



**Federal state budgetary educational institution of higher education "North Ossetian state medical Academy of the Ministry of health of Russia»**

**Department of OTO-Rhino-laryngology with ophthalmology**

**THE COURSE OF OPHTHALMOLOGY**

**KOROEV O.A., KOROEV A.O.**

**INDIVIDUALIZED TASKS FOR INDEPENDENT  
WORK OF 4TH YEAR STUDENTS OF THE  
FACULTY OF MEDICINE ON THE CYCLE OF  
OPHTHALMOLOGY**



**Vladikavkaz 2021**

**THEMATIC PLAN**  
**practical training in ophthalmology in the 4th year (8 semester)**  
**medical faculty (52 hours)**

- 1 lesson.** Age anatomy of the organ of vision. Physiology and functions of the components of the eye and its auxiliary (accessory) apparatus.
- 2 lesson.** Methods of investigation of the eye and its appendages. The order of examination of the eye patient and the scheme of the history of the disease. Performing eye diagnostic and therapeutic manipulations. Visual functions and age dynamics of their development.
- 3 lesson.** Physical and clinical refraction. Astigmatism. Accommodation. Presbyopia. The purpose of the spectacles.
- 4 lesson.** Diseases of the orbit, eyelids, conjunctiva and lacrimal organs.
- 5 lesson.** Diseases of the cornea, sclera and choroid.
- 6 lesson.** Diseases of the retina and optic nerve. Ocular manifestations of General pathology of the body.
- 7 lesson.** Diseases of the lens and vitreous.
- 8 lesson.** Physiology and pathology of intraocular pressure. Glaucomas.
- 9 lesson.** Binocular vision. Strabismus. Damage to the eye and its appendages. Neoplasms of the organ of vision. Professional diseases of the eye.
- 10 lesson.** Modular lesson. Test of practical skills. Testing of theoretical knowledge.



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**TOPIC 1: "AGE-RELATED ANATOMY OF THE VISUAL ORGAN.  
PHYSIOLOGY AND FUNCTIONS OF THE MAIN PARTS OF THE EYE  
AND ITS AUXILIARY APPARATUS»**

**Vladikavkaz 2021**

## TOPIC 1: "AGE-RELATED ANATOMY OF THE VISUAL ORGAN. PHYSIOLOGY AND FUNCTIONS OF THE MAIN PARTS OF THE EYE AND ITS AUXILIARY APPARATUS».

### I. Questions for checking the initial (basic) level of knowledge.

1. Specify how many walls the eye socket has and what their names are.
2. What are the shells of the eyeball, and what are their functions.
3. What anatomical formations belong to the optical apparatus of the eye.
4. Describe the course of the visual pathway from the peripheral to the cortical analyzer.
5. Which oculomotor muscles do you know, and which cranial nerves carry out their innervation.

### II. Targets:

<p><u>The student needs to know:</u></p> <ul style="list-style-type: none"> <li>• embryology of the eye;</li> <li>• anatomical and optical characteristics of the child's and adult's visual organs;</li> <li>• structure of the eye protection device;</li> <li>• structure of the cornea and sclera;</li> <li>• structure of the vascular membrane;</li> <li>• basic functions of the retina;</li> <li>• structure of the optical apparatus of the eye;</li> <li>• functions and innervation of the oculomotor muscles.</li> </ul>	<p><u>Recommended reading:</u></p> <p><i>a) educational literature</i></p> <p><u>Avetisov S.E.</u> Ophthalmology: national guide. - 2nd ed. - Moscow: GEOTAR-Media, 2019. - 904 p.</p> <p>Eye disease. Textbook. / Edited by <u>V.G. Kopaeva</u>. - M.: Ophthalmology, 2018. - 495 p.</p> <p>Eye diseases: a textbook. / Edited by <u>A.P. Nesterov</u> and <u>V.M. Malov</u>. - M.: Leader M, 2008. - 316 p.</p> <p>Ophthalmology. Textbook. / Under the editorship of <u>E.A. Egorov</u>. - M.: GEOTAR-Media, 2017. - 240 p.</p> <p>Ophthalmology: textbook. / Under the editorship of <u>E. I. Sidorenko</u>, -3rd ed. - 2013. - 640 p.</p> <p><i>b) additional</i></p> <p><u>Koroev O.A.</u> Clinical and topographic anatomy of the orbit. - Vladikavkaz: Iriston, 2002. - 92 p.</p> <p><u>Koroev O.A.</u> Ophthalmology: the subordinate education of the eye. - Rostov-on-Don: Phoenix, 2007. - 413 p.</p> <p><u>Somov E.E.</u> Clinical anatomy of the visual organ. - St. Petersburg: Olga, 2005. - 136 p.</p>
<p><u>The student must be able to:</u></p> <ul style="list-style-type: none"> <li>• find the training tables adventitious formation of the eye;</li> <li>• find on the table and on the model of the skull the bones that make up the eye socket;</li> <li>• find and determine on the training tables and the dummy layer of the eye;</li> <li>• find and determine the contents of the eyeball on tables and models;</li> </ul>	<p><u>Recommended reading:</u> Same.</p>

- indicate the course of the visual pathways on the tables;
- find the oculomotor muscles on the table.

### III. Tasks for independent work on the topic under study.

#### Option 1.

1. Complete the list: the identification points on the eyeball are: the front pole of the eye, the back pole of the eye, the equator,
2. What intraocular muscles does the eyeball contain?
3. The Angle of the anterior chamber of the eye is made up of the following anatomical formations:
4. Draw a diagram of the conducting visual pathways.
5. Nutrition of the cornea is carried out by:
6. List the transparent environments of the eye and emphasize the most powerful of them.
7. Fill in the table:

Anatomical formations of the fibrous capsule of the eye are:	
Anatomically, the vascular membrane of the eye consists of the following parts:	
Anatomically, the following sections of the retina are distinguished, the border between them is:	

8. Arrange the main functions of the various layers of the cornea in the correct order (indicate with arrows):

Epithelium	Resistance to mechanical damage
The outer edge of the membrane	Nutrition of the cornea
Own substance	The regenerative ability
The inner limiting membrane	Main refractive substance
The inner epithelium	Resistance to infectious agents.

9. Draw schematically how the direction of the cartilages of the eyelids have glands meibomian?



10. What hole connects the orbit with the cranial cavity?

11. What are the main functions of the various departments of the vascular tract?

Iris	
Ciliary body	
Choroid	

12. Blood Supply to these parts of the eye is carried out:

Iris and ciliary body	
Retinae	

Front ciliary arteries, short posterior ciliary arteries, posterior long ciliary artery, Central artery of the retina.

Insert the correct answers.

13. Which cranial nerves innervate the following oculomotor muscles?

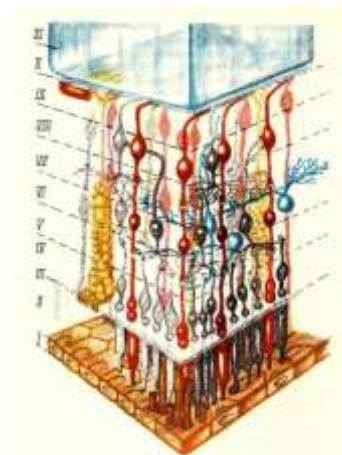
Upper rectus muscle	
The upper oblique muscle	
Internal rectus muscle	
External rectus muscle	
The lower oblique muscle	
Lower rectus muscle	

14. What is the thickness of the cornea in the center and on the periphery, and what is the shape and optical effect of the lens (collecting or scattering) it represents?
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently, with marks of correct answers.*

## Option 2

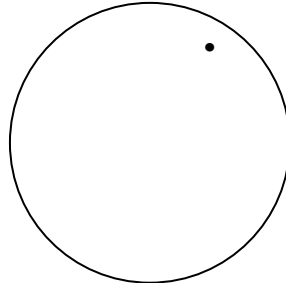
1. Describe which areas are connected to the main holes of the orbit.
2. Write the names of the layers that make up the retinal tissue.

- I –
- II –
- III –
- IV –
- V –
- VI –
- VII –
- VIII –
- IX –
- X –



3. What function does the palpebral part of the circular eyelid muscle perform?
4. Write down which glands are contained in the conjunctiva of the eyelids.

5. What is the shape of a lens resembles the cornea?
6. Explain why the intraocular fluid does not pass from the anterior chamber to the posterior chamber.
7. Describe the location of the foreign body on the cornea of the eye



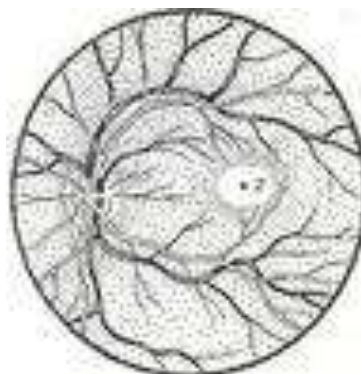
8. Fill in the table:

Muscle of the iris	Innervation
Muscle that constricts the pupil	
Muscle that extends the pupil	

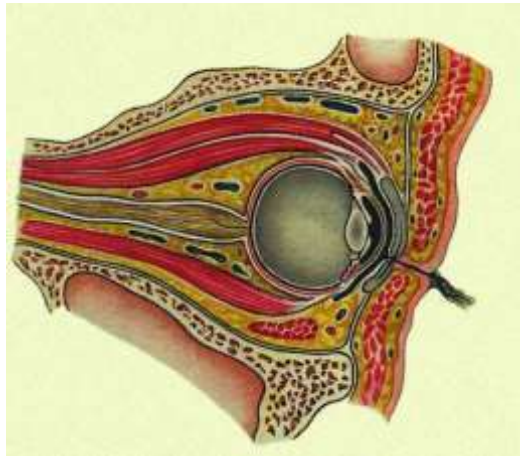
9. Mark the image and name the identification points of the lens.



10. Name the substances that give the relative density of the vitreous body.
11. On the fundus diagram, mark the arterial vessels that are branches of the central retinal artery.



12. Which of the oculomotor muscles crosses the bone-cartilage block and where it is localized?
13. Where is the tarsoorbital fascia located and what functions does it perform?
14. Except that the eyeball contains the eye socket? Indicate the numbers in the drawing and write the names of anatomical formations.



- 1-
- 2-
- 3-
- 4-

15. Make 5 test tasks on the topic. *Test questions are compiled by students independently, with marks of correct answers.*

### Option 3

1. What get sensitive nerves the innervation of the upper eyelids?
2. Mark on the diagram and sign the visible identification points of the eyeball.



3. Emphasize which oculomotor muscles start from the fibrous ring in the area of the visual opening.



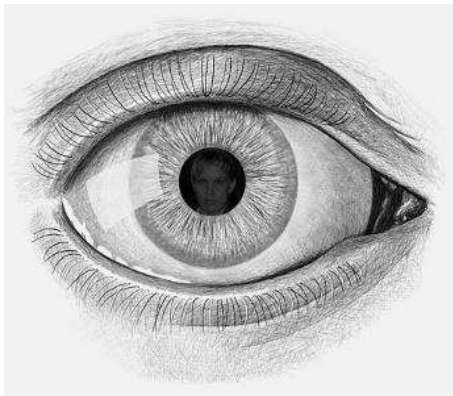
Upper rectus muscle  
Lower rectus muscle  
External rectus muscle

Internal rectus muscle  
The upper oblique muscle  
The lower oblique muscle

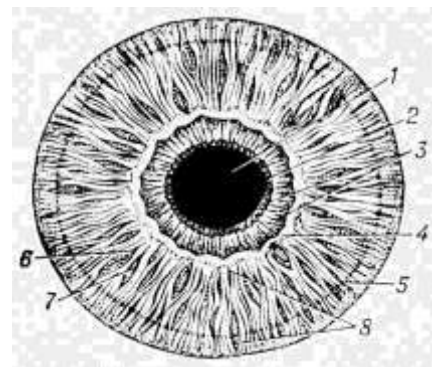
4. Use the arrow to indicate where the lacrimal gland is located in the orbit.



5. Mark and sign the anatomical formations that distinguish the inner eyelid junction from the outer one.



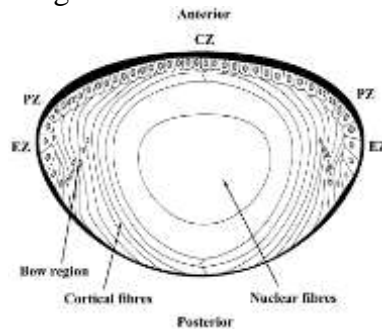
6. What are the main differences between the upper eyelid from the bottom?
7. Draw the course of the muscle fibers and write the names of the iris muscles.



8. Emphasize which of the following anatomical structures is the front wall of the anterior chamber of the eye.

Tarsoorbital fascia; Eyelids; Conjunctiva; Cornea; Iris; Lens; Vitreous body; Retina.

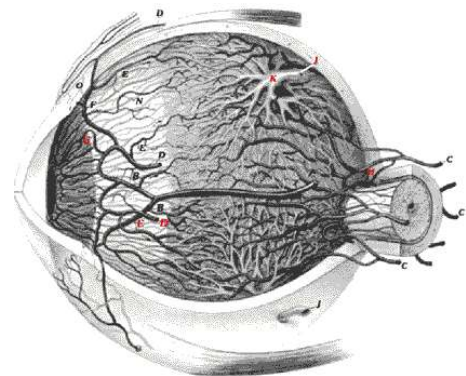
9. Write down what the main functions of the eye socket are.
10. Use the arrow to indicate the direction of movement of the subcapsular epithelium of the lens and describe further changes that occur with it.



11. What is the name and what is the purpose of the recess in the anterior parts of the vitreous body?



12. What is the name and what is the purpose of the recess in the anterior parts of the vitreous body?



13. Looks like, where it is called the visible part of the blind division of the retina?
14. How many processes does the villous part of the ciliary body have, and what is their main function?
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently, with marks of correct answers.*

#### Option 4

1. List the functions that the connective membrane of the eye performs and how these functions are performed.
2. What is the name and where are the protrusions on the eyelids, where are the tear points?
3. Draw schematically anatomical formations that are part of the lacrimal pathways.
4. In the drawing of the orbit, mark the localization of the bone-cartilage block, through which the tendon of the upper oblique muscle is thrown.

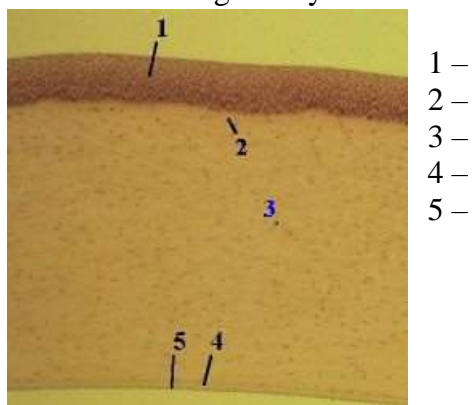


5. Emphasize which (which) of the anatomical structures do not participate in the formation of the anterior chamber of the eye?  
Tarsoorbital fascia; Eyelids; Conjunctiva; Cornea; Iris; Ciliary body; Choroid; the Lens; the Vitreous; the Retina.
6. What is the name of the cognitive plane in which the cross-section of the schematic eye is made?



7. What is the name and what projection on the sclera, corresponds to the place of transition of the ciliary body to the actual vascular membrane of the eye?
8. Write down where the zinc ligament starts and attaches to, and what fibers it consists of?
9. What is Cloquet's canal and that he himself is?
10. Write down which branches of the orbital artery supply blood to the eyeball.
11. Which lymph nodes are the collector for the lymphatic vessels of the upper eyelid?
12. What eye symptoms may occur in lesions of the facial nerve?

13. Mark the histological layers of the cornea.



14. Which element of the neuroepithelium is shown in the figure, and in which area of the retina is its maximum concentration observed?



15. Make 5 test tasks on the topic. *Test questions are compiled by students independently, with marks of correct answers.*

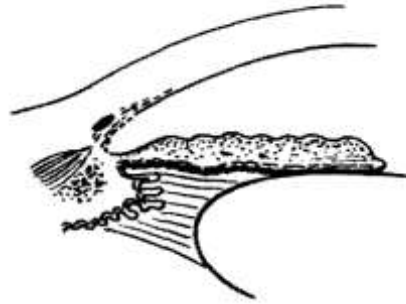
### Вариант 5

1. Write down the size of the eye in the suggested table.

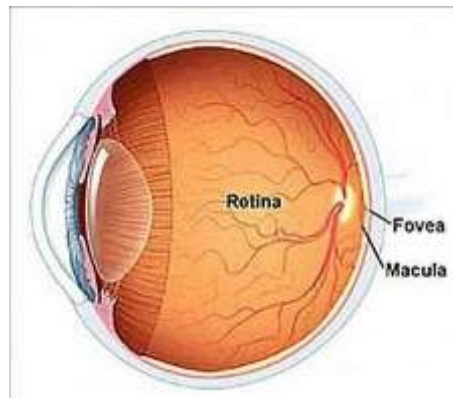
Sagittal axis	
Horizontal axis	
Vertical axis	

2. What types of innervation does the cornea have?
3. Explain what causes the radial striation of the iris and define these terms.  
 Crypts –  
 Lacunae –  
 Ruff –
4. Emphasize what anatomical formations are limited to the back camera of the eye.  
 Cornea, sclera, iris, ciliary body, choroid, retina, lens, vitreous body, optic nerve.
5. Write what anatomical formations innervate the lacrimal nerve?

6. Draw on the diagram how the transition of the cornea to the sclera is performed.



7. Mark with a cross on the diagram the places of tight fixation of the retina to the underlying tissues.



8. Add the names of the authors whose names are given to the following anatomical formations:

Part of the circular eyelid muscle surrounding the lacrimal SAC –

Eyelid cartilage glands –

Part of the middle bundle of muscle that raises the upper eyelid –

External border membrane of the cornea –

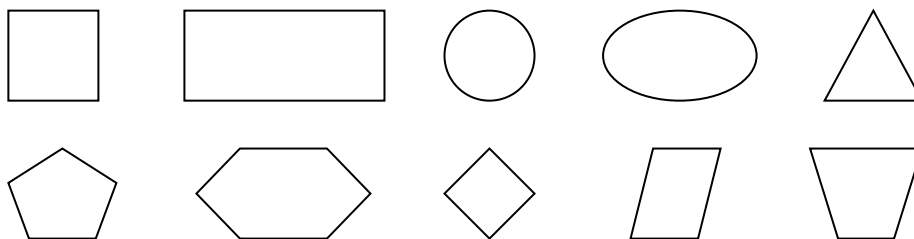
Internal border membrane of the cornea –

The pigment membrane of the retina –

The channel through which the outflow of intraocular fluid is carried out –

Arterial circle around the optic disc –

9. Circle the figure that have lenticular fiber cross-section.



10. Emphasize which of the listed arteries are extra-ocular.

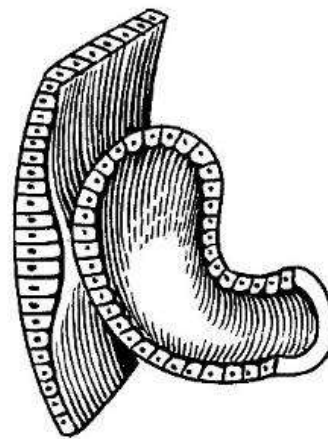
The Central artery of the retina,

Posterior laticed arteries,

Front ethmoid artery,

Posterior long ciliary arteries,  
 Posterior short ciliary arteries,  
 Supraorbital artery,  
 Anterior ciliary arteries,  
 Supra-block artery,  
 The lacrimal artery,  
 Artery of the nasal dorsum.

11. Describe the increase in which lymph nodes, can be observed in inflammatory processes of the upper eyelid?
12. Explain why it seems that a newborn child's eyeballs will stand out of the orbit more strongly than an adult's?
13. Sign under the picture, what stage of development of the human eye is depicted?

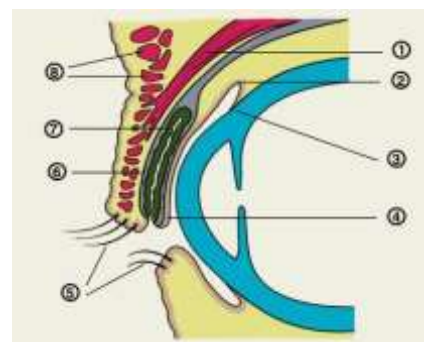


14. Describe the features of the development of the lacrimal apparatus in children.
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently, with marks of correct answers.*

### Option 6

1. Mark on the diagram and name what departments the conjunctiva is divided into?

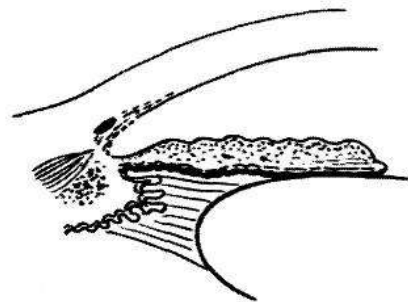
4 –  
 2 –  
 3 –



2. How many processes does the villous part of the ciliary body have, and what is their main function?
3. Describe what is the normal position of the upper and lower eyelids in relation to the cornea when the eye slit is open?



4. Name the anatomical formation that lies at the top of the angle of the anterior chamber of the eye.
5. Describe how the lens is fixed in the posterior chamber of the eye.
6. Indicate on the diagram with arrows and sign: where does the cornea, which does not have its own vessels, get food from?

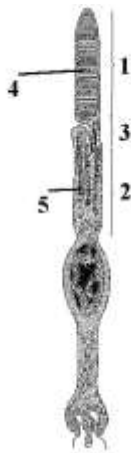


7. What vessels and nerves are present in the vitreous body?
8. Emphasize which oculomotor muscles start at the top of the orbit from the tendon ring around the visual opening, put the + sign next to the names of the muscles that form the muscle funnel.

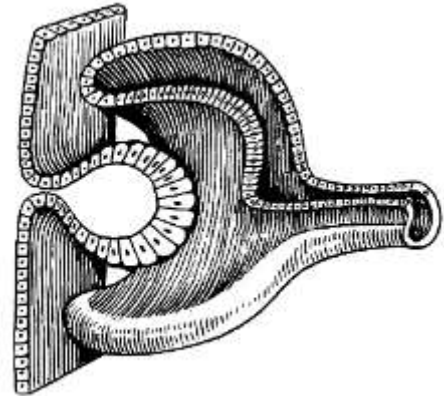
Upper rectus muscle  
Internal rectus muscle  
Lower rectus muscle  
The upper oblique muscle  
External rectus muscle  
The lower oblique muscle

9. It is known that the orbit of newborns has the shape of a three-sided pyramid. What is the wall of the orbit they have almost not expressed?
10. Write how the blood supply to the orbital part of the optic nerve is carried out?

11. Which element of the neuroepithelium is shown in the figure, and in which area of the retina is its maximum concentration observed?



12. Describe the location of the ciliary node in the orbital cavity.
13. Sign under the picture, what stage of development of the human eye is depicted?



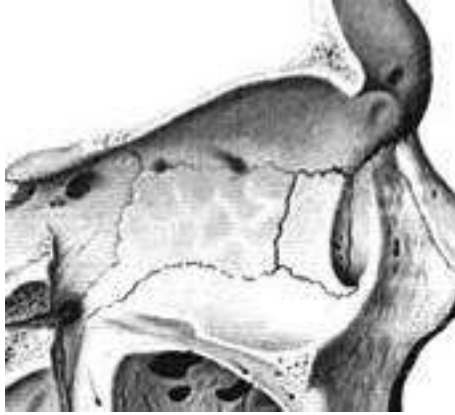
14. Describe how the lens is fixed in the posterior chamber of the eye.
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently, with marks of correct answers.*

### Option 7

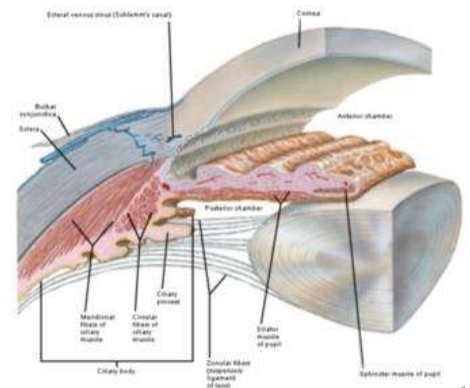
1. Determine which part of the conjunctiva is most tightly soldered to the underlying tissues?
2. What are the main functions of the cornea of the eye?
3. Describe what changes the epithelial cells located under the anterior lens capsule undergo over time?



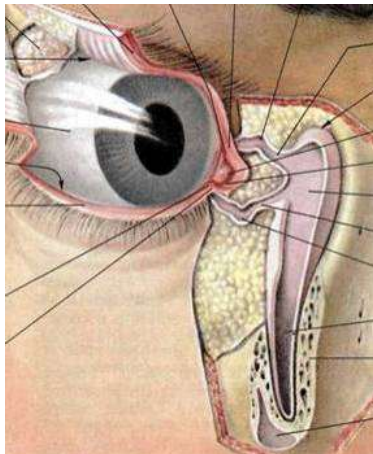
4. Which bones make up the inner wall of the eye socket, and which of them is the thinnest?



5. What portions are available in the ciliary muscle? What direction and what name do they have?



6. What parts of the nasolacrimal duct are distinguished, and in which part of the nose is its mouth?

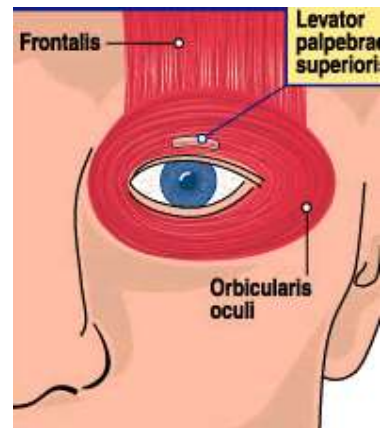


7. Underline in the list, which mucopolysaccharides does the vitreous body contain?

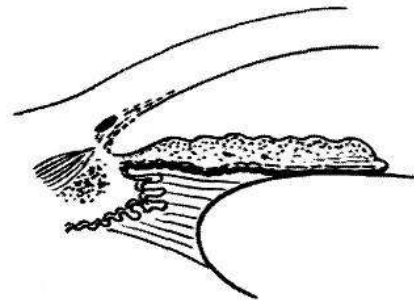
Chondroitin  
Mucin  
Dermatan sulfate  
Mannose  
Lumigan  
Vitrazin  
Keratocin

## Gesture

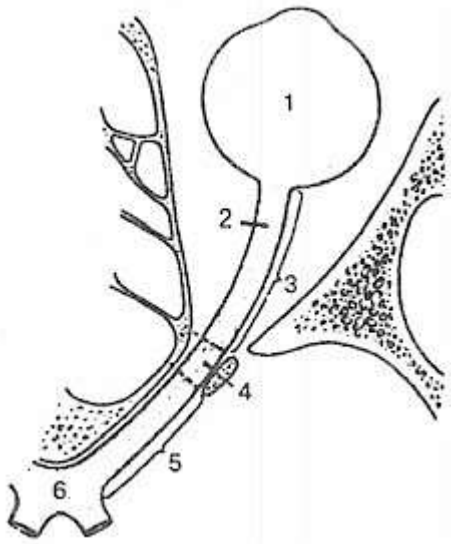
8. Describe where the upper eyelid muscles start and attach, as well as what innervation they receive



9. Mark the location of the eye drainage system on the diagram (circle it with a pen).



10. Mark on the diagram and sign, which parts of the optic nerve distinguish?



11. Cross out anatomical formations that do not involve the lacrimal nerve in innervation.

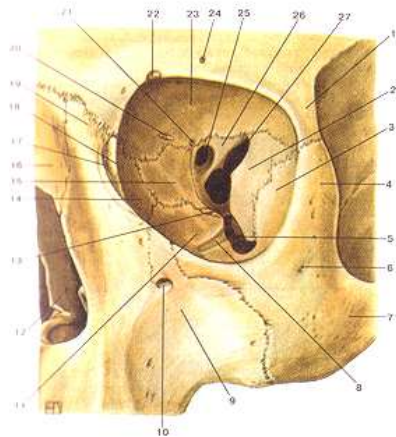
Lacrimal gland  
Oculomotor muscles  
The sphincter of the pupil

External conjunctiva of the eyelids  
 Ciliary muscle  
 Cornea  
 Middle part of the upper eyelid skin  
 Skin of the outer corner of the eye  
 Skin of the inner corner of the eye  
 Internal divisions of the conjunctiva of the eyelids

12. Mark the arrows in the table, which anatomical formations supply blood to the listed arteries.

Iris and ciliary body	The Central artery of the retina
	Anterior ciliary arteries
Retina	Posterior long ciliary arteries
	Posterior short ciliary arteries

13. Draw a pen around the hole in the orbit through which the optic nerve passes, and write in which part of the skull this hole opens?



14. What eye symptoms may occur in lesions of the facial nerve?
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently, with marks of correct answers.*

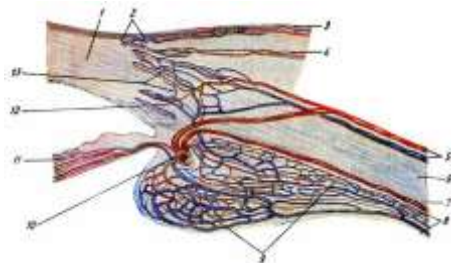
### Option 8

1. What liquid circulates between the membranes of the optic nerve?
2. Describe the differences between choriocapillaries and normal capillaries of the vascular network.
3. What fluid circulates between the optic nerve membranes?
4. List the cavities that the orbit borders on:
5. Describe how the lens is fixed in the posterior chamber of the eye.

