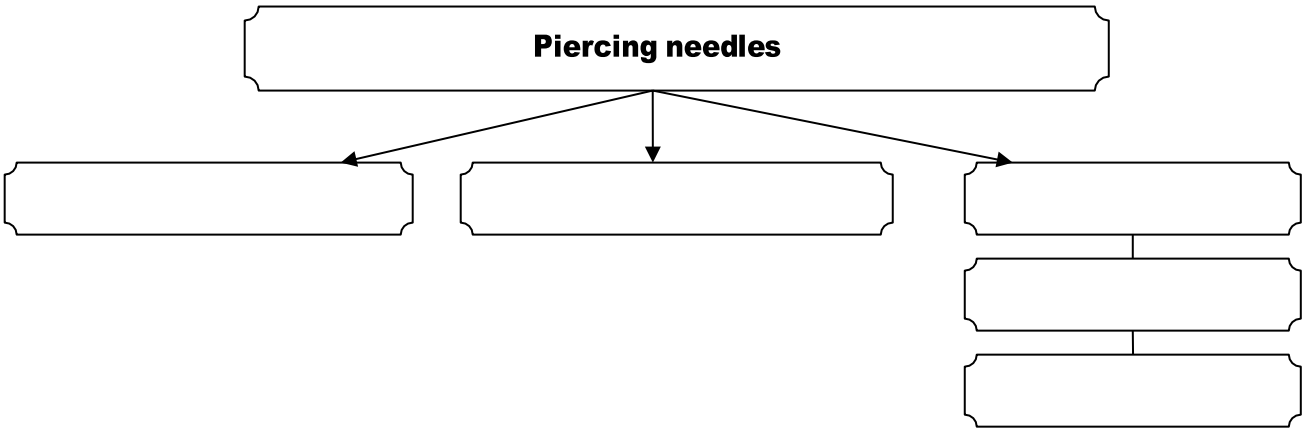
Task 3. Analyze the system of notation of suture threads

Suture marking system according to USP		
Metric size	**Conditional number according to USP**	**Diameter**

Task 4.Consider the structure of surgical and atraumatic needles. Define their structure



Task 5.*Work out the classification of piercing needles*

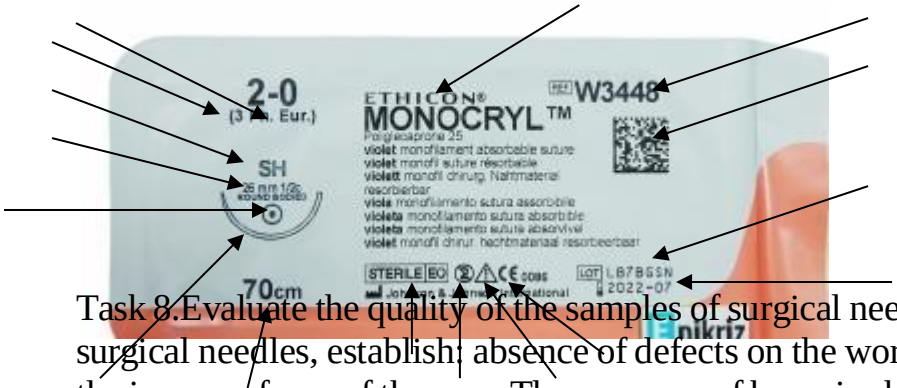


Task 6.*Decipher the conventional markings of the needles suggested by the teacher.*

Sample number	Conventional designation of needles

1. OA2-0.4*30	
2. 3B3-0.3*25	
3. 5A1-0.5*30	

Task 7.Process the marking of this suture material.



Task 8.Evaluate the quality of the samples of surgical needles provided by the teacher. For surgical needles, establish: absence of defects on the working surface of the needle and the inner surfaces of the ears. The presence of burrs is checked by piercing cotton wool, the fibers of which should not remain on the needle.

Define:

1.The sharpness of the needle part

Methodology - with 10 punctures of stretched suede with a thickness of 0.4-0.7 mm, the point of the needle should not be deformed.

Result

_____ ____

_____

_____

2.Strength of the needle.

Method of conducting the test - grasp the needle by the needle holder, while it should not break or have residual deformation.

Result_____

_____

_____

_____

Recommended Books:

1. Medical and pharmaceutical commodity science: a textbook for university students. education institutions / I.I. Baranova, S.M. Kovalenko, D.V. Semeniv et al. - Kharkiv: National Academy of Sciences: Golden Pages, 2017. - 320 p.
2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
3. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. help for students higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyka, 2011. - 492 p.
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Regulations:

1. Law of Ukraine 124-VIII, "On technical regulations and conformity assessment" https://zakon.rada.gov.ua/laws/show/124-19#Text
2. On the approval of the Technical Regulation on medical devices: Resolution of the Cabinet of Ministers of Ukraine dated 02.10.2013 No. 753: http:// zakon2.rada.gov.ua/laws/show/753-2013-п

TOPIC No. 7. MARKET ANALYSIS OF GENERAL SURGICAL INSTRUMENTS: CUTTING, CLAMPING, PRESSING.

Goal:to know the nomenclature of general surgical instruments, their purpose, design and storage features, sterilization methods; to be able to use NTD and reference literature on issues of acceptance, quality, storage and release of general surgical instruments.

Control questions:

1. Classification of medical instruments.
2. Corrosion resistance test.
3. Classification of surgical instruments.
4. Cutting tools The main design elements. Material used to make medical instruments. Classification. Assortment. Technical requirements. Functional tests.
5. Clamping tools. The main elements of the design. Material used to make medical instruments. Classification. Assortment. Technical requirements. Functional tests.
6. Packaging, labeling, transportation, storage of general surgical instruments. Methods of determining quality. Sterilization.

Theoretical part:

Tool- subject, device, mechanism, which is used for impact on the object - its changes or measurements in order to achieve a useful effect.

Medical instruments- products intended for surgical procedures manipulations on the organs and tissues of the human body for the purpose of mechanical

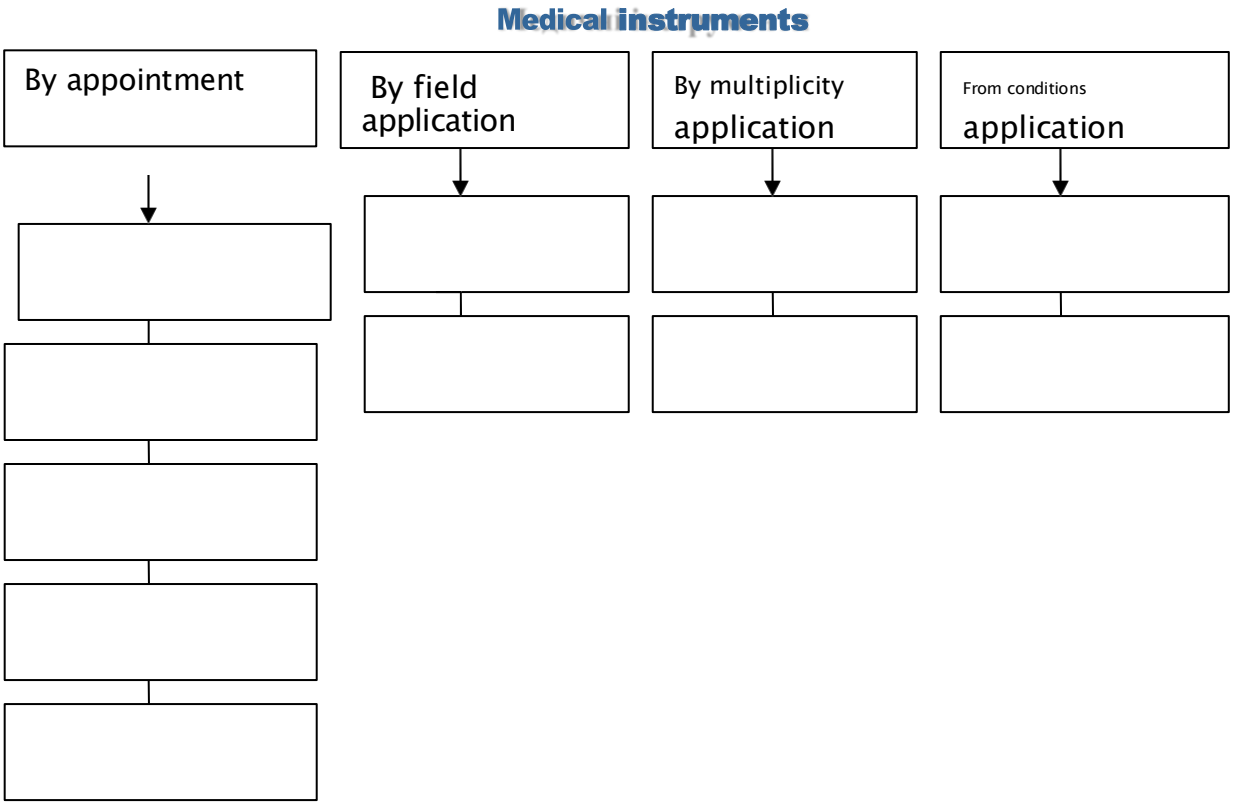
impact on them, as well as certain actions with the materials used in such manipulations.

Homogeneity- a sign characterizing the absence of extraneous particles, agglomerates or cavities on the surface of the product.

Appearance index- quantitative or qualitative characteristic of one or several properties of the surface of the product.

Stratification- a defect that represents a violation of monolithicity products in the form of dividing the array into layers.

Task 1.***Work out the classification of medical instruments***



Task 2.Define the term "Medical instruments" and list them general technical requirements for them.

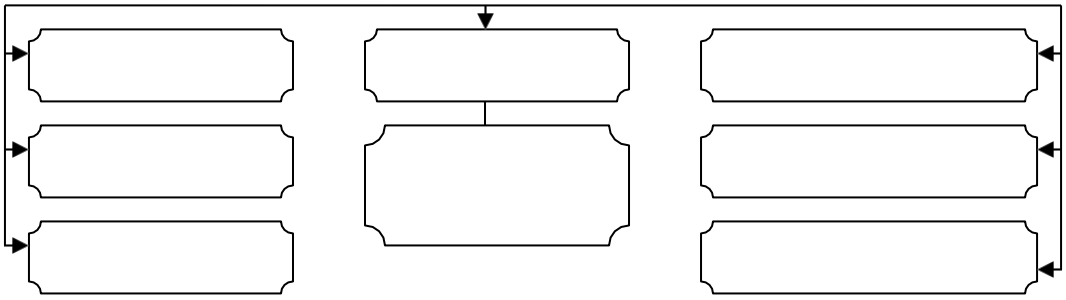
Medical instruments–	
1.	
2.	
3.	
4.	
5.	
6.	
7.	

8.	

Task 3.Define the term "cutting medical instruments" Analyze the assortment of this group of tools, indicate the scope of application.

Cutting medical instruments–

Cutting tools



Tool	Product appearance	Scope of application
Medical knives	1.	
	2.	
	3.	
	4.	
Scalpels		
	1.	
	2.	
	3.	
	4.	
	5.	

Scissors	

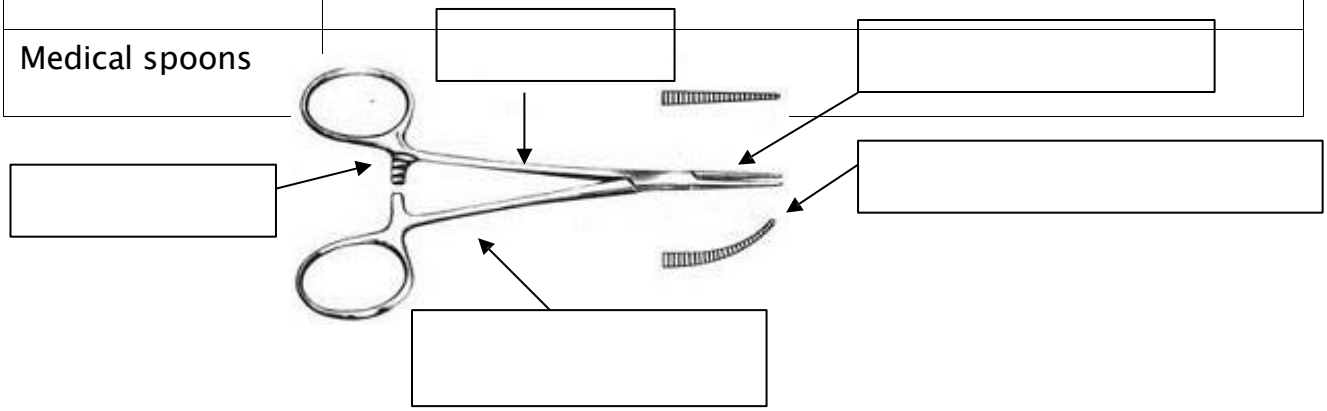
Depending on the nature of the movement blades	1. 2.	
Scissors surgical	1.	
	2.	
	3	
	4.	
	5.	
Scissors auxiliary		
Chisel		
	1.	
	2.	
	3.	
Medical saws		
	1.	
	2.	
	3.	
	4.	
	5.	
	6.	
Tongs bone nippers		
	By the shape of the sponges	
	by design castle	
	by curvature	
Scammers		

spoons	

Task 4.*Specify the methods of checking the functional properties of cutting tools tools.*

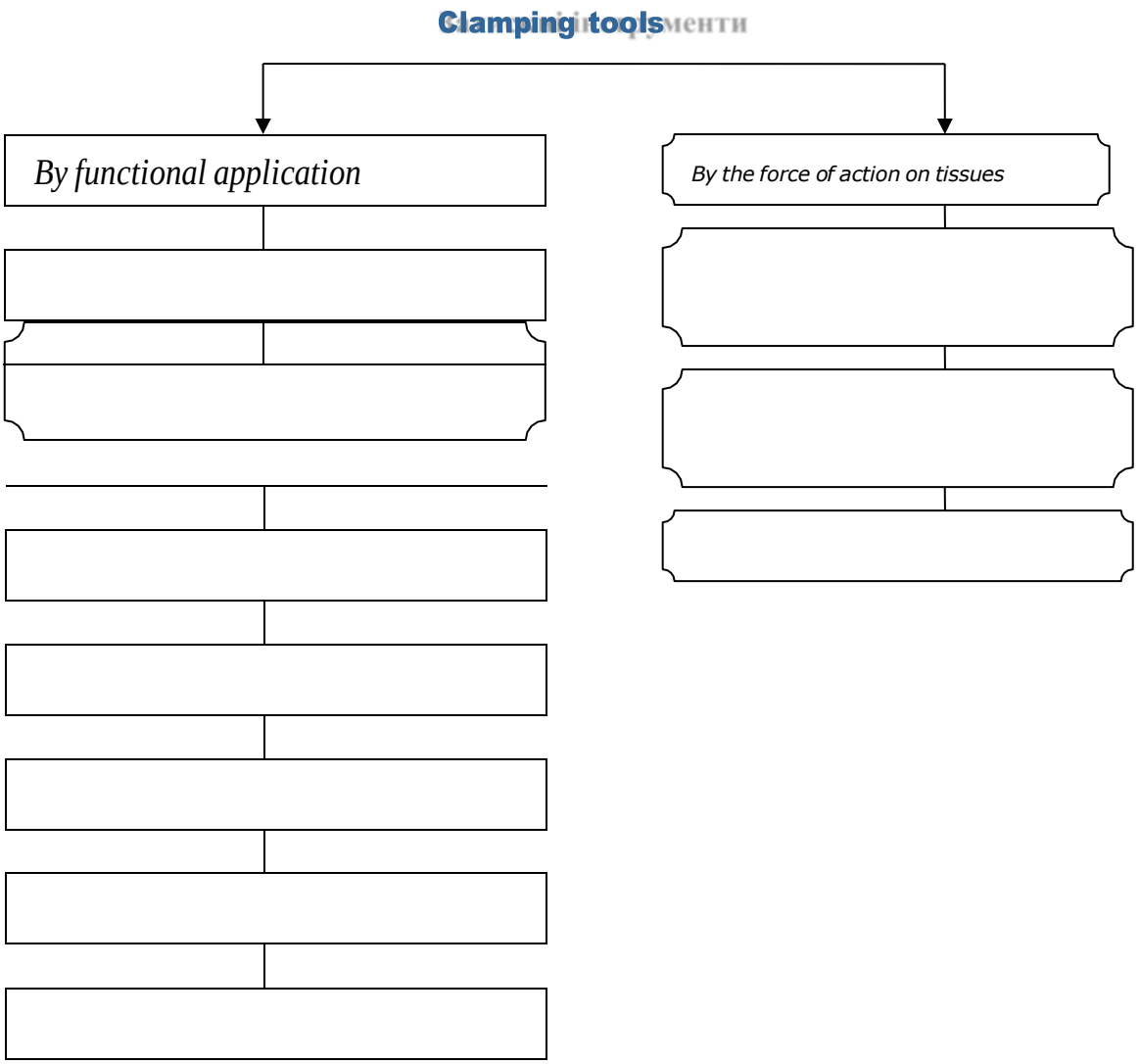
Type of tool	Checking of functional properties
Knives, scalpels	
Scissors	
Chisel	
Medical saws	
Bone forceps nippers	
Raspator	
Medical spoons	

Task 6.Specify the features of the structure of clamping tools.



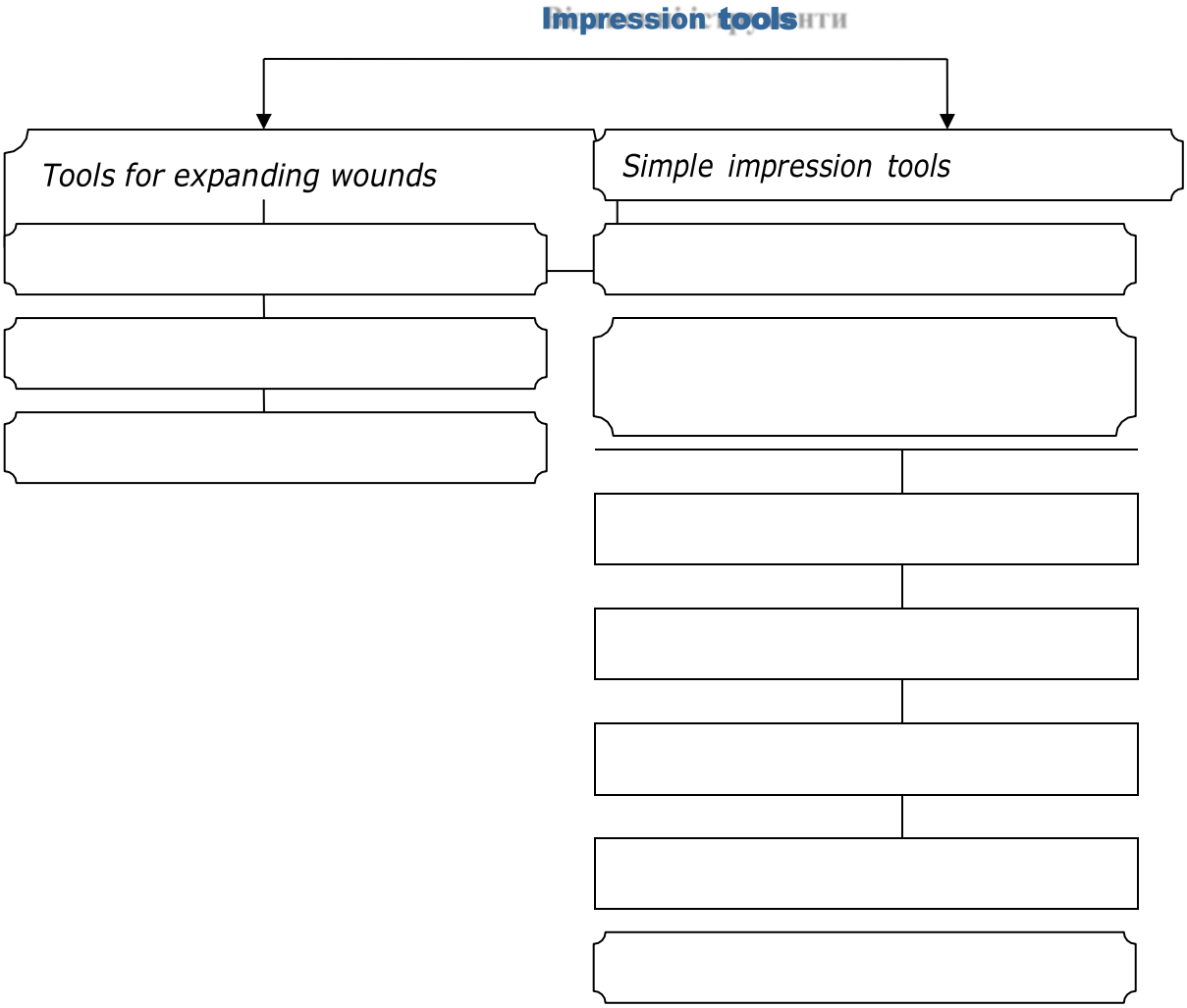
Task 5. Define the term "clamping tools", classify this group of tools

Clamping medical instruments -



Task 7.Define the term "impression tools". Spend classification of this group of goods.

Impression tools-



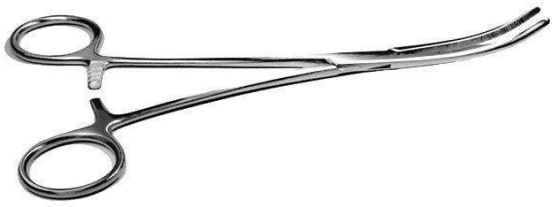
Task 8.Specify the product types and areas of application of the indicated impressions tools :

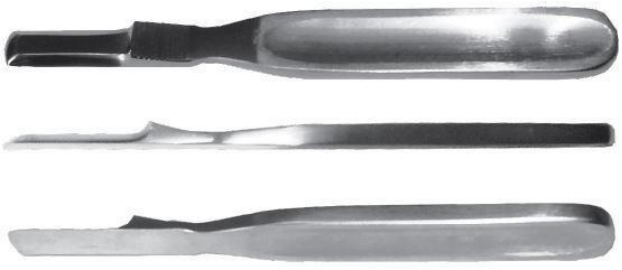
Type of tool	Product appearance	Scope of application
Medical hooks	1.	
	2.	
Medical mirrors		
	1.	
	2.	
	3.	
	4.	
	5.	
	6.	

Spatula Buyalskyi		
Plates for imprinting internal bodies		
Rotor expanders	1.	
	2.	
Tongue holder	1. 2.	
Spatulas	1.	
	2.	

Task 10.Carry out a commodity analysis of the proposed medical samples tools

Sample No. 1 Sample No. 2





Sample No. 3 ***Sample No. 4***

Sample No. 5

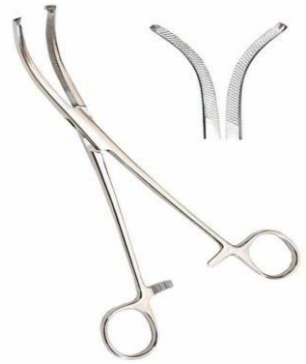
Sample No. 6

Task 11. Situational task

	Sample #1	***Sample #2***	***Sample #3***	***Sample #***
Name of the tool				
Classification group				
Appointment				
Material production, metal grade				
Elements structures				
Normative documents that regulate product quality				
Audit functional properties				
Accompanying document that confirms product quality				
Marking				
Storage				
Method sterilization				

When carrying out an inventory of property in the department of medical instruments in the warehouse of medical equipment, instruments in the factory packaging, but not subjected to conservation, were found.
The tools had the following appearance: narrow, elongated jaws had an oblique notch on the inner surface, and teeth on the ends. The total length of the tool is 160 mm. The numbers 23 and 23 are embossed on the inner surface of the handles

on the outside - K-99. Carry out a commodity analysis of the identified tools,give a conclusion on the possibility of their release and acceptance.



No n/p	Name indicator	Characteristic	
		Requirements of ND	The studied sample
1	Name tool		
2	Classification group		
3.	Appointment		
4.	Material production, metal grade		
5	Elements structures		
6	Technical requirements		
7	Packaging		
8.	Marking		

Conclusion_____

Recommended Books:

1. Medical and pharmaceutical commodity science: a textbook for university students. educationinstitutions / I.I. Baranova, S.M. Kovalenko, D.V. Semeniv et al. - Kharkiv: National Academy of Sciences: Golden Pages, 2017. - 320 p.
2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
3. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. helpfor students higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyka, 2011. - 492 p.
4. Kabatov Y.F., Krendal N.E. Medical commodity science. - Medicine, 1994.- 384p.
5. Texts of lectures on pharmaceutical and medical commodityscience

Regulations:

1. GOST 21239-77 Medical scissors;http://vsegost.com/Catalog/96/9650.shtml
2. GOST 21240-89 Medical scalpels and knives. http://online.budstandart.com/ua/catalog/doc-page?id_doc=71574
3. GOST 28519-90 Medical saws.http://docs.cntd.ru/document/gost-28519-90
4. DSTU GOST Bone nippers. General technical requirements and 28071:2009methods
test GOST 28071-89 Bone nippers
5. GOST 21241-89 Medical tweezers.http://online.budstandart.com/ua/catalog/docpage?id_doc=84597
6. GOST 21238-77 Clamping medical tools with ratchet. http://docs.cntd.ru/document/gost-21238-93
7. GOST 21238-89 Medical clampshttp://docs.cntd.ru/document/1200022384

Topic No. 8. MARKET ANALYSIS OF GOODS OF A LIMITED RANGE.

Goal: to study the features of mineral waters, medical leeches, disinfectantsfor cosmetic products and personal hygiene products, baby food and special food products. Learn how to use regulatory and technical documentation and reference literature on working with products from a limited pharmacy assortment

Control questions:

1. Mineral waters. Classification, requirements for mineral water

Packaging, labeling, transportation and storage of mineral waters.

2. Rules for acceptance of mineral waters, determination of organoleptic properties indicators

3. Cosmetic products. Classification, general requirements for cosmetic products.

4. Packaging, labeling and storage of cosmetics.
5. Classification of medical and preventive toothpastes
6. Requirements for special food products

Biologically active supplements. classification of special dietary products.

7. Classification of baby food.
8. Characteristics of repellents.

Theoretical part:

Biologically active additives- natural or identical to natural biologically active substances intended for direct use or introduction into the composition of food products for the purpose of enriching the human diet.

A food product for weight control- specially developed and a manufactured food product intended for use while following a low-caloriediet for weight loss, which, when used according to the instructions of themarket operator, replaces the daily diet;

Repellents- substances of natural and synthetic origin that have property of scaring away arthropods and rodents, which are carriers ofnumerous infections.

A food product for special medical purposes- specially designed and manufactured product to be consumed under the supervision of a physician. This product is intended to partially or completely replace the usual diet of patients with a limited, weakened or impaired ability to accept, digest, assimilate normal food products or certain nutrients contained in them or their metabolites.

Cosmetic product is a tool intended for application directly to different parts of the human body (epidermis, hair, nails, lips and external genitalia) or onthe teeth and mucous membrane of the oral cavity with the sole or main purpose of cleaning them, providing a pleasant smell, changing the appearance and (or) correcting body odor, and (or) their protection or preservation in good condition.

Task 1. Define the term "mineral water", make a classification mineral watersSubmit the results in the form of a table.

Mineral waters -

Classification sign	**Types**	**Characteristics, examples**
Originally		
By appointment		
By mineralization		

According to the ionic content		
At a temperature of exit from the source	1	
	2	
	3	
	4	
	5	
According to the content of gases and special elements	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	1	

According to RN			
	2		
	3		
	4		
	5		
By debit wells	1		
	2		
	3		
For medical use			
According to the method application			
By balneologicalgroups (main)			
By impact on organism			
According to the testimony of application			

Task 2. Using the information provided, match medical indications andnames of mineral healing waters. Enter the results in the table.

- Nitrogen mineral waters,
- Mineral waters with high bromine content
- Iodized mineral waters
- Radon mineral waters

Diseases of the musculoskeletal system, analgesic, anti-allergic, atherosclerosis, skin, gynecological diseases, sedative effect, thyroiddisease, anti-inflammatory, immunomodulating effect.

Task 3. *Conduct a merchandising analysis of the proposed samples mineral watersin accordance with the requirements of DSTU 878-93.*

(well, spring) and its depth, m				
Name, full address (legal address, country) and phone number manufacturer, packer, exporter, importer, opportunity addresses production				
Capacity, dm3				
Manufacturer's trademark (if available)				
Origin (mineral natural, mineral divorced)				
Mineralization, g / dm				
Definition of a regulatory document				
Chemical composition of water, in mg/dm3(for medical table and medicinal waters)	Anions		Cations	
Use of water (natural canteen, therapeutic canteen, therapeutic)				
Indications to application of notation: for treatment table water				
Date of bottling (date, month, day)				
Batch number				
Conditions storage				
Bar code				
Expiration date				
Certification mark				

Marking of mineral water

Water name, proper name, chemical class, subclass, group

Location and number of water points

Packaging	
Analysis of organoleptic indicators	
Name indicator	The results
transparency	
color	
taste	
scent	
Conclusion:	

Task 4. List the main factors when conducting a drinking coursetherapy with therapeutic mineral waters.

1	
2	
3	
4	
5	
6	

Task 5. Classify the range of cosmetics. Enter the results in the table.