6. Where are the Zeiss and Moll glands located?
7. Describe the features of the fundus characteristic of a newborn:



8. Mark the diagram with arrows and describe the ways of feeding the cornea.



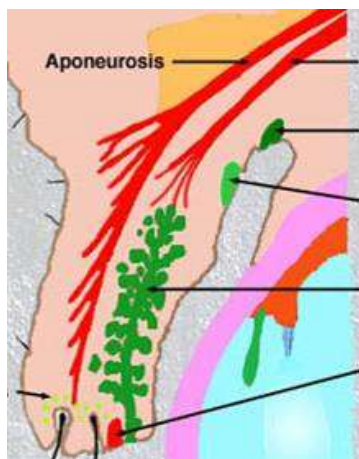
9. Label the layers and write their names in the precorneal tear film.



10. Fill in the table, describing five periods in the development of the visual analyzer after birth:

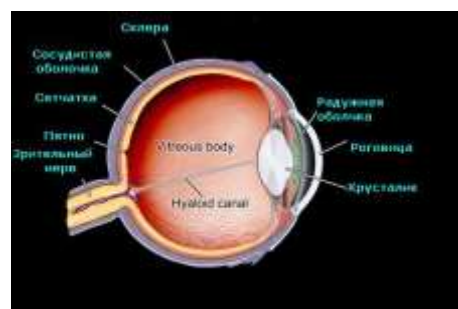
1	
2	
3	
4	
5	

11. Where is the tarsoorbital fascia located and what functions does it perform?

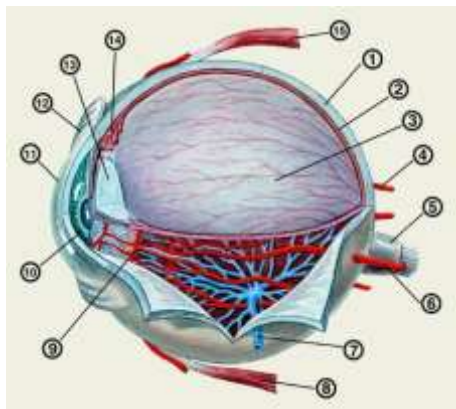


12. Mark on the diagram and sign the names of the hardware that performs basic tear production.

13. Mark the suprachoroidal space on the diagram.



14. What is the name of the vessels shown in the figure, marked with the number 7? What is their number, and where do they carry blood?

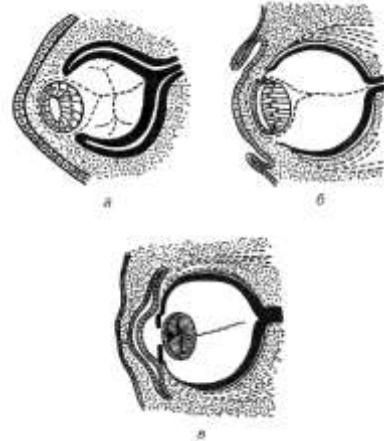


15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

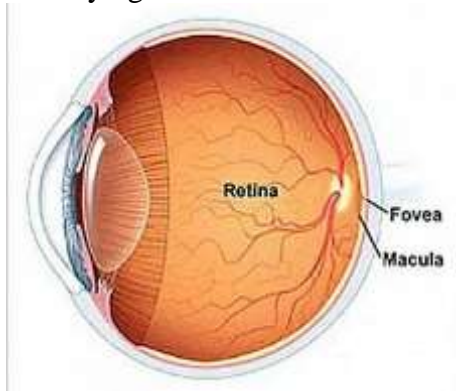
### Option 9

1. Describe the features of the development of the lacrimal apparatus in children.
2. Explain what the expression "sectoral structure of the choroid" means.

3. Indicate in the drawing what stages of development of the human eye are depicted.



4. Mark on the diagram with arrows the places where the retina is tightly fixed to the underlying tissues.



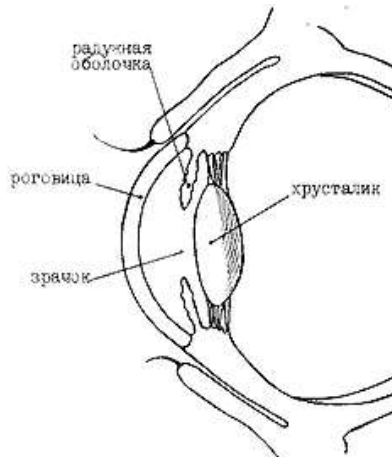
5. Write what layers are distinguished in the histological structure of the sclera?
6. Describe what effect on the position of the eye in the orbit can have a contraction or relaxation of the orbital muscle, where this muscle is located and what innervation it receives?
7. Mark on the drawing and describe what is a tear meat?



8. What is the barrier function of the conjunctiva?



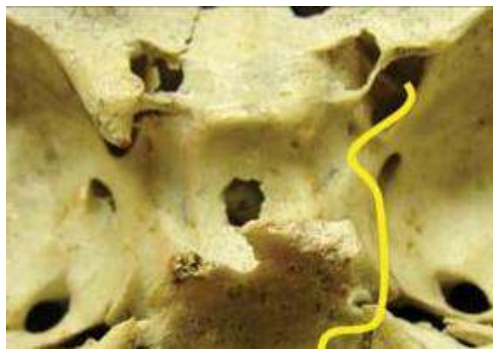
9. Describe and graphically represent how the lens is fixed in the back chamber of the eye.



10. What anatomical formation in the photo of the dissected human eye is indicated by CB?



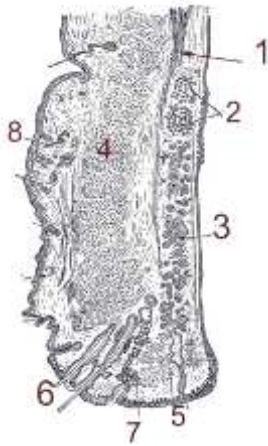
11. What anatomical formation is localized in the place of the skull cavity shown in the drawing?



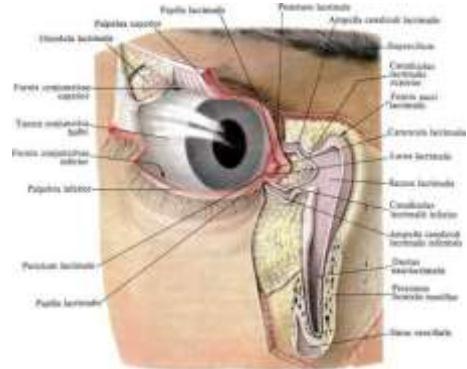
12. Write which of the oculomotor muscles changes its direction before attaching to the eyeball, and describe its course from the beginning to the place of attachment, specify its motor innervation.
13. What feature of the venous system of the orbit contributes to the movement of infectious agents in different directions?
14. Write down what the main functions of the eye socket are.
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

## Option 10

1. Write next to the drawing, which part of the century is indicated by the figure 4?



2. Write in order, what anatomical formations are represented by the lacrimal pathways?



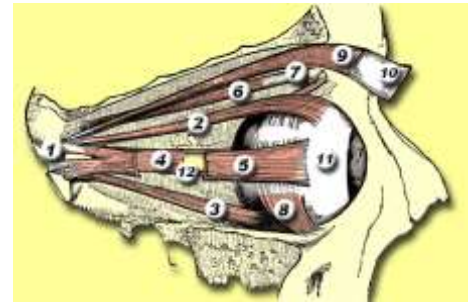
3. Sign under the drawing, which anatomical formation is marked with an arrow in the proposed drawing?



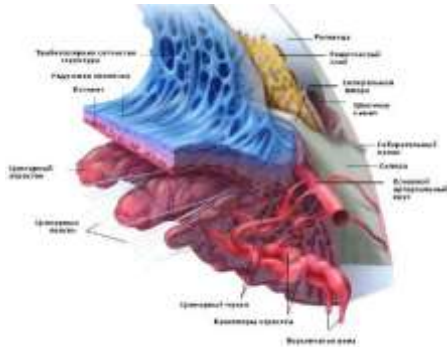
4. Write what substances in its composition has a tear fluid?
5. What is the thickness of the cornea in the center and on the periphery, and what is the shape and optical effect of the lens (collecting or scattering) it represents?
6. At what week of fetal development formed the eye bubbles?



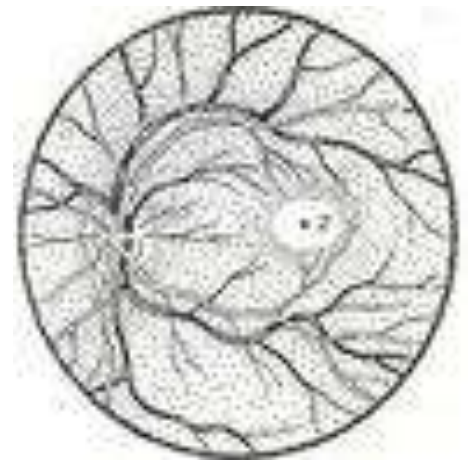
7. Which oculomotor muscles are indicated on the diagram by the numbers 7 and 8?



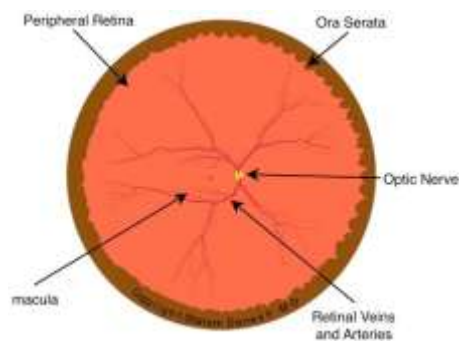
8. Write what vessels formed the main arterial circle of the iris?



9. Mark the place of the highest concentration of retinal cone elements with a circle on the diagram.



10. Describe the branching of the Central retinal artery that entered the eye in the center of the optic disc.



11. Describe the path of intraocular fluid movement, starting from the moment it is produced by the villi of the ciliary body.



12. Write down what anatomical element of the eyeball is shown in the drawing you are offered?



13. Which of the listed vessels are directly involved in the formation of the vascular membrane itself (cross out the unnecessary)?  
Anterior ciliary arteries, posterior long ciliary arteries, posterior short ciliary arteries, laticed arteries, Central retinal artery, choroidal arteries.
14. Name the anatomical formation that lies at the top of the angle of the anterior chamber of the eye.
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*



**Federal state budgetary educational institution of higher education  
"North Ossetian state medical Academy of the Ministry of health of  
Russia»**

**Department of OTO-Rhino-laryngology with ophthalmology**

**THE COURSE OF OPHTHALMOLOGY**

**KOROEV O.A., KOROEV A.O.**

**INDIVIDUALIZED TASKS FOR INDEPENDENT  
WORK OF 4TH YEAR STUDENTS OF THE  
FACULTY OF MEDICINE ON THE CYCLE OF  
OPHTHALMOLOGY**



**TOPIC 2: "METHODS OF INVESTIGATION OF THE EYE AND ITS  
APPENDAGES. THE ORDER OF EXAMINATION OF THE EYE PATIENT  
AND THE SCHEME OF THE HISTORY OF THE DISEASE. PERFORMING  
EYE DIAGNOSTIC AND THERAPEUTIC MANIPULATIONS. VISUAL  
FUNCTIONS AND AGE DYNAMICS OF THEIR DEVELOPMENT"**

**TOPIC 2: "METHODS OF INVESTIGATION OF THE EYE AND ITS APPENDAGES. THE ORDER OF EXAMINATION OF THE EYE PATIENT AND THE SCHEME OF THE HISTORY OF THE DISEASE. PERFORMING EYE DIAGNOSTIC AND THERAPEUTIC MANIPULATIONS. VISUAL FUNCTIONS AND AGE DYNAMICS OF THEIR DEVELOPMENT".**

**I. Questions for checking the initial (basic) level of knowledge.**

1.

Anatomical structure	Inspection and research methods
Eyelids	<i>1.</i>

2.

Anatomical structure	Inspection and research methods
Orbit	<i>1.</i>

3.

Anatomical structure	Inspection and research methods
Iris	<i>1.</i>

4.

Anatomical structure	Inspection and research methods
Lens	<i>1.</i>

5.

Visual function	Method of research
Visual acuity	<i>1.</i>

6.

Visual function	Method of research
Field of view	<i>1.</i>

7.

Visual function	Method of research
Chromatic sensitivity	<i>1.</i>

8.

Visual function	Method of research
Light perception	<i>1</i>

**II. Targets:**

<u>The student should know:</u> <ul style="list-style-type: none"> <li>• how to perform an external eye examination;</li> <li>• how to perform an eversion of the eyelids;</li> </ul>	<u>Recommended reading:</u> <i>a) educational literature</i>
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<ul style="list-style-type: none"> <li>• how to examine the eye with side or focal lighting;</li> <li>• how to examine the eye in passing light;</li> <li>• how to perform an ophthalmoscopy;</li> <li>• how to carry out biomicroscopy of the eye;</li> <li>• how to examine intraocular pressure;</li> <li>• how and why is diaphanoscopy performed;</li> <li>• how and why exophthalmometry is performed;</li> <li>• how and why is echoophthalmography performed;</li> <li>• in what ways is the examination of the child;</li> <li>• the order in which the medical history of an ophthalmic patient is drawn up;</li> <li>• how to determine visual acuity using various methods;</li> <li>• how peripheral vision is examined;</li> <li>• what are the normal limits of the field of view;</li> <li>• what are the most common pathological changes in the visual field;</li> <li>• how light perception and adaptation are explored;</li> <li>• what types of dark adaptation disorders exist and how to treat them;</li> <li>• how color perception is investigated;</li> <li>• what are the types of congenital disorders of color vision exist.</li> </ul>	<p><u>Egorov E.A.</u> Ophthalmology. National leadership. Short edition. – Moscow: GEOTAR-Media, 2016. – 736 p.</p> <p>Ophthalmology: textbook. <u>V.N. Alekseev, Yu.S. Astakhov, S.N. Basinsky et al.</u> /Ed. by <u>E.A. Egorov</u>. – M.: GEOTAR-Media, 2010. – 240 p.</p> <p>Ophthalmology: Textbook / ed. by <u>E.I. Sidorenko</u>. – 3rd ed. – Moscow: GEOTAR-MED. 2013. – 640 p.</p> <p><u>Ruban E.D.</u> Eye diseases: the newest reference book. Rostov-on-Don: Phoenix, 2016. – 622 p.</p> <p><u>Takhchidi H.P., Yartseva N.S., Gavrilova N.A., Deev L.A.</u> Ophthalmology: textbook. – M.: GEOTAR-Media, 2011. – 544 p.</p> <p><i>b) additional</i></p> <p><u>Avetisov S.E., Kashchenko T.P., Shamshinova A.M.</u> Visual functions and their correction in children. – M.: Medicine, 2005. – 872 p.</p> <p><u>Avetisov S.E.</u> Ophthalmology: national guide. – M.: GEOTAR-Media, 2013. – 944 p.</p> <p>Clinical physiology of the visual organ. Essays (edited by <u>A.M. Shamshinova</u>). – M., 2006. – 956 p.</p> <p><u>Daker, J.S.</u> Optical coherence tomography of the retina – Moscow: Medpress-inform, 2016, 192 p/</p> <p><u>Koroev O.A.</u> Ophthalmology: the subordinate education of the eye. – Rostov-on-don: Phoenix, 2007.</p> <p><u>Koroev O.A., Koroev A.O.</u> Methodological guide to practical training for students of medical, medical-preventive and pediatric faculties. – Vladikavkaz, 2012. – 35 p. – +1 electron.Opt. Disk.</p> <p><u>Koroev O.A., Koroev A.O.</u> Methodological recommendations for mastering practical skills in ophthalmology. 2015.</p> <p><u>Sing A.D.</u> Ultrasound diagnostics in ophthalmology, Moscow: Medpress – inform, 2015, 280 p.</p>
<p><u>The student must be able to:</u></p> <ul style="list-style-type: none"> <li>• perform an external eye examination;</li> <li>• perform an inversion of the lower eyelid;</li> <li>• perform an eversion of the upper eyelid;</li> <li>• examine the eye with side or focal lighting;</li> <li>• examine the eye in passing light;</li> <li>• perform biomicroscopy of the eye;</li> <li>• to investigate the intraocular pressure;</li> <li>• fix the child for eye examination;</li> </ul>	<p><u>Рекомендуемая литература:</u> Та же.</p>

<ul style="list-style-type: none"> <li>• study visual acuity in the distance using the tables of Sivtsev and Orlova;</li> <li>• to investigate the visual acuity below 0.1;</li> <li>• to explore the perception;</li> <li>• examine the field of view using the perimeter and determine its violations;</li> <li>• examine the field of view in a controlled way;</li> <li>• to explore the perception on the tables Rabkin or Yustova.</li> </ul>	
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### III. Tasks for independent work on the topic under study.

#### Option 1

1. What objective data can be obtained by watching the patient enters the office of an ophthalmologist?
2. What is the criterion for correct inversion of the lower eyelid?
3. Exophthalmometry is used to determine... (Give definitions of eye pathology).
4. Complete the omissions: to Perform an eye examination with side or focal lighting, you must have a table lamp that is placed \_ \_ \_ \_ \_ from the patient, as well as \_\_\_\_\_.
5. The correct implementation of the research method in the transmitted light of the eye of a healthy person is indicated by the observed doctor ....
6. Name the types of ophthalmoscopic examination.
7. Which image and where watching the doctor while conducting ophthalmoscopy in the reverse form?
8. Why is visual acuity based on optotypes studied from a distance of 5 meters?
9. At what angle of view is the letter of the tenth row visible in the Sivtsev table from a distance of 5 meters?
10. What methods of peripheral vision research can you name?
11. Explain why the boundaries of the field of view are wider than the rest of the blue color.
12. Complete the table of congenital anomalies of color vision:

Monochromacy	Dichromate	Abnormal trichromate
	Protanopia Deuteranopia	

13. What visual functions are performed by the retinal rod apparatus (cross out what you Don't need)?
- Visual acuity and color perception
  - Visual acuity and field of view
  - Visual acuity and light perception
  - Color perception and field of view
  - Color perception and light perception
  - Field of view and light perception
14. What diseases of internal organs can hemeralopia talk about?
15. Make 5 test questions on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 2

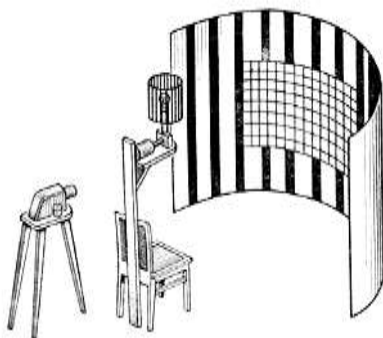
1. Describe which data is shared history may be important for the emergence of ocular pathology?
2. What qualities of the eyelids should be paid attention to when conducting an external inspection?
3. Emphasize which structures of the eye can be viewed using only the focal lighting of the eye.
- Eyelids
  - Conjunctiva of the eyelids
  - Conjunctiva of the eyeball
  - Cornea
  - Iris
  - Ciliary body
  - Retina
  - Lens
  - Vitreous
  - Optic nerve
4. What are the parameters of the eye allows you to explore the methods-echocardiography, and to diagnose what pathology it can be applied?



5. Write down what degrees of eye density are noted during palpatory examination of intraocular pressure?
6. Write down what research method you need to use to get this effect. Describe the method of its implementation.
7. What research methods can be used for the device shown in the figure?



8. What is the name of the visual acuity research technique shown in the drawing?



9. What is the name of the device shown in the drawing, and what is it used for?



10. Write what space (in degrees) both fixed eyes cover along the horizontal and vertical Meridian.



11. What research method does the doctor perform? What is the main condition for its application? Write an algorithm of actions to perform it.



12. Describe what are the polychromatic tables of E.B. Rabkin?

13. Complete the table of congenital anomalies of color vision:

Monochromacy	Dichromate	Abnormal trichromate
	Protanopia Deuteranopia	

14. Describe what are the differences between positive and negative scotomata?
15. Make 5 test questions on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 3

1. What pathology of eyes can be assumed if entering into the ophthalmologist's office, the patient covers the eyes from light?
2. Which of the tools shown in the figures should be used for double inversion of the upper eyelid (mark the bird under the picture)?



3. Arrange in the correct order, indicating the number, the order of external examination of the eye structures.

Conjunctiva; –  
 Eyelids; –  
 The eyeball. –  
 Lacrimal organs: –

4. What is the name of this device and what is it used for?



5. Explain the reasons why the upper eyelid is technically much more difficult to turn out than the lower one?
6. Describe the algorithm for studying the mobility of the eyeball.
7. What type of research is performed by the doctor shown in the picture?



8. What is an international optotype? And when was it adopted at the International Congress of ophthalmologists?
9. Explain why visual acuity below 0.1 can be examined by showing the subject a different number of fingers?
10. Which device is shown in the drawing and what is it used for?
11. Explain why the extreme periphery of the retina are able to discern only white color?
12. Enter in the table, what are the characteristics of each color?

Tone	
Brightness	
Saturation	

13. What complaints usually impose individuals with congenital colour vision defects?
14. Using the table, describe the three types of functional ability of the eye.

Photopic vision	
Twilight vision	
Night vision	

15. Make 5 test questions on the topic. *Test questions are compiled by students independently with marks of correct answers.*

#### Option 4

1. Describe what changes in eyelids defined by the outside of the vehicle, it is necessary to pay attention to?
2. Write down what qualities of the cornea should be paid attention to when examining it with focal lighting?
3. Complete the definition: Gonioscopy is a research method that allows you to:\_\_\_\_\_ It is used for diagnostics  
\_\_\_\_\_
4. Write what is the method of ultrasound dopplerography?
5. What device is shown in the drawing, and what is it used for?



6. Explain why the method of one of the types of ophthalmoscopy is called "reverse ophthalmoscopy"?
7. What are visual evoked potentials?
8. What is the reason for limiting the perception of long-wave infrared radiation by the eye?
9. Write algorithm for the study of visual acuity if the patient does not distinguish between the four facilities?
10. Which of the following methods of visual field research is the Most valuable in cattle research? (underline the correct answer)

Control or finger method

Campimetry

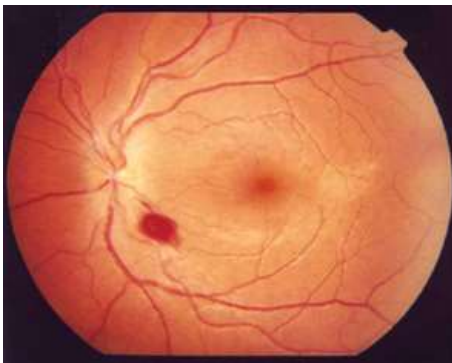
Perimetry

11. Explain why perimetry Excludes distortion of the boundaries of the field of view?
12. What is the name of people with dichromasia, depending on the form of color perception disorders?
13. What is anomaloscopy, and what is the basis of this method of research?
14. What types of light sensitivity exist, and what is each of them characterized by?
15. Make 5 test questions on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 5

1. Write about the presence of some pathology can tell which is determined by palpation of the eyelids crepitus?
2. Through the unchanged transparent conjunctiva of the eyelids, yellowish narrow vertical stripes are visible. What's it?
3. Which States the depth of the anterior chamber, detectable by lateral illumination, we can say (5)?
4. What is the difference between lens opacities and vitreous opacities that allows them to differentiate when examined in transmitted light?

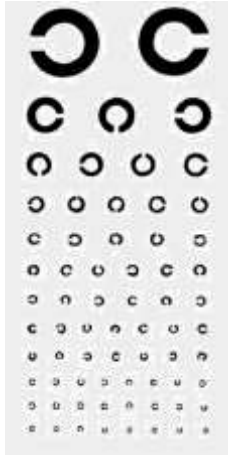
5. The figure below shows the retina with the presence of hemorrhage, the study was performed by indirect ophthalmoscopy. What quadrant do you think has hemorrhage? Underline the correct answer.



- In signaturegem;
- In the lower interior;
- In upper-morning;
- In verhnenaruzhnom.

6. Write down what contraindications to fluorescence angiography exist?
7. What ways can I increase the size of the image visible to the doctor using the method of side or focal lighting?
8. What is meant by the detail of the optotype sign?
9. Give the definition of a blind spot and other physiological scotoma.

10. Why is it possible to use this part of the Sivtsev table shown in the figure?



11. Which device is shown in the drawing, and what is it used for?

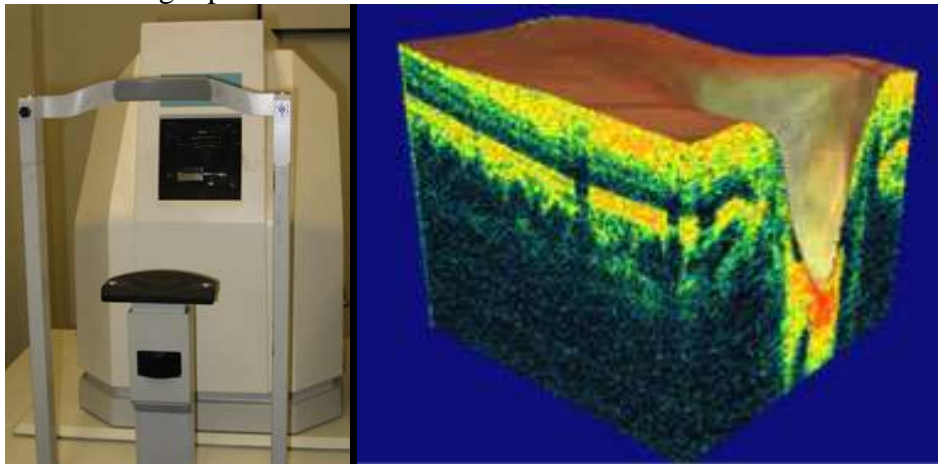


12. Why are E B. Rabkin's polychromatic tables recognized as the Most perfect for studying color perception?
13. What color perception disorder is called color anomaly, and what types of it are distinguished?
14. What is the duration of light adaptation of the eye, and what is the protective reaction of the eye it is usually accompanied by?
15. Make 5 test questions on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 6

1. Write an algorithm for palpatory examination of intraocular pressure.
2. What are the advantages over other methods of study, and in particular light and x-ray has ultrasound diagnostics?
3. Ophthalmodinamometry – a special research method that allows you to determine...

4. Write the maximum number of devices known to you for the study of the eye, the names of which end with: ... osprey.
5. What opportunities do laser scanning ophthalmoscopes offer to ophthalmology? The hint is shown in the right picture



6. What pronounced changes in the face and eyes can be noticeable immediately when the patient appears in the ophthalmologist's office?
7. What additional devices can be used for eversion of the upper eyelid?
8. What method of research is performed in the patient shown in the figure?



9. Briefly describe the current theory of relative specificity of cones.
10. In what kind of color perception disorder can the patient see everything around them in blue? In what case can this pathology occur?

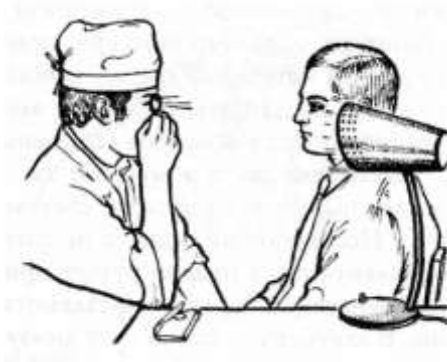


11. Write in which cases color perception errors may occur in everyday life?

12. What is the main condition that must be met when performing a visual field study using the control method? It is impossible to get objective data without it.
13. Describe the conditions and process of conducting a campimetric study.
14. What ability does a person have with normal light perception?
15. Make 5 test questions on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 7

1. What are the features of ultrasonic vibrations based on the method of echoophthalmography?
2. Write an algorithm for the technique of inversion of the lower eyelid.
3. List the eye structures that can be viewed using focal or side lighting.
4. Write down what anatomical formations are examined during ophthalmoscopy
5. Under what condition does gonioscopy make it possible to examine the ciliary processes?
6. What method of eye examination is performed by the doctor shown in the picture?