No	Classification sign	Groups	Appointment
1	By appointment		
2.	According to the form of release		
3.	By gender and age signs		

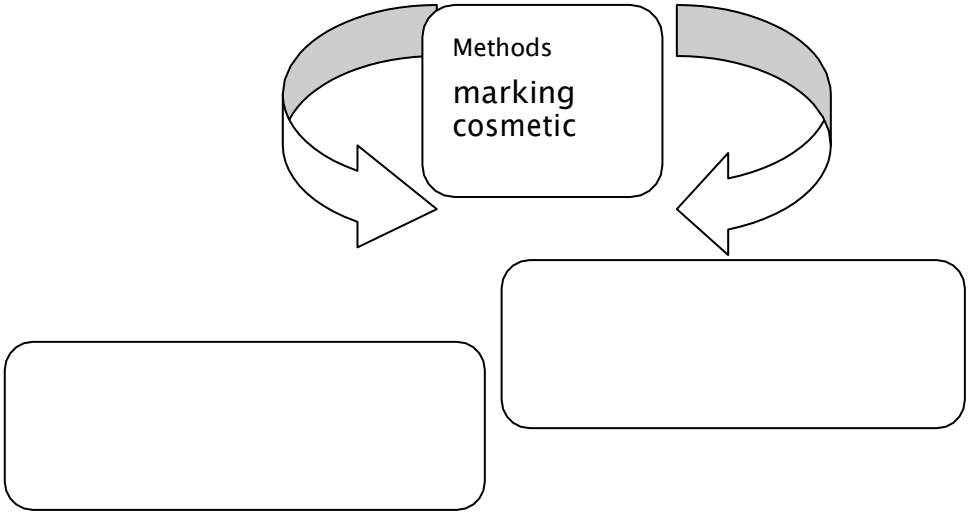
4.	By type of dispersion systems		
5	By field application		
6.	By level penetration to skin		

Task 6. Define the term "cosmetic products". List which ones groups ofdrugs belong to them. Enter the results in the table

Cosmetic products (CS)-			
No	**Sphere application**	**Appointment**	**Examples**
1			
2			
3		.	
4			
5			
6			
7			

8			
9			

Task 7.Specify the techniques used for testing cosmetics. Decipher theproposed ethical labeling signs.



Task 9.Explain the essence of the definition of essential oils, according toISO.

No	Definition ethereal oils	*Characteristic*
1		
2		
3		
4		
5		
6		
7		
8		

Task 10. Classify medical and preventive toothpastes according to thecriterion of "direction of action"

No	Toothpastes	*Composition, characteristics*
1		
2		
3		
4		
5		
6		
7		

Situational task

The visitor turned to the pharmacist with the question: are all whitening toothpastes equally effective, and which toothpaste is better to choose for a pronounced whitening effect? How long can you use this paste?

_____

_____

_____

_____

_____

_____

_____

_____

Task 11. Check the conformity of the labeling of the proposed dental sample to meet the requirements of ND.

Name and appointment tool	
Name and location of the manufacturer, location of the organization authorized by the manufacturer to accept claims fromthe consumer	
Manufacturer's trademark	
Net mass, volume	
The composition of the tool	
Mass fraction of fluorides (for fluorine-containing pastes)	
Expiration date	
Designation of the standard	
Information on effectiveuse	

Conclusion:_____

_____

_____

_____

Task 12. Situational task

A visitor to the pharmacy asked the pharmacist for a recommendation

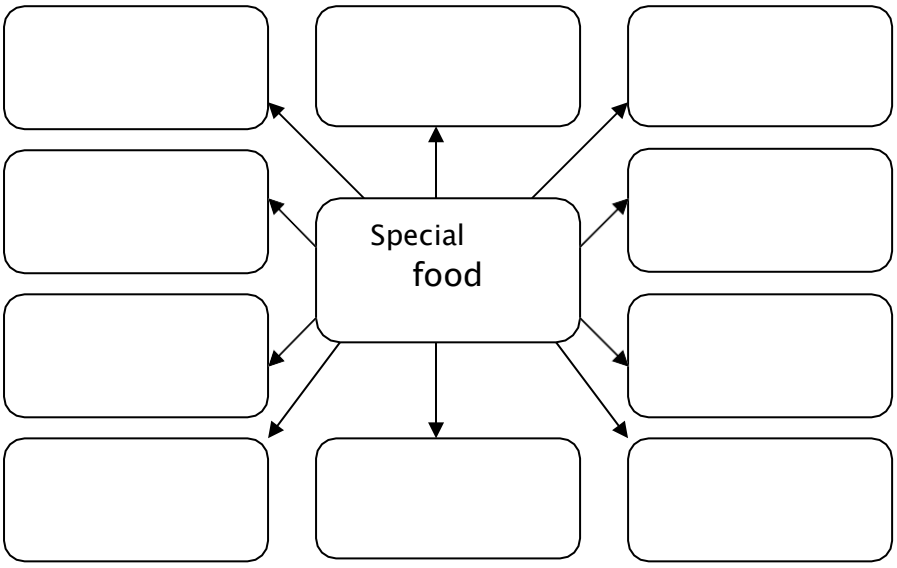
toothbrush. Dental status of the user: periodontitis in the acutestage. The pharmacist recommended a toothbrush with stiff bristles for better plaque removal and an even brush field. Assess the situation. Suggest more options. Justify the answer.

_____ __

_____ __

_____ __

Task 13. Specify the groups into which special food products are divided, listthe requirements for them



Requirements for special food products:

*1.*_____

*2.*_____

*3.*_____

*4.*_____

Task 14 .Define the term "Biologically active supplements", do classificationof special dietary products.

BAD-

Name	***Storage***	***Appointment***
Nutritional supplements		
Eubiotics (probiotics)		
Parapharmaceuticals		

Task 15. Carry out a comparative characteristic of the medicinal product and of biologically active additives Enter the results in the table.

Drug	**BAD**
Trade name, pharmaceutical form	
Linex capsules. No. 16	Acidolak baby
Storage	
Excipients	
Indications for use	
Contraindication	
Method of application and dosage	

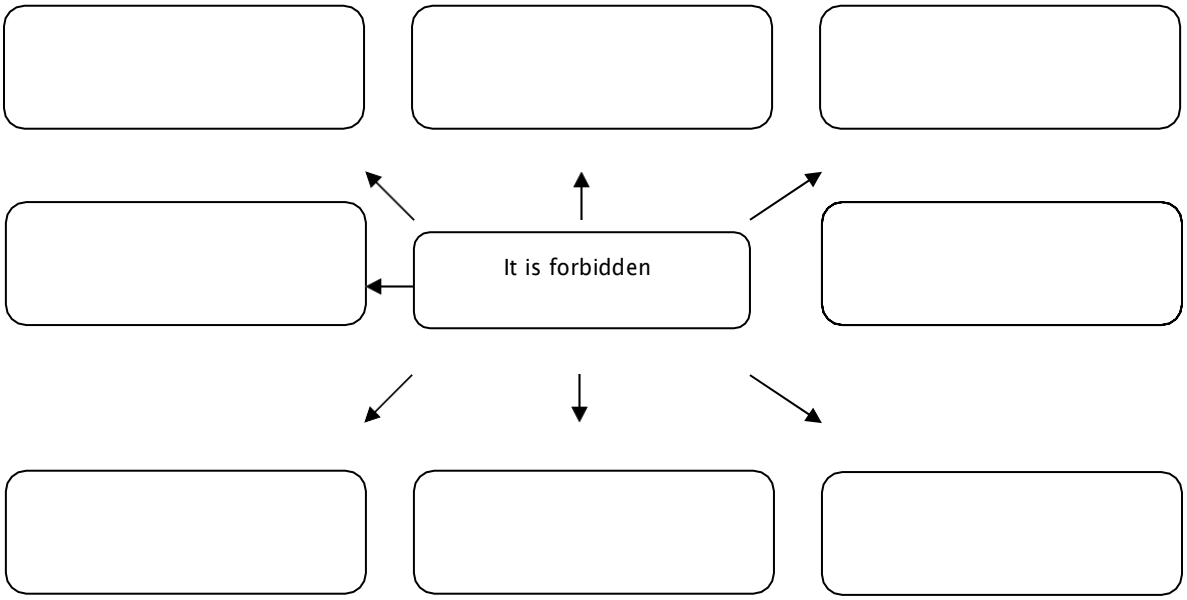
Features of application	
Course of treatment	**Period of use**
Storage conditions	
A document that allows implementation	
Document confirming quality	

Task 16. Classify baby formula as indicated classification features. Submit theresults in the form of a table.

Classification criteria	Characteristic		
By age			
By degree readiness before using			
By availability milk			
By composition			

By degree adaptation to breast milk			
In the presence regulatory impact on organism			
Upon availability medical properties			

Task 17. List the food additives prohibited for use with production ofbaby food.



Recommended Books:

1. Medical and pharmaceutical commodity science: teaching manual for foreign students of universities of the Ministry of Health of Ukraine, studying in the Russian language / I.I. Baranova,
S.N. Kovalenko, Yu.A. Bespalaya, T.V. Dyadyun, S. A. Mamedova. - Kh.: NFaU; Original, 2017. - 328p.
2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
3. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. helpfor students higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyka, 2011. -

492 Gromovyk B.P. Workshop on medical and pharmaceutical commodity science. Part 2. Pharmaceutical commodity science: a study guide for teachers / B.P. Gromovyk, N.B. Yarko, I.Ya. Horodetska - Lviv: Prostir M, 2018.-139 p. 5. Texts of lectures on pharmaceutical and medical commodity science.

Regulatory documentation:

1. Order of the Ministry of Health of Ukraine dated 02.06.2003 N 243 "On approval of the Procedure for carrying out medical and biological assessment of the quality and value of natural medicinal resources, determining the methods of their use" https:// zakon.rada.gov.ua/laws/show/z0752-03#Text
2. DSU-878-93 "Mineral drinking water". http://online.budstandart.com/ ua/catalog/doc-page.html?id_doc=82547
3. State sanitary rules and safety standards of perfumery and cosmetic industry products2.2.9.027-99, https://zakon.rada.gov.ua/rada/show/ v0027588-99#Text
4. Law of Ukraine 771/97-BP "On basic principles and requirements for the safety andquality of food products"https://zakon.rada.gov.ua/laws/show/771/97-%D0%B2%D1%80#Text
5. Law of Ukraine 2746-VI(Information of the Verkhovna Rada of Ukraine (VVR), 2011, No. 22,Article 149)
"On Amendments to the Law of Ukraine "On Baby Nutrition" Regarding StrengtheningRequirements for the Production and Distribution of Baby Nutrition Products" https:// zakon.rada.gov.ua/laws/show/2746-17#Text
6. On the approval of the List of goods that pharmacy establishments and their structural units have the right to purchase and sell: Order of the Ministry of Health of Ukraine dated July6, 2012 No. 498,https://zakon.rada.gov.ua/laws/show/z1231-12#Text .

TOPIC No. 9. MARKET ANALYSIS OF TOOLS AND APPARATUS FOR PUNCTURES, INJECTIONS, TRANSFUSIONS.

Goal: know the nomenclature of tools and devices for punctures, injections, transfusions and suctions, their purpose, construction and storage features,methods of sterilization; to be able to use NTD and reference literature on issues of acceptance, quality, storage and release of these instruments.

Control questions:

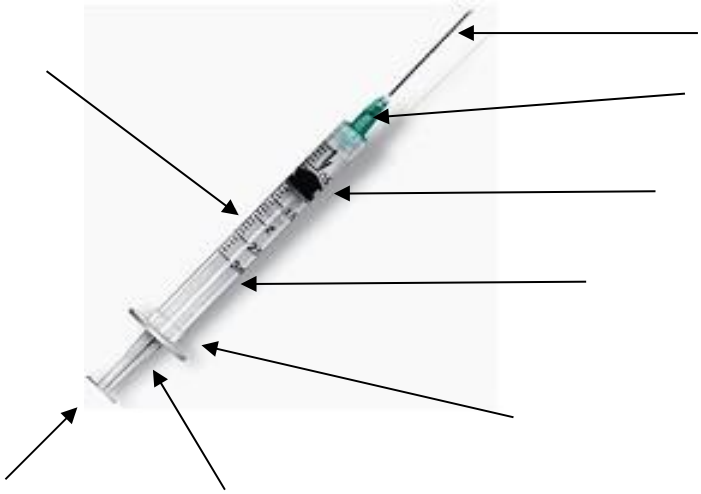
1. Syringes for injections.
2. Classification of syringes by design and purpose.
3. Syringes for washing cavities.
4. Medical needles and their classification.
5. Intravenous catheters for installation in peripheral veins.
6. Devices for transfusions, infusions and suction.
7. Technical requirements. Packaging, marking, transportation and storage.

Methods determination of quality, sterilization.

Task 1. Define the term "instruments for injections, infusions, transfusions"

Injection tools -	
Tools for infusions -	
Tools for transfusion-	

Task 2. Consider the structure of a disposable syringe



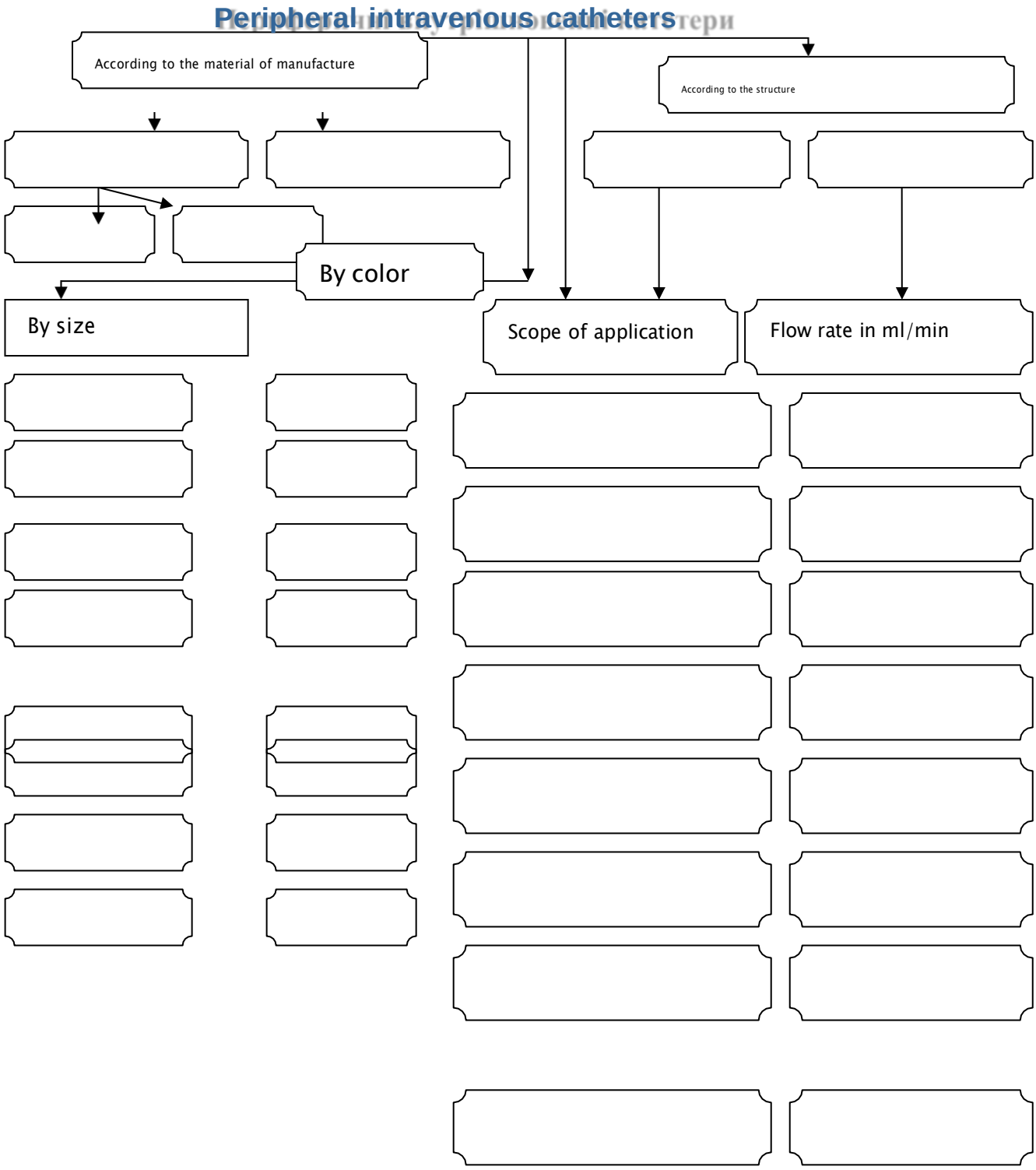
Classification sign	**Product types**
1. According to the volume of the cylinder	1
	2
	3
2. According to position tip of the cone	1
	2
3. By the type of needle attachment	1
	2
	3

	1
	2

Task 3. Analyze the assortment of disposable syringes, specify the field application.

No	Product type	Application
1		
2		
3		
4		
5		
6		
7		
8		
9		

Task 4. Carry out the classification of PVVK.



Catheter type	Building	Advantages	Disadvantages
Catheter for short-term administration of drugs			

Task 5. Carry out a comparative characteristic of the catheter for short-termadministration of drugs and a peripheral intravenous catheter

			
Catheter for long-term administration of drugs 			

Task 6.*Describe the structure of an infusion-transfusion device of the "PC-21"*

1	PK-21	

Recommended Books:

1. Medical and pharmaceutical commodity science: a textbook for university students. educationinstitutions / I.I. Baranova, S.M. Kovalenko, D.V. Semeniv et al. - Kharkiv: National Academy of Sciences: Golden Pages, 2017. - 320 p.
2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
3. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. helpfor students higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyka, 2011. - 492 p.
4. Gromovyk B.P. Workshop on medical and pharmaceutical commodity science.Part 2. Pharmaceutical commodity science: a study guide for teachers / B.P. Gromovyk, N.B. Yarko, I.Ya. Horodetska - Lviv: Prostir M, 2018.-139 p. 5. Texts of lectures on pharmaceutical and medical commodity science.

Regulatory documentation:

1. Law of Ukraine 124-VIII "O,n technical regulations and conformity assessment"https://zakon.rada.gov.ua/laws/show/124-19#Text
2. Resolution of the CMU No. 754 "On approval of the Technical Regulation on medical devices for in vitro diagnostics"; https://zakon.rada.gov.ua/laws/show/754-2013-

Topic No. 10. EYE WEAR OPTICS. MARKET ANALYSIS OF DEVICES AND TOOLSFOR RESEARCH, CORRECTION AND PROTECTION OF THE ORGANS OF VISION.

Goal: master the knowledge of the nomenclature of devices and means for research, correction and protection of the organs of vision, learn to use NTD and reference literatureon the issues of reception, quality, storage and release of devices and means for research, correction and protection of the organs of vision.

Control questions:

1. Devices and tables for visual acuity testing.
2. Devices for determining the refraction of the eye, for the study of visual functions.
3. Devices for examination and research of the eye
4. Spectacle lenses: purpose, classification
5. Lenses for correction of refractive errors, technical requirements for them.
6. Spectacle frames: purpose, classification, technical requirements.
7. Safety glasses: purpose, classification, technical requirements for glass and frame
8. Prescriptions for glasses. Selection of glasses.
9. Contact lenses: classification, labeling, packaging, storage.

Theoretical part:

Emmetropia is a refraction of the eye in which the focus of parallel rays in the non-accommodating eye coincides with the retina. Emmetropia is a favorable (perfect) refraction.

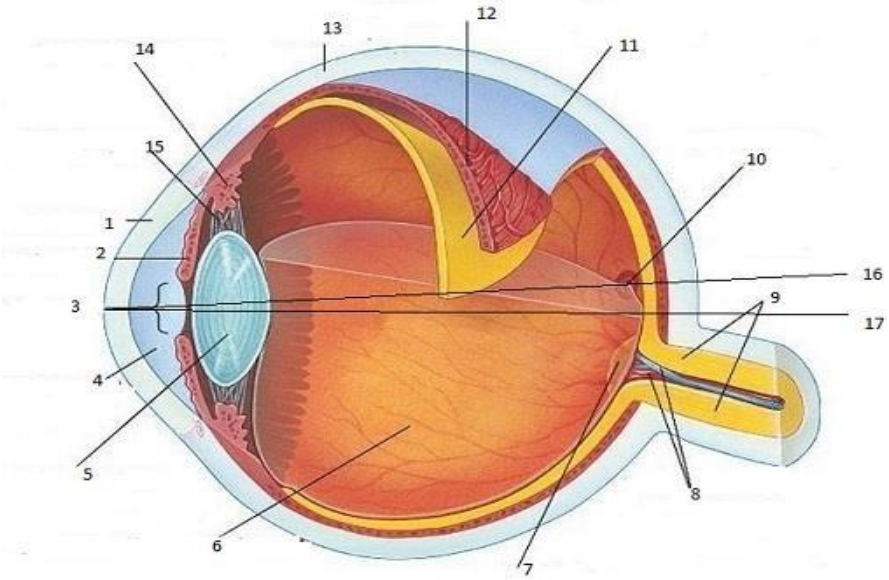
Myopia or myopia- visual impairment, in which a person is fine sees objects located at a close distance, and poorly - objects that are far from him. The main cause of myopia is an increase in the size of the eyeball along the optical axis of the eye. At the same time, parallel rays are collected in the rearmain focus, lying in front of the retina. Myopia can be corrected by placing concave (diffusing, negative) lenses in front of the eye.

Hypermetropia or farsightedness -pathology of refraction of the eye, in which the image of objects is formed *behind the retina*. With hypermetropia, either the ocular axis is significantly shortened (less than 23.5 mm), or the cornea has a weak refractive power. Vision can be corrected by placing convex (collective, positive) lenses in front of the eye.

Astigmatism– anomaly of refraction of the eye, in which in one and the same eye a different refraction or a different degree of the same refraction is observed.

Presbyopia- age-related weakening of accommodation. It is impossible with presbyopia obtaining a clear image of closely spaced objects on the retina.

Task 1. Study the diagram of the structure of the human eye and mark its anatomical structures



1	6	11	16		
2	7	12	17		
3	8	13			
4	9	14			
5	10	15			

Task 2 **.**Give the correct answers.

1. Lens. 2. Cornea, moisture of the anterior chamber of the eye, lens, vitreous body 3. Pupil 4. Retina 5. Yellow spot 6. Sticks 7. Blind spot 8. Cones 9. Photosensitive cells with their endings in the form rod and cone, optic nerve, as the conducting part of the visual analyzer 10. Accommodation	

a. The place where the optic nerve enters the eyeball, which does not have sensitive elements.

b. Changing the refractive power of the eye using the lens.

c. The receptor system of the eye includes:

d. Retinal receptors that perceive light rays in twilight conditionslight

e. Retinal receptors that perceive light rays in bright conditionslighting and cause color vision.

f. A transparent body, in shape close to a biconvex lens.

g. The hole located in the center of the light-impermeable iris, thanks to which the amount of light entering the eye is regulated.

h. The inner surface of the eyeball from the back side represents itself a system of nerve elements that perceive light stimuli, which are transmittedto the brain via nerve fibers.

k. The part of the retina opposite the pupil, where the sensitive elements are are located most densely and are responsible for central vision.

l. The optical system of the refractive media of the eye includes:

Task 3. Using the formula R =1/ F, determine the following parameters a)Refraction of the lens if its focal length F = 4m.

_____

_____

c) The focal length of the lens is F = 50 cm. What is the optical power?

_____ _____

c) The optical power of the lens is R = 5.0 D. What is the focal length?

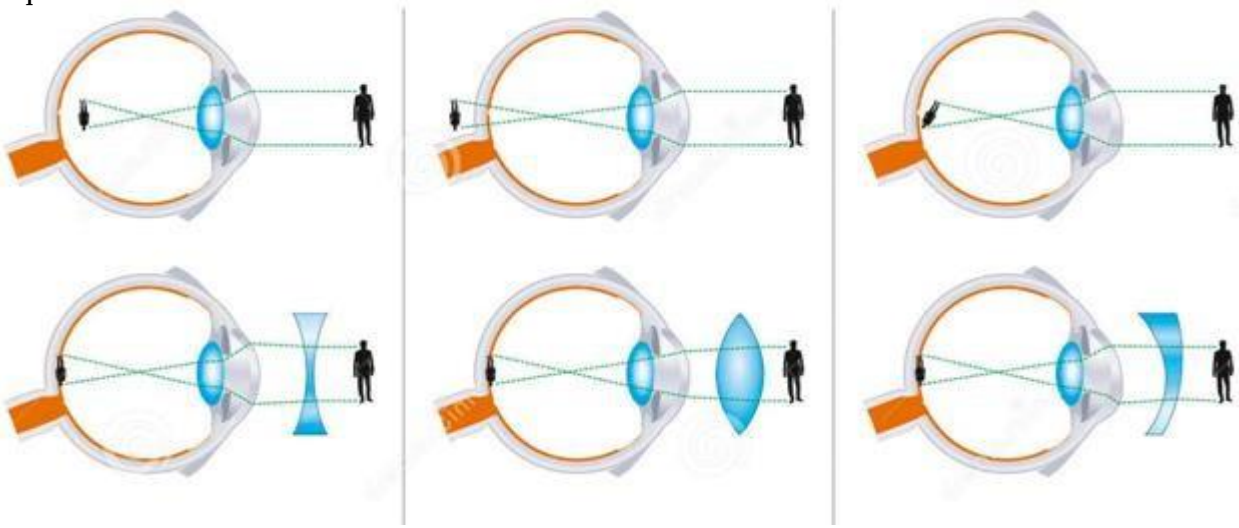
_____ _____

Task 4. *List and characterize eye refraction anomalies. Specify the reasons fortheir occurrence.*

Emmetropia	
Hypermetropia (farsightedness)	

Myopia (myopia)	
Astigmatism	.
Presbyopia (century farsightedness)	

Task 5. Determine the proposed types of refraction of the eye and the type of lenses required forvision correction.



Task 6. Conduct a trade analysis of ophthalmic devices

Naming devices	**Appointment**	**completeness**
Ophthalmoscope specular		
Elastotonometer Filatova-Kalfa		

Conclusion:

Task 7. Decipher the graphic symbols used in the marking offered samplesof soft contact lenses.

Symbol	**Essence**	**Value**
The name of the lens		
Producer		
VS(VSR)		
D(PWR)		
DIA		

RXOnly		
STERILE		
CE		
LOT		
 EX P		
UV (half sun)		
		
		
		

Task 8. Describe soft care products contact lenses. Conduct a tradeanalysis of the proposed multifunctional solution.

Type of solution	Characteristic	
Water-salt		
Peroxide cleaners systems		
Enzyme tablets		

Multifunctional solutions		

Product analysis of MAXIMA ELITE multi-functional solution forlenses

MAXIMA ELITE-	
	COMPOSITION OF THE SOLUTION
1	
2	
3	
4	
5	
6	

Task 9.*Decipher the symbols that make up the recipe for glasses:*

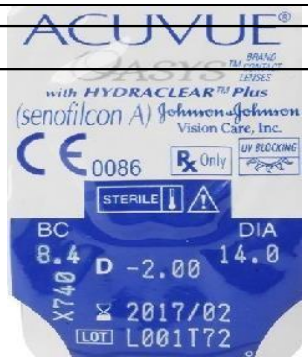
O.D	
OS	
OU	
SPH	
CYL	
AX	
DP	

ADD	
PRISM	

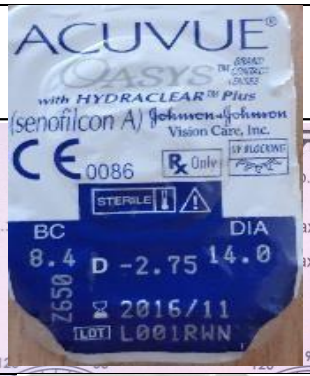
Task 10. Analyze and decode prescriptions for glasses and soft contactslenses

Recipe #1 *Recipe No. 2*

1.



2.

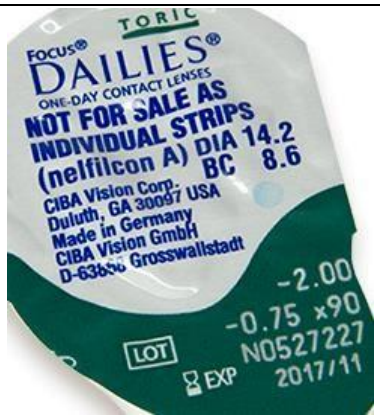
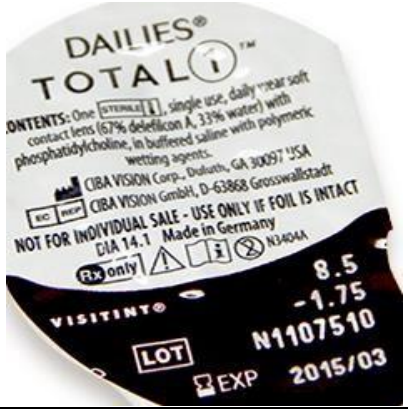


Recipe #4

3.

4.

I samples of soft contact lenses.

5.		
6.		
7.		

Recommended Books:

1. Medical and pharmaceutical commodity science: a textbook for university students. educationinstitutions / I.I. Baranova, S.M. Kovalenko, D.V. Semeniv et al. - Kharkiv: National Academy of Sciences: Golden Pages, 2017. - 320 p.
2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk. - Ternopil: TDMU, 2017.- 484 p.
3. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. helpfor students' higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyk 2011. - 492 p.