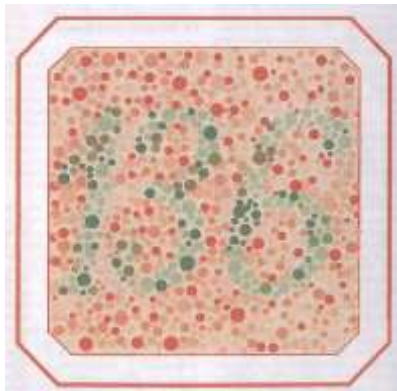
7. Whether and how diaphanoscopy to assist in the diagnosis of subconjunctival rupture of the sclera?
8. Explain what is the main Advantage of the sign projector for visual acuity research over the demonstration of standard optotypes?
9. Complete the table of congenital anomalies of color vision:

Monochromacy	Dichromate	Abnormal trichromate
		Protanomaly Deutanomaly

10. Write what methodological error is made by the patient who is being examined for visual acuity?



11. What visual function is studied using the table shown in the figure:



12. What are the main landmarks in the study of the field of view.
13. Explain why the kinetic perimetry movement of the object should be carried out from the periphery to the center?
14. Changing the light sensitivity of the eye when changing the illumination is called ...
15. Make 5 test questions on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 8

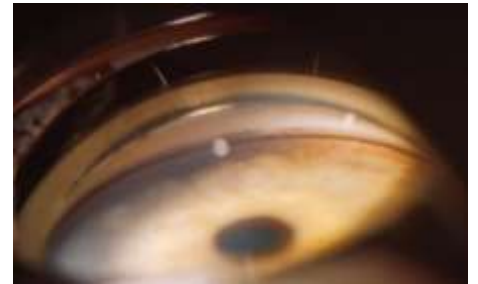
1. Write, in some cases, at the diaphanoscope may not experience the red glow of the pupil?
2. What research method can be used to observe the blood flow in the vessels of the marginal loop network?
3. What kind of eye change is indicated by the entry in the medical document: "palpation T+3".



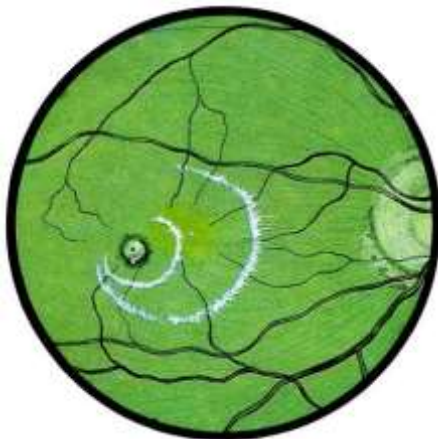
4. What type of research is performed by the doctor, and what anatomical structures of the eye can be considered?



5. What anatomical structures are shown in the drawing? What research method was used to obtain such an image? In which disease is this technique mainly used?

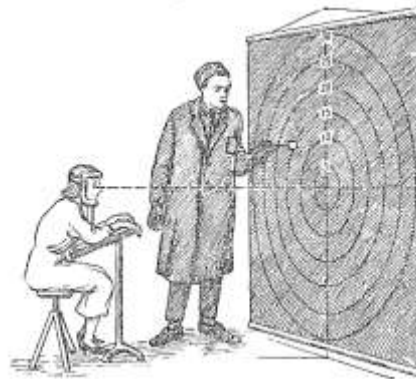


6. What is the method of studying the eye, in which you can observe such a picture of the fundus.



7. Write down what are the main indicators obtained during the tonographic examination?
8. What methods can be used to determine visual acuity below 0.1?
9. At what angle of view are the details of the letters of the tenth row in the Sivtsev table visible from a distance of 5 meters?
10. How common are congenital color perception disorders?
11. What do you think is the relative specificity of cones in color perception? The drawing below will help you.

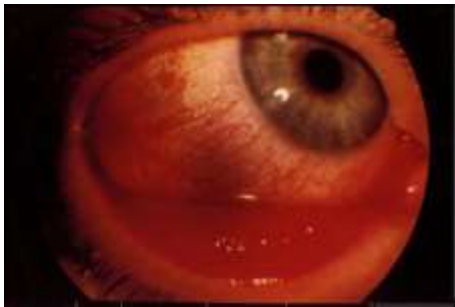
12. What do you see as the fundamental difference between static and dynamic perimetry?
13. What method of research is performed by the doctor shown in the picture?



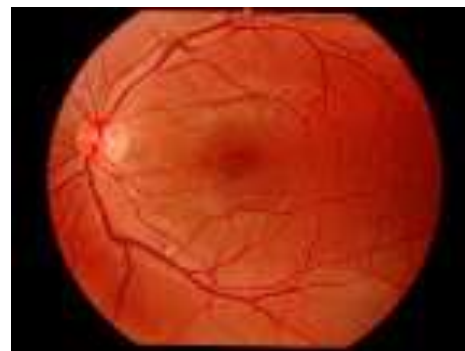
14. What time does a person usually spend on light adaptation?
15. Make 5 test questions on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 9

1. Determine what type of eyeball injection is shown in the picture?



2. With what, or what methods of eye examination can a doctor see such an image?



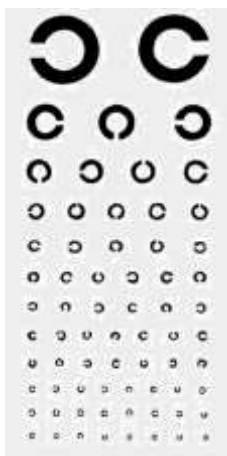
3. What pathology in this child can indicate the presence of eye pathology?



4. Create an algorithm of actions for conducting research methods in transmitted light.
5. What manipulation allows you to get the picture shown in the drawing?



6. Write why ophthalmoscopy in the reverse form has the same name?
7. Why do you think the side lighting technique is still called the focal lighting technique?
8. Give a description of the Central vision.
9. Why is it possible to use this part of the Sivtsev table shown in the figure?



10. What kind of color perception disorder can the patient see everything around them in red?  
In what case can this pathology occur?



11. Give a description of the three colour components.
12. Describe where the blind spot is located in the field of vision, and what are its boundaries?
13. What are the main advantages and disadvantages of the Foerster arc perimeter?



14. Give the definition of congenital night blindness.
15. Make 5 test questions on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 10

1. What research methods that are known to You can be used for diagnosis of intraocular tumors?
2. Explain why the inversion of the upper eyelid is technically More difficult to perform than the inversion of the lower eyelid?
3. If you can't get a good look at some small details when examining the eye using the focal lighting technique, What can you do to get a better view?
4. When examining the eye in transmitted light, there is no red reflex from the fundus. What reasons can lead to this?

5. What pathology in the child can be assumed with this picture, observed during external examination?



6. What research method can be used to obtain an optical cross-section of transparent eye media?
7. What type of research is performed on this patient?



8. How is retinal visual acuity investigated?



9. Write algorithm for the study of visual acuity on the table Sivtsev.
10. Perform a topical diagnosis of the pathological process. Where is the lesion located in bitemporal hemianopsia?
11. Write down what visual functions relate to Central and peripheral vision?

12. What is the principle of treatment at the heart of the anomaloscope?



13. In what kind of color perception disorder can the patient see everything around them in green? In what case can this pathology occur?



14. Describe what a test sample can be applied to approximate studies of light perception?
15. Make 5 test questions on the topic. *Test questions are compiled by students independently with marks of correct answers.*



**TOPIC 4: "PHYSICAL AND CLINICAL REFRACTION. ASTIGMATISM. ACCOMMODATION. PRESBYOPIA. ASSIGNING POINTS".**

**I. Questions for checking the initial (basic) level of knowledge.**

1.

Questions	Emmetropia	Myopia	Hypermetropia	Astigmatism
Which is larger: the optical axis or the focal length?				

2.

Questions	Emmetropia	Myopia	Hypermetropia	Astigmatism
Where is the further point of clear vision?				

3.

Questions	Emmetropia	Myopia	Hypermetropia	Astigmatism
Where is the main focus?				

4.

Questions	Emmetropia	Myopia	Hypermetropia	Astigmatism
How many and what degrees of this type of refraction are distinguished?				

5.

Questions	Emmetropia	Myopia	Hypermetropia	Astigmatism
What kind of glasses are corrected?				

**II. Targets:**

<p><u>The student should know:</u></p> <ul style="list-style-type: none"> <li>• termination of physical and clinical refraction, its types;</li> <li>• subjective and objective methods for determining clinical refraction;</li> <li>• the mechanism of accommodation and its various violations;</li> <li>• clinic and correction of various types of clinical refraction;</li> <li>• forms and degrees of myopia;</li> <li>• prevention of myopia;</li> <li>• what is presbyopia, what are its manifestations and correction;</li> <li>• what types of accommodation disorders exist;</li> <li>• principles and types of astigmatism correction;</li> <li>• how to write a prescription for glasses.</li> </ul>	<p><u>Recommended reading:</u></p> <p><i>a) educational literature</i></p> <p>Egorov E.A. Ophthalmology. National leadership. Short edition. – Moscow: GEOTAR-Media, 2016. – 736 p.</p> <p>Ophthalmology: textbook. V.N. Alekseev, Yu.S. Astakhov, S.N. Basinsky et al. /Ed. by E. A. Egorov. – M.: GEOTAR-Media, 2010. – 240 p.</p> <p>Ophthalmology: Textbook / ed. by E.I. Sidorenko. – 3rd ed. – Moscow: GEOTAR-MED. 2013. – 640 p.</p> <p>Ruban E.D. Eye diseases: the newest reference book. Rostov-on-don: Phoenix, 2016. – 622 p.</p> <p>Takhchidi H.P., Yartseva N. S., Gavrilova N. A., Deev L.A. Ophthalmology: textbook. – M.: GEOTAR-Media, 2011. – 544 p.</p> <p><i>b) additional</i></p>
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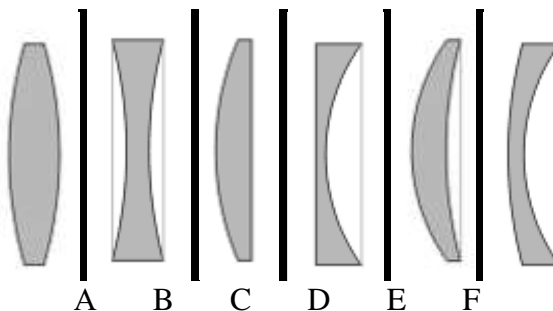


	<p><u>Avetisov E.S.</u> Myopia. – M.: Medicine, 2002. – 288 p.</p> <p><u>Korojev O.A., Korojev A.O.</u> Methodological guide to practical training for students of medical, medical-preventive and pediatric faculties. Vladikavkaz: 2012. – 35 p. – +1 electron. Opt. Disk.</p> <p><u>Nosenko I.A.</u> Fundamentals of optometry: practical work. – Rostov-on-don: Phoenix, 2015. – 141 p.</p> <p><u>Orlova N.S., Osipov G.I.</u> Vision correction. – M., 2006. – 226 p.</p> <p><u>Stukalov S.E.</u> Clinic of various forms of myopia, treatment and prevention. – M., 2007. – 128 p.</p>
<p><u>The student must be able to:</u></p> <ul style="list-style-type: none"> <li>• determine the type and degree of clinical refractive error using a subjective method;</li> <li>• select glasses for patients with refractive errors;</li> <li>• identify measures for the prevention of myopia;</li> <li>• explore the scope of accommodation;</li> <li>• pick up points for the correction of presbyopia;</li> <li>• determine the type and strength of eyeglass lenses by neutralization;</li> <li>• write prescriptions for different types of glasses.</li> </ul>	<p><u>Recommended reading:</u> Same.</p>

### III. Tasks for independent work on the topic under study.

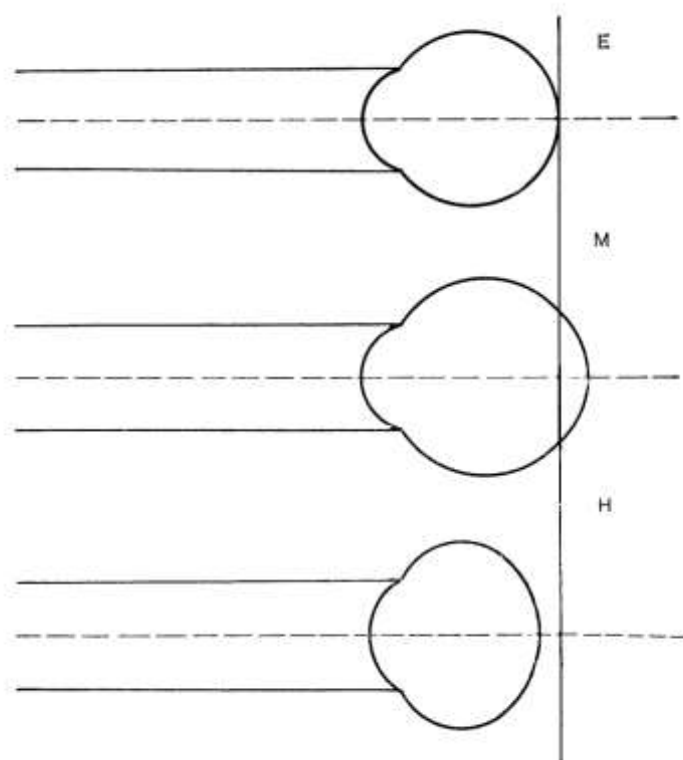
#### Option 1

1. Describe what changes occur in the eye during accommodation.
2. Which of the drawn lenses are:  
Collective –  
Scattering –



3. Give the formulation process. Accommodation is called – the ability of the eye ...

4. Draw on the diagram the course of rays for eyes with different types of clinical refraction.



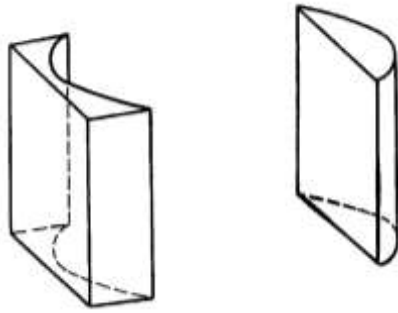
5. As you know, the type of clinical refraction depends on the optical power of the eye and the length of the anatomical axis of the eye. Insert the eye parameters specific to each type of refraction in the table.

Type of refraction	The value of physical refraction (D)	Length of the optical axis of the eye (mm)
Emmetropia		
Axial hypermetropia		
Refractive hypermetropia		
Axial myopia		
Refractive myopia		

6. Describe how you can detect hidden hypermetropia.
7. What methods of correction of myopia exist?
8. Fill in the table

Age and type of refraction in the patient	Glasses needed to correct presbyopia
50 years old, emmetropia	
40 years old, emmetropia	
40 years old, hypermetropia at 2.0 D	
60 years old, hypermetropia at 1,0 D	
50 years old, myopia at 2.0 D	
40 years old, myopia at 5.0 D	
60 years old, myopia at 1,0 D	

9. In the drawing, draw a plane that characterizes the axis of a cylindrical lens.



10. Write the patient a prescription for glasses for correcting myopia in 3.5 D.
11. Describe possible complications of high-grade myopia.
12. What types of corrections you can offer the patient with a high degree of anisometropia.
13. Fill in the empty spaces in the suggested table:

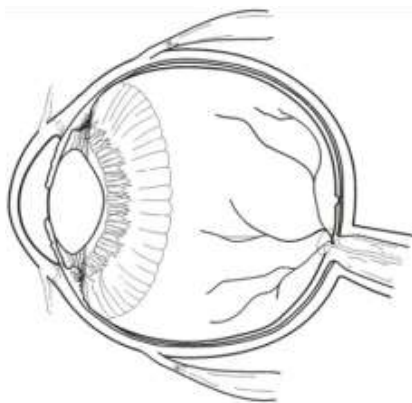
Correct astigmatism	The refraction of rays along the main meridians does not change
	Refractive power changes over the course of the Meridian
	In one of the meridians there is emmetropic refraction, in the other – ametropia.
	In both meridians, the same type of ametropia but of different degrees.
Mixed astigmatism	There are different types of refractive errors in different meridians.
	In the vertical Meridian, the refractive power is greater than in the horizontal one.
	The refractive power is greater in the horizontal Meridian than in the vertical one.
	In the vertical Meridian, myopia, and in the horizontal Meridian, emmetropia.
	In the vertical Meridian, farsightedness, and in the horizontal Meridian, emmetropia.

14. Describe what pathological changes may lead to uncorrected visual hyperopia?
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

## Option 2

1. Define the physical refraction of the eye.

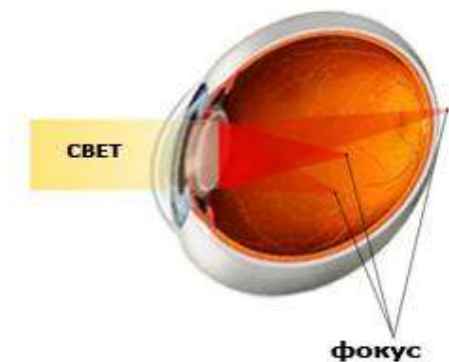
2. Draw the optical axis of the eye on the diagram and mark the position of the main focus during myopic refraction.



3. Arrange in the correct order the characteristics of the position of the further point of clear vision for different types of refraction.

1.	Emmetropia		Not exist
2.	Myopia		In infinity
3.	Hypermetropia		At the final distance from the eye

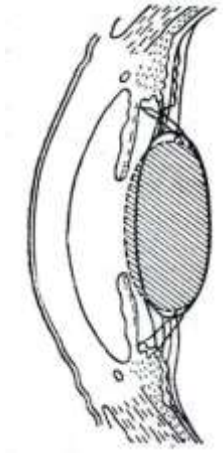
4. What is the difference (in optical terms) between spherical and cylindrical glass?
5. What or What types of refraction are possible in the patient if the shadow in the pupil moves in the opposite direction during skiascopy without the use of skiascopic lines?
6. What is called the "main focal length" of the optical system?
7. What type of astigmatism corresponds to the above scheme?



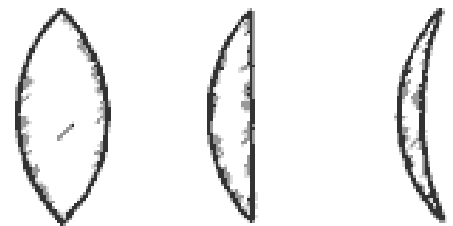
8. What kind of accommodation change is shown in the drawing?



9. Describe the mechanism of accommodation according to Helmholtz.



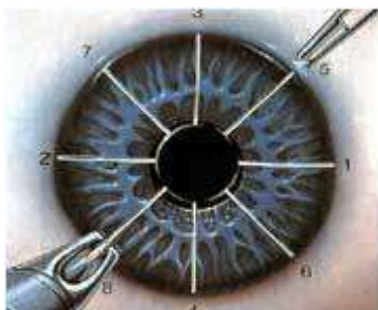
10. To correct what type of refraction are the optical glasses shown in the diagram used?



11. The patient has myopia of 2.0 D. How will its visual acuity change when the lens is applied – 2.0 D? (select the desired image).



12. What operation is shown in the diagram, and what is it used for? (keratotomy)



13. Write, what opportunities exist for the correction of anisometropia greater than 2 diopters?

14. Complete the prescription to the patient in need of the correction of hypermetropic anisometropia of 2.0 D. He has the best eye has a hypermetropic refraction of 1.0. D. the Patient 30 years. The interpupillary distance is 64 mm.

**Рецепт на очки**

\_\_\_\_\_ 19 г.

Rp: **OD** sph. \_\_\_\_\_ cyl. \_\_\_\_\_ ax. \_\_\_\_\_

**OS** sph. \_\_\_\_\_ cyl. \_\_\_\_\_ ax. \_\_\_\_\_

Dp = \_\_\_\_\_





**DS** очки для дали.

работы.

постоянного ношения

Примечание \_\_\_\_\_

Кому \_\_\_\_\_

Врач \_\_\_\_\_

15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

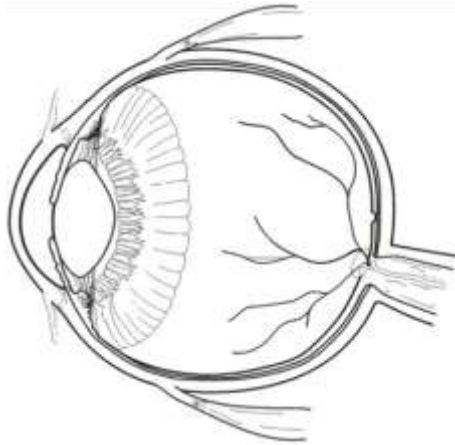
### Option 3

1. What is the difference between emmetropic and ametropic refraction?
2. Explain why the physiological astigmatism, as a rule, is a direct?
3. What is the physiological process shown in the figure?

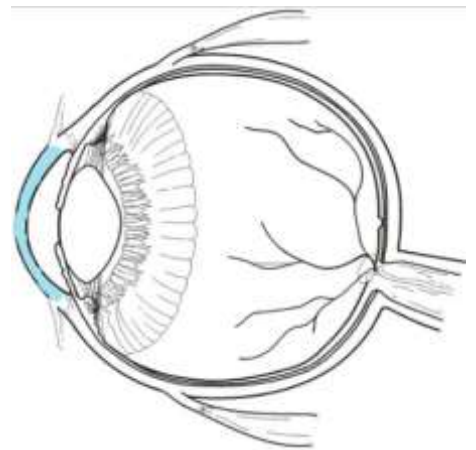


4. What age-related eye changes create conditions for presbyopia?
5. Explain why when starting the selection of corrective glasses, a weak collective glass is used, and not a scattering glass?

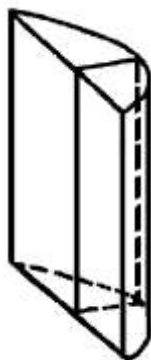
6. Draw the optical axis of the eye on the diagram and mark the position of the main focus in hypermetropic refraction.



7. Write down what changes in the fundus are characteristic of myopia?
8. What type of clinical refraction is typical for most eyes of newborns (draw schematically).
9. Note on the diagram, which of the light-conducting media is the strongest from the optical point of view?



10. What is the name of the cylindrical lens plane shown in the drawing?



11. What types of refraction are possible in the patient if the shadow in the pupil moves in the direction of the illuminator when performing skiascopy without using skiascopic lines?

12. What are the main parameters of the eye that influence the formation of various types of clinical refraction?
13. Fill out the patient's prescription for bifocal glasses. He has hypermetropic anisometropia of 2.0 D. The best eye has hypermetropic refraction of 1.0 D. the patient is 40 years old. The interpupillary distance is 64 mm.

Учреждение \_\_\_\_\_

Рецепт на очки " \_ " \_ 20 г.

Акс-метр	Оси	Сфера	Цилиндр	Ось	Примы	Основание
<b>R</b>	Верх					
	Низ					
<b>L</b>	Верх					
	Низ					

**ЛИНЗА R**

**ЛИНЗА L**

РОЦ - расстояние между оптическими центрами однофокальных линз или зон бифокальных линз с наименьшей по абсолютной величине рефракцией \_\_\_\_\_ мм. Зоны верхние нижние. Линшее зачеркнуть.

РОЦ2 - расстояние между оптическими центрами зон бифокальных линз с наименьшей по абсолютной величине рефракцией \_\_\_\_\_ мм. Зоны верхние нижние. Линшее слово зачеркнуть.

РЦП - расстояние между центрами проемов оправы любых очков должно быть не меньше межзрачкового расстояния для глаз, равного \_\_\_\_\_ мм

Очки для расстояния: ☐ 33 ☐ 40 ☐ 67 ☐ 133 ☐ 500 см

Очки для постоянного ношения: ☐ ДА ☐ НЕТ

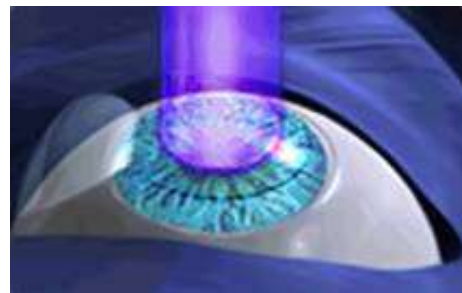
Врач отмечает нужные квадратики

Подобранный вариант очков в пробной оправе проверен врачом на переносимость больным в течение \_\_\_\_\_ мин. Подпись больного \_\_\_\_\_

Кому \_\_\_\_\_ Возраст \_\_\_\_\_

Врач (подпись, личная печать)

14. What operation is shown in the diagram, and what is it used for?



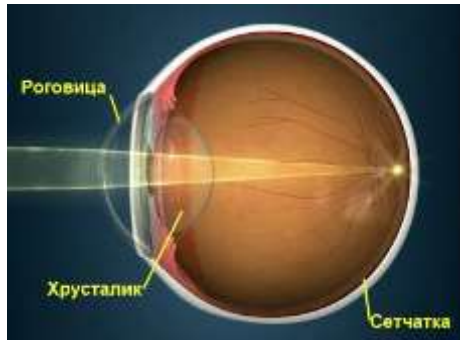
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

#### Option 4

1. Write what is taken as a value equal to 1 diopter?
2. Write what is called irregular astigmatism?



3. What type of refraction corresponds to the location of the main focus shown in the figure?



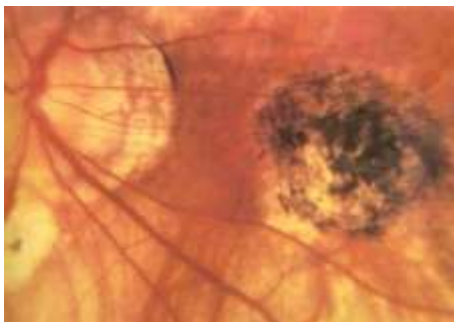
4. Write a definition of astigmatism.
5. What glasses should be used to correct simple myopic astigmatism?
6. Describe the rule for selecting glasses for correcting presbyopia
7. Explain why when selecting corrective glasses for myopia, the minimum strength of the glass is selected to ensure optimal vision.
8. In the accommodation there are two main components. What is included in each of them?

The active ingredient	Passive component

9. What type of research does the doctor conduct for the patient?

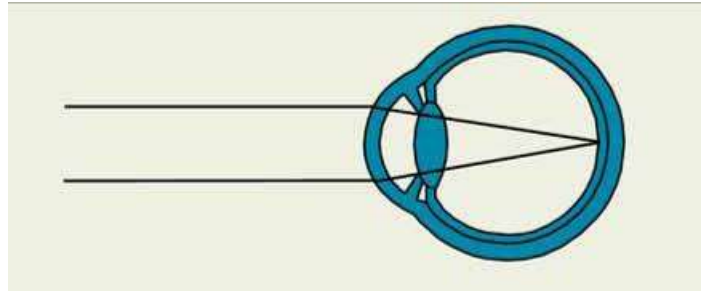


10. What type of clinical refraction is characterized by changes in the fundus shown in the figure, what are they called?



11. What operations on the lens are possible to correct refractive errors?

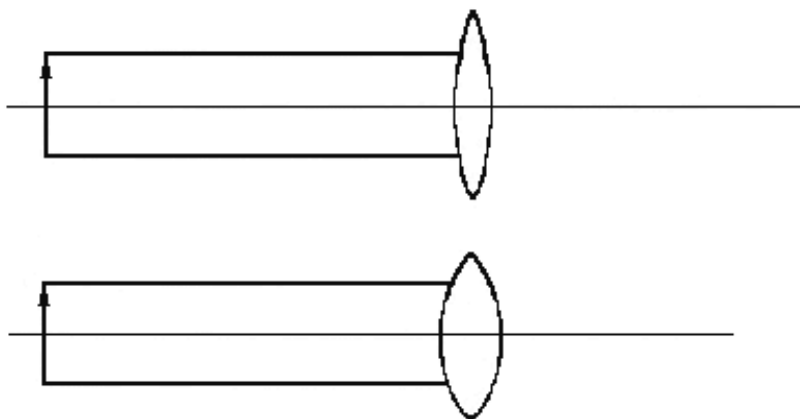
12. What are the advantages of contact correction of ametropia in comparison with glasses?
13. Draw on the diagram what changes In the length of the eye axis can lead to changes in clinical refraction?



14. Describe how you can detect hidden hypermetropia.
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

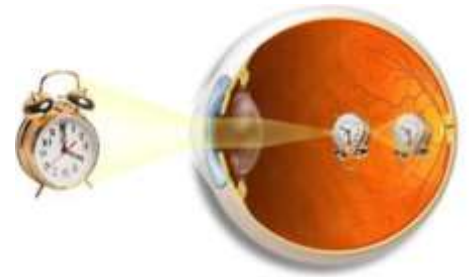
### Option 5

1. Explain why the cornea is considered to be a scattering lens, and the lens – a collective?
2. Define physiological astigmatism.
3. What are the causes of abnormal astigmatism?
4. What kind of glass you want to use for the correction of complex myopic astigmatism?
5. What is the relationship between the optical power and the focal length of the lens (draw on the diagram)?



6. List the activities that can be carried out to prevent myopia.
7. Explain why when selecting corrective glasses for hypermetropia, the maximum strength of the glass is selected to ensure optimal vision?

8. Explain why anisometropia above 2.0 D can be corrected using contact lenses, but eyeglass correction is not possible in this case?
9. What type of refraction corresponds to the location of the main focus shown in the figure?



10. What are bifocal glasses and what are they used for?



11. Describe the complications possible in a patient with myopia of high degree.
12. Fill out a prescription for a patient who needs 2.5 d myopia correction. the patient is 36 years old. The interpupillary distance is 64 mm.

**Рецепт на очки**

№ \_\_\_\_\_ 19 г.

Rp: OD sph. \_\_\_\_\_ cyl. \_\_\_\_\_ ax. \_\_\_\_\_

-2,5Д

OS sph. \_\_\_\_\_ cyl. \_\_\_\_\_ ax. \_\_\_\_\_

-2,5Д

Dp = 64 мм

OD

OS

**DS** очки для дали.

работы.