4. Gromovyk B.P. Workshop on medical and pharmaceutical commodity science.Part 2. Pharmaceutical commodity science: a study guide for teachers / B.P. Gromovyk, N.B. Yarko, I.Ya. Horodetska - Lviv: Prostir M, 2018.-139 p.
5. Texts of lectures on pharmaceutical and medical commodity science.

Regulatory documentation:

1. Law of Ukraine 124-VIII "O,n technical regulations and conformity assessment"https://zakon.rada.gov.ua/laws/show/124-19#Text
2. On the approval of the Technical Regulations on medical devices: Resolutionof the Cabinet of Ministers of Ukraine of October 2, 2013 No. 753: http:// zakon2.rada.gov.ua/laws/show/753-2013-п
3. Resolution of the CMU No. 754 "On approval of the Technical Regulation onmedical devices for in vitro diagnostics";
https://zakon.rada.gov.ua/laws/show/754-2013-
4. Resolution of the CMU No. 755 "On approval of the Technical Regulationon active medical devices that implant . .
https://zakon.rada.gov.ua/laws/show/755-2013-%D0%BF#Text

Topic No. 11. COMMODITY ANALYSIS PRIVATE OF YAZUVALNIK MATERIALS AND FINISHED PREPARATIONS OF AGENTS.

Goal: acquire knowledge about the assortment of dressing materials and ready-made one's dressings, their purpose, storage features, methods of sterilization; master theskills of using NTD and reference literature on the issues of reception, quality, storage and release of these goods.

Control questions:

1. Dressing materials and their purpose.
2. Types of dressing material.
3. The main types of raw materials for obtaining dressing material and requirements
4. Ready dressings.
5. Carrying out a commodity analysis (definition of the commodity form, evaluation quality).
6. Laboratory determination of the functional properties of the dressing material
7. Packaging, labeling, transportation and storage of dressings.

Theoretical part:

Ready dressing - factory-made products made of gauze and cotton wool, non-woven cloth and other materials, ready for use as intended (bandages, napkins, bandages, plasters, etc.).

Bandage- a soft or hard device that secures dressing material (sometimes containing medicinal or other substances) on the surface

the patient's body
Assortment (fr. Assortment - set, set) - a set of different groups, types and grades of goods, united by consumer, trade or production characteristics, which are sold by the enterprise through trade facilities.
Product range- is a selection or set of various products, united by a certain consumer, trade or production feature.
Storage- this is the process of saving medical and pharmaceutical goods to their implementation or application, which ensures constancy or minimal permitted changes in the initial properties.

Task 1*. Reveal the essence of the purpose and list the main requirements for dressing materials (PM) and ready-made dressings (PP)*

Appointment	**Requir ements**

Task 2. Using the suggested terms, give a description the main types of medical cotton wool according to the following classification features. Enter the results inthe table

Deadlines*: cotton fiber, cotton fiber with the addition of cotton fluff, white, good, warming compresses, degreased, cream, contact, application of splints, which are not degreased, not contact, bandages, bad*

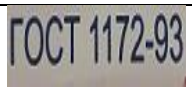
Characteristic	**Medical cotton wool hygroscopic hygienic**	**Compress cotton wool**
Material for production		
Scope of application		
color		

fatty substances		
absorbs water		
Contact with the wound		

Task 3. Describe the physic-mechanical and chemical parameters of cotton wool.

Indicator	**Ochna**	**Surgical**		**Hygienic**
		Cotton and	**Cotton-viscous**	
Pollution,% (no more)				
Absorption capacity, g (not less)				
Capillarity, mm (not less)				
Moisture, % (no more)				
Ash content,% (no more)				
The content of extraneous impurities				
The reaction of the water hood				
tinting				
scent				

Task 4.Decipher the graphic symbols in the proposed marking a sampleof a medical product (sterile medical gauze bandage 5 * 10, TM "Bilosnizhka", manufacturer - TOV "Ukrmedtekstil", Cherkasy)

Symbol	value	Symbol	value
			
			
			
			
			
MFG (Manufacture ng)		EXP (Expiratio n)	

Task 5. Determine the types of the proposed cotton wool samples according to thedata obtained during laboratory tests in accordance with GOST 5556-81 "Medical hygroscopic cotton wool. Specifications"

Indexes	Sample 1	Sample 2	Sample 3
Absorbent ability, g	21 g	19 g	20 g
Capillarity, mm	77 mm	67 mm	70 mm
Pollution,%	0.1%	0.7%	0.3%
conclusion:			

Task 6. Define wettability and describe the method of determination capillarity of medical hygroscopic gauze. Make a conclusion about the qualityof the proposed sample

Determination method

Gauze analysis is carried out in accordance with GOST 9412-

93 "Medical gauze. General technical conditions"

	Conclusion:	
	Task 7. *Classify hemostatic dressing materials.*	

Group	Name	Storage	Appointment	Merchandise species
1.materials, what get wet	1.			
	2.			
	3.			
	4.			
2. materials, what not get wet	1.			

Task 8. Analyze the conditions in which transportation is carried out and storage of dressing materials and ready-made dressings

Sterile cotton wool and gauze were delivered to the pharmacy warehouse inan open vehicle and stored in a damp room, where a sudden change in temperature can be observed. Bandages were stored on unpainted racks, sterile cotton wool was poured from factory packaging onto pallets.

Ware	Storage conditions according to ND requirements	Actual conditions storage

Cotton sterile Gauze		

Conclusion:

_____ _____

_____

_____

_____

Task 9. *Study in detail the classification of plasters as indicatedclassification features. Fill in the proposed table*

Sign	**Kinds**	**Appointment**
By appointment	**1**.	
	2.	
	3.	
According to the medical destination	**1**.	
	2.	
	3.	

Externally appearance	**1.**	**2.**	**3.**
for sterility	**1.**	**2**.	
by construction	**1.**	**2.**	
According to the material production adhesive (glue foundations)	**1.**	**2.**	
According to the material production patch bases	**1.**	**2.**	**3.**
	4.	**5.**	
By design and form	**1.**	**2.**	
	3.		
By functional properties	**1.**		
	2.		

Recommended Books:

1.Medical and pharmaceutical commodity science: a textbook for university students. educationinstitutions / I.I. Baranova, S.M. Kovalenko, D.V. Semeniv et al. - Kharkiv: National Academy of Sciences: Golden Pages, 2017. - 320 p.

2. Medical and pharmaceutical commodity science: study guide. / O.B. Kalushka, T.A.

Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
3.Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. help for students higher pharmacy education closing and pharmacy faculty higher honey.
education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [andothers]; under the editorship BP Gromovyka, 2011. - 492 p.
4. Gromovyk B.P. Workshop on medical and pharmaceutical commodity science.Part 2. Pharmaceutical commodity science: a study guide for teachers / B.P. Gromovyk, N.B. Yarko, I.Ya. Horodetska - Lviv: Prostir M, 2018.-139 p.
5. Texts of lectures on pharmaceutical and medical commodity science.

Regulatory documentation:

1. Law of Ukraine 124-VIII "O,n technical regulations and conformity assessment"https://zakon.rada.gov.ua/laws/show/124-19#Text
2. On the approval of the Technical Regulation on medical devices: Resolution ofthe Cabinet of Ministers of Ukraine of October 2, 2013 No. 753: http:// zakon2.rada.gov.ua/laws/show/753-2013-п
3. Resolution of the CMU No. 754 "On approval of the Technical Regulation onmedical devices for in vitro diagnostics"; https://zakon.rada.gov.ua/laws/show/754-2013-
4. GOST 9412-93 "Medical gauze. General technical conditions" http:// helpnik.college.ks.ua/standart/gost/Catalog/Index/27/27870.htm
5. GOST 5556-81 "Medical hygroscopic cotton wool. Specifications" http:// online.budstandart.com/ua/catalog/doc-page.html?id_doc=83362

Topic No. 12. RECEIVING GOODS IN THE PHARMACY WAREHOUSE. ORGANIZATION OF STORAGE OF MEDICINES AND MEDICAL PRODUCTS.

Goal: to study the work of a pharmacist at a wholesale pharmaceutical company (pharmacy warehouse / base), related to the issues of receiving, issuing and storing pharmaceutical goods, to study the peculiarities of

storing medicines and medical products; to learn how to use regulatory and technical documentation and referenceliterature on the storage of pharmaceuticals and medical devices (MD).

Control questions:

1. Receipt and release of goods, quality assessment, organization of storage and transportation.
2. The process of the movement of goods in the pharmacy network and related merchandising operations.
3. The procedure for drawing up contracts with suppliers of medical and pharmaceutical goods.
4 Release of goods from pharmacy warehouses.
5. Basic requirements for arrangement and operation of storage areas.
6. Requirements for drugs and their storage.
7. Quality control, stability and shelf life of drugs.
8. Requirements for storage of different groups of drugs depending on their physical and chemical properties. Assortment of medical products. The main factors affecting the quality of medical products.
9. Requirements for medical devices and their storage conditions. Quality control, expiration dates.

Theoretical part:

Pharmacy warehouse (base)- health care institution, the main task of which is consists in providing medicinal products to other subjects of wholesale or retail trade, health care institutions and manufacturers of medicinal products through their wholesale trade;

Pharmacy establishments- pharmacy warehouses (bases), pharmacies and their structural units
subdivisions;

Distribution (wholesale distribution) of medicines- any activities related to the receipt, storage, supply, transportation and import/export of medicinal products, with the exception of their sale directly to citizens for personal consumption. This activity is carried out jointly with manufacturers or their representatives, importers, other enterprises in the wholesale and/or retail trade of medicinal products, medical and preventive institutions;

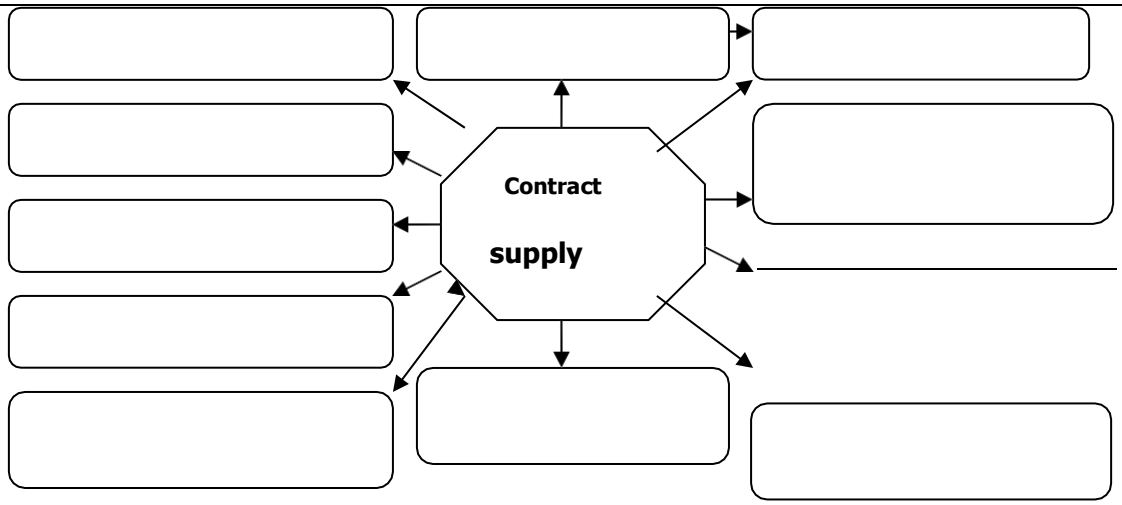
Distributor- the business entity that conducts the relevant activity related to the distribution (wholesale distribution) of medicinal products;

Storage- is the process of preserving medical and pharmaceutical products until them implementation or application ensures the immutability or minimum permissible

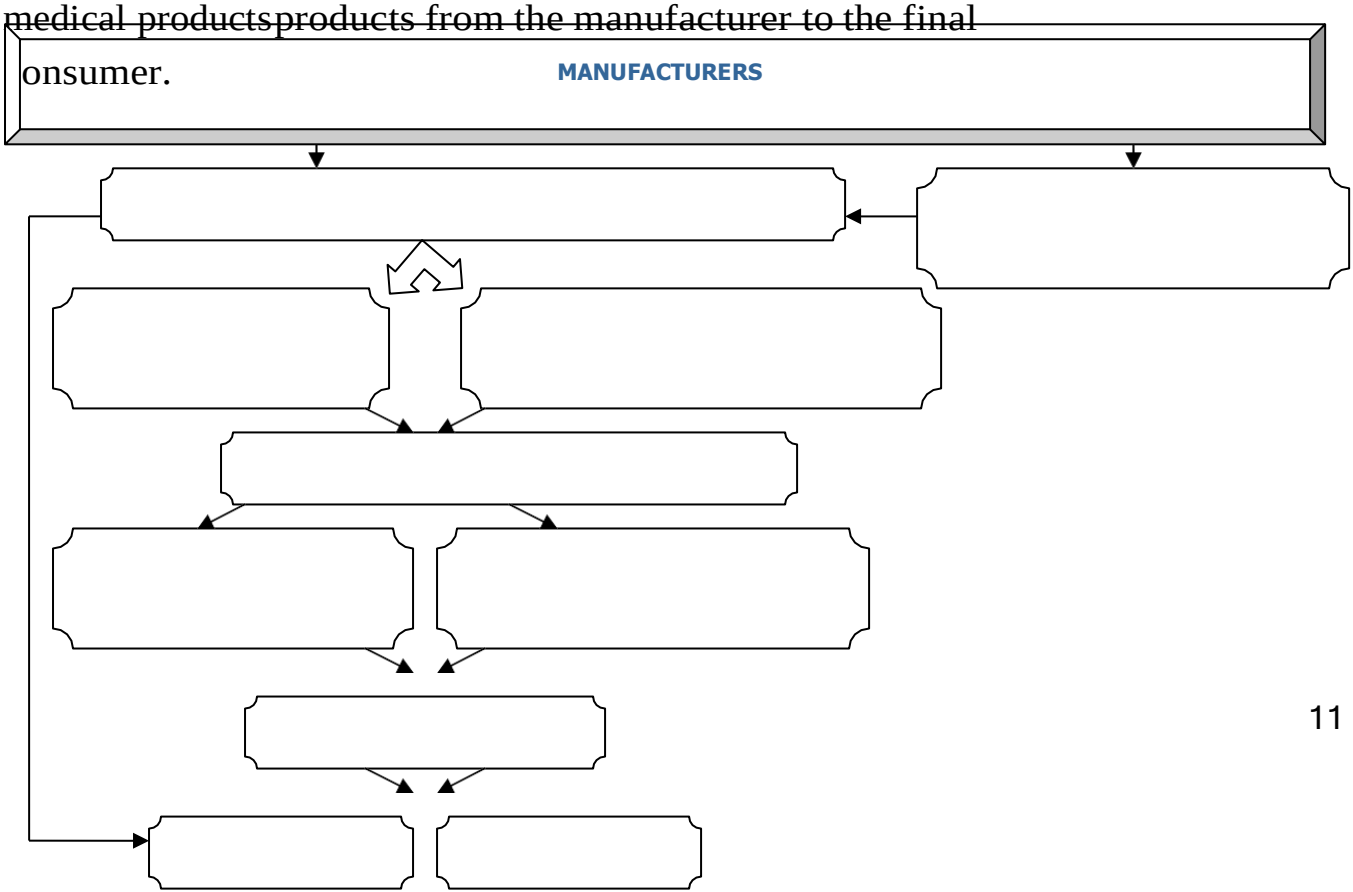
change of their properties.
Contamination- unwanted introduction of chemical or of microbiological nature or foreign substances in the initial raw materials, intermediate products, finished products or active pharmaceutical ingredients (APIs) during the technological process, sampling, packaging orrepackaging, storage and transportation.

Task 1. Define the concept of "agreement" and indicate its main elements. Use Appendix 1 to complete the task.

Contract-



Task 2. Show schematically the movement of medicinal products, medical productsproducts from the manufacturer to the final onsumer.



Task 3. Set the reception option1__20__of the year wholesale company of medicinal products from manufacturing companies, taking into account the remaining shelf life and the possibility of leave from the warehouse, provided that these medicinal products were received by the warehouse earlier (table). Take into account that the remaining shelf life of drugs entering the warehouse should be at least 80% of the shelf life for medicinal products and 50% for bacterial preparations.

When shipping products from the warehouse, the shelf life of drugs must be at least 60%, and for bacterial drugs - at least 40%

Name of drug	Series						Conclusion of opportunities	
		Date output in	Term device bearing	Term device bearing by AND	final th		welcome to him pharmacy th storage	Dismissal ka with composition
					in miss.	in %		
Yogurt - Baby Comfort capsicum No. 30	1860	09.2020		2 years				
Gerbion syrup with plantain 150 ml	Z82279		11.2023	3 years				
De-Nol tab. 120 mg #56	171112			4 years				
Bioven mono (immunogl) 25 ml	30820		08.2023					

Ascoril table No. 50	05181822	06.2020		2 years				
Aileron table p/o 5 mg No. 30	EM81052	08.2020		2 years				
Fenkarol tab. 25 mg No. 20	150418			5 years				
Maalox table No. 10	180619			4 years				
Herpevir-KMP ointment 2.5% 15 g	10119		12.2024					
Glycerin suppositories Farmina 0.75g No. 5	92061		02.2022	2 years				

Task 4. *Indicate in the correct sequence the stages of receiving the goods atpharmacy warehouse.*

No n/p	**Etap**	**Algorithm of actions**
1		Checking of accompanying documents
2		Control of the compliance of the specified data in the delivery invoice of the actually received products by name, series and dosage.
3		Conducting incoming quality control of medicinal products.
4		Permit for the sale of medicinal products.
5		Preparation of warehouse premises for receiving and storing goods
6		Checking the presence of medicinal products prohibited for circulation by the State Medical Service
7		Checking compliance with transportation conditions.
8		Creation of the reception committee.

Task 5. Define the specified terms and specify the main requirements for of a business entity during the wholesale and retail trade of medicinal products. Analyzethe duties of the authorized person when receiving the product at the pharmacy warehouse. To complete the

task, use the order of the Ministry of Health No. 677 of 09/29/2014 (as amended). "On the approval of the Procedure for Quality Control of MEDICINES during wholesale and retail trade"

Conclusion on the quality of medicinal products imported into Ukraine-
Conclusion on quality -
Certificate of quality of the medicinal product series-
Medicinal products of questionable quality-
Low-quality medicines--

Basic requirements for a business entity

1. Prohibited by the order of the Ministry of Health No. 677 of 09/29/2014 Trade…	
2. Over the course of 3 years...	
3. Obliged to create ..	
4. Incoming quality control of medicinalproducts is carried out with the help of ..	

5. Incoming quality control of medicinal products is carried out by ..	
6. Incoming quality control of medicinalproducts is carried out in ..	
7. Each series of medicinal products must be accompanied by	
IN***the authorized person is obliged to:***	
1. Check conformity…..	
2. Provide driving...	
3. Primary and secondary packaging, group container, labeling instruction are checked for ...	
4. Give permission to implement...	
5. When negative as a result..	

6. In case of suspicion regarding the quality of medicinal products means	
7. For a while carrying out laboratory of research Medicines are in ...	

Task 6. Specify the main requirements for the arrangement and operation of warehouses zones according to the guidelines ST-N MOZU 42-5.1: 2011 "Medical products. Proper storagepractices" dated March 10, 2011

1	The storage area should be enough	
2	There must be premises	
3	Carrying out regular preventive measures	
4	In the places of receipt and shipment of goods	
5	If the quarantine status is ensured by storage in separate zones	
6	Highly active or	

7	Narcotic drugs must be stored	

Task 7. Ready medicines have arrived at the pharmacy warehouse. Specify the requirements, submitted for storage of different groups of drugs, fill in the table. To perform the task, use the recommended regulatory document Order of the Ministry of Health of Ukraine No. 44 dated 16.03.1993 "Instructions for the organization of storage in pharmacies of various groups of medicinal products andmedical products"

No n/p	**Name**	**Medical form**	**Features of storage**
1	Mukolvan district d/in. 7.5 mg/ 2 ml No. 5		
2	Tantum Verd espray 30 ml		
3	Viburkol suppositories No. 12		
4	Augmentin tab. on 500 mg/125 mg No. 14each		

Situational task.

When accepting the goods in terms of quantity and quality (on a selective basis), the authorized person of the pharmacy warehouse discovered that one of the primary packages ofthe medicinal product of the foreign manufacturer was empty. Provide the algorithm of
actions of the authorized person.

1. What documents must accompany the goods received from the supplier?

2. Name the mistakes that were made during the acceptance of the goods.
3. Is the supplier correct in refusing to accept a verbal claim?
4. What should be the professional actions of an authorized person when a discrepancy inquantity and quality is detected when receiving the goods?

Task 8. Analyze the storage conditions of individual groups of medicines. Fill in thetable. To perform the task, use the regulatory document Order of the Ministry ofHealth of Ukraine No. 44 dated 16.03.1993 "Instructions for the organization of storage in pharmacies of various groups of medicinal products and medical products"

No	The name of the drug group	Medicines	Storage conditions
1	LZ, what require protection from increased action temperature		
2	medicine, what require protection from light		
3	Fragrant and dyeing substances		

Task 9Store the received medicinal products in accordance withpharmacological groups on the basis of ATS classification

N p /p	***Name of drug***	***Code drug and***	***First level ATX systems***	***Second ATH level systems***	***Third level ATX systems***	***Thursday the one level ATX systems and***	***Fifth Level ATX systems***
1	Cetrin tab. 10 mg No. 20	RO6AE O7	R-means thatact on respirato I'm running system	RO6 antigys other means for systemic applied not	RO6A anti-histism mines means for systematic ally oh apply nya	RO6A E derivativ es piperaz other	RO6A E 07 cetirizia N
2	Rheosorb ilakt solution d/inf. 200m l						
3	Tserukal tab. 10 mg #50						

4	L-thyroxine tab. 50 μg No. 50						
5	Influvak, vaccine the flu						
6	Pulmykort suspension 0.25 mg/ml were not #20						
7	Aldazole tab. 400 mg No. 3						

8	Cefodox powder for oral suspensions 50 ml						
9	Movalis Tab. 7.5 mg No. 20						
10	Triphas Tab. 10 mg #50						

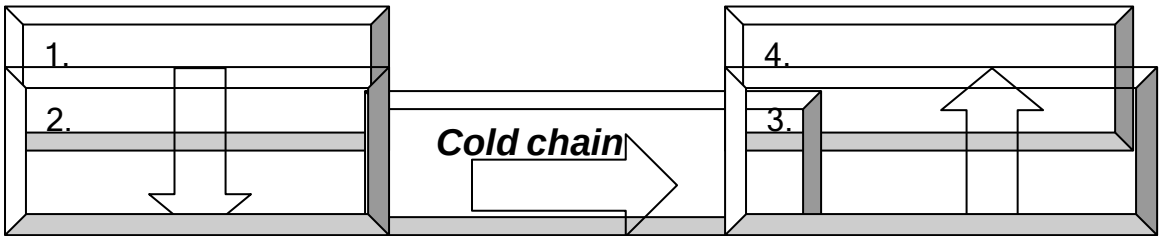
Task 10. The following medical products arrived at the pharmacy warehouse appointment: *combined heaters, syringes B-5, sterile medical cotton wool 50 g roller, pads, non-sterile bandage 5 * 10, disposable syringes*. Organize proper storage of medical supplies in accordance with the Instruction "On the organization of storage in pharmacies of various groups of medicinal products andmedical products (Order of the Ministry of Health of Ukraine No. 44 dated 16.03.1993) specify the specifics of the storage of medical products.

Name of goods	Product group by storage	Features of storage	Term storage

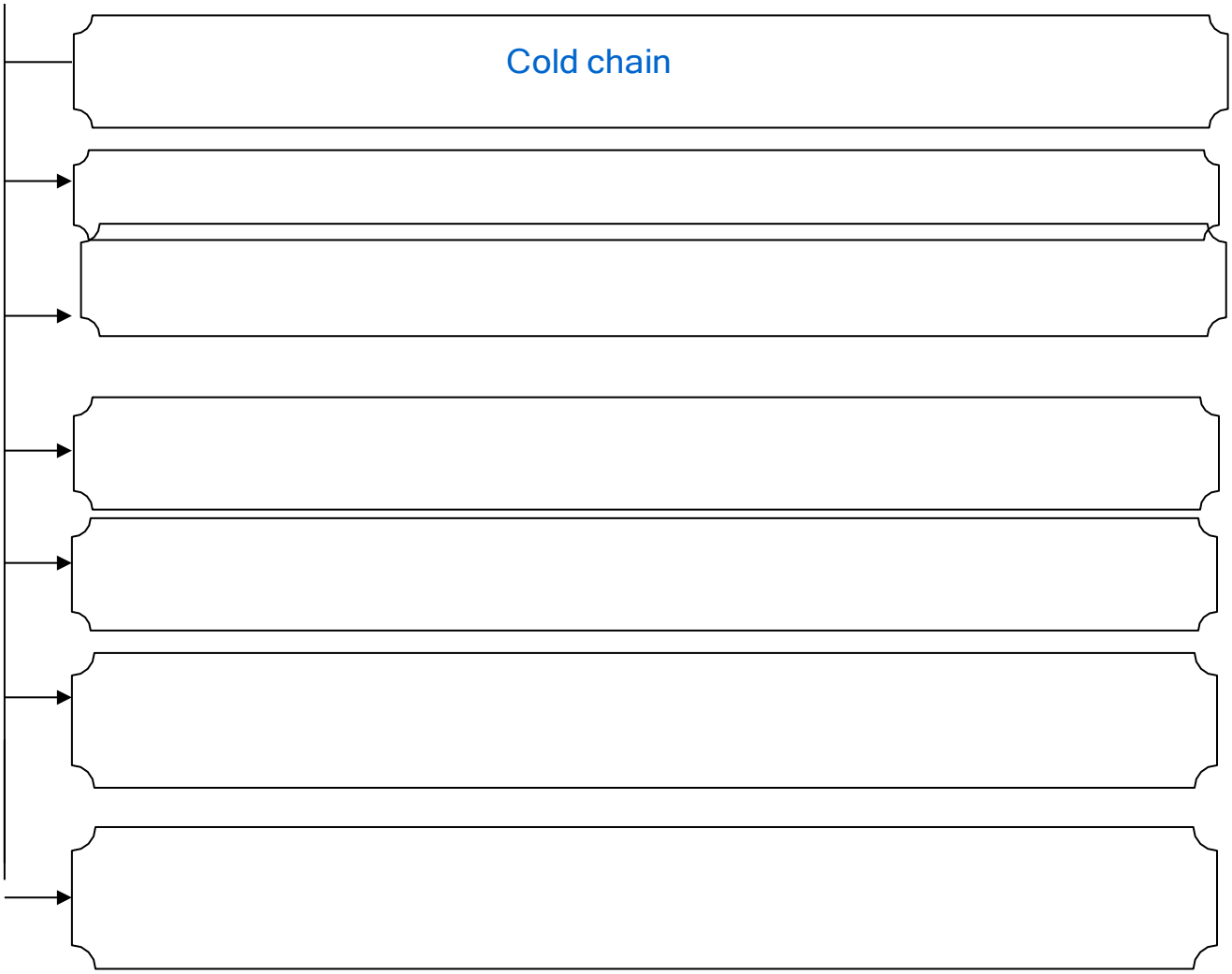
Heaters combined wheels are supported B-5 syringes			
Syringes disposable in assortment			
Cotton medical sterile 50 Mrroller bandage non-sterile 5 * 10			

Task 11. Define the term "Cold chain" and display the levels "cold chain" system necessary for storage and transportation of vaccines, toxoids and tuberculosis allergen. To perform the task, use the order of the Ministry ofHealth No. 595 dated 16.09.2011 "The procedure for ensuring proper storage, transportation, acceptance and accounting of vaccines, toxoids andallergens of tuberculosis in Ukraine"

"Cold Chain"-



Task 12. List the main elements of the "cold chain"



Task 13. Also list the equipment used in the system "cold chain". Describe each type of the listed elements.

No	**Type equipment, element**	**Characteristic**
1	Refrigeration rooms (cameras)	
2	Freezers	
3	Freezers	

4	Household refrigerators	
5	Thermal containers	
6	Medical bag refrigerator	
7	Cooling elements	
8	Thermal indicators	
8.1	Control card-indicator	
8.2	Indicator freezing	

8.3	Electronic indicator freezing "Freeze - tag"	
9	Thermograph	
10	*Thermometers*	
11	Thermometer	

Task 14. Analyze the conditions of storage and transportation of vaccines, toxoidsand tuberculosis allergen. To perform the task, use the order of the Ministry of Health No. 595 dated 16.09.2011 "The procedure for ensuring proper storage, transportation, acceptance and accounting of vaccines, toxoids and allergens of tuberculosis in Ukraine"

Storage conditions	**Characteristic**
Optimal temperature	
Vaccines that cannot be frozen	
Transportation must be carried out	
The manufacturer and warehouses for the wholesale storage of vaccines must have	

The transport container must be	
Taking into account seasonal temperature fluctuations, it is necessary to make	
In cases of using cold accumulators in insulated boxes	
Frozen and cooled batteries must be	

Recommended Books:

1. Gromovyk B. P. Workshop on medical and pharmaceutical commodity science. Part 2. Pharmaceutical commodity science: a study guide for teachers / B.P. Gromovyk, N.B. Yarko, I.Ya. Horodetska - Lviv: Prostir M, 2018. -139 p. 2. Merchandising at a pharmaceutical enterprise; study guide for students of higher education of the second (master's) level of the specialty "Pharmacy" / I.I. Baranova,
S.M. Kovalenko, S.V. Breusova et al..-Kharkiv: NSFaU, 2018.-160 p.
3. Medical and pharmaceutical commodity science: a textbook for university students. education institutions / I.I. Baranova, S.M. Kovalenko, D.V. Semenov and others. - Kharkiv: NFaU: Golden Pages, 2017. - 320 p.
2. Medical and pharmaceutical commodity science: a textbook for university students. education institutions / I.I. Baranova, S.M. Kovalenko, Yu.O. Bespala, T.V. Dudyun, S.O. Mamedova. - Kh.: National Academy of Sciences: Original, 2016. - 304 p.
4. Medical and pharmaceutical commodity science: teaching. manual / O.B.