постоянного ношения

Примечание \_\_\_\_\_

Кому \_\_\_\_\_

Врач \_\_\_\_\_

13. Circle with a pen the picture where you think the person uses the accommodation?



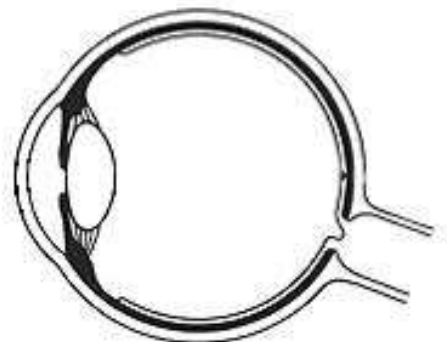
14. Kind of methodological error is committed by the doctor conducting the study skiascopia?



15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 6

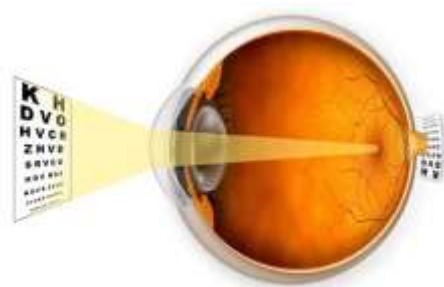
1. What is the difference between right and wrong astigmatism?
2. Note on the diagram, which of the light-conducting media can change its optical power under physiological conditions?



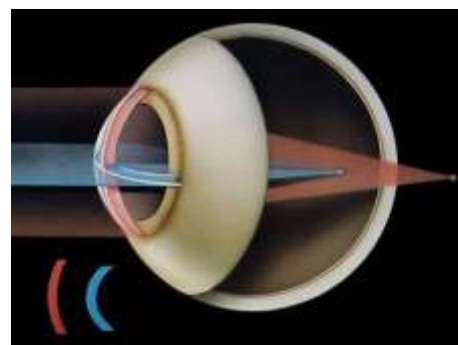
3. What kind of glass you want to use for the correction of compound hypermetropic astigmatism?
4. Insert the missing values in the table below.

Optical power of the lens	Focal length
5 D	
	50 cm
10 D	
	2 m
4 D	
	1 m

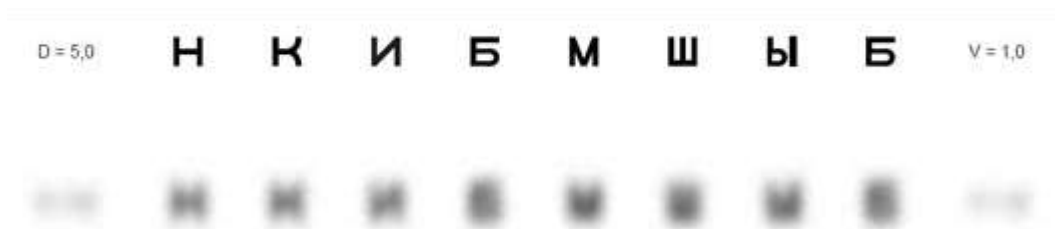
5. What type of refraction corresponds to the location of the main focus shown in the figure?



6. What kind of abnormal refraction is shown in the diagram?



7. Specify what changes occur in the eye during accommodation, in addition to changes in the optical power of the lens?
8. Select and circle the picture, what does a young patient with latent hypermetropia of 1.0 D see the optotypes of the tenth row?



9. Explain why the interpupillary distance in the upper half of bifocal glasses more than at the bottom?
10. Fill out a prescription for the patient to correct hypermetropia at 3.0 D. the patient is 28 years old. The interpupillary distance is 64 mm.

**Рецепт на очки**

"---" --- 19 г.

Rp: **OD** sph. --- cyl. --- ax. ---

**OS** sph. --- cyl. --- ax. ---

**Dp=**



**OD**



**OS**

**DS** очки для дали.  
работы.  
постоянного ношения

Примечание ---

Кому ---

Врач ---

11. What device is shown in the drawing?



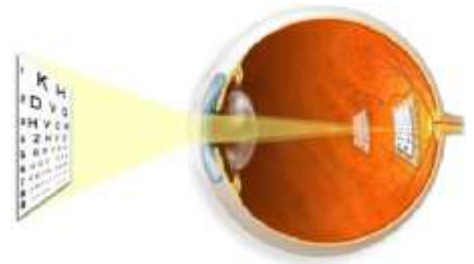
12. List the operations that can be used to correct myopia.
13. What is the concept of "degree of astigmatism"?
14. What are the indications for scleroplasty?
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

## Option 7

1. Complete the definition: "Refraction of light in \_\_\_\_\_ it's called refraction."
2. What are the main meridians of the eye?
3. What data on the optics of the eye can be obtained by conducting research on an ophthalmometer?
4. Insert the missing values in the table below.

Optical power of the lens	Focal length
1 D	
2 D	
4 D	
5 D	
10 D	
20 D	

5. Can a patient with hypermetropia have normal vision in the distance? If so, how? What is this hypermetropia called?
6. What type of astigmatism corresponds to the above scheme?



7. What type of refraction is the minimum accommodation voltage when reading? Underline the correct answer.  

Emmetropia Myopia Hypermetropia
8. In some cases, States that the patient has a progressive myopia?
9. Give the definition of anisometropia.
10. What type of refractive examination is performed for the patient?



11. Complete the prescription to the patient who is in need of correction of presbyopia. The patient has emmetropic refraction. The patient is 56 years old. The interpupillary distance is 64 mm.

**Рецепт на очки**

"-----" ----- 19 г.

Rp: **OD** sph.-----cyl.-----ax.-----

**OS** sph.-----cyl.-----ax.-----

**Dp=**




**DS** очки для дали.  
работы.  
постоянного ношения

Примечание -----

Кому -----

Врач -----

12. What are progressive lenses and what are they used for?
13. What is the closest point of clear vision?
14. What is the essence of scleroplasty, and in what cases is it used?
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 8

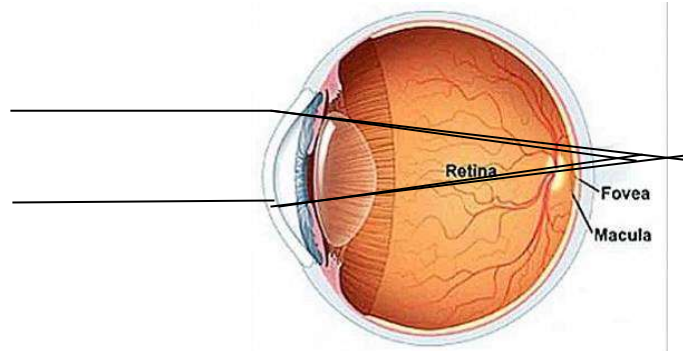
1. Complete the definition: "A straight line passing through \_\_\_\_\_, it is the optical axis of the eye."
2. Write some complaints and objective signs observed when the spasm of accommodation?
3. What type of refraction is the maximum accommodation voltage when reading?  
Underline the correct answer.  
Emmetropia Myopia Hypermetropia
4. Write, what, in your opinion, advantage over emmetropia can get with age a person who has a small degree of myopia?



5. Insert the missing values in the table below.

Optical power of the lens	Focal length
	4 m
0,5 D	
	1 m
2,0 D	
	0,25 m
10,0 D	

6. What type of astigmatism corresponds to the above scheme?



7. What is the difference between cycloplegia and cyclore relaxation?
8. For what purpose is used a device, shown in the figure – dioptries?



9. If the optical glass + 1.0 D is applied to the eye, the vision changes as follows. What is the patient's refraction?



10. What are the main indicators that should be taken into account in the diagnosis of progressive myopia?
11. Define aniseikonia.

12. Complete the prescription to the patient who is in need of correction of presbyopia. The patient has hypermetropic refraction of 1.0 D. the patient is 45 years old. The interpupillary distance is 64 mm.

**Рецепт на очки**

№ \_\_\_\_\_ 19 г.

Rp: **OD** sph. \_\_\_\_\_ cyl. \_\_\_\_\_ ax. \_\_\_\_\_

**OS** sph. \_\_\_\_\_ cyl. \_\_\_\_\_ ax. \_\_\_\_\_

**Dp =** \_\_\_\_\_



**OD**



**OS**

**DS** очки для дали.  
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постоянного ношения

Примечание \_\_\_\_\_

Кому \_\_\_\_\_

Врач \_\_\_\_\_

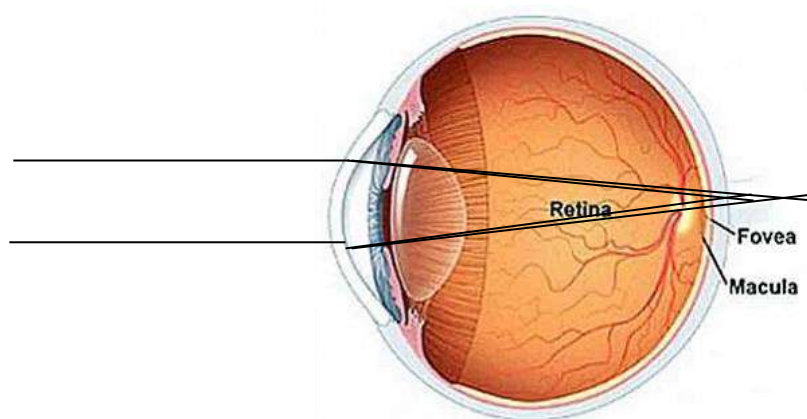
13. What is the essence of retrocerebellar, and in what cases it is applied?
14. Write, what opportunities exist for the correction of anisometropia greater than 2 diopters?
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 9

1. Write an algorithm for determining the type and strength of the optical lens using the neutralization method.
2. Complete the definition: "The main focal length of an optical system is the distance from ...
3. What are the parameters of the size of the eye, affecting its refraction, it is possible to investigate with ultrasound biometry?
4. What kind of refraction can accommodation be used for distant vision? Underline the correct answer.

Emmetropia Myopia Hypermetropia

5. What type of astigmatism corresponds to the above scheme?



6. Complete the prescription to the patient who is in need of correction of presbyopia. The patient has a myopic refraction of 1.0 D. the patient is 60 years old. The interpupillary distance is 64 mm.

**Рецепт на очки**

№ \_\_\_\_\_ 19 г.

Rp: **OD** sph. \_\_\_\_\_ cyl. \_\_\_\_\_ ax. \_\_\_\_\_

**OS** sph. \_\_\_\_\_ cyl. \_\_\_\_\_ ax. \_\_\_\_\_

Dp = \_\_\_\_\_

**OD**

**OS**

**DS** очки для дали.  
работы.  
постоянного ношения

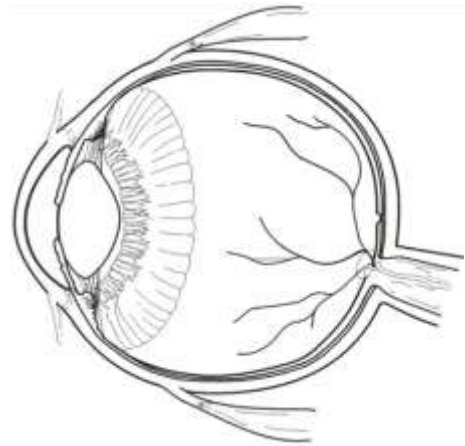
Примечание \_\_\_\_\_

Кому \_\_\_\_\_

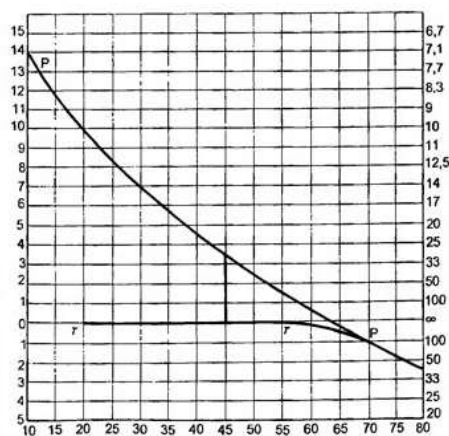
Врач \_\_\_\_\_

7. How can the type of refraction be differentiated using the subjective method of refraction research?
8. Explain in which case we can talk about refractive ametropia?
9. Write, what opportunities exist for the correction of anisometropia greater than 2 diopters?
10. Describe the ways to diagnose astigmatism in a patient.

11. Draw on the diagram, what changes in the eye occur when spasm of accommodation?



12. What physiological process is reflected in the proposed schedule?

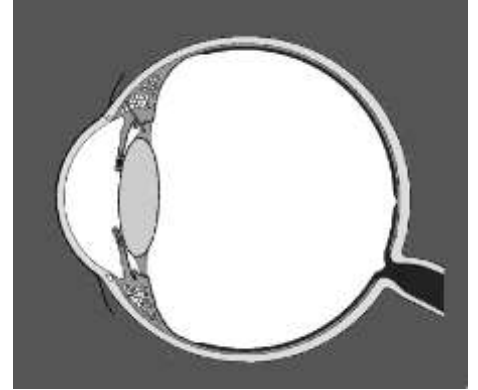


13. Explain why when starting the selection of corrective glasses, a weak collective glass is used, and not a scattering glass?
14. Describe the rule for selecting glasses for correcting presbyopia
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

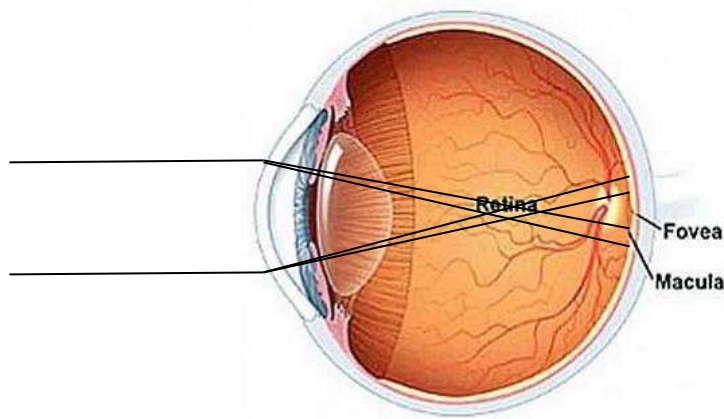
### Option 10

- What are the parameters of the eye that influence the refraction, you can explore with the help of ophthalmometry?
- Complete the definition: "The further point of clear vision is the point farthest from the eye that is clearly visible when ...".
- Define the concept of "accommodation".

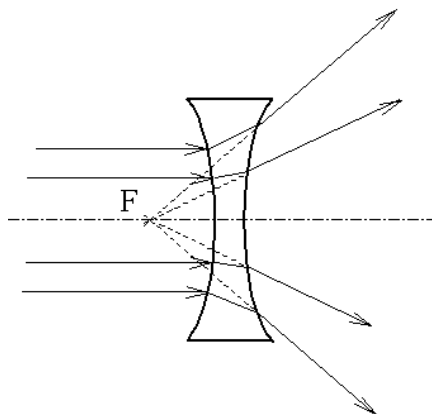
4. Define the concept of "refraction".
5. It is known that when writing a prescription for glasses, the doctor indicates the distance between the centers of the pupils. To do this, use a ruler to measure the distance from the outer edge of one pupil to the inner edge of the other. Write in which cases this method of measurement is unsuitable?
6. Draw the optical axis of the eye on the diagram and mark the position of the main focus in emmetropic refraction.



7. What type of astigmatism corresponds to the above scheme?



8. To correct what type of refraction is the glass shown in the diagram used?



9. Write some complaints and objective signs observed in paralysis of accommodation?

10. Write an algorithm for skiascopy.
11. What operation is depicted in the diagram, and what it is used?



12. Describe what pathological changes may lead to uncorrected visual hyperopia?
13. Fill out the patient's prescription for bifocal glasses. The patient has 2.0 d farsightedness. He is 50 years old. The interpupillary distance is 64 mm.

Учреждение \_\_\_\_\_

Рецепт на очки \* \_ \* \_ 20 г.

Линза	Зона	Сфера	Цилиндр	Ось	Прим.	Основание
<b>R</b>	Верх					64
	Низ					
<b>L</b>	Верх					
	Низ					

ЛИНЗА  
**R**

ЛИНЗА  
**L**

РОЦ - расстояние между оптическими центрами однофокальных линз или зон бифокальных линз с наименьшей по абсолютной величине рефракцией \_\_\_\_\_ мм. Зоны верхнее нижнее. Линшее зачеркнуть.

РОЦ2 - расстояние между оптическими центрами зон бифокальных линз с наименьшей по абсолютной величине рефракцией \_\_\_\_\_ мм. Зоны верхнее нижнее. Линшее слово зачеркнуть.

РЦП - расстояние между центрами проёмов оправы любых очков должно быть не меньше межзрачкового расстояния для глаз, равного \_\_\_\_\_ мм.

Очки для расстояния: ☐ 33 ☐ 40 ☐ 67 ☐ 133 ☐ 500 см

Очки для постоянного ношения ☐ ДА ☐ НЕТ

Врач отмечает нужные квадратики

Подобранный вариант очков в пробной оправе проверен врачом на переносимость больным в течение \_\_\_\_\_ мин. Подпись больного \_\_\_\_\_

Кому \_\_\_\_\_ Возраст \_\_\_\_\_

Врач (подпись, личная печать) \_\_\_\_\_

14. Kind of methodological error is committed by the doctor conducting the study skiascopy?



15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*



**Federal state budgetary educational institution of higher education  
"North Ossetian state medical Academy of the Ministry of health of  
Russia»**

**Department of OTO-Rhino-laryngology with ophthalmology**

**THE COURSE OF OPHTHALMOLOGY**

**KOROEV O.A., KOROEV A.O.**

**INDIVIDUALIZED TASKS FOR INDEPENDENT  
WORK OF 4TH YEAR STUDENTS OF THE  
FACULTY OF MEDICINE ON THE CYCLE OF  
OPHTHALMOLOGY**



**TOPIC 4: "DISEASES OF THE ORBIT, EYELIDS, CONJUNCTIVA AND  
LACRIMAL ORGANS»**

**Vladikavkaz 2021**



## TOPIC 4: "DISEASES OF THE ORBIT, EYELIDS, CONJUNCTIVA AND LACRIMAL ORGANS».

### I. Questions for checking the initial (basic) level of knowledge.

1.	Phlegmon of the orbit – Symptoms
1.	
2.	Ulcerative blepharitis – Symptom
1.	
3.	Diphtheria conjunctivitis – Symptom
1.	
4.	Phlegmon of the lacrimal SAC – Symptoms
1.	

### II. Целевые задачи:

<p><u>The student should know:</u></p> <ul style="list-style-type: none"> <li>• what are exophthalmos and enophthalmos;</li> <li>• the definition of pulsating exophthalmos;</li> <li>• how to distinguish between anterior and posterior periostitis;</li> <li>• the cause and clinic of orbital phlegmon and cavernous sinus thrombosis;</li> <li>• what pathological changes belong to the group of developmental abnormalities of the eyelids;</li> <li>• varieties of anomalies in the position of the eyelids;</li> <li>• manifestations of allergic diseases of the eyelids;</li> <li>• characteristic features of inflammatory diseases of the edges and other parts of the eyelids;</li> <li>• what abnormalities in the development and position of the eyelids require urgent surgical treatment;</li> <li>• what diseases are most often the causes of blepharitis;</li> <li>• what are the complications and how it can develop in purulent inflammatory diseases of the eyelids;</li> </ul>	<p><u>Рекомендуемая литература:</u></p> <p><i>a) educational literature</i></p> <p><u>Egorov E.A.</u> Ophthalmology. National leadership. Short edition. – Moscow: GEOTAR-Media, 2016. – 736 p.</p> <p>Ophthalmology: textbook. <u>V.N. Alekseev, Yu.S. Astakhov, S.N. Basinsky, etc.</u> /Ed. by <u>E.A. Egorov.</u> – M.: GEOTAR-Media, 2010. – 240 p.</p> <p>Ophthalmology: Textbook / ed. by <u>E.I. Sidorenko.</u> – 3rd ed. – Moscow: GEOTAR-MED. 2013. – 640 p.</p> <p><u>Ruban E.D.</u> Eye diseases: the newest reference book. Rostov-on-don: Phoenix, 2016. – 622 p.</p> <p><u>Takhchidi H.P., Yartseva N.S., Gavrilo N.A., Deev L.A.</u> Ophthalmology: textbook. – M.: GEOTAR-Media, 2011. – 544 p.</p> <p><i>b) additional</i></p> <p><u>Arefeva N.A.</u> Allergic rhinoconjunctivitis (clinical recommendations). – M.: Practical medicine, 2015. – 80 p.</p> <p><u>Bastrikov N I.</u> Diseases of the lacrimal organs and methods of their treatment. – M., 2007. – 256 p.</p>
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<ul style="list-style-type: none"> <li>• what complaints are presented by patients with conjunctivitis;</li> <li>• what methods are used to examine the conjunctiva;</li> <li>• General objective signs of conjunctivitis;</li> <li>• infectious diseases that may cause conjunctivitis;</li> <li>• characteristic symptoms of diphtheria, gonorrhea, adenovirus, bacterial conjunctivitis;</li> <li>• symptoms of trachoma and its complications;</li> <li>• the main medicines used for the treatment of conjunctivitis;</li> <li>• measures to prevent inflammatory diseases of the conjunctiva; signs of lacrimal gland disease, clinic and treatment principles;</li> <li>• congenital and acquired pathology of the lacrimal pathway;</li> <li>• principles of treatment of pathology of the lacrimal tubules, lacrimal SAC and lacrimal-nasal canal;</li> <li>• possible outcomes and complications of newborn dacryocystitis;</li> <li>• principles and methods of sequential treatment (massage, washing, probing, etc.).</li> </ul>	<p><u>Brzhesky V.V.</u> Diseases of the lacrimal apparatus: a guide for practicing doctors. – M.: N-L, 2009. – 108 p.</p> <p><u>Brovkina A.F.</u> Diseases of the orbit. – M.: Medical information Agency (MIA), 2008. – 256 p.</p> <p><u>Grusha Ya.O., Fetzer E.I., Fedorov A.A.</u> Paralytic lagophthalmos. – M.: GEOTAR-Media, 2019. – 224 p.</p> <p><u>Koroev O.A.</u> Ophthalmology: the subordinate education of the eye. – Rostov-on-don: Phoenix, 2007. – 413 p.</p> <p><u>Koroev O.A., Sozaeva M.A., alikova T.T., Koroev A.O., Laitadze I.A.</u> Pterygium. – Vladikavkaz, 2009. – 82 p.</p> <p><u>Medvedev I.B., Neshchadim G.N., Bagrov S.N., Dergacheva N.N.</u> Demodecosis: ophthalmological and dermatological aspects. – M.: 2019. – 240 p.</p>
<p><u>The student must be able to:</u></p> <ul style="list-style-type: none"> <li>• diagnose exophthalmos and enophthalmos;</li> <li>• diagnose pulsating exophthalmos;</li> <li>• diagnose anterior and posterior periostitis;</li> <li>• to diagnose phlegmon of the orbit and cavernous sinus thrombosis;</li> <li>• diagnose abnormalities of eyelid development;</li> <li>• diagnose anomalies in the position of the eyelids;</li> <li>• diagnose and treat allergic diseases of the eyelids;</li> <li>• diagnose and treat inflammatory diseases of the edges and other parts of the eyelids;</li> <li>• diagnose and treat conjunctivitis;</li> <li>• diagnose infectious diseases that may cause conjunctivitis;</li> <li>• diagnose and treat trachoma;</li> <li>• to carry out preventive maintenance of inflammatory diseases of the conjunctiva;</li> <li>• diagnose and treat diseases of the lacrimal gland;</li> </ul>	<p><u>Recommended reading:</u> Same.</p>

- conduct functional tests for lacrimal discharge and lacrimal drainage; diagnose congenital and acquired pathology of the lacrimal pathway.

### III. Tasks for independent work on the topic under study.

#### Option 1

1. Name the main reasons that can cause exophthalmos.
2. Complete the table, putting the symptoms characteristic of each type of osteoperiostitis.

Anterior osteoperiostitis	Posterior osteoperiostitis

3. What inflammatory disease can be assumed in a child? What are the objective signs that support Your diagnosis? What treatment measures are necessary?



4. Based on the following description of the clinical picture of the disease – make a diagnosis. The anterior ciliated edge of the eyelid is turned towards the eyeball. At the same time, the eyelashes, like a brush, RUB the cornea, causing its damage and even ulceration.
5. Complete the table by specifying the characteristics of various forms of blepharitis.

Simple blepharitis	Scaly blepharitis	Ulcerative blepharitis
Hyperemia of the edges of the eyelids, itching, a feeling of blockage in the eyes, rapid blinking, foamy discharge in the corners of the eyes, eye fatigue with visual stress.		

6. List what types of conjunctivitis are associated with common diseases of the body.

7. What congenital pathology of the eyelids is shown in the picture, and what treatment is necessary for the patient?



8. Enter in the table the main features that characterize various forms of herpetic conjunctivitis:

Catarrhal form	
The follicular form	
Vesicular-ulcerative form	

9. What inflammatory diseases of the conjunctiva are accompanied by the formation of films on it, and how can they be differentiated?



10. What kind of research was conducted for the patient, judging by the figure below?



11. Make a diagnosis of a possible disease based on the clinical Picture described below: The disease begins first on one eye, and after 2-3 days it appears on the other eye. Patients are concerned about the feeling of blockage ("sand"), burning or itching in the eye, its

redness, lacrimal flow, mucopurulent, and then copious purulent separation. In the morning after sleep, the patient can hardly open his eyes, as the eyelids are glued together by the dried-up discharge on the eyelashes. On examination, the conjunctiva of the eyelids is sharply hyperemic, swollen and loosened, and the meibomian glands are not visible. The eyeball is also hyperemic, and the conjunctiva of the sclera becomes thickened.

12. What are the possible congenital diseases of the lacrimal passages.
13. Look like colored functional test with different pathology of the lacrimal apparatus?  
(cross out what you don't need)

Canaliculitis				Dacryocystitis			
Tubal sample		Nasal test		Tubal sample		Nasal test	
+	–	+	–	+	–	+	–

14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

## Option 2

1. Give the characteristic of the orbit
2. What are the most common causes of inflammatory diseases of the eye socket:
3. The way in which the inflammatory process can go into orbit from the pterygopalatine and temporal fossae?
4. Make a diagnosis based on the clinical picture described below. Dense infiltrates that lie in deep layers and subcutaneous tissue merge into one lumpy infiltrate that spreads in depth and level. Then ulcers appear on its surface, which are opened with an abundant discharge of pus and necrotic masses with an admixture of blood. Around in the swollen tissue, dense, blood-filled venous vessels are visible. Revival occurs with the formation of the edge and frequent deformation of the eyelid-eversion and shortening.
5. What pathology of the eyelids is characterized by all the following symptoms: Edema is very significant, pale, completely painless, usually one-sided. The cause of development is a reaction to milk, citrus fruits, chocolate, medications, plant pollen, and other irritants. It disappears without a trace in a few hours, less often – days, relapses are possible?
6. What can be the starting point for the activation of the herpes simplex virus?
7. What are the possible complications of gonoblennorrhea?

8. Describe the clinic and development of diphtheria conjunctivitis.
9. How does infection occur in adults with chlamydial conjunctivitis?
10. Describe the picture of conjunctival injection of the eyeball.
11. Write the types of dacryocystitis you know.
12. What manipulation is shown in the drawing?



13. Explain why an adult is not probed for the lacrimal nasal canal as a child with dacryocystitis of newborns?
16. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
14. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 3

1. What are the most common causes of inflammatory diseases of the eye socket:
2. Write next to the picture – what pathology detected on the x-ray can lead to the appearance of phlegmon of the eye socket?



3. Write the principles of treatment of endocrine ophthalmopathy.
4. What are the causes of eyelid abscess?
5. Name the pathology of the eyelid shown in the drawing.



6. What disease in appearance can be assumed in a newborn child?



7. During what period of intrauterine development does the eyelids fuse together?
8. What disease can be assumed from the following clinical picture? The disease begins with the upper transitional fold. The conjunctiva thickens, becomes hyperemic, acquiring a characteristic bluish-purple hue. There are first single, and then multiple follicles in the form of large, randomly distributed and deeply gelatinous-turbid grains. The surface of the mucous membrane becomes uneven, bumpy. From the transitional folds, the process extends to the conjunctiva of the cartilage. The follicles are small, and more often there is hypertrophy of the papillae, which gives the conjunctiva a velvety appearance.
9. What is the pathogenesis of the development phlyctenular conjunctivitis?
10. Name the disease, the clinic of which is described below: Both eyes are always affected. And the second one gets sick in a few hours or 1-2 days after the first one. Severe hyperemia and edema of the scleral conjunctiva, in which petechial hemorrhages appear. Within the open eye slit, the thickened and edematous conjunctiva of the sclera looks like two triangular elevations, the base facing the limb. Severe edema is observed in the area of the lower transitional fold, often swollen eyelids. There may be General malaise, fever, headache, runny nose. The process may involve the cornea, where surface infiltrates are formed. The duration of the disease is 5-6 days; with corneal changes, it can take much

longer. The forecast is favorable. As the conjunctivitis fades, the infiltrates on the cornea quickly and completely resolve.