Kalushka,
T.A. Groshovyi, A.V. Znaevska, M.B. Demchuk.- Ternopil: TDMU, 2017.- 484 p.
5. Medical and pharmaceutical commodity science: pharmacy assortment goods [Text]: education. help for students higher pharmacy education closing and pharmacy faculty higher honey. education closing III-IV level of accreditation / B. P. Gromovyk, N. B. Yarko, I. Ya. Horodetska [and others]; under the editorship BP Gromovyka, 2011. - 492 p.
5. Texts of lectures on pharmaceutical and medical commodity science.

Regulator ydocum:

1. On the approval of the Licensing conditions for conducting economic activities for the production of medicinal products, wholesale and retail trade of medicinal products, import of medicinal products (except for active pharmaceutical ingredients): Resolution of the Cabinet of Ministers of Ukraine of November 30, 2016, No. 929 http://zakon3.rada.gov.ua/laws/show/929-2016-p
2. On the approval of the Rules for the storage and quality control of medicinal products in medical and preventive institutions: Order of the Ministry of Health of Ukraine No. 584 dated 12.16.2003 (as amended): http://zakon5.rada.gov.ua/laws/show/z0275-04
3. On the organization of storage in pharmacies of various groups of medicines and medical products: Order of the Ministry of Health of Ukraine dated 16.03.93. No. 44 http://zakon3.rada.gov.ua/rada/show/v0044282-93
4. The procedure for ensuring proper conditions of storage, transportation, acceptance and accounting of vaccines, toxoids and tuberculosis allergen in Ukraine: Order of the Ministry of Health of Ukraine dated 16.09.2011 No. 595. https://zakon.rada.gov.ua/laws/show/z1166-11#Text
5. On the approval of the Procedure for quality control of medicinal products during wholesale and retail trade: Order of the Ministry of Health of Ukraine No. 677 dated 29.09.2014 https://www.zakon5.rada.gov.ua/laws/show/z1515-14
6. On medicinal products: Law of Ukraine No. 123/96 dated 04.04.1996

https://www.zakon3.rada.gov.ua/laws/show/123/96-%D0%B2%D1%80

Topic No. 13. MARKET ANALYSIS OF TECHNICAL MEANS FOR DIAGNOSTIC DISEASES.

Goal: to study the assortment of technical means for diagnosing diseases; learn to use regulatory and technical documentation and reference literature on technical means for diagnosing diseases

Control questions:

1. Product types, assortment of devices and devices for diagnostics.
2. Classification of diagnostic devices by purpose.
3. Methods of disinfection and sterilization of parts of diagnostic equipment that comeinto contact with patients.
4. Merchandising analysis of diagnostic devices when receiving them.
5. Care of devices and their storage.

Theoretical part:

Stethoscope- the first version of the device for listening to noises body

Phonendoscopes- a medical device used for listening heart sounds, breathing noises and other sounds that occur in the body (that is, for the same purposes as a stethoscope).

Thermometry- method of measuring human body temperature according to using a mercury, alcohol or electronic thermometer.

Inhaler- device for introduction of drugs by inhalation.

Tonometer (sphygmomanometer, tonometer to determine the level blood pressure monitor, medical tonometer, blood pressure monitor, Riva-Rocchi apparatus) - a medical device for measuring blood pressure - the pressure of bloodsupplied by the heart in the artery.

Task 1. Define the term "Medical devices"

Medical devices-

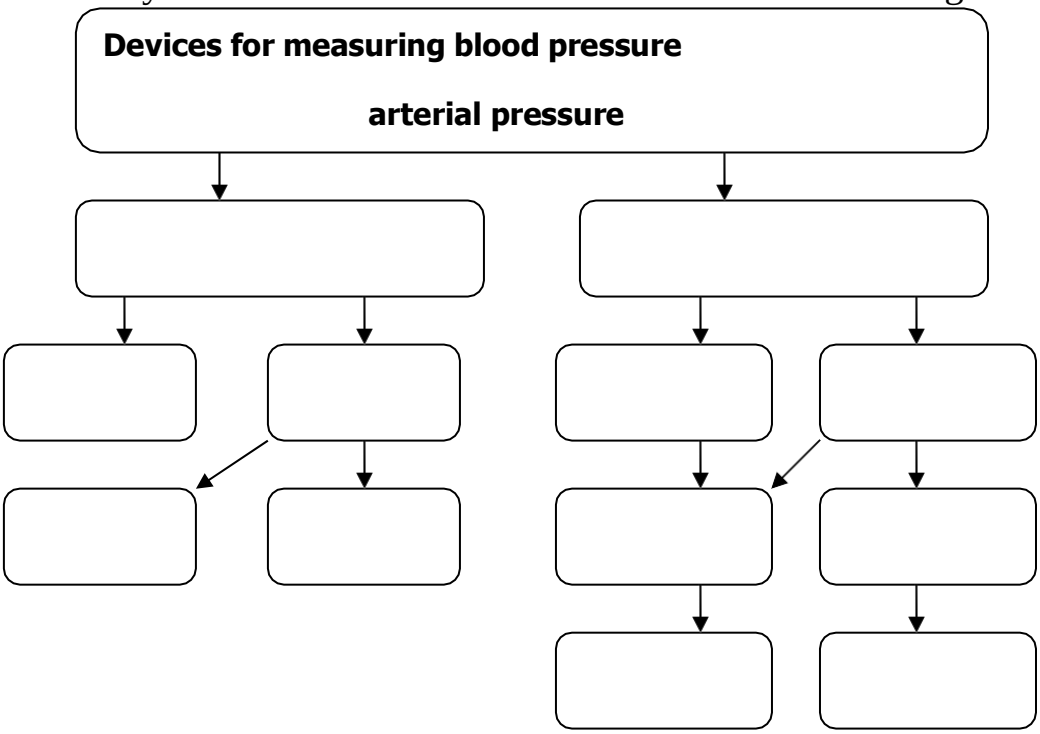
Task 2. Formulate the concept of "Hypertensive disease" and classify arterial hypertension in accordance with the 2017 ACC/ANA clinical recommendations.**Hypertension Guidelines.**

Hypertensive disease -

2017 ACC/AHA Clinical Guidelines

Normal blood pressure	
Increased blood pressure	
1st degree hypertension	
Hypertension of the 2nd degree	
3rd degree hypertension	

Task 3. Classify tonometer's. Submit the data in the form of a diagram**.**



Task 4.Describe the structure of mechanical, semi-automatic and automatic tonometer's State their advantages and disadvantages**.**

Tonometer type	**Storage**	**Advantages**	**Disadvantages**

Task 5. Define the concept of "MAM technology",PAD technology, AFIB technology. State their advantages

MAM-technology-
PAD-technology-
AFIB technology-

Task 6. Give recommendations for measuring blood pressure.

1
2
3
4
5
6
7
8
9

Task 7. Measure blood pressure with mechanical and

semi-automatic tonometers. Compare the results obtained.

Mechanical tonometer	
Semi-automatic tonometer	

Task 8.List the most common mistakes and factors of wrong measurementof blood pressure and untimely diagnosis of hypertension.

1.
2.
3.
4.
5.
6.
7.

Situational problem.

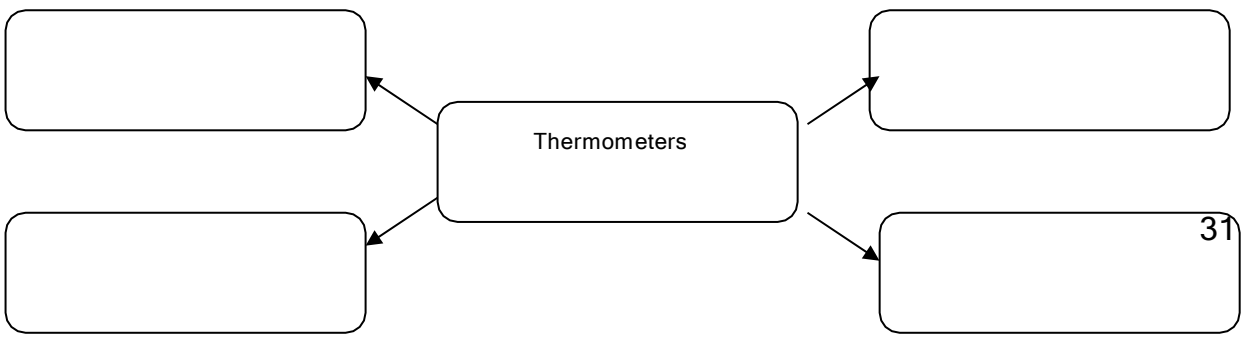
A 70-year-old visitor came to the pharmacy to buy a wrist tonometer, similarto the one she saw at a friend's, and she found it very convenient: compact, light, you can carry it with you.

The pharmacist completed the purchase, saying that it is really a very convenient device

option.

Assess the situation. Justify the answer. Specify the features of using wrist tonometers.

Task 9. Classify means for measuring body temperature a person



Task 10. Describe the principle of operation of the medical maximum thermometer anddigital thermometers. State the advantages and disadvantages.

Type of thermometer	**Principle work**	**Advantages**	**Disadvantages**
Mercury			
Digital (digital, electronic)			

Task 11 . Carry out a comparative characteristic of indicators of different typesthermometers

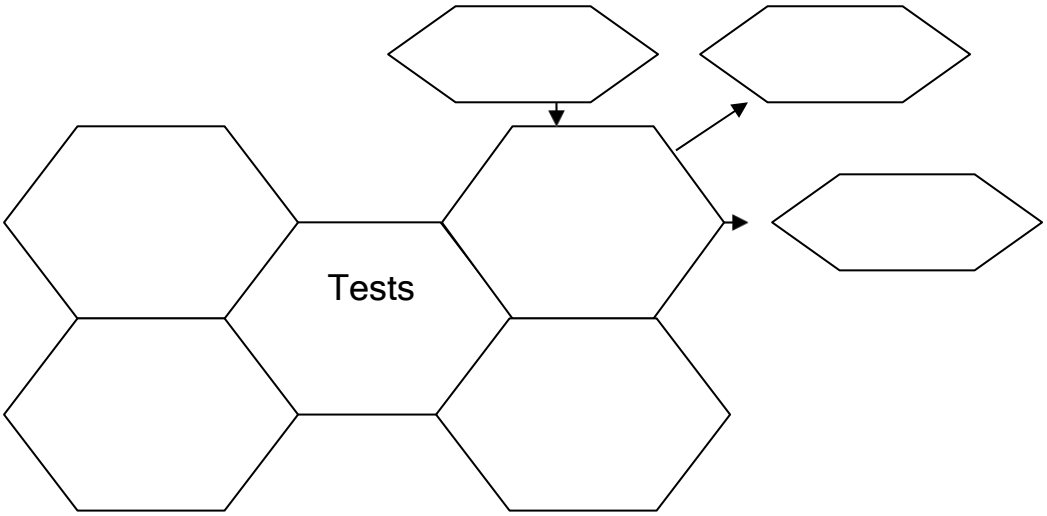
Type of thermometer	***Time of measurement***	***Accuracy of indicators***
mercury		
temperature indicator		
digital		
infra-red		

Situational problem.

A visitor to a pharmacy chooses a thermometer for himself, reliable and accurate for many years.The pharmacist offers an electronic thermometer, as the very latest development,

+ this thermometer has additional functions: memory of the last measurement, soundsignal that indicates the end of the measurement. The visitor is not sure about this recommendation, does not want to overpay for additional functions that he can do without. Evaluate the pharmacist's advice. Justify the answer. Describe the mechanismof action, reliability and accuracy of mercury and electronic thermometers.

Task 12. Classify tests and test systems.



Task 13. Carry out a comparative characterization of the definition tests pregnancy

System type	***Sensitivity***	***Term of determination pregnancy***
Test strip d/recognition of weights. Clever Girl		

Test strip d/recognition of family weight		

Task 14. Define the disease "Diabetes". Describe the point methods underlying the determination of the level of glucose in the blood usingglucometers.

Diabetes-

Method	Characteristic

***Task 15*. Compare the glucometers of different manufacturers**

model	***One Touch Select Simple***	***Accu-Chek glucometer Performa Nano***
producer		
range of measurements		
measurement time		
memory		
average value		
the amount of blood at measurements		
dimensions		
pros and cons		

Task 16. Define the Nebulizer medical device. Compare two types ofnebulizers, describe

their advantages and disadvantages.

Nebulizer-

Type of nebulizer	**Advantages**	**Disadvantages**
1.		
2.		
and)		
b)		
in)		
d)		
3.		

Situational task.
A buyer approached the pharmacy with a desire to purchase a nebulizer for the treatment of pneumonia. Provide advice to the buyer on nozzles for the device, according to the required size of particles in the aerosol cloud. Specify the particle size for the treatment of the upper and lower respiratory tract.

_____ _____

_____ _____

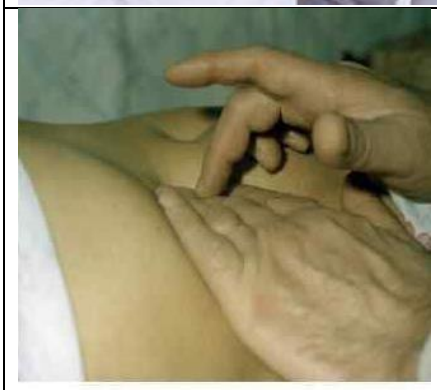
_____ _____

DISTRIBUTION OF AEROSOL CLOUD

Area of influence	***Particle size***
oropharynx, trachea and larynx	

medium and small bronchi	
in the alveoli	

Task 17. Define the research methods and the devices depicted. Give thecorrect matches.

Image	**Name research ordevice**	**Characteristic**
		
		
		

a) A medical device used for listening to heart sounds, breathing noises and other sounds occurring in the body, equipped with a sound-receiving chamber closed by a rigid membrane to amplify the heard sounds.

b) A diagnostic method that allows studying sound phenomena occurring in the body by listening

c) Medical diagnostic device for auscultation (listening) to sounds emanating from the heart, blood vessels, lungs, bronchi, intestines and other organs

d) A diagnostic method that allows studying sound phenomena in the body bytapping

Task 18. Describe the following methods of internal diagnostics bodies

No	Diagnostic method	The essence of the method	Medical device
1	**Radiography**		
2	**Fluorography**		
3	**Computer room tomography (CT)**		

4	**Magnetic resonance tomography (MRI)**		
5	**Electrocardiography**		

Recommended Books:

1. Gromovyk B. P. Workshop on medical and pharmaceutical commodity science. Part 2. Pharmaceutical commodity science: a study guide for teachers / B.P. Gromovyk, N.B. Yarko, I.Ya. Horodetska - Lviv: Prostir M, 2018. -139 p. 2. Merchandising at a pharmaceutical enterprise; study guide for students of higher education of the second (master's) level of the specialty "Pharmacy" / I.I. Baranova,
S.M. Kovalenko, S.V. Breusova et al..-Kharkiv: NSFaU, 2018.-160 p.

3. Texts of lectures on pharmaceutical and medical commodity science.

Regulatory documentation:

1. On the approval of the Technical Regulation on medical devices: Resolution of the Cabinet of Ministers of Ukraine dated 02.10.2013 No. 753: [Electronic resource] – Access mode: http://zakon2.rada.gov.ua/laws/show/753-2013-п
2. On the organization of storage in pharmacies of various groups of medicines and medical products: Order of the Ministry of Health of Ukraine dated 16.03.93. No. 44 http:// zakon3.rada.gov.ua/rada/show/ v0044282-93

Appendix 1

AGREEMENT
No.
DELIVERY OF GOODS

"___"_____201_

Limited Liability Company "VENTA. LTD", which is a taxpayer for profit on general terms, in the person of the General Director Oleksandr Mykolayovych Voloshyn, acting on the basis of the Charter, hereinafter referred to as the "Supplier", on the one hand, and

is payer _____, in person which one

_____, acting on the basis of_____, hereinafter referred to as the "Buyer", on the other hand, collectively referred to as the Parties, concluded this contract for the supply of goods (hereinafter referred to as the "Agreement") regarding the following:

1. SUBJECT OF THE AGREEMENT

1.1. The Supplier undertakes to deliver and transfer to the Buyer the goods (medicines, medical products, goods that pharmacies and their structural subdivisions have the right to purchase and sell) provided for in the Agreement and integral parts to

it (hereinafter referred to as the "Goods"), and the Buyer undertakes to accept the above-mentioned Goods and to pay for them on time under the terms stipulated in the Agreement.

1.2. The assortment, quantity and price of the delivered Goods are defined in the specifications orinvoices, which are recognized by the Parties as specifications drawn up for each batch of the delivered Goods and are an integral part of the Agreement.

1.3. The price of each batch of Goods is fixed and is not subject to change, unless otherwise stipulated by this Agreement or additional agreements/additional agreements to it. The price of the Goods may be formed and/or changed by applying discounts and other price formation mechanisms, as provided by the legislation of Ukraine. The size and conditions of application of the specified price formation and change mechanisms are established in additional agreements/additional contracts to the Agreement: in case of granting a discount on the purchased Product (i.e., one whose ownership has been transferred to the counterparty under the Agreement), the price of the Product will be the price including the discount.

1.4. The total price of the Agreement is determined by the sum of all Goods received under invoices during the entire term of the Agreement, and is approximately _____hryvnias.

2. QUALITY, COMPLETENESS AND QUANTITY OF GOODS

2.1. The quality and completeness of the delivered Goods, their packaging and labeling must comply with the established standards or technical conditions of the manufacturer and the requirements of legislative acts.

Documents certifying the quality and conformity of the Goods, the Supplier is obliged to place in scanned form on its website on the Internet. At the time of signing the Agreement, the Supplier provides/sends to the Buyer his personal password for access to the specified documents on the Supplier's website: by signing this Agreement, the Buyer certifies receipt of such a password.

At the Buyer's request, the Supplier is obliged to provide/send to the Buyer paper copies of the above documents certified by the Supplier's seal no later than two days after the

Supplier receives the request.

2.2.In order to confirm the quality and completeness of the delivered Goods, the Supplier shall hand over the following documents to the Buyer: sealed copies of hygiene reports (if such must be attached to the Goods according to the requirements of the legislation of Ukraine).

2.3. In order to confirm their legal capacity, the Supplier and the Buyer shall exchange sealed copies of licenses, certificates of VAT or single tax payers, certificates of status, certificates of state registration or extracts from the EDRPOU. The Party providing this information is responsible for the accuracy of the information specified in these documents.

2.4. The quality and completeness of the Goods is checked by the Buyer in accordance with the Instructions on the procedure for accepting products for industrial and technical purposes and consumer goods according to quality, approved by the resolution of the State Arbitration under the Council of Ministers of the USSR dated April 25, 1966 No. P-7 (with additions and changes). In the case of detection of defects in the quality of the Goods directly by the Buyer or competent state authorities, it is mandatory to call the Supplier's representative to draw up the relevant act.

2.5. Acceptance of goods by quantity is carried out in accordance with the Instructions on the procedure for accepting products for industrial and technical purposes and consumer goods by quantity, approved by the resolution of the State Arbitration under the Council of Ministers of the USSR dated June 15, 1965 No. P-6 (with additions and changes). In the event that the Buyer discovers a shortage of the Goods, it is mandatory to call the Supplier's representative to draw up the relevant act.

2.6. The Supplier is released from the obligation to accept the Goods from the Buyer (return the Goods) if the reason for the return is changes in the classification of the Goods according to the relevant

classifiers, changes in the legislation of Ukraine or the adoption of new legal acts that make it impossible or significantly limit the Supplier's ability to accept the returned Goodsand/or to transport and/or store them (licensing of certain types of activities, withdrawal from circulation or restriction of circulation, etc., except in cases , when the Supplier's obligation to accept the Goods is directly stipulated by the regulatory and legal acts).

3. ORDER OF DELIVERY

3.1. The delivery of the Goods is carried out at the expense of the Supplier, in individual batches after the Parties agree on the application (by phone, fax, e-mail or in another form not prohibited by law).

3.2. For the implementation of the Agreement, the parties use the terms of the DDP in accordance with the International INCOTERMS rules in the 2010 edition, which are applied taking into account the domestic nature of this Agreement. If it is necessary to change the delivery address, this address is agreed upon by the Parties when ordering the Goods and is noted in the accompanying invoices.

3.3. The right of ownership, the risk of accidental death or damage/deterioration of the delivered Goods passes from the Supplier to the Buyer at the moment of actual receipt of the Goods by the latter (the moment of delivery).

3.4. If the Buyer violates the procedure and/or payment terms established by the Agreement, the Supplier has the right to suspend the shipment and/or delivery of any ordered batch of Goods.

4. TERMS AND PROCEDURE OF CALCULATIONS

4.1. The Buyer makes payment for the delivered Goods by transferring funds to the Supplier's current account specified in the Agreement.

4.2. The payment term and/or the date of payment by the Buyer for each specific batch of Goods delivered by the Supplier shall be indicated in the corresponding invoice, while the payment term begins on the first day from the date of shipment of the goods to the Buyer. In the event that the Supplier does not specify a specific term or date of payment in the invoice, the payment by the Buyer must be made in full within a period of no more than ten calendar days from the date of receipt of the Goods by the Buyer. In the event that

the Buyer is in debt for the Goods for two or more consignments of the Goods and/or for two or more invoices (in the full amount of the invoiceor in some part of the amount), all payments that the Buyer transfers to the Supplier under the Agreement are credited first of all to the repayment account debts for the Goods delivered (received by the Buyer) earlier, regardless of the purpose of payment specified in the payment document.

4.3.The payment for the delivered Goods is considered to have been made by the Buyer after the full

amount of funds has been deposited into the Supplier's current account.

4.4.The Supplier, based on permanent and continuous economic relations with the Buyer, makes rhythmic deliveries of goods to the Buyer. The Supplier provides the Buyer with consolidated tax invoices for the amount of all product deliveries for 10 days, calculations of adjustments of quantitative and value indicators to the tax invoice (hereinafter referred to as "Adjustment Calculation") in case there have been corresponding changes in the deliveries of different periods. Consolidated tax invoices and adjustment calculations, registered in the EPIIH in accordance with the current legislation of Ukraine, are provided to the Buyer every 10 days in electronic form. In the same period, documents for returning the goods from the Buyer or changing the amount of compensation for the goods are submitted.

5. LIABILITY OF THE PARTIES

5.1.For late payment of the delivered Goods, the Buyer shall, at the Supplier's request, pay the Supplier a penalty in the amount of twice the NBU accounting rate of the amount owed for each day of delay, as well as in accordance with Art. 625 of the Civil Code of Ukraine pays the Supplier the amount of the debt, taking into account the established inflation index for the entire period of delay and pays

ten percent per annum on the overdue amount. If the violation of payment terms continues for more than 30 calendar days, the Buyer shall additionally pay the Supplier a fine of 10% of the valueof the untimely paid Goods at the request of the Supplier.

5.2. For late delivery of the Goods, the Supplier shall pay a penalty in the amount of twice theNBU accounting rate of the value of the undelivered Goods for each day of delay.

5.3. If the Buyer violates any condition of the Agreement, the Supplier may apply to the Buyer, regardless of the collection of fines and/or losses/damages, one of the following operational and economic sanctions (at the Supplier's choice):

- refusal to establish business relations for the future by the Buyer; unilateral
- establishment of additional guarantees for the future

due fulfillment of obligations by the Buyer in the form of a change in the order of payment for products (works, services) in the form of a reduction in payment terms or transfer to advance payment of the Goodsfor any subsequent batches of deliveries of the Goods.

The specified operational-economic sanctions are applied without any agreement or coordination with the Buyer by sending a notice to the Buyer about the application of the corresponding operational-economic sanction by mail, courier delivery or handing it personally to the representative/employee of the Buyer. An operational-economic sanction is considered to be applied by the Supplier and notified to the Buyer from the moment the specified notice is sent by mail/courier delivery or from the moment the notice is personally delivered to the Buyer's representative/employee.

The operational-economic sanction applied by the Supplier may be canceled by the Supplier on its own initiative by sending the Buyer a notice of cancellation of the operational-economic sanction in a manner similar to sending a notice of the applicationof the operational-economic sanction.

6. FORCE MAJEURE

6.1. The Parties are released from responsibility for the full or partial non-fulfillment of any of the provisions of this Agreement, if this non-fulfillment occurred as a result of circumstances that the Party that failed to properly fulfill its obligations could neither foresee nor prevent their occurrence. Such circumstances include natural disasters and

phenomena, wars, military or military actions/measures, man-made disasters, actions and/or acts of state authorities and local self-government, etc. (hereinafter - circumstances of force majeure).

6.2. The period of exemption from liability begins after the occurrence of force majeure circumstances from the moment of notification of the non-fulfilling Party about the force majeure circumstances and ends with the termination of the force majeure circumstances.

6.3. Force majeure circumstances automatically extend the term of performance of obligations for the entire period of their existence. The Parties must notify each other about the occurrence of force majeure circumstances within 3 days from the moment of occurrence or from the moment when the relevant Party became aware of the occurrence of such circumstances.

6.4. If the force majeure circumstances will exist for more than 1 month, each of the Parties has the right to terminate the Agreement unilaterally by notifying the other Party 30 days before such termination. In such a case, each Party must return to the other Party everythingthat was not covered by its performance due to force majeure circumstances, but the Party cannot demand compensation from the other Party for possible losses and the collection of fines for violations of the terms of the Agreement, if such violations occurred as a result of force majeure.

6.5. The facts of the existence and duration of force majeure circumstances are confirmed by documents of competent authorities authorized to certify force majeure circumstances, in accordancewith the current legislation of Ukraine.

7. DISPUTE RESOLUTION PROCEDURE

7.1. All disputes and disagreements between the Parties under the Agreement will be resolved through negotiations. Incase of failure to reach an agreement, the dispute shall be referred to the court in accordance with the procedure provided for by the current legislation of Ukraine.

8. DURATION OF THE AGREEMENT

8.1. The Agreement enters into force from the moment of its signing by the Parties and binding with the seals of the Parties and is valid for 12 current months, and in terms of the

fulfillment of monetary obligations

- until the moment of its complete completion. In the absence of notice from the Parties about the intentionto terminate the Agreement at least 7 calendar days before the expiration of the Agreement, the latter is considered an extended period for another 12 current months and under the same conditions.

8.2. The Agreement may be terminated before the end of its validity period with the consent of the Parties, as well as unilaterally by the Party, if the other Party does not properly fulfill its obligations under the Agreement, by sending a notice of such termination of the Agreement to theother Party no later than 20 calendar days in advance until the date of such termination (the date of dispatch of the notice shall be the date of dispatch of the postal correspondence or the date of personal delivery of the notice to the representative of the other Party), while the Parties are obliged to make final settlements between themselves.

Also, the Agreement may be terminated unilaterally in the cases and in the manner provided forin Clause 6.4. Agreement.

9. OTHER TERMS

9.1. All changes and additions to the Agreement are made in writing and are an integral part of it from the moment of signing, unless otherwise stipulated or otherwise does not follow from the terms of the Agreement.

9.2.The Parties have agreed that when signing this Agreement, additional agreements/additional agreements to the Agreement, as well as documents for the execution of this Agreement (invoices, powers ofattorney, etc.), the use of the seals of the Parties is mandatory.

According to Part 3 of Art. 207 of the Civil Code of Ukraine, the parties agree to use a facsimile reproduction of the signature of, the General Director, acting on behalf of the Supplier. The specified facsimile reproduction of the signature can be used when the Supplier signs the goods supply agreement, additional agreements, specifications, annexes to the Agreement and similar documents related to the amendment and execution of this Agreement.

The parties agreed that upon signing the Agreement and others related to it documents, facsimile copies are legally binding. In the future, the Parties shall exchange the originals of the specified documents within fourteen calendar days. An original document is considered both a document created in written and electronic form. The exchange of electronic documents is carried out using the "MEDoc" program, and requires signing using an electronic digital signature from both Parties.

9.3. In the event of a change in the details specified in Section 10 of the Agreement, the Party that hasundergone such changes must notify the other Party within five days from the date of such changes.

9.4. The contract is concluded in two original copies, one for each of the Parties.

10. LEGAL ADDRESSES AND BANK DETAILS OF THE PARTIES

10. LEGAL ADDRESSES AND BANK DETAILS OF THE PARTIES

PROVIDER

BUYER