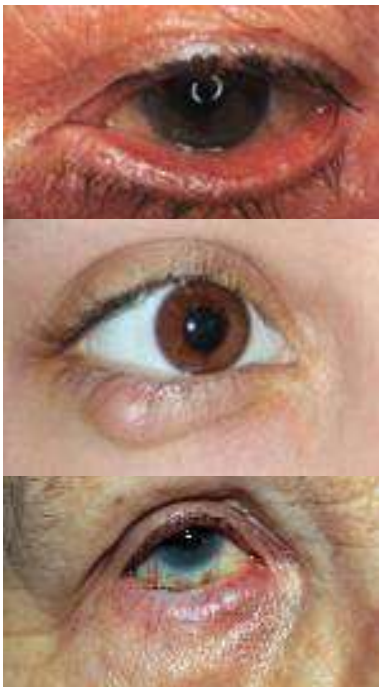
11. What is the main cause of dacryocystitis in newborns?
12. What medical procedure is performed for a child, and for what purpose is it performed?



13. What is the danger to the eye of chronic dacryocystitis?
17. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
14. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

#### Option 4

1. How to determine the amount of standing or sinking of the eyeball?
2. Write next to the pictures, what are the possible diseases of the eyelids they depict?





3. Describe the clinical Picture of orbital vein thrombophlebitis complicated by cavernous sinus thrombosis.
4. Name the main types of eyelid inversions.
5. How do patients compensate for drooping eyelids in mild congenital ptosis?
6. Clinic what the diseases described below? The eyelids are sharply swollen, hyperemic (sometimes with a cyanotic tinge), they cannot be opened even with great effort. The conjunctiva is swollen and can be pinched between the eyelids. The eye is sharply protruding forward, often deviated to the side, its mobility is limited or completely absent. Vision is significantly reduced (sometimes to light perception, and sometimes to blindness).
7. Write a sample algorithm for the treatment of acute epidemic conjunctivitis (conjunctivitis Koch-Weeks).
8. What are the eye drops with high antigenic activity.
9. Describe the test with instillation of epinephrine solution.
10. What is the clinical picture of conjunctivitis described below? – Strong, dense, bluish-purple swelling of the eyelids. The eyelids can not be turned out, you can only slightly dilute them. At the same time, a cloudy liquid with flakes is released from the eye slit. On the edges of the eyelids, gray deposits are visible-films that spread to the conjunctiva of the eyelids and eyeball. The films are tightly soldered to the underlying tissue, their removal is difficult and accompanied by bleeding.
11. What proportion of all eye diseases are diseases of the lacrimal organs?
12. What causes lacrimation in the patient shown in the picture?



13. Explain why the operation of dacryocystorhinostomy not conduct in early childhood?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 5

1. The outcome is left without treatment of congestive exophthalmos?
2. What treatment should be taught to patients with echinococcosis of the eye socket?
3. What is the pathological position of the eyeball, characteristic of diseases of the orbit, shown in the figure?



4. Where does the foamy discharge at the corners of the eye come from in blepharitis?
5. Describe the clinical picture of the lesion of the eyelids with a contagious mollusk.
6. Specify the main symptom of these diseases of the neuromuscular system of the eyelids

Blepharospasm	
Ptosis	
Inversion of the eyelid	
Eversion of the eyelid	
Lagophthalmos	

7. What anomaly from the lacrimal SAC can be seen in the picture?



8. What is the purpose of performing the operation shown in the drawing?



9. Describe the clinical picture characteristic of pollinous conjunctivitis.
10. Explain why adenoviral conjunctivitis still bears the name pharyngoconjunctival fever?
11. What are the possible complications of gonoblenorrhea?
12. What treatment is possible in the absence or insufficiency of the lacrimal gland?
13. What manipulation is shown in the drawing?



18. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 6

1. Describe what underlies the occurrence of endocrine ophthalmopathy?
2. What Are the main reasons for the sharp increase in the size of the oculomotor muscles in edematous exophthalmos?
3. What disease of the eye socket corresponds to the given x-ray?



4. What are the manifestations of eyelid damage in chickenpox?
5. What pathology of the eyelids is characterized by all the following symptoms: Edema is very significant, pale, completely painless, usually one-sided. The cause of development is a reaction to milk, citrus fruits, chocolate, medications, plant pollen, and other irritants. It disappears without a trace in a few hours, less often – days, relapses are possible?

6. Make a diagnosis based on the clinical picture shown in the drawing and the description of the disease. When the phenomenon of fever, General malaise develops bright redness of the skin, hot and dense to the touch, sharply separated from the healthy areas of the eyelid. The eyelids are very swollen, there is conjunctival hyperemia, and in the year and its chemosis. Blisters with cloudy contents may form on the surface of reddened skin. Invariably swell of the regional lymph glands.



7. What inflammatory phenomena can be observed in drug-induced conjunctivitis?
8. Describe the anti-epidemic measures required in the medical institution for the prevention of epidemic keratoconjunctivitis.
9. Describe the test with instillation of epinephrine solution.
10. Enter in the table the main features that characterize various forms of herpetic conjunctivitis:

Catarrhal form	
The follicular form	
Vesicular-ulcerative form	

11. In what diseases is there a lesion of the lacrimal gland?
12. Which of the following symptoms certainly indicate the presence of dacryocystitis in the patient (cross out the unnecessary)?

Lacrimation in cold wind

Tear state

The appearance of pus from lacrimal points when pressing on the site of the projection of the lacrimal SAC

Negative tubular test

The appearance of purulent discharge from the nose when washing the lacrimal tract

A negative nasal test

Presence of swelling in the upper-outer corner of the orbit

13. What are the common symptoms may follow a phlegmon of the lacrimal SAC?

14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 7

1. Describe the clinical manifestations of pulsating exophthalmos.
2. What pathology of the eye socket corresponds to the clinical picture described below: The General condition of the patient is severe: high temperature, signs of intoxication. Exophthalmos appears, chemosis, the eye is motionless. The eyelids are swollen, strained so much that sometimes they can not be parted, their skin is sharply hyperemic. The subcutaneous veins of the forehead are dilated and sharply convoluted. Complete blindness may develop within a few hours as a result of acute optic neuritis. Rapidly increasing exophthalmos also plays a role in the development of blindness. As a result of tissue edema, blood filling of blood vessels, the optic nerve is rapidly stretched (its S-shaped bend disappears), the posterior pole of the eyeball is stretched conically, while the pressure in the arteries drops, in the veins increases, which leads to the appearance of sharp ischemia on the fundus. Exophthalmos can be so significant that the eye gap does not close and the strained edematous eyelids are not able to protect the cornea.
3. What is the reason for the expansion of eye slits in thyrotoxic exophthalmos?



4. What is the cause of Gorner's syndrome?
5. Explain why blepharophimosis is a threat to the cornea?
6. Write anamnesis data that can help in the diagnosis of conjunctivitis.
7. Write down the main ways to prevent conjunctivitis in the table.

Gonorrheal conjunctivitis	Diphtheria conjunctivitis

8. Name the pathology of the eyelid shown in the drawing.



9. Write a sample algorithm for the treatment of nonrheal conjunctivitis.
10. What pathogenetic process underlies the occurrence of phlegmon of the lacrimal SAC?
11. What disease, shown in the picture, can accompany dacryoadenitis?



12. Make a diagnosis of a possible disease based on the clinical Picture described below: The disease begins first on one eye, and after 2-3 days it appears on the other eye. Patients are concerned about the feeling of blockage ("sand"), burning or itching in the eye, its redness, lacrimal flow, mucopurulent, and then copious purulent separation. In the morning after sleep, the patient can hardly open his eyes, as the eyelids are glued together by the dried-up discharge on the eyelashes. On examination, the conjunctiva of the eyelids is sharply hyperemic, swollen and loosened, and the meibomian glands are not visible. The eyeball is also hyperemic, and the conjunctiva of the sclera becomes thickened.
13. What is the main cause of dacryocystitis in newborns?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*

15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 8

1. What disease underlies the occurrence of endocrine exophthalmos in a patient?
2. What are the main ways of penetration of bacterial infection into the orbit.
3. What disease most often has to differentiate sarcoidosis of the eye socket?
4. What is the frequency of eyelid pathology in the structure of eye morbidity?
5. What type of treatment for blepharitis is shown in the picture?



6. Based on the following description of the clinical picture of the disease – make a diagnosis. The anterior ciliated edge of the eyelid is turned towards the eyeball. At the same time, the eyelashes, like a brush, RUB the cornea, causing its damage and even ulceration.
7. The clinical picture of what conjunctivitis in a newborn corresponds to the following description: Conjunctivitis is associated with infection of the eyes through infected birth canal. Conjunctivitis begins acutely on the 5th-10th day after birth with the appearance of abundant mucopurulent discharge, sometimes with an admixture of blood. Pronounced edema of the eyelids, the conjunctiva is sharply hyperemic, and easily removable films can form on the lower eyelid mucosa. After a week, the inflammatory phenomena decrease, but with further development, follicles appear on the conjunctiva of the eyelids. In newborns, both eyes are more often affected, but conjunctivitis can also be unilateral. Sometimes it can be accompanied by anterior adenopathy, otitis and nasopharyngitis?
8. What complaints are usually presented by patients with conjunctivitis?
9. What can explain the fact that currently diphtheria conjunctivitis is rare?
10. What kind of conjunctivitis the characteristic described below, the clinical picture? – The disease begins acutely, first on one, and after 1-5 days – on the second eye. Patients complain of redness of the eye, pain, a feeling of blockage, lacrimation. On examination, there is a slight swelling of the eyelids, hyperemia and infiltration of the conjunctiva of the eyelids, transitional folds, especially in the lower arch. Hyperemia and edema also extend to the conjunctiva of the sclera. On the conjunctiva of the lower eyelid, multiple small, transparent follicles are detected. The discharge is insignificant, non-purulent. Almost all patients have increased and painful regional parotid lymph nodes. In some patients, ocular manifestations are preceded by mild malaise, damage to the respiratory



tract. About a week after the onset of the disease, after some apparent improvement, the second stage of the disease develops with characteristic manifestations. Increased lacrimation, increased photophobia and a feeling of "sand" in the eye. Some patients report a decrease in vision. When examining the cornea, characteristic multiple, dotted, randomly scattered "coin-shaped", unpigmented, subepithelial opacities, decreased sensitivity are found.

11. What is the Latin Name for dropsy of the lacrimal SAC?
12. What proportion of all eye diseases are diseases of the lacrimal organs?
13. What kind of research was conducted for the patient, judging by the figure below?



14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 9

1. What treatment should be taught to patients with echinococcosis of the eye socket?
2. What examination is necessary to hold the patient when contacting him about the periostitis of the orbit?
3. What are the causes of eyelid abscess?
4. What stage of trachoma can be assumed in the picture below?





5. Write an algorithm for local treatment of simple blepharitis.
6. Каков патогенез развития фликтенулезного конъюнктивита?
7. Based on the following description of the clinical picture of the disease – make a diagnosis. The anterior ciliated edge of the eyelid is turned towards the eyeball. At the same time, the eyelashes, like a brush, RUB the cornea, causing its damage and even ulceration.
8. Name the disease, the clinic of which is described below: Both eyes are always affected. And the second one gets sick in a few hours or 1-2 days after the first one. Severe hyperemia and edema of the scleral conjunctiva, in which petechial hemorrhages appear. Within the open eye slit, the thickened and edematous conjunctiva of the sclera looks like two triangular elevations, the base facing the limb. Severe edema is observed in the area of the lower transitional fold, often swollen eyelids. There may be General malaise, fever, headache, runny nose. The process may involve the cornea, where surface infiltrates are formed. The duration of the disease is 5-6 days; with corneal changes, it can take much longer. The forecast is favorable. As the conjunctivitis fades, the infiltrates on the cornea quickly and completely resolve.
9. What is symblepharon? What diseases are characterized by its formation?
10. What are the definite sign of dacryocystitis.
11. What causes lacrimation in the patient shown in the picture?



12. What are the advantages of endonasal dacryocystorhinostomy?
13. How does infection occur in adults with chlamydial conjunctivitis?
14. Create two interdisciplinary situational tasks on the topic *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 10

1. Describe the common symptoms is accompanied by a thyrotoxic exophthalmos?

2. What treatment should be taught to patients with echinococcosis of the eye socket?
3. What is the name of the congenital pathology shown in the drawing that can lead to orbital deformity?



4. Clinic what the diseases described below? On the skin, strictly along the course of the sensitive nerve and its branches, pink spots of various sizes appear, and after 1-2 days small transparent, closely adjacent bubbles appear in place of the spots. The contents of the bubbles become cloudy, the spots disappear and by the end of the first week, the bubbles turn into crusts. After 10-12 days, the crusts fall off, leaving a slight pigmentation. It is most often localized in the area of the first and second branches of the trigeminal nerve, which are involved in the innervation of the eyelids. Therefore, the process involves the skin of the forehead, temporal region, nose and eyelids, especially the upper one. If the process on the eyelids ends with scarring, then there may be consequences such as trichiasis (incorrect growth of eyelashes), eversion of the eyelids, deformity of the eyelids, etc. All branches of the trigeminal nerve are rarely affected simultaneously. There may be eye complications – superficial, less often deep keratitis, iritis, curable paresis of the ocular nerves, more often oculomotor. There may be more serious complications such as retrobulbar neuritis, thrombosis of blood vessels of the retina, papillitis, intraocular pressure.
5. In what disease is it possible to perform such an operation?



6. Name the pathology of the eyelids shown in the drawing.



7. What disease can be assumed in the clinical picture shown in the figure?



8. Подпишите под рисунками названия осложнений и последствий трахомы.



9. Подпишите рядом с рисунками названия основных видов дакриоциститов.



10. Какую лечебную процедуру выполняют ребенку, и с какой целью она проводится?



11. What is the cause of destruction of the cornea when gonorrheal conjunctivitis?
12. What diseases can lead to the development of acute dacryoadenitis?

13. What disease corresponds to the clinic described below? The disease develops acutely



with redness, sharp pain in the eye, sensation of a foreign body, photophobia, the appearance of lacrimation, mucopurulent discharge. Rapid edema of the eyelids occurs, the conjunctiva is sharply hyperemic, infiltrated, and small follicles are often visible. On day 2, the most characteristic sign of the disease appears – hemorrhages from small multiple petechiae to extensive hemorrhages that cover almost the entire conjunctiva of the sclera. The sensitivity of the cornea decreases, sometimes small-point epithelial infiltrates appear in it, which

resolve after 7-10 days. Both eyes are always affected. The next day, the process develops in the second eye and proceeds more easily. Many patients (in 1/3 of cases) develop regional lymph gland adenopathy.

14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*



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**INDIVIDUALIZED TASKS FOR INDEPENDENT  
WORK OF 4TH YEAR STUDENTS OF THE  
FACULTY OF MEDICINE ON THE CYCLE OF  
OPHTHALMOLOGY**



**TOPIC 5: "DISEASES OF THE CORNEA, SCLERA AND CHOROID"**

**Vladikavkaz 2021**

## TOPIC 5: "DISEASES OF THE CORNEA, SCLERA AND CHOROID".

### I. Questions for checking the initial (basic) level of knowledge.

1.	
Corneal syndrome	Symptoms
	1.
2.	
Corneal erosion	Symptoms
	1.
3.	
Scleritis	Symptoms
	1.
4.	
Clinical sign	Causes of occurrence
The presence of precipitates	
5.	
Clinical sign	Causes of occurrence
Changing the color of the iris	

### II. Targets:

<p><u>The student should know:</u></p> <ul style="list-style-type: none"> <li>• definition of corneal syndrome;</li> <li>• differences between surface and deep keratitis;</li> <li>• differences in dystrophic, scarring and inflammatory processes in the cornea;</li> <li>• pathogenetically based treatment for the most common keratitis;</li> <li>• connection of local symptoms of corneal damage with the General condition of the patient, namely with the etiology and pathogenesis of diseases in nosological forms, as well as with congenital changes in the shape, size and transparency of the cornea;</li> <li>• fundamentals of medical, labor, and social rehabilitation of patients with corneal diseases;</li> </ul>	<p><u>Recommended literature:</u></p> <p><i>a) educational literature</i></p> <p><u>Egorov E.A.</u> Ophthalmology. National leadership. Short edition. – Moscow: GEOTAR-Media, 2016. – 736 p.</p> <p>Ophthalmology: textbook. <u>V.N. Alekseev, Yu.S. Astakhov, S.N. Basinsky, etc.</u> /Ed. by <u>E.A. Egorov.</u> – M.: GEOTAR-Media, 2010. – 240 p.</p> <p>Ophthalmology: Textbook / ed. by <u>E.I. Sidorenko.</u> – 3rd ed. – Moscow: GEOTAR-MED. 2013. – 640 p.</p> <p><u>Ruban E.D.</u> Eye diseases: the newest reference book. Rostov-on-don: Phoenix, 2016. – 622 p.</p> <p><u>Takhchidi H.P., Yartseva N.S., Gavrilova N.A., Deev L.A.</u> Ophthalmology: textbook. – M.: GEOTAR-Media, 2011. – 544 p.</p> <p><i>b) additional</i></p>
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<ul style="list-style-type: none"> <li>• features of sclera pathology in comparison with diseases of other eye membranes;</li> <li>• congenital anomalies of sclera;</li> <li>• clinical manifestations of scleritis;</li> <li>• clinical manifestations of episcleritis;</li> <li>• features of the structure of the vascular membrane, its blood supply and innervation;</li> <li>• abnormalities in the development of the choroid;</li> <li>• clinic and differential diagnosis of iridocyclitis and choroiditis in children and adults;</li> <li>• features of the course of viral, bacterial uveitis, juvenile rheumatoid uveitis;</li> <li>• complex of methods for examination of patients with uveitis;</li> <li>• principles of treatment of uveitis of various etiologies;</li> <li>• the origin of the complications and expected outcome of diseases of the choroid;</li> <li>• terms and principles of treatment of patients with vascular pathology.</li> </ul>	<p><u>Alikova T.T.</u> Immunological aspects of ophthalmopathology. Educational manual of UMO. – Vladikavkaz, 2010. – 87 p.</p> <p><u>Vyshegurov Ya.Kh., Zakirova D.Z., Rascheskov A.Yu., Yakovlev M.Yu.</u> Intestinal endotoxin as an obligate factor of pathogenesis of endogenous iridocyclites and endophthalmitis of unclear etiology. – M., 2006. – 134 p.</p> <p><u>Polcanova T.I.</u> Semiotics and differential diagnosis of inflammatory diseases of the cornea: a training manual. – Ngma, 2016. – 56 p.</p> <p><u>Rapuan K.J., Heng V.-D.</u> Cornea: Atlas. edited by <u>A.A. Kasparov</u>. – M., 2010. – 160 p.</p> <p><u>Ratkina N.N.</u> Features of pathogenesis and conservative treatment of corneal dystrophy – M., 2008. – 50 p.</p> <p><u>Senchenko N.Ya., Shchuko A.G., Malyshev V.V.</u> Uveites: guide – M., 2010. – 144 p.</p> <p><u>Sevastyanov E.N., Gorskova E N.</u> Keratoconus plus. – M., 2006. – 148 p.</p> <p><u>Sozaeva M.A., Laitadze I.A.</u> Medicines most frequently used in ophthalmology. – Vladikavkaz, 2011. – 95 p.</p>
<p><u>The student must be able to:</u></p> <ul style="list-style-type: none"> <li>• to diagnose the violation of the integrity of the cornea and to determine its sensitivity;</li> <li>• diagnose and treat the most common forms of keratitis;</li> <li>• determine the relationship of local symptoms of corneal lesions with the General condition of the patient, namely, the etiology and pathogenesis of diseases in nosological forms;</li> <li>• diagnose congenital changes in the shape size and transparency of the cornea;</li> <li>• to diagnose congenital anomalies of sclera;</li> <li>• diagnose and treat scleritis and episcleritis;</li> <li>• diagnose abnormalities in the development of the choroid;</li> <li>• diagnose and treat iridocyclitis and choroiditis in children and adults.</li> </ul>	<p><u>Recommended literature:</u> The same.</p>



### III. Tasks for independent work on the topic under study.

#### Option 1

1. What kind of abnormalities of the cornea is possible?
2. What is the name of the symptom shown in the drawing? What are the ways of its further development?



3. Name the ways of local administration of antibiotics that Are most used in the treatment of keratitis.
4. Write, what is the essence of the operation of the department?
5. Describe the pathways of corneal ulcers. What can lead to the spread of ulcers?
6. Specify the two most common congenital abnormalities of the sclera.
7. What disease can correspond to the clinical picture shown in the figure?



8. What is the most common localization of sclera staphylomas?
9. Write what type of eyeball injection is shown in the drawing? What types of injection are typical for iridocyclitis?

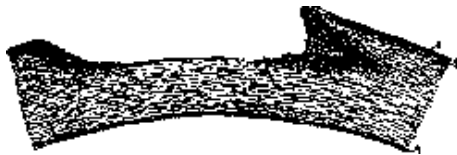




10. What is the difference between primary and secondary uveitis?
11. Inflammation of the choroid (uveitis) can be divided into:
12. Describe the connection with some General diseases of the body may have uveitis.
13. What emergency care should be provided by the physician to the patient with acute iridocyclitis?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 2

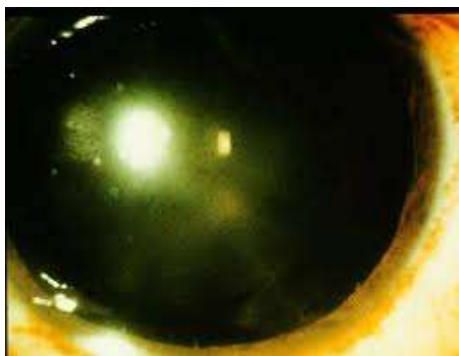
1. Name the symptoms included in the concept of corneal syndrome.
2. What disease corresponds to the histological picture of the cornea shown in the figure?



3. What keratitis the characteristic described below, the clinical picture? – Keratitis begins with edema of the epithelium in the Central part of the cornea. The edema quickly spreads to the stroma, which forms a well-defined rounded focus of grayish-white color with an intensely white spot in the center. The spread of the posterior stroma is accompanied by a wrinkling of Descemet's membrane and thickening of the epithelium back. Corneal vascularization appears relatively late, and the vessels can be both superficial and deep, but their number is insignificant.
4. What color were more likely to have corneal opacity, and what it depends on?
5. What treatment measures should be carried out in the presence of acanthamoebic keratitis?
6. Name the pathology of the sclera shown in the drawing.



7. What disease corresponds to the symptom complex described below? In the sclera, one or several spilled foci (infiltrates) of red-purple color, rising above the level of the sclera. The process may involve the cornea, iris, and ciliary body. The process is often bilateral and has a chronic recurrent character with frequent exacerbations.
8. Describe the pathogenesis of sclera staphyloma formation.
9. Write what explains the high frequency of inflammatory diseases of the vascular membrane?
10. What are the main causes of hypotension in uveitis? What consequences can this process have?
11. List possible complications of uveitis.
12. In what cases, when the vascular membrane is inflamed, there is an increase in pain in the eye?
13. What is the congenital pathology of the iris shown in the picture?



14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 3

1. What kind of abnormalities of the cornea is possible?
2. Write an algorithm for diagnosis of epithelial defect of the cornea.
3. Name the factors that reduce the body's defenses, which may be of great importance in the pathogenesis of herpetic keratitis and its subsequent relapses.
4. What is the pathogenesis of corneal vascularization?

5. What property of the cornea is being investigated, how does it change in keratitis?



6. What pathology of the organism is usually combined syndrome of "blue sclera"?
7. What pathology of the sclera can be assumed in the patient shown in the figure?



8. What disease corresponds to the symptom complex described below? – The inflammatory focus in the episclera has a bright red color with a purple tinge, is relatively localized, but without clear borders, and slightly rises above the surface of the unchanged sclera. The conjunctiva above it is mobile. Palpation of this area is painful. The process can be two-way. Visual acuity is almost always maintained at the same level.
9. Write the names of research methods that can be used to diagnose choroiditis.
10. Write the names of inflammatory diseases of the vascular membrane, identified by the localization of the process.
11. What disease is characterized by the following clinical picture? A sharp increase in intraocular pressure, the appearance of large precipitates, corneal edema. The duration of the attack is from 1 to 10-15 days. Corticosteroids and Mydriatics stop the attack.
12. There are photos of the eyes of patients with iridocyclitis and acute conjunctivitis. Circle the photo of the patient with iridocyclitis.
13. What disease accompanied by uveitis is characterized by corneal ribbon-like dystrophy?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*

14. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

#### Option 4

1. Describe the clinic and provide treatment to the patient, with the tree of herpetic keratitis.
2. What are the main properties of the cornea that affect the possible reduction of visual functions?
3. Describe the approximate treatment of fungal keratitis.
4. Write the main reasons for the frequent involvement of the cornea in the pathological process.
5. What is the complication of keratitis is shown in the figure?



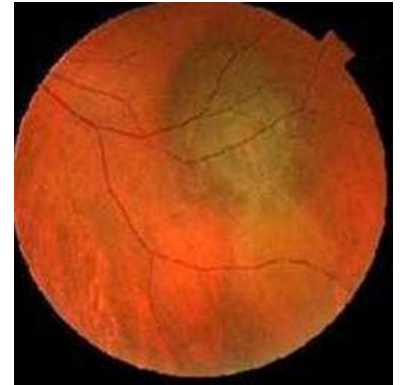
6. What is the congenital pathology of the sclera shown in the picture?



7. Cross out the types of sclera pathology that you think are not found.
- inflammatory processes;
  - ectasia;
  - opacities;
  - staphyloma;
  - degeneration;

abnormalities of development;  
formation of fragments in fractures;  
cysts;  
tumors.

8. What diseases can cause inflammatory processes in the sclera?
9. What processes lead to the disappearance of the precipitates in the eye?
10. Explain why the combined purpose of the instillation of atropine and adrenaline caused a more pronounced effect?
11. Name the complication of choroiditis shown in the picture.



12. Describe what changes that occur in iridocyclitis, you can see in the picture?



13. Explain why there are no complaints of eye pain, photophobia, or lacrimation in choroiditis.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 5

1. Name the main outcomes of diseases of the cornea and describe the possible principles of their treatment.
2. Write down what external factors can affect the cornea?
3. What type of eyeball injection that characterizes keratitis is shown in the drawing?



4. What type of keratitis is characterized by a complete lack of corneal sensitivity?
5. What diseases most often cause marginal keratitis?
6. In what cases is surgical treatment of scleromalacia indicate
7. What pathology of the sclera is shown in the drawing?



8. Due to what processes is the regeneration of the sclera during its pathological changes?
9. What is the reason for changing the color of the iris in iridocyclitis?
10. What changes in intraocular pressure occur more often in iridocyclitis?
11. Write down the reasons that, in addition to the fusion of the pupil, can lead to secondary glaucoma in uveitis.
12. Describe a fresh inflammatory choroidal focus.

13. What changes in the eyeball of a patient with iridocyclitis can be seen in the figure?



14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 6

1. Name the corneal pathology shown in the drawing.



2. Specify what qualities characterize the infiltration of the cornea?
3. What keratitis the characteristic described below, the clinical picture? A limited grayish-white infiltrate is formed, initially without a tendency to deepen. On its surface, "nodules" or "crumbs" are visible, sometimes giving it a curd-like appearance. Edema and infiltration of the cornea has the appearance of circles. The first circle is jagged, saturated with pus, the second is translucent and narrow, the third is in the form of a narrow roller with a sharp transition to healthy tissue. There is an unusual, pyramidal shape, hypopion. The infiltrate can break up and turn into a yellowish-gray ulcer with indistinct edges and foci of satellite granular infiltrates and microabscesses.



4. What is the etiology of the process indicated by the presence of flictenular keratitis?
5. What are the main properties of the cornea that affect the possible reduction of visual functions?

6. What pathology is shown in the drawing, accompanied by a description of the clinical picture? – A yellowish-gray necrotic focus first appears on the sclera, which later undergoes decay until the vascular tract is exposed. The course of the disease is chronic and prolonged.



7. What diseases can cause inflammatory processes in the sclera?
8. Complete the table by specifying what types of stafiloma meet with different localization?

Localization of staphyloma	Name
The area of the limb	
Above the ciliary body	
In the equator region	

9. Try to explain the essence of the therapeutic effect of Mydriatics in iridocyclitis.
10. What are the causes that contribute to the occurrence of myosis in iridocyclitis.
11. What is the congenital pathology of the iris shown in the picture?



12. Write, what, in your opinion, is the difference between the fusion and overgrowth of the pupil in iridocyclitis?
13. Of the etiological factors that cause uveitis, pay attention to:



14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 7

1. What are the reasons For the loss of luster of the cornea.
2. Write an algorithm for diagnosis of epithelial defect of the cornea.
3. What actions are necessary in case of a negative result of drug therapy, further progression of purulent keratitis, the appearance of a threat of corneal perforation or if there is a perforation?
4. Describe the clinical picture of fungal keratitis.
5. What is the name of the changes in the cornea shown in the drawings in size? (write the names next to the pictures)



6. Make a table for the differential diagnosis of scleritis and episcleritis.

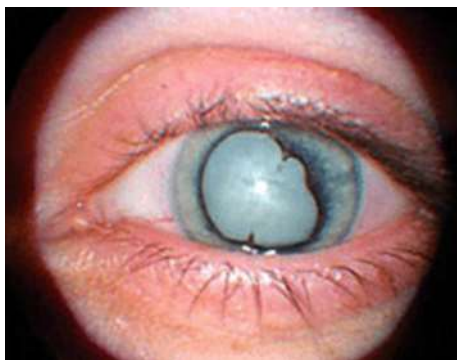
Scleritis	Episcleritis

7. What pathology of the sclera can be diagnosed in the specific case shown in the figure?



8. What disease corresponds to the symptom complex described below? – The inflammatory focus in the episclera has a bright red color with a purple tinge, is relatively localized, but without clear borders, and slightly rises above the surface of the unchanged sclera. The conjunctiva above it is mobile. Palpation of this area is painful. The process can be two-way. Visual acuity is almost always maintained at the same level.

9. What complication of uveitis is shown in the picture? What do you see as the main reasons for its occurrence?



10. What changes in intraocular pressure occur more often in iridocyclitis?
11. Long-existing hypotonia of the eye can cause following changes:
12. Write what explains the high frequency of inflammatory diseases of the vascular membrane?
13. What disease accompanied by uveitis is characterized by corneal ribbon-like dystrophy?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

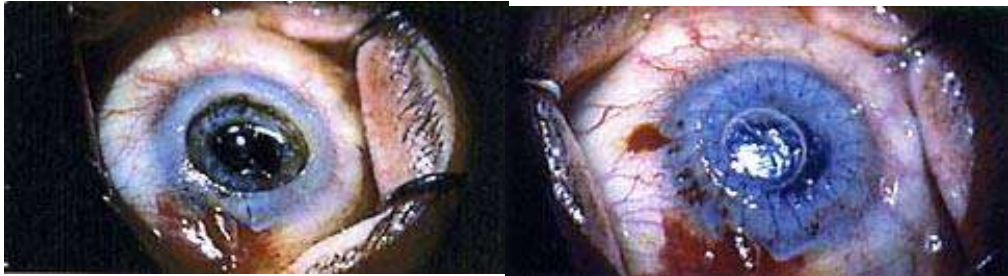
### Option 8

1. Describe the etiology and clinical picture of keratoconjunctivitis phlyctenular.

2. What disease is characterized by the clinical picture shown in the figure?



3. Explain why the inflammatory process of the cornea is often complicated by iridocyclitis?
4. Where does the growth of the epithelium covering the bottom of the corneal ulcer begin when it heals?
5. Which operation steps are shown in the figures?

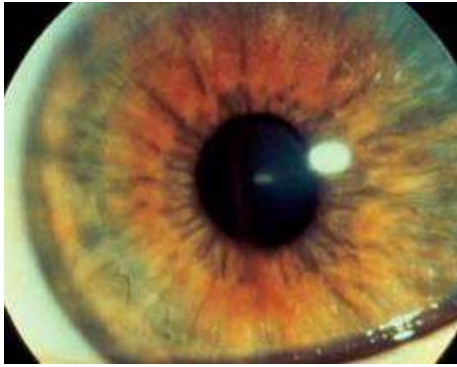


6. As a result of what processes can sclera staphylomas be formed?
7. What disease can correspond to the clinical picture shown in the figure?



8. What Is the prognosis for episcleritis after recovery?
9. Write, with what purpose in anterior uveitis appoint mydriatic? What do You see as their therapeutic effect?
10. What is the reason for changing the color of the iris in iridocyclitis?

11. Describe the clinical picture that characterizes Fuchs syndrome.



12. Due to what reasons a person can become blind with adhesion of the pupil?
13. What is called peripheral uveitis?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Make 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

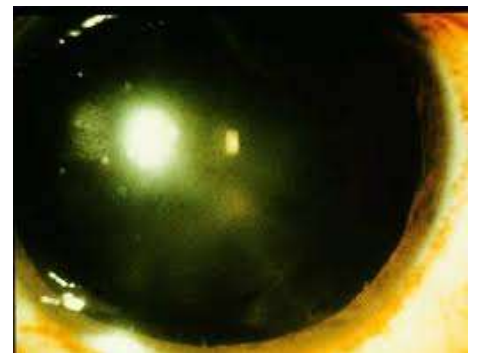
### Option 9

1. For a disease of the cornea characterized by symptoms below? – The infection develops slowly, a limited infiltrate of grayish-white color is formed at the site of introduction and reproduction, at first without a tendency to deepen. On its surface, "nodules" or "crumbs" are visible, sometimes giving it a curd-like appearance. Edema and infiltration of the cornea has the appearance of circles. The first circle is jagged, saturated with pus, the second is translucent and narrow, the third is in the form of a narrow roller with a sharp transition to healthy tissue. There is an unusual, pyramidal shape, hypopion. The infiltrate can break up and turn into a yellowish-gray ulcer with indistinct edges and foci of satellite granular infiltrates and microabscesses.
2. Specify the features of the clinic of herpetic keratitis.
3. Tell us which cellular elements may include infiltration of the cornea?
4. Name the factors that reduce the body's defenses, which may be of great importance in the pathogenesis of herpetic keratitis and its subsequent relapses.
5. Describe three periods in the course of syphilitic parenchymatous keratitis.
6. What is the most common localization of sclera staphylomas?
7. What are the main qualities of a normal sclera.

8. What type of sclera staphyloma is shown in the picture? (Write the answer next to the drawing).
9. Write, what, in your opinion, is the difference between the fusion and overgrowth of the pupil in iridocyclitis?
10. What is the difference in the appearance of choroidal and retinal hemorrhages when evaluating the ophthalmoscopic picture?
11. Write down the type of pathology of the eye may accompany aniridia?
12. What complication of uveitis is shown in the picture? What do you see as the main reasons for its occurrence?



13. What is the congenital pathology of the iris shown in the picture?



14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 10

1. What kind of abnormalities of the cornea is possible?
2. What is the "facet" of the cornea?

3. What is the name of the pathology shown in the drawing? Write its name next to the drawing.



4. Write the names of medications used to treat viral keratitis.
5. What are the main factors that lead to clouding of the cornea.
6. What pathology of the sclera can be diagnosed in the specific case shown in the figure?



7. In what cases is surgical treatment of scleromalacia indicated?
8. Name the pathology of the sclera shown in the drawing.



9. What disease of the choroid of the eye is characterized by a yellow glow of the pupil when examined in transmitted light?



10. Describe how you can define ciliary tenderness?

11. What is called peripheral uveitis?
12. What are the main causes of metastatic ophthalmia?
13. What disease is characterized by the following clinical picture? A sharp increase in intraocular pressure, the appearance of large precipitates, corneal edema. The duration of the attack is from 1 to 10-15 days. Corticosteroids and Mydriatics stop the attack.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*





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WORK OF 4TH YEAR STUDENTS OF THE  
FACULTY OF MEDICINE ON THE CYCLE OF  
OPHTHALMOLOGY**



**TOPIC 6: "DISEASES OF THE RETINA AND OPTIC NERVE. OCULAR  
MANIFESTATIONS OF GENERAL PATHOLOGY OF THE BODY»**

**Vladikavkaz 2021**



## TOPIC 6: "DISEASES OF THE RETINA AND OPTIC NERVE. OCULAR MANIFESTATIONS OF GENERAL PATHOLOGY OF THE BODY»

### I. Questions for checking the initial (basic) level of knowledge.

1.

Central serous chorioretinitis	Symptoms
	<i>I.</i>

2.

Retinal detachment	Symptoms
	<i>I.</i>

3.

Optical neuritis	Symptoms
	<i>I.</i>

4.

Advanced diabetic retinopathy	Changes in the fundus
	<i>I.</i>

### II. Targets:

The student should know:

- retinal changes in angiomatosis;
- signs of hereditary dystrophies of the retina and their treatment;
- clinic for age-related retinal dystrophy and its treatment;
- eye changes in retinal detachment and its treatment;
- clinical manifestations of congenital optic nerve abnormalities;
- diagnostic value of optic disc stasis detected during ophthalmoscopy, pathogenesis of optic disc stasis in intracranial hypertension;
- clinic of different stages of optic disc congestion, the difference between inflammatory edema of the optic nerve in neuritis and non-inflammatory edema in stagnation;
- methods of rehabilitation of patients with optic nerve atrophy of various origins;
- retinal changes in retinal spasms, embolism, and vascular thrombosis and their treatment;
- ophthalmological changes in hypertension;

Recommended literature:

*a) educational literature*

- Egorov E.A. Ophthalmology. National leadership. Short edition. – Moscow: GEOTAR-Media, 2016. – 736 p.
- Ophthalmology: textbook. V.N. Alekseev, Yu.S. Astakhov, S.N. Basinsky, etc. /Ed. by E.A. Egorov. – M.: GEOTAR-Media, 2010. – 240 p.
- Ophthalmology: Textbook / ed. by E.I. Sidorenko. – 3rd ed. – Moscow: GEOTAR-MED. 2013. – 640 p.
- Ruban E.D. Eye diseases: the newest reference book. Rostov-on-don: Phoenix, 2016. – 622 p.
- Takhchidi H.P., Yartseva N.S., Gavrilo N.A., Deev L.A. Ophthalmology: textbook. – M.: GEOTAR-Media, 2011. – 544 p.
- b) additional*
- Alpatov S.A., Shchuko A.G., Urneva E.M., Malyshev V.V. Age – related macular degeneration: a guide. - M., 2010. – 112 p.
- Ho A.K., Brown G.K. Retina: guide for doctors / Tr. of engl. – M., 2009. – 352 p.
- Medvedev I.B. Diabetic retinopathy and its complications: a guide. – Moscow: GEOTAR-Media, 2015. – 288 p.

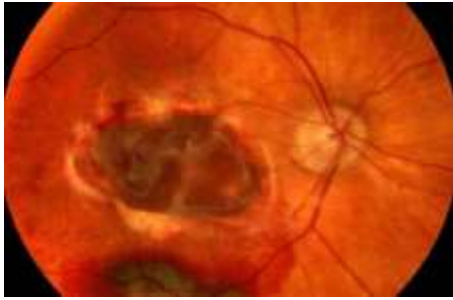
<ul style="list-style-type: none"> <li>• describe the classification of hypertensive changes in the fundus and the most disturbing eye symptoms in hypertension;</li> <li>• changes in the fundus in diseases of the cardiovascular system;</li> <li>• eye symptoms in diseases of the Central nervous system;</li> <li>• changes in the retina in diseases of the blood;</li> <li>• causes of eye symptoms in diseases of the ENT organs and oral cavity;</li> <li>• why is fluorescein angiography of the ocular fundus allows to diagnose subclinical forms of diabetes;</li> <li>• ocular symptoms in connective tissue diseases;</li> <li>• changes in the eyes when the function of the thyroid or parathyroid glands is impaired;</li> <li>• eye changes in infectious diseases;</li> <li>• eye damage in congenital metabolic disorders;</li> <li>• absolute eye indications from the woman for termination of pregnancy.</li> </ul>	<p><u>Nikiforov A.S., Guseva M.R.</u> Neuro-Ophthalmology. – M., 2008. – 624 p.</p> <p><u>Trukhan D.I., Lebedev O.I.</u> Changes in the organ of vision in diseases of internal organs. – M.: Practical medicine, 2014. – 208 p.</p> <p><u>Ustinova E.I.</u> Tuberculosis of the eyes and Similar diseases. A guide for physicians. – SPb., 2011. – 420 p.</p> <p><u>Zhaboedov G.D., Skripnik R.L.</u> Lesion of the optic nerve. – Kiev, 2006. – 472 p.</p> <p><u>Zhukova S.I., Shchuko A.G., Malyshev V.V.</u> Retinal pigment abiotrophy: a guide, M., 2010 – - 112 p.</p>
<p><u>The student must be able to:</u></p> <ul style="list-style-type: none"> <li>• prescribe treatment for hereditary retinal dystrophy;</li> <li>• prescribe early treatment for age-related retinal dystrophy;</li> <li>• prescribe timely treatment for retinal detachment;</li> <li>• interpret ophthalmoscopy data for differential diagnosis of neuritis and congestive optic disc;</li> <li>• treat patients with various types of optic nerve atrophy;</li> <li>• prescribe adequate therapy for spasms, embolism, and retinal vascular thrombosis;</li> <li>• apply in practice the knowledge of eye symptoms in General diseases of the body.</li> </ul>	<p><u>Recommended literature:</u> The same.</p>

### III. Tasks for independent work on the topic under study.

#### Option 1

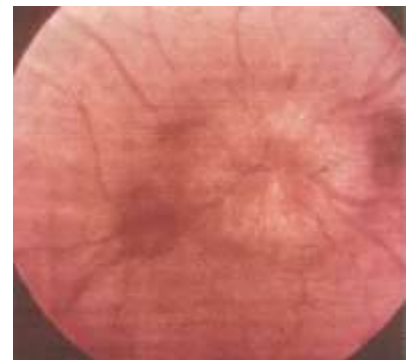
1. Write down what pathological conditions of the retina you can name?
2. What internal organs may have angiomatic nodes in Hippel-Landau disease?

3. Write the name of the retinal dystrophy shown next to the drawing.



4. What are the symptoms and the data of the neurological examination are important for diagnosis of stagnant disc optic nerve?

5. What disease clinic is shown in the drawing?



6. What symptoms and neurological examination data are important for the diagnosis of a congestive optic disc?
7. Explain what causes transient hypermetropia, Central scotoma, color perception disorders in Central serous chorioretinitis?
8. Describe changes in the fundus typical for renal retinopathy.
9. Eye damage in chickenpox is manifested by the following symptoms:
10. What stage of diabetic retinopathy does the image in the picture correspond to?



11. With multiple sclerosis, the following ocular manifestations are possible (cross out the unnecessary ones).
- conjunctivitis;
  - keratitis;
  - uveitis
  - cataract;
  - glaucoma;
  - retinal vein thrombosis;
  - optic neuritis;
  - nystagmus;
  - paralysis of the oculomotor muscles;
  - hemianopsia.

12. Underline the correct answers in the proposed table concerning simple atrophy of the optic nerve in tabes and progressive paralysis:

Manifestations	Symptoms
The field of view	Concentric constriction Sector dropout Local defects
Narrowing the field of view	To the blue color To red On the green
Visual acuity	Reduced Not changed
Process	One-way Two-way
Age	Young Average Elderly
Argyll-Robertson Symptom	Direct Reverse
Pupils	Mobility is preserved No mobility Direct reaction to light Friendly response to light The correct form Incorrect form Anisocoria

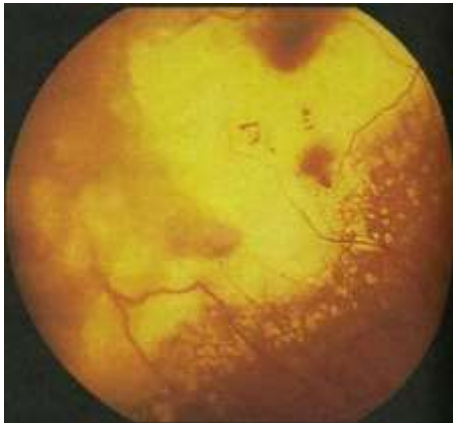
13. Atopic eczema on the part of the visual organ is manifested:
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

## Вариант 2

1. Name the main complaints of patients with retinal pathology.
2. Write what pathological processes in the central nervous system can lead to atrophy of the optic nerve?
3. Write what changes in the field of vision are characteristic of optical neuritis?
4. Name juvenile retinal dystrophy.



5. What a rare pathology of the retina, occurs in children and young people, mainly in men. One eye is affected.



6. For what optic nerve atrophy following describes characteristic clinical picture: reduced vision in both eyes for several days. The disease occurs against the background of a good General condition. Sometimes patients complain of a headache. Initially, there is hyperemia of the optic nerve discs and slight blurring of the borders. Examination of the visual field indicates the presence of Central absolute cattle on the white color, the boundaries of the visual field remain normal. Gradually, the discs become waxy and pale, especially in the temporal half.
7. Is it always with Central serous chorioretinitis pathological focus is localized in the foveal area?
8. What changes to the eyes are possible with extensive hemorrhages in the brain?
9. Describe the possibility of spreading to the eye socket of inflammatory processes from the dental system.

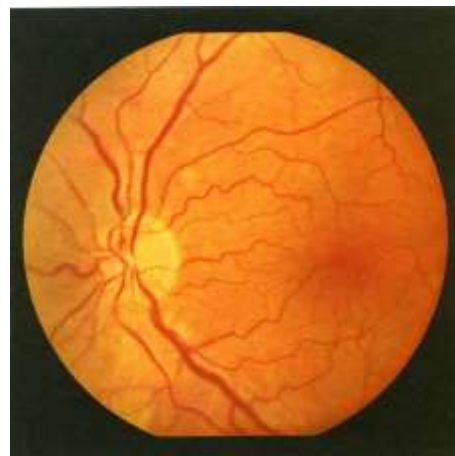
10. The emergence and proliferation of ksantomatoznye masses found in such physical illness as:
11. What diseases of the teeth and jaws can cause ocular manifestations?
12. For what disease of the CNS characterized the following symptoms?
  - bilateral development of the stagnant disk, but possibly unilateral development, and changes always develop on the side of the lesion;
  - disorder of pupillary reactions (mainly in the form of mydriasis);
  - hemianopsias;
  - paralysis of the oculomotor and abductor nerves.
13. For what purpose do doctors of other specialties consult patients with an ophthalmologist?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 3

1. Explain what has caused the lack of pain with retinal pathology.
2. Specify which age-related changes were made in the Ophthalmoscope picture of the retina?
3. Name the places where the retina is firmly attached to the underlying tissues.
4. What disease corresponds to the clinical picture described below? "Hyperemia of the optic disc, blurred borders, moderate dilation of the arteries and tortuosity of the veins. The disk is impregnated with exudate, its tissue is swollen and somewhat mined, the vascular funnel is filled with exudate. On the disc and in the peripapillary area of plasmorrhhea and hemorrhage".
5. Which of the above images of the fundus corresponds to the picture of optic nerve atrophy (sign under the picture)?



6. What determines the nature and degree of reduced visual acuity, changes in the field of vision, color vision disorders, and dark adaptation in retinal diseases?
7. What are the research Methods that can clarify the diagnosis of central serous chorioretinitis?
8. List the symptoms included in the upper orbital fissure syndrome.
9. What is the name of the symptom shown in the figure that occurs in hypertension?



10. Describe the eye changes that may occur in mumps.
11. What treatment should be given to patients with Central retinal vein thrombosis?
12. Is there a difference in retinal changes in patients with type 1 and type 2 diabetes?
13. Write the eye changes that occur in Marfan syndrome.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

#### **Вариант 4**

1. What are the possible outcomes of optical neuritis?
2. The picture of what disease is given in the following description of the fundus: the optic nerve disk is white, with a grayish tinge, there is a decrease in the number of small vessels.
3. What special research methods can be used to detect pathological conditions of the retina, its vessels and pigment epithelium even before the appearance of ophthalmoscopically visible changes?

4. What diseases are used for differential diagnosis of Central serous chorioretinitis?
5. How do visual functions change in the presence of Drusus of the optic nerve?
6. Name the complaints made by patients with Leber atrophy of the optic nerves.
7. What are the reasons, which can develop retrobulbar neuritis.
8. Name the symptom that characterizes changes in blood vessels in hypertension.



9. Name a conservative supportive Treatment for diabetic retinopathy.
10. Describe the fundus picture in chronic lymphoid leukemia.
11. What symptoms does the ocular form of myosthenia gravis include?
12. Name the eye lesions that may occur with sinus thrombosis.
13. What eye manifestations are possible in diseases of the trigeminal nerve?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 5

1. Write an algorithm for the treatment of Central serous chorioretinitis?
2. What is the composition of the optic nerve drusus?
3. Specify the changes in the field of vision that are characteristic of Leber atrophy of the optic nerves.
4. What are the symptoms characteristic of acute retrobulbar neuritis.



5. What is used to fill the eye cavity during endovitreous surgery for retinal detachment?
6. Purulent processes in the ear often cause all of the following processes, except (cross out unnecessary)
  - abscesses and phlegmons of the eye socket;
  - conjunctivitis;
  - keratitis;
  - choroiditis;
  - purulent uveitis;
  - panophthalmitis;
  - cataracts;
  - glaucoma;
  - neuritis of the optic nerves;
  - congestion of the optic nerve;
  - otogenous thrombosis of the orbital veins;
  - cavernous sinus thrombosis.

7. What is the name of the visual changes shown in the drawing?



8. What retinal disease can lead to such a change in the field of vision, which is shown in the picture, and is also accompanied by hemeralopia?

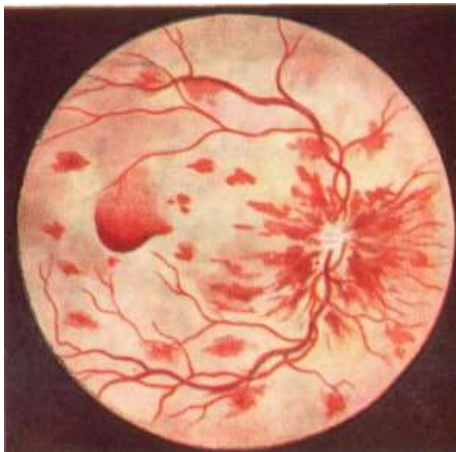


9. Describe the ocular manifestations of Behcet's disease.

10. What is the symptom of arterio-venous depression shown in the picture?



11. What changes in the eyes, in addition to retinopathy can occur in diabetes?
12. What are the modern method of treatment of diabetic retinopathy, contributing to the preservation of visual function.
13. In what disease does the fundus look like this?



14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

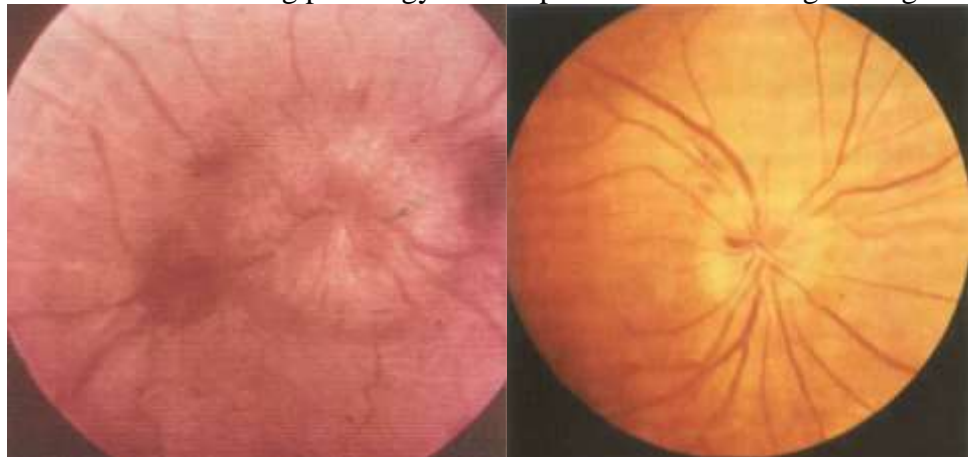
### Option 6

1. What are the processes occurring in the body, can lead to inflammatory changes in the retina?

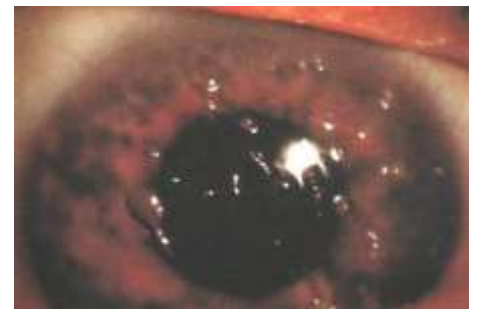
2. Describe retinal changes characteristic of the first stage of Central serous chorioretinopathy.
3. Describe the ophthalmoscopic picture in the presence of drusus of the optic nerve.
4. Mark in the table with the + sign the changes in visual functions that are most characteristic of optic nerve atrophy.

Visual acuity	
Field of view	
Color perception	
Light perception	

5. Sign the names of the existing pathology of the optic nerve under the given figures.



6. What are the changes in the optic nerve discs in Leber atrophy?
7. Name the changes in the optic nerve characteristic of the initial form of retrobulbar neuritis.
8. When is laser treatment for diabetes, and what is it?
9. What pathology corresponds to the clinical picture shown in the drawing? What manifestations are typical for it?



10. What are the risk factors for diabetic retinopathy?
11. Write the eye changes that occur in Crohn's disease.
12. Write what symptoms are usually accompanied by cerebrospinal meningitis?

13. Name the symptom that characterizes changes in blood vessels in hypertension.



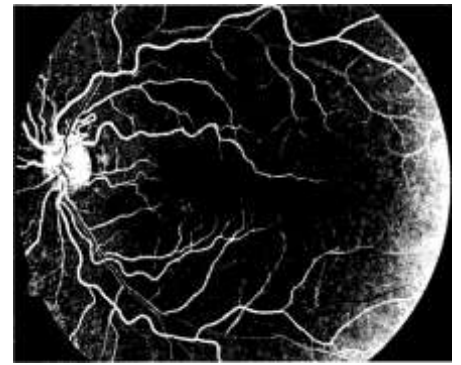
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 7

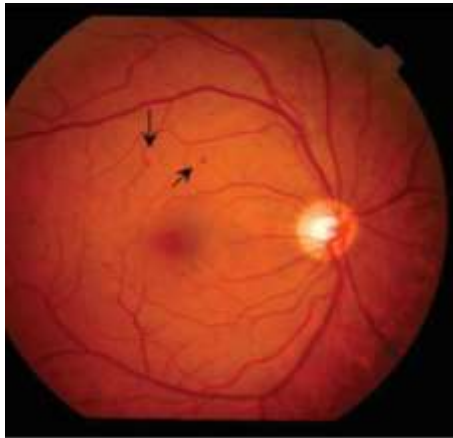
1. What are the main manifestation of the Eels' periflebit.
2. What are the cause of ischemic optic neuropathy.
3. Write down what methods can help in the differential diagnosis of various forms of optic nerve atrophy?
4. What diseases should be differentiated from optic neuritis?
5. What changes in the fundus can be observed with retinopathy of prematurity?
6. What disease, the outcome of which is shown in the figure, did the patient suffer?



7. The results of which research method are shown in the figure?



8. What stage of diabetic retinopathy does the image in the picture correspond to?



9. Name the symptom of hypertonic changes in the fundus, shown in the figure.



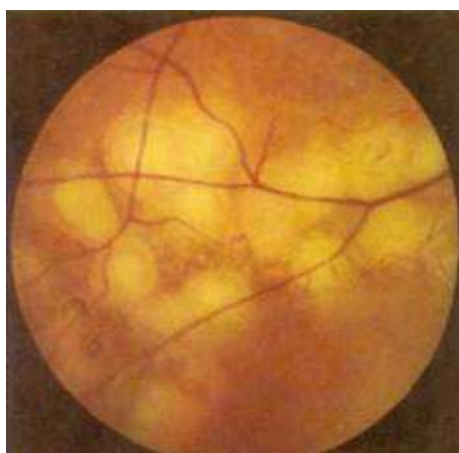
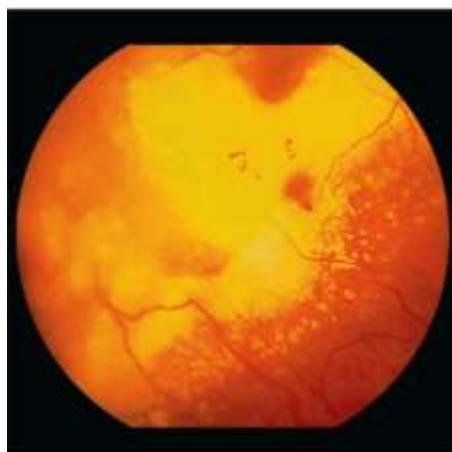
10. What disease is characterized by the appearance of Lish nodules in the iris?



11. What studies are necessary to diagnose the volumetric brain process accompanied by stagnant optic nerve discs?
12. What are myelomas on the fundus that are formed in chronic myeloid leukemia?
13. Describe retinal changes in erythremia.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

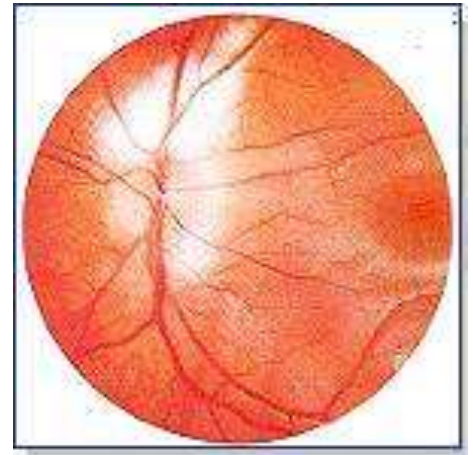
### Вариант 8

1. What are the changes in the retinal vessels when the Eels' periflebity?
2. The disease manifests itself in the form of recurrent hemorrhages in the vitreous body. Occurs at a young age, often in one eye, and begins suddenly with a sharp decrease in visual acuity. Ophthalmoscopy reveals various forms of manifestations. In the early stages of the disease, there is tortuosity and dilation of the veins, unevenness of their caliber. In some places the veins are interrupted by small or larger retinal hemorrhages and plasmorrhea. Vascular microaneurysms are a constant finding. Write its name and identify possible therapeutic measures.
3. What is the clinical picture of the disease shown in the drawing?





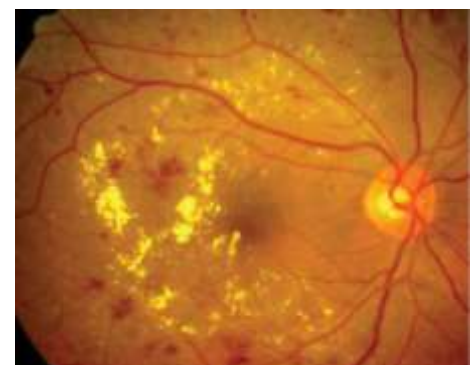
4. Describe what is the pathogenesis of the occurrence of stagnant disc optic nerve?
5. What eye diseases can be complicated by Hippel-Landau disease?
6. Describe the features of the occurrence of hereditary, or Leber, atrophy of the optic nerve associated with gender.
7. What retinal pathology is shown in the drawing? What treatment is required for this pathology?



8. What disease is characterized by the clinical picture shown in the figure?



9. What stage of diabetic retinopathy does the image in the picture correspond to?



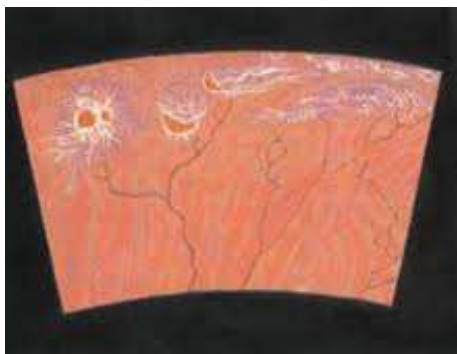
10. For what pathology is characterized as described below in the clinical picture? "The vision is reduced suddenly as a rule, to total blindness. The retina becomes milky white

due to edema. The Central fossa of the retina on this background has a cherry-red color (a symptom of "cherry stone"). The arteries are sharply narrowed, pale, and intermittent blood flow may be visible. The veins are narrowed slightly. There is some paling of the optic disc".

11. What is a complication from the eye in ankylosing spondylitis?
12. Name the inflammatory processes of the eye that Can occur with purulent otitis.
13. In what pathology can "soft" retinal exudates be observed?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 9

1. What research data is used to diagnose diseases of the optic nerve?
2. What type of peripheral retinal dystrophy corresponds to the ophthalmoscopic picture shown in the figure?

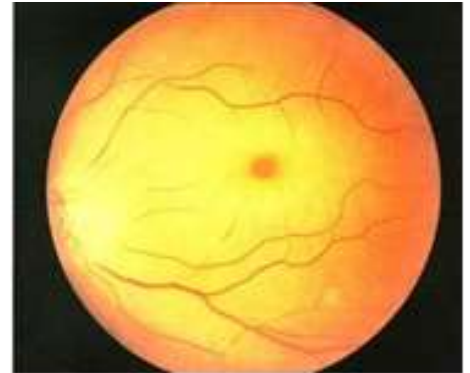


3. When a somatic pathology may cause stagnation of the optic nerve head?
4. What kind of optic nerve atrophy is characterized by the following clinical picture: reduced vision in both eyes for several days. The disease occurs against the background of a good General condition. Sometimes patients complain of a headache. Initially, there is hyperemia of the optic nerve discs and slight blurring of the borders. Examination of the visual field indicates the presence of Central absolute cattle on the white color, the boundaries of the visual field remain normal. Gradually, the discs become waxy and pale, especially in the temporal half.
5. What retinal disease is described below? – Mainly in the Central parts of the fundus, a limited yellowish-white focus appears with indistinct contours, due to cell infiltration. The focus rises above the retina. Exudation spreads to the vitreous body, as evidenced by its turbidity near the focus. In the inner and middle layers of the retina, streaked and dotted

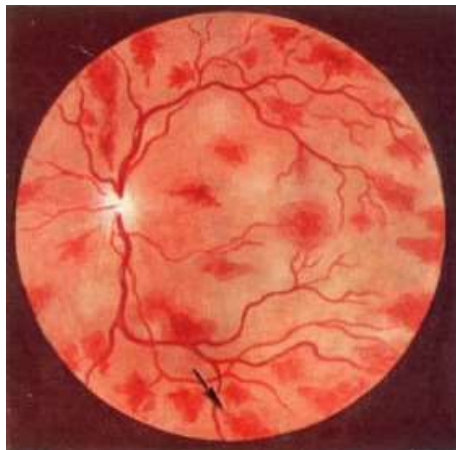


extravasates are visible around the focus. If the focus is located in close proximity to the optic disc, it may be involved in the process.

6. For a retinal disease typical symptoms are night blindness and tubular field of vision?
7. Name the disease that is characterized by the type of fundus shown in the drawing.



8. What somatic disease is characterized by changes in the fundus shown in the figure?



9. What pathology of the eye can cause diseases of the nasal cavity?
10. Name the somatic diseases that Most often lead to the occurrence of ischemic optical neuropathy.
11. For brain tumor, typical:
12. What stage of diabetic retinopathy is characterized by the changes described below?  
"Veins dilated; small number of microaneurysms; single intraretinal microhemorrhagia; small number of intraretinal lipid foci; non-blood perfused areas of the retina on fluorescent angiography."
13. Describe the symptoms that occur with thyrotoxicosis:  
Dalrymple's symptom –  
Steelwag's symptom –  
Grefe's symptom –  
Moebius's symptom –

Kocher's symptom –

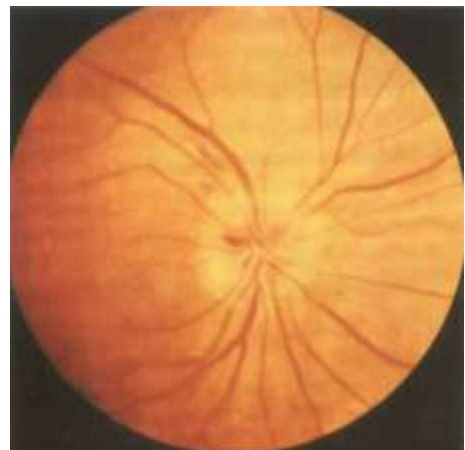
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 10

1. What disease is characterized by the clinical picture of the fundus shown in the figure?



2. Of ophthalmoscope describe the main symptoms that characterize pigmentary retinal dystrophy.
3. Describe the changes in the optic disc that are characteristic of ischemic optical neuropathy.
4. What is the etiology of Central serous chorioretinopathy?
5. The clinical picture of which disease is shown in the figure?



6. From which segment of the visual field begins its narrowing in retinal pigmented dystrophy?
7. What disease is characterized by the following clinical picture? With what disease should a differential diagnosis be made? – The disease is manifested by sudden loss of vision or a sharp decrease in it, mainly in elderly people suffering from hypertension or atherosclerosis. The optic disc is swollen, enlarged, penetrates into the vitreous body, its borders are blurred. There may be hemorrhages near the disc. The disc is pale, the arteriae are sharply narrowed, and of uneven caliber. Changes in the field of vision are characteristic. More often, atypical upper or lower hemianopsias occur, although Central scotomas of various forms are also possible.
8. Ocular manifestations that may occur due to empyema of the paranasal sinuses:
9. For brain tumor, typical:
10. For what type of meningitis characteristic lesions of the oculomotor and trochlear nerves?
11. Describe the location and type of "soft" retinal exudates.
12. Name the diseases of the oral cavity that Can cause pathology of the visual organ.
13. Describe retinal changes in erythremia.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*



Department of OTO-Rhino-laryngology with ophthalmology

## THE COURSE OF OPHTHALMOLOGY

**KOROEV O.A., KOROEV A.O.**

# **INDIVIDUALIZED TASKS FOR INDEPENDENT WORK OF 4TH YEAR STUDENTS OF THE FACULTY OF MEDICINE ON THE CYCLE OF OPHTHALMOLOGY**



## Vladikavkaz 2021

## TOPIC 7: "DISEASES OF THE LENS AND VITREOUS BODY».

### I. Questions for checking the initial (basic) level of knowledge.

1.		
	Immature cataract	Symptoms
		1.
2.		
	Birth defects of the lens	Names
		1.
3.		
	The aphakia	Methods of correction
		1.
4.		
	Hemophthalmos	Methods of treatment
		1.

### II. Целевые задачи:

<p><u>The student should know:</u></p> <ul style="list-style-type: none"> <li>• what is the normal lens, with abnormalities of its development and diseases;</li> <li>• how does the lens grow over the course of a person's life, thereby ensuring a stable Central position of the lens;</li> <li>• in which parts of the lens changes are observed in different clinical forms of cataract;</li> <li>• what types of cataracts are distinguished;</li> <li>• what methods can be used to examine the lens;</li> <li>• definition of cataract;</li> <li>• methods for the treatment of cataract;</li> <li>• definition of aphakia;</li> <li>• ways to correct aphakia;</li> <li>• anatomical features of the vitreous body;</li> <li>• to explain the appearance of ocular symptoms in diseases of the vitreous body;</li> <li>• know the abnormalities of the vitreous body and conduct differential diagnostics with tumor and inflammatory processes.</li> </ul>	<p><u>Recommended literature:</u></p> <p><i>a) educational literature</i></p> <p><u>Egorov E.A.</u> Ophthalmology. National leadership. Short edition. – Moscow: GEOTAR-Media, 2016. – 736 p.</p> <p>Ophthalmology: textbook. <u>V.N. Alekseev, Yu.S. Astakhov, S.N. Basinsky, etc.</u> /Ed. by <u>E.A. Egorov.</u> – M.: GEOTAR-Media, 2010. – 240 p.</p> <p>Ophthalmology: Textbook / ed. by <u>E.I. Sidorenko.</u> – 3rd ed. – Moscow: GEOTAR-MED. 2013. – 640 p.</p> <p><u>Ruban E.D.</u> Eye diseases: the newest reference book. Rostov-on-don: Phoenix, 2016. – 622 p.</p> <p><u>Takhchidi H.P., Yartseva N.S., Gavrilova N.A., Deev L.A.</u> Ophthalmology: textbook. – M.: GEOTAR-Media, 2011. – 544 p.</p> <p><i>b) additional</i></p> <p><u>Aznabaev B.M.</u> Ultrasound cataract surgery-phacoemulsification. – M.: August Borg, 2005. – 136 p.</p> <p><u>Bhavsara Abdhish R.</u> Vitreoretinal surgery. – Moscow: Logosphere, 2013. – 384 p.</p> <p><u>Evgrafov V.Yu., Batmanov Yu.E.</u> Cataract. – M., 2005. – 368 p.</p>
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	<u>Steve Charles</u> Microsurgery of the vitreous body and retina. Moscow: Medpress, 2012. – 400 p. <u>Takhchidi H.P., Egorova E.V., Tolchinskaya A.I.</u> Intraocular correction in surgery of complicated cataracts. – M., 2004. – 176 p.
<u>The student must be able to:</u> <ul style="list-style-type: none"> <li>• examine the lens using side lighting, transmitted light, and biomicroscopy techniques;</li> <li>• diagnose various types of cataracts;</li> <li>• treat incipient cataracts;</li> <li>• to diagnose the aphakia and make it a spectacle correction;</li> <li>• to diagnose artificiu;</li> <li>• diagnose and treat vitreous opacity.</li> </ul>	<u>Recommended literature:</u> The same.

### III. Tasks for independent work on the topic under study.

#### Option 1

1. Name the necessary properties of a healthy lens.
2. The optical slice of the lens obtained with the slit lamp, there are the following zones:
3. Use the arrows to indicate the possible dislocation of the lens when it is dislocated.



4. Explain why the initial brown cataract is called cataract with dual focus?
5. What kind of localization of lens opacity is shown in the figure?



6. What is the purpose of conservative treatment of incipient cataracts?
7. Explain the reason for the presence of high-grade hypermetropia in aphakia.
8. What stage of development of age-related cortical cataracts corresponds to the figure below?



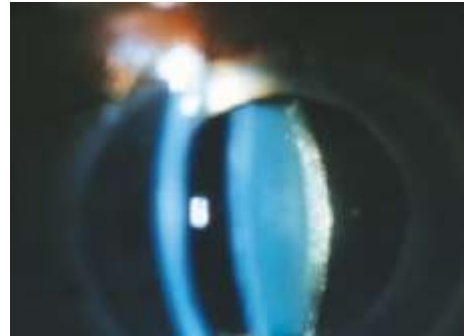
9. Which type of intraocular lens is currently the most advanced?
10. Describe the functional features of the lens epithelial cells.
11. At what age is intraocular correction of aphakia in the presence of a congenital cataract?
12. What changes in the eye characterize the clinical picture of lens subluxation?
13. Describe what the remains of the hyaloid artery look like.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 2

1. At the immature age-related cataract may increase intraocular pressure. Why is this happening?
2. Describe the clinical Picture of the initial nuclear cataract.
3. Name the congenital changes in the size and shape of the lens.
4. Fill in the table, indicating what pathological changes are accompanied by various types of destruction of the vitreous body.

Filamentous destruction	Granular destruction	Destruction with crystal inclusions

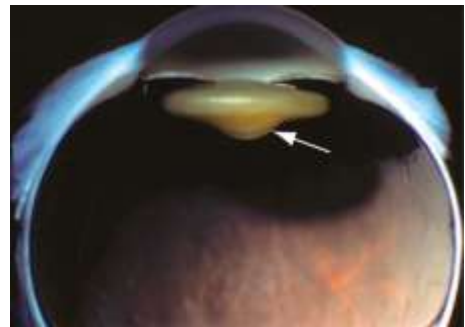
5. What kind of localization of lens opacity is shown in the figure?



6. What condition is desirable to observe when examining the lens?
7. What is the main method of cataract treatment?
8. What are the ways to correct aphakia?
9. On what grounds can we conclude about the swelling of the lens in the immature stage of age-related cataracts?



10. Name the congenital abnormality of the lens shown in the picture.



11. Name the materials used to make intraocular lenses.
12. What is the difference between primary and secondary congenital aphakia?
13. Describe the localization of lens ectopia that occurs in Marfan syndrome.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*



15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Вариант 3

1. What is called secondary cataract?
2. What are the main indicators for mature age-related cataracts that allow you to count on a good visual result after surgery.
3. How is the power of the lens?
4. By the time of occurrence, cataracts are distinguished:
5. What kind of localization of lens opacity is shown in the figure?



6. What stage of development of age-related cortical cataracts corresponds to the figure below?



7. How does the nucleus of the lens is a nuclear cataract?
8. What is the name of the ophthalmologist performed the first cataract extraction.
9. Describe the disadvantages of the aphakia glasses correction.
10. At what stage of cataract development is medication prescribed, and what effect do the prescribed medications produce?

11. Name the congenital abnormality of the lens shown in the picture.



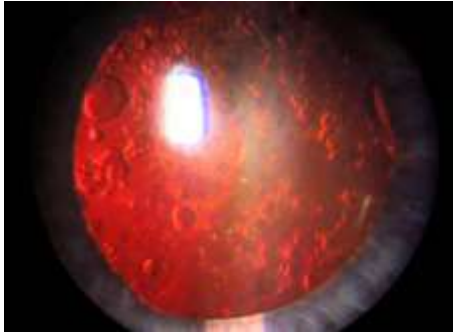
12. Give a description of the colobomas of the lens.
13. What pathology of the vitreous body corresponds to the following clinical picture? Whitish reflex in the pupil area. The lens is reduced in size. Behind it is a white fibrous mooring, in the center it is usually vascularized. Elongated ciliary processes are soldered to the mooring. In the future, the lens may become cloudy and swell strongly. The front camera becomes very small. Increases intraocular pressure, develops ophthalmia.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

#### Option 4

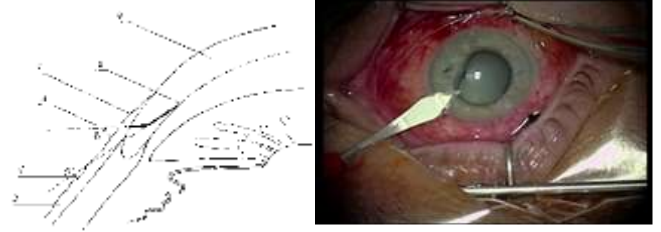
1. What is characterized by Morgagni's cataract?
2. What do Adamyuk-Elshnig balls look like and where do they come from?
3. Write the properties of the newborn's lens.
4. Name the main sign of acquired cataracts.
5. Describe the complaints made by the patient in the initial cortical cataract.
6. What is currently the main indication for cataract extraction?
7. Give the characteristic of subcapsular cataract.



8. Describe the changes characteristic of mature age-related cortical cataracts.
9. Describe the secondary cataract of the eye.



10. He was the first to implant an artificial lens in the eye.
11. Explain the visual impairment in the presence of lenticonus and lentiglobus.
12. What incisions are used in modern cataract surgery and what are their features?



13. Describe the point of Mittendorf.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 5

1. Sign the name of the change in the lens shown in the drawing that occurred as a result of an eye injury.



2. What are therapeutic measures for secondary cataract can be done?
3. Describe age changes of the crystalline lens.
4. According to the localization of opacity, the following types of cataracts are distinguished:
5. What changes in the crystalline lens during the initial cataract seen in the study of focal, or side lighting?
6. What changes occur in the lens when overripe cataract initial podstudio?
7. How common is diabetic cataract in diabetic patients and what are its characteristics?
8. Cataract extraction is called the "pearl" of eye surgery. For what?
9. Name a russian ophthalmologist who actively supported the idea of implanting an artificial lens in the eye.
10. Give the characteristics of anterior polar congenital cataract.



11. Describe the physiology of the epithelial cells of the anterior lens capsule.
12. Name the congenital abnormality of the lens shown in the picture. What syndrome does it often occur in? What are the possible complications?



13. What does the vitreous cysticercus look like?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*

15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 6

1. Specify the biochemical composition of the lens.
2. What somatic pathology corresponds to the clinical picture described below? There is A Kaiser-Fleischner ring of golden-brown color, which is formed by pigment granules located in the zone of the descemet shell. The ring is separated from the limb by a strip of transparent corneal tissue. Sunflower-shaped cataracts are often formed. The brown pigment is deposited under the anterior capsule of the lens and in the subcapsular layers of the cortex in the shape of a star, similar to the petals of a sunflower flower. In most cases, sunflower-shaped cataracts do not lead to serious visual impairment.
3. Describe the essence of the extracapsular cataract extraction method.
4. What is the last name of the scientist who first performed cataract extraction?



5. Write down the changes that occur with subcapsular plaques in overripe cataracts.
6. What kind of localization of lens opacity is shown in the figure?



7. What changes in the crystalline lens during the initial cataract visible when examined in transmitted light?
8. What are the signs of aphakia (4).
9. Describe the clinical picture of diabetic cataract in its initial stage.



10. What is the name of an eye with an artificial lens?



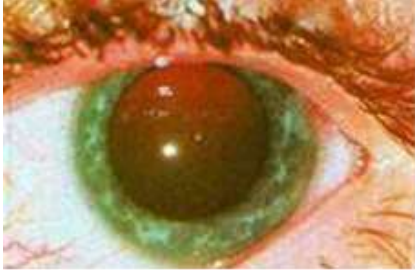
11. The most common form of congenital cataracts is the one shown in the picture. What is its name?



12. Name the congenital abnormality of the lens shown in the picture.



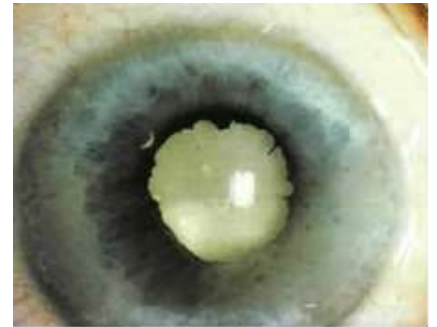
13. Name the congenital abnormality of the lens shown in the picture.



14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 7

1. Name the eye disease that occurs in the picture of complicated cataracts.



2. List possible ways to correct aphakia.
3. What is the significance of the absence of vessels and nerves in the lens?
4. Name the somatic pathology that May cause the appearance of complicated cataracts.
5. Describe the opacities present in the lens in zonular cataract.
6. What kind of localization of lens opacity is shown in the figure?

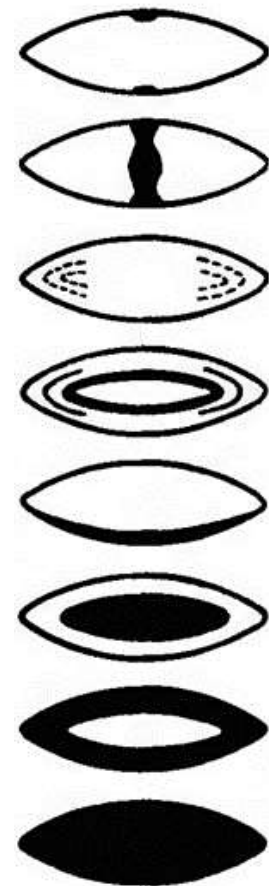




7. Describe the essence of the intracapsular cataract extraction method.
8. What stage of development of age-related cortical cataracts corresponds to the figure below?



9. Sign the names of cataract types by location of opacities next to the drawing.



10. Describe the clinical picture of morganiian cataract.





11. Write the name of a modern cataract surgery and the name of the author who proposed this method.



12. What are the advantages of intraocular correction of aphakia over other methods?
13. What complication is possible due to mooring in hemophthalmos?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Вариант 8

1. Name the main groups of medications that have a cataractogenic effect when used for a long Time.
2. Under the pictures, sign what is the difference between different types of ectopia of the lens?



3. Describe the signs characteristic of the initial cortical cataract, detected biomicroscopically
4. What is called the anterior-posterior polar cataract?

5. Name the authors who proposed laser cataract extraction.



6. What does the word "cataract" mean?
7. What kind of localization of lens opacity is shown in the figure?



8. What method of intracapsular cataract extraction is shown in the figure?



9. What complication is possible due to mooring in hemophthalmos?
10. What structures of the eye are fixed with anterior-chamber intraocular lenses?



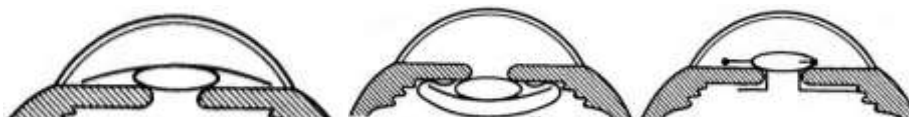
11. Write down the possible end-outcomes of overripe cataracts.
12. Under what conditions is it impossible to correct afakia with glasses?
13. Write down what chemicals cause the lens to become cloudy.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 9

1. Zonular cataract may not be congenital, but may occur in the postnatal period in children suffering from...
2. What is the main threat possible in the presence of total congenital cataract.
3. Name the type of cataract shown in the drawing.



4. What are the main types of intraocular lenses?



5. Describe the biochemical changes that occur in the lens during cataract.
6. Write down the duration of the stage of incipient age-related cortical cataract.
7. At what kind of cataract cortical or nuclear before there is a violation of view?
8. How long are the rays absorbed by the lens, causing it to become cloudy?
9. What is the complaint presented to patients that suggests the presence of opacities in the vitreous body, and not in the cornea or lens?

10. Under the pictures, sign what is the difference between different types of ectopia of the lens?



11. What kind of localization of lens opacity is shown in the figure?



12. What structures of the eye are fixed with intraocular pupil lenses?



13. What modern method of cataract extraction is mainly used at the present time?

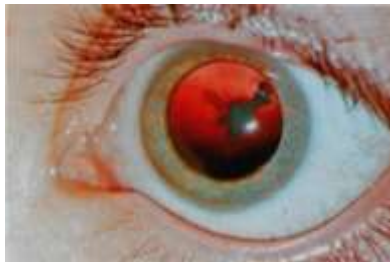


14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*

15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 10

1. What are the terms of surgical treatment in children with total cataracts?
2. What is the shape and optical power of the adult lens?
3. Under the figures, sign the names of the main research methods used to diagnose cataracts.



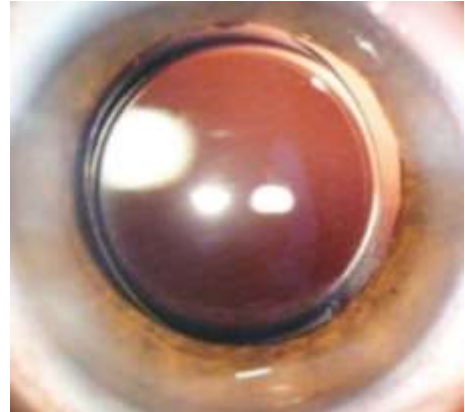
4. What kind of cataract is called "cataract with dual focus"?
5. Which form of senile cataracts is more common, cortical or nuclear? (Underline the correct answer).
6. What kind of localization of lens opacity is shown in the figure?



7. What are the features of the development of x-ray and similar cataracts?



8. By what process does the lens provide dynamic optics of the eye?
9. What lens is the lens: a collective or scattering (underline as appropriate)?
10. Describe the changes in the lens in immature age-related cortical cataract.
11. What are the characteristics of the initial brown cataract?
12. What are the most informative ways to study hemophthalmos?
13. Which structures of the eye are fixed with posterior-chamber intraocular lenses?



14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*





**Federal state budgetary educational institution of higher education  
"North Ossetian state medical Academy of the Ministry of health of  
Russia»**

**Department of OTO-Rhino-laryngology with ophthalmology**

**THE COURSE OF OPHTHALMOLOGY**

**KOROEV O.A., KOROEV A.O.**

**INDIVIDUALIZED TASKS FOR INDEPENDENT  
WORK OF 4TH YEAR STUDENTS OF THE  
FACULTY OF MEDICINE ON THE CYCLE OF  
OPHTHALMOLOGY**



**TOPIC 8: "PHYSIOLOGY AND PATHOLOGY OF INTRAOCULAR  
PRESSURE. GLAUCOMAS"**

**Vladikavkaz 2021**

## TOPIC 8: "PHYSIOLOGY AND PATHOLOGY OF INTRAOCULAR PRESSURE. GLAUCOMAS "

### I. Questions for checking the initial (basic) level of knowledge.

1.		
	Drainage system	Symptoms
		<i>1.</i>
2.		
	Sequence of changes in the field of view	Names
		<i>1.</i>
3.		
	Stages of primary glaucoma	Methods of correction
		<i>1.</i>
4.		
	Congenital glaucoma	Symptoms
		<i>1.</i>

### II. Целевые задачи:

<p><u>The student should know:</u></p> <ul style="list-style-type: none"> <li>• what is the tonometric, the true and tolerant intraocular pressure;</li> <li>• movement of intraocular fluid in the eye;</li> <li>• the main places of retention of its movement in the eye;</li> <li>• determination of eye hypertension;</li> <li>• explanation of the term glaucoma;</li> <li>• the main signs of glaucoma;</li> <li>• causes of permanent blindness in glaucoma;</li> <li>• the cause of errors in diagnosis in an acute attack of glaucoma, which General somatic symptoms lead to gross errors in diagnosis (poisoning, "acute stomach", cardiological pathology);</li> <li>• first aid for a patient with an acute attack of glaucoma;</li> <li>• measures to prevent the development of blindness in glaucoma.</li> </ul>	<p><u>Recommended literature:</u></p> <p><i>a) educational literature</i></p> <p><u>Egorov E.A.</u> Ophthalmology. National leadership. Short edition. – Moscow: GEOTAR-Media, 2016. – 736 p.</p> <p>Ophthalmology: textbook. <u>V.N. Alekseev, Yu.S. Astakhov, S.N. Basinsky, etc.</u> /Ed. by <u>E.A. Egorov.</u> – M.: GEOTAR-Media, 2010. – 240 p.</p> <p>Ophthalmology: Textbook / ed. by <u>E.I. Sidorenko.</u> – 3rd ed. – Moscow: GEOTAR-MED. 2013. – 640 p.</p> <p><u>Ruban E.D.</u> Eye diseases: the newest reference book. Rostov-on-don: Phoenix, 2016. – 622 p.</p> <p><u>Takhchidi H.P., Yartseva N.S., Gavrilova N.A., Deev L.A.</u> Ophthalmology: textbook. – M.: GEOTAR-Media, 2011. – 544 p.</p> <p><i>b) additional</i></p>
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	<p><u>Egorov E.A., Alekseev V.N.</u> Pathogenesis and treatment of primary open – angle glaucoma: a guide for doctors. – Moscow: GEOTAR-Media, 2019. – 224 p.</p> <p><u>Egorov E.A., Alekseev V.N., Gazizova I.R.</u> Primary open – angle glaucoma: neurodegeneration and neuroprotection.- Moscow: GEOTAR-Media, 2019. – 176 p.</p> <p>Glaucoma. National leadership. / Under the editorship of <u>E.A. Egorov</u>. – M: GEOTAR-Media, 2014. – 824 p.</p> <p>National guide to glaucoma: for medical practitioners. / Ed. by <u>E.A. Egorov, Yu.S. Astakhov, V.P. Erichev</u> – 3rd ed. – Moscow: GEOTAR-Media, 2015. – 456 p.</p> <p><u>Nesterov A.P.</u> Glaucoma. – ed. 2. – M. Medical information Agency, 2014. – 360 p.</p> <p><u>Nikolaenko V.P., Pirogov Yu.I., Antonova A.V.</u> Complications of hypotensive operations in ophthalmology: Educational and methodological guide. – SPb.: Eco-Vector, 2018. – 54 p.</p>
<p><u>The student must be able to:</u></p> <ul style="list-style-type: none"> <li>• to investigate the intraocular pressure;</li> <li>• diagnose various forms of glaucoma;</li> <li>• prescribe antihypertensive therapy;</li> <li>• diagnose and treat an acute attack of angle-closure glaucoma;</li> <li>• conduct medical examinations of patients with glaucoma.</li> </ul>	<p><u>Recommended literature:</u> The same.</p>

### III. Tasks for independent work on the topic under study.

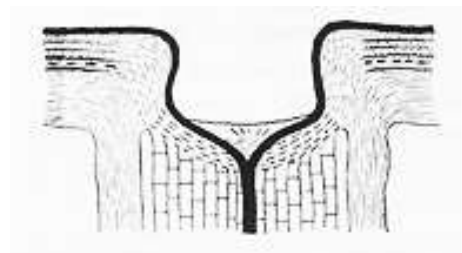
#### Option 1

1. Define the concept of "intraocular pressure".
2. Write the main pathogenetic links of the glaucoma process.
3. What are the causes of congenital glaucoma?
4. Describe the pathological changes in the third stage of primary glaucoma.
5. Deflection and deformation of the lattice plate of the sclera cause:

6. What data at the initial stage of primary open-angle glaucoma can be obtained by tonographic examination?
7. What is the main link in the pathogenesis of primary closed-angle glaucoma?
8. What are the main differences between subacute and acute attacks of angle-closure glaucoma?
9. What are the forms of vascular glaucoma?
10. What are the groups of modern ophthalmic antihypertensive drugs?
11. What are the 4 main groups of surgical interventions used for glaucoma?
12. What are the aspects that affect the quality of life of a glaucoma patient?
13. Where pressure is higher in the anterior chamber or schlemm's canal?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

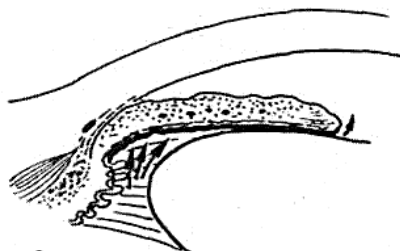
### Option 2

1. Name the conditions that provide a normal level of intraocular pressure.
2. Next to the drawing, write the name of the pathological change in the optic nerve disk that is characteristic of glaucoma.



3. When in primary open-angle glaucoma there are changes in the fundus?
4. Name the forms of primary glaucoma and the causes of increased intraocular pressure.
5. Describe the pathological changes in the fourth stage of primary glaucoma.

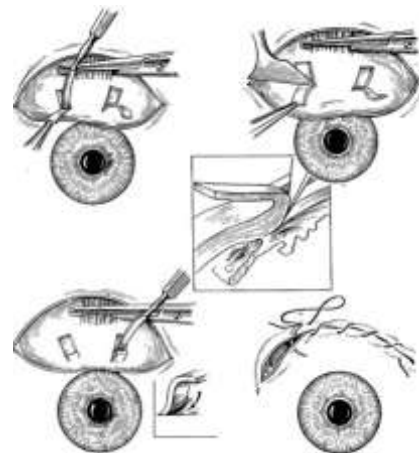
6. What changes occur in the angle of the anterior chamber in primary angle-closure glaucoma?



7. Fill in the missing columns in the table below.  
The differential diagnosis of an acute attack of glaucoma

Клинические проявления	Острый приступ глаукомы	Острый иридоциклит
Боли	Преобладают иррадиирующие боли	
Жалобы		Радужных кругов нет
Продромальные явления	Часто продромальные приступы	
Инъекция		Перикорнеальная
Роговица	Мутная, отечная	
Чувствительность роговицы		Не изменена
Передняя камера	Мелкая	
Зрачок		Сужен
Внутриглазное давление	Повышено	

8. What operations improve the circulation of intraocular fluid and what are the indications for them?



9. What is an anatomical predisposition to the blockade of scleral sinus?
10. Under what conditions of the organ of vision occurs most frequently in neovascular glaucoma?
11. Which groups of ophthalmic anti-hypertensive agents improve the outflow of watery moisture from the eye?
12. Describe limitations in labour for a patient with glaucoma.
13. What are the reasons, which, in patients with angle-closure glaucoma is not recommended the introduction of vasodilating drugs.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 3

1. What factors depends on the level of intraocular pressure?
2. What is called the "head of the optic nerve"?
3. Describe the clinical manifestations of congenital glaucoma.
4. Fill in the table of classification of primary glaucoma.

Form of glaucoma	Stage	Condition of intraocular pressure	Dynamics of visual functions

5. Explain the difference between primary and secondary hemocirculation violations.

6. What changes in the optic nerve cause significant progression of the disease?
7. Write about changes in the vitreous body that lead to primary angle-closure glaucoma.
8. Name the forms of secondary glaucoma.
9. Describe the clinical picture of neovascular glaucoma.



10. Name the structures of the eye that need to be viewed during gonioscopy.



11. Which groups of ophthalmic hypotensive agents reduce the secretion of intraocular fluid?
12. Write the purpose of performing fistulizing operations for glaucoma.
13. In what cases can hypotension of the eye occur?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

#### Option 4

1. How are products regulated?
2. Name the composition of the optic nerve head.
3. Define secondary glaucoma.
4. Describe the pathological factors related to metabolic disorders.
5. Describe the changes in the eye after vision loss due to primary open-angle glaucoma?
6. What changes in the angle of the front camera occur due to periodic function blocks.
7. Describe the changes in the child's eyes that may speak in favor of congenital glaucoma.



8. As a result of any disease occurring inflammatory glaucoma?
9. When does phlebohypertensive glaucoma occur?
10. Describe the clinical manifestations of glaucomatous atrophy of the optic nerve.



11. Name the myotics used for the treatment of glaucoma, and the principle of their action.
12. What is the basis of non-penetrating filtering operations?
13. Describe the immediate causes of eye hypotension.

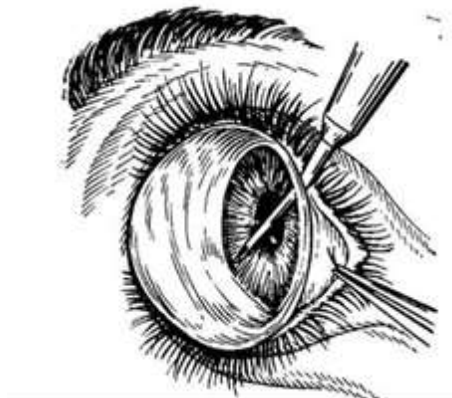
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 5

1. How many tubules does the lattice plate of the sclera contain?
2. What part of the anterior chamber angle is depicted in picture?



3. What part of the anterior chamber angle is depicted in picture?
4. What forms of primary open-angle glaucoma occur?
5. Name the operation for congenital glaucoma shown in the picture.

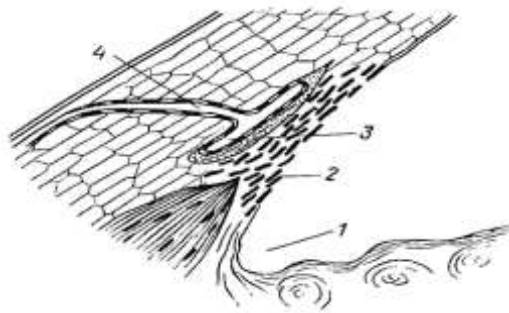


6. Describe what are the objective changes in the eye in the case of painful primary terminal open-angle glaucoma.

7. What are the factors that can lead to an acute attack of angle-Closure glaucoma?
8. What are the types phacogenic glaucoma.
9. Describe the clinical picture phleboviruses glaucoma.
10. What are the main agonists used for antihypertensive therapy.
11. Describe the main action of cyclodestructive operations.
12. What are the clinical manifestations of hypotension the eye.
13. Define the concept of "preglaucoma".
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 6

1. Sign the names of the anatomical structures shown on the drawing.



- 1-
  - 2-
  - 3-
  - 4-
2. What explains the more frequent deformity of the upper and lower segments of the cribriform lamina of sclera?
  3. Describe and give the characteristic of stages of primary glaucoma.



4. Name the operation for congenital glaucoma shown in the picture.



5. What is the appearance facotories glaucoma?
6. Name the subjective symptoms that may occur in primary open-angle glaucoma.
7. What diseases should be treated for differential diagnosis of primary open-angle glaucoma?
8. Describe possible complaints of a patient with an acute attack of angle-closure glaucoma.
9. Write what represents iridocorneal endothelial syndrome?
10. What are the main beta-blockers used for antihypertensive therapy.
11. Explain the concept of "refractory" glaucoma.
12. What is the risk of glaucoma in newborns and who should diagnose this disease?
13. How is the discharge test performed in the diagnosis of glaucoma?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### **Option 7**

1. Describe the path of intraocular fluid through the drainage system.
2. Describe the sequence of changes in the field of vision in glaucoma.
3. What are the levels of intraocular pressure exist in the classification of primary glaucoma?
4. What are the risk factors for primary open-angle glaucoma?

5. Describe the clinical picture of an acute attack of angle-closure glaucoma.
6. Name the symptom that appears in glaucoma and how it manifests itself.



7. Who is more frequently diagnosed primary angle closure glaucoma, in men or women?
8. Due to what processes occur phacomorphic glaucoma?
9. What are the causes of traumatic glaucoma?



10. The result of what laser intervention is shown in the figure?



11. What are the main carbonic anhydrase inhibitors used for antihypertensive therapy.
12. What features does "refractory" glaucoma surgery include?
13. What is the acceptable difference in the level of ophthalmotonus during the day?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 8

1. Write what is the volume and how is the uveoscleral outflow of intraocular fluid?
2. Write the names of the main types of glaucoma.
3. How is the dynamics of the glaucoma process evaluated?
4. What is the reason for the deterioration of the outflow of intraocular fluid in primary open-angle glaucoma?
5. Describe the symptoms that can be detected by biomicroscopic examination of the eye with primary open-angle glaucoma.
7. What are the changes in the eye associated with vascular strangulation in an acute attack of angle-closure glaucoma?

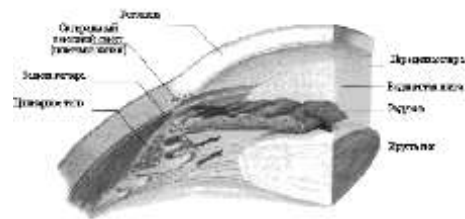


6. What are the etiological factors that contribute to the development of primary angle-closure glaucoma?
8. How is the cure of phacomorphic glaucoma achieved?

9. What is postoperative glaucoma?



10. What are the main combination of drugs used for antihypertensive therapy.
11. Determine the indications for surgical treatment of glaucoma.
12. What is the follow-up of patients with glaucoma?
13. Where, and in what way produces the intraocular fluid?

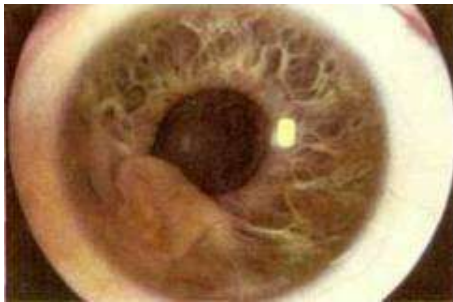


14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 9

1. What hydrodynamic parameters exist, and what is their normal level?
2. What is the main cause of increased intraocular pressure in glaucoma?

3. Describe the pathological changes in the first stage of primary glaucoma.
4. Increased intraocular pressure causes...
5. What does the angle of the anterior chamber look Like in primary open-angle glaucoma?
6. Describe the anatomical features affecting the development of primary angle-closure glaucoma.
7. What is the cause of spontaneous reverse development of acute attack of angle-closure glaucoma.
8. What is the cause of phacolytic glaucoma?
9. Describe neoplastic glaucoma.



10. What are the main osmotic agents used for antihypertensive therapy?
11. What pathology of the eye is shown in the picture?

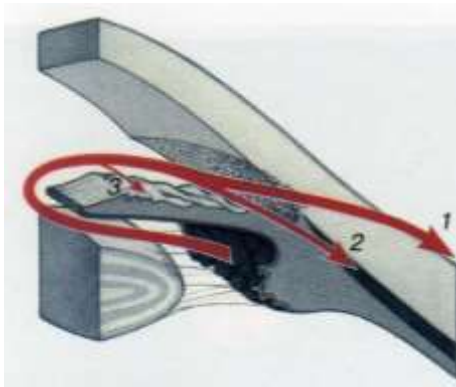


12. What treatment is indicated for the correction of metabolic and hemodynamic disorders in glaucoma?
13. How common is hypersecretory glaucoma? What are the visual functions?

14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 10

1. Give the definition of the term "glaucoma".
2. What are the main options of the hydrodynamic blocks.
3. Describe the pathological changes in the second stage of primary glaucoma.
4. The outward displacement of the trabecular diaphragm leads to ...
5. Describe the state of intraocular pressure characteristic of primary open-angle glaucoma, and what research methods should be performed.
6. What are the functional factors that contribute to the development of primary angle-closure glaucoma?
7. What phenomena lead to the development of chronic primary angle-closure glaucoma?
8. Describe the clinical Picture of phacolytic glaucoma.
9. What are the three main methods of treating glaucoma?
10. What are the main ways of outflow of intraocular fluid?



11. Describe the algorithm of first aid in the treatment of acute attack of angle-closure glaucoma.
12. Name the types of retention that occur in congenital glaucoma.
13. What are the main measures that include medical examination of glaucoma patients?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*



Department of OTO-Rhino-laryngology with ophthalmology

## THE COURSE OF OPHTHALMOLOGY

**KOROEV O.A., KOROEV A.O.**

# **INDIVIDUALIZED TASKS FOR INDEPENDENT WORK OF 4TH YEAR STUDENTS OF THE FACULTY OF MEDICINE ON THE CYCLE OF OPHTHALMOLOGY**



**TOPIC 9: "BINOCULAR VISION. STRABISMUS. DAMAGE TO THE EYE AND ITS APPENDAGES. NEOPLASMS OF THE ORGAN OF VISION. PROFESSIONAL DISEASES OF THE EYE"**

Vladikavkaz 2021



**TOPIC 9: "BINOCULAR VISION. STRABISMUS. DAMAGE TO THE EYE AND ITS APPENDAGES. NEOPLASMS OF THE ORGAN OF VISION. PROFESSIONAL DISEASES OF THE EYE".**

**I. Questions for checking the initial (basic) level of knowledge.**

1.

Concomitant strabismus	Symptoms
	<i>1.</i>

2.

Amblyopia	Types
	<i>1.</i>

3.

A penetrating wound of the cornea	Symptoms
	<i>1.</i>

4.

Grade III corneal burn	Symptoms
	<i>1.</i>

5.

Nevus of the iris	Symptoms
	<i>1.</i>

6.

Choroid melanocytoma	Symptoms
	<i>1.</i>

7.

Effect of mercury on eye	Pathological changes in the eyes
	<i>1.</i>

8.

Organochlorine pesticides	Pathological changes in the eyes
	<i>1.</i>

## II. Targets:

<p><u>The student should know:</u></p> <ul style="list-style-type: none"><li>• how is stereoscopic perception of space achieved by the joint activity of the sensory and oculomotor systems of both eyes;</li><li>• definition of binocular vision;</li><li>• what conditions are necessary for the development of binocular vision in a child;</li><li>• what methods can be used to check the nature of a person's vision with two eyes open;</li><li>• what is strabismus;</li><li>• how to determine the primary and secondary angle of strabismus using the Hirschberg method;</li><li>• what is the difference between secondary and primary strabismus;</li><li>• clinical signs of friendly and paralytic strabismus;</li><li>• methods of prevention and treatment of amblyopia in children;</li><li>• what is ortoptika and diploptika and at what stages of treatment of strabismus in children these methods are used;</li><li>• symptoms of soft tissue contusions of the eye socket;</li><li>• a classification of injuries of the eyeball;</li><li>• symptoms of eye socket fractures;</li><li>• clinic for chalcosis and siderosis of the eye;</li><li>• diagnostics of foreign bodies of the eye;</li><li>• what is sympathetic ophthalmia and what is its prevention;</li><li>• features of children's and military eye injuries;</li><li>• methods of treatment with chemical and thermal burns of the eye;</li><li>• prevention of eye injuries types of tumors;</li><li>• methods for diagnosing tumors;</li><li>• clinic of malignant and benign formations;</li><li>• optimal terms and methods of treatment of tumors diagnose occupational eye diseases;</li><li>• provide first aid in case of professional damage to the visual organ.</li></ul>	<p><u>Recommended literature:</u></p> <p><i>a) educational literature</i></p> <p><u>Egorov E.A.</u> Ophthalmology. National leadership. Short edition. – Moscow: GEOTAR-Media, 2016. – 736 p.</p> <p>Ophthalmology: textbook. <u>V.N. Alekseev, Yu.S. Astakhov, S.N. Basinsky, etc.</u> /Ed. by <u>E.A. Egorov.</u> – M.: GEOTAR-Media, 2010. – 240 p.</p> <p>Ophthalmology: Textbook / ed. by <u>E.I. Sidorenko.</u> – 3rd ed. – Moscow: GEOTAR-MED. 2013. – 640 p.</p> <p><u>Ruban E.D.</u> Eye diseases: the newest reference book. Rostov-on-don: Phoenix, 2016. – 622 p.</p> <p><u>Takhchidi H.P., Yartseva N.S., Gavrilova N.A., Deev L.A.</u> Ophthalmology: textbook. – M.: GEOTAR-Media, 2011. – 544 p.</p> <p><i>b) additional</i></p> <p><u>Alieva Z.A., Nesterov A.P., Skripnichenko Z.M.</u> Professional pathology of the organ of vision. - M.: Medicine, 1988. - 288 p.</p> <p><u>Avetisov E.S.</u> Nistagm. – 2001. – 96 p.</p> <p><u>Bikbov M.M., Bikbulatova A.A., Khusnitdinov I.I., Farkhutdinova A.A.</u> Refractive amblyopia. Surgical and conservative treatment of children and adolescents. – 2010. – 158 p.</p> <p><u>Chernysh E.V., Boyko E.V.</u> Burns to the eyes. State of the problem and new approaches. – 2nd ed. – Moscow: GEOTAR-Media, 2017. – 184 p.</p> <p>Eye injury. / Under the General editorship of <u>Gundorova R.A., Neroev V.V., Kashnikov V.V.</u>, – Moscow: GEOTAR-Media, 2014. – 560 p.</p> <p><u>Ferris J.D.</u> Surgery of strabismus with DVD. – M.: Logosphere, 2014. – 232 p.</p> <p><u>Goncharova S.A., Panteleev, G.B.</u> Functional treatment of concomitant strabismus. – 2010. – 244 p.</p> <p><u>Koroev O.A., Koroev A.O.</u> Methodological recommendations for mastering practical skills in ophthalmology. 2015.</p>
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	<p>Ophthalmology. National leadership. Short edition / Edited by <u>S.E. Avetisov, E.A. Egorov, L.K. Moshetova, V.V. Neroev, H.P. Takhchidi</u>. - Moscow: GEOTAR-Media, 2019. - 752 p.</p> <p><u>Shields J.A., Shields K.L.</u> Intraocular tumors. Atlas and reference book, Moscow: Panfilova, 2018, 608 p.</p> <p><u>Shields J.A., Shields K.L.</u> Tumors of the eyelids, conjunctiva, and eye sockets. Atlas and reference book in 2 volumes. – Moscow: Panfilova, 2017, – 816 p.</p>
<p><u>The student must be able to:</u></p> <ul style="list-style-type: none"> <li>• examine binocular vision using approximate methods;</li> <li>• diagnose friendly and paralytic strabismus;</li> <li>• determine the angle of strabismus by Hirschberg;</li> <li>• diagnose blunt trauma to the eye and its appendages;</li> <li>• diagnose a penetrating eye injury;</li> <li>• diagnose burn the eyes;</li> <li>• provide first aid for eye injuries;</li> <li>• implement the prevention of eye injuries</li> </ul> <p>diagnosing tumors of the eye and epibulbar tumors diagnose occupational eye diseases;</p> <ul style="list-style-type: none"> <li>• provide first aid in case of professional damage to the visual organ.</li> </ul>	<p><u>Recommended literature:</u> The same.</p>

### III. Tasks for independent work on the topic under study.

#### Option 1.

1. Define binocular vision.
2. When studying binocular vision on a four-point color test in the presence of binocular vision, the patient sees:
3. What do we call amblyopia?
4. Describe the clinical data describing traumatic damage to the optic nerve.
5. Formulate the definition Of a penetrating eye injury.
6. Describe what types metallosis eyes exist, and give them a description.

7. Name the complication of a penetrating eye injury shown in the drawing.



8. What is the frequency of occurrence of eyelid skin tumors in comparison with all neoplasms of the visual organ?
9. Write the principles of treatment of conjunctival melanoma.
10. What disease of the eyelids, shown in the picture, can be assumed?

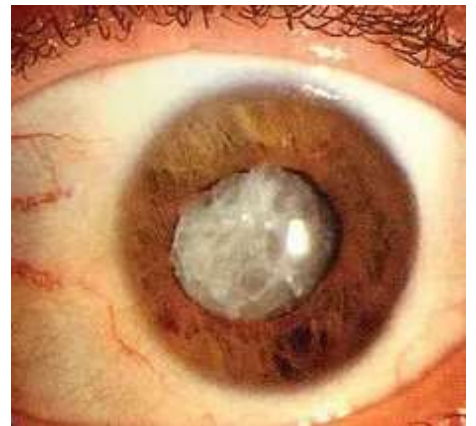


11. Describe the clinical Picture of progressive conjunctival nevus.
12. Describe the toxic effect of mercury on the muscular system of the eye.
13. Describe the defeat of the cornea when ophthalmoargery.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers.*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 2

1. What are the primary and secondary angles of deviation of the eye?

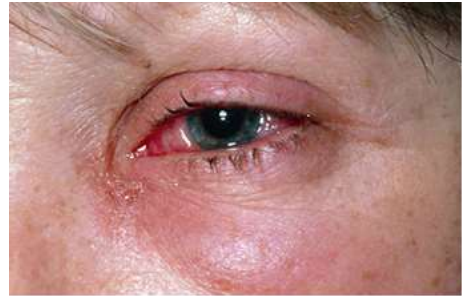
2. What are the types of congenital amblyopia.
3. Describe the basic principles of surgical treatment of strabismus.
4. Describe the upper orbital fissure syndrome.
5. Name the types of penetrating eye wounds depending on the anatomical location.
6. Give the definition of sympathetic inflammation.
7. Describe the changes in the eye in traumatic cataract.



8. Describe the primary acquired melanosis of the conjunctiva.
9. What are the principles of treatment for iris leiomyomas?
10. Describe the clinical presentation of retinoblastoma at the initial stages of its development.
11. Try to diagnose the choroid neoplasm shown in the picture.



12. How occupational hazards may be associated with the labor process?
13. Describe the clinical picture of electrophthalmia.



14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 3

1. Give the definition of visual fixation.
2. Describe the methodology for performing the Sokolov experiment.



3. What are the main signs of friendly strabismus?
4. Describe the types of damage that occur in industrial eye injuries.



5. What is electroophthalmia and when does it occur?
6. What are the absolute signs of a penetrating injury to the eyeball?



7. What is hemophthalmus what his clinic, necessary treatment and possible complications.
8. Try to diagnose the choroid neoplasm shown in the picture.

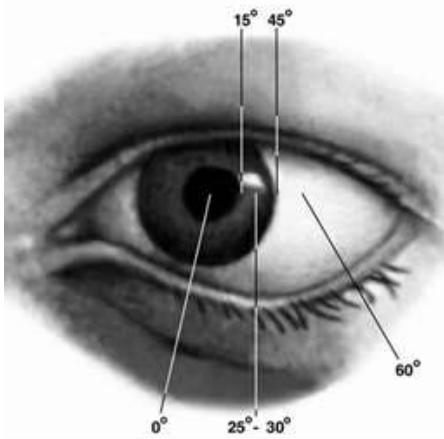


9. Describe the data that can be obtained by computed tomography of a patient with cavernous hemangioma of the eye socket.
10. What symptoms are common to all malignant tumors of the orbit.
11. What are the instrumental methods of examination that help in the diagnosis of malignant lymphoma?
12. Describe the effect of mercury on the cornea.
13. Describe the changes in the anterior segment of the eye under the long-term influence of increased concentrations of carbon disulfide in the air of working rooms.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers*

15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

#### Option 4

1. When studying binocular vision on a four-point color test in the presence of alternating vision, the patient sees:
2. Thereby achieving the possibility of binocular vision?
3. Name the approximate method for determining the angle of strabismus shown in the figure.



4. Explain why damage to the inner third of the eyelid is particularly dangerous.

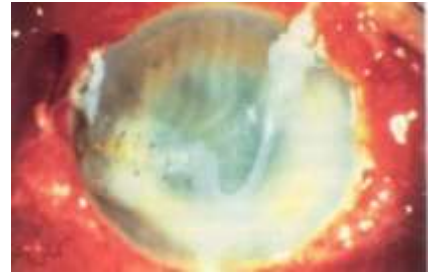


5. Describe the location of the intraocular foreign body shown in the drawing (write the answer next to the drawing).





6. What purulent complication of a penetrating eye injury is shown in the drawing?



7. What changes in the eye are characteristic of a grade I burn?
8. Try to diagnose the corneal and conjunctival neoplasms shown in the picture.



9. Try to diagnose the conjunctival neoplasm shown in the picture.



10. Describe the clinical Picture of pigmented iris leiomyoma.
11. Try to use the image of the disease in the proposed drawing to diagnose an orbital tumor.

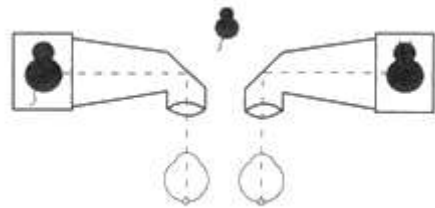


12. Write down what eye tissues and how they react to ultraviolet radiation.

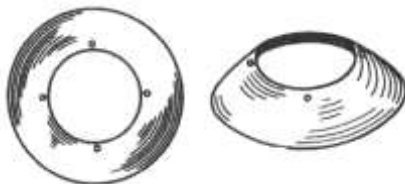
13. Describe the damage to the retina when exposed to the laser.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 5

1. What are primary and secondary strabismus?
2. When studying binocular vision on a four-point color test in the presence of monocular vision, the patient sees:
3. Describe the device and the principle of determining the angle of strabismus on the synoptophore.



4. Name the devices shown in the drawing.



5. Name the degree of eye burn shown in the drawing.



6. Describe the clinical picture of endophthalmitis after penetrating wounds of the eye.
7. What are the consequences of an iron metal fragment located inside the lens?
8. Describe the clinical picture of optic nerve glioma.



9. What are the treatments and prognosis of the adenocarcinoma of meibomian cancer?
10. What explains the growth of non-pigmented leiomyomas from the iris sphincter?
11. Outline the principles of treatment of ciliary body melanoma.
12. In some cases, the possible production of eye damage by ionizing radiation?
13. How do visual functions change under the influence of mercury intoxication?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 6

1. Describe the method of exercises for the development (restoration) of the bifixation reflex.
2. Describe the principle of functional bio-management for the treatment of amblyopia.
3. Describe the functional scotoma.

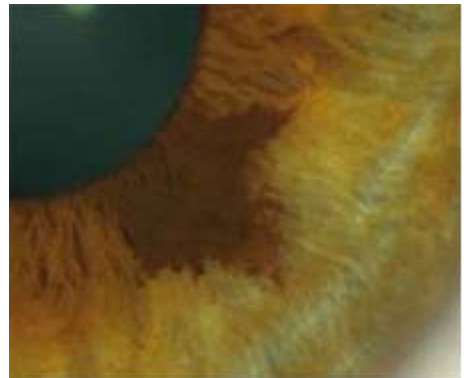
4. What are the features of treatment of endophthalmitis after a penetrating eye injury?
5. Why do massive subconjunctival hemorrhages require additional research and revision of the wound?



6. Name the type of scrap metal shown in the drawing.



7. What changes in the eye are characteristic of a grade II burn?
8. Try to diagnose the neoplasm of the iris, shown in the picture.



9. What is the prognosis for primary cancer of the orbit?
10. Describe the clinical Picture of scleroderma-like form of basal cell carcinoma of the eyelid.

11. Name the neoplasm of the eyelid shown in the picture.



12. Describe the types of arsenic compounds and their effects on the eye.
13. Describe changes in the conjunctiva caused by hydroquinone.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 7

1. What is called stereoscopic vision?
2. When studying binocular vision on a four-point color test in the presence of binocular vision, the patient sees:
3. Describe the procedure for performing the test with pressure on one eye.



4. Name the division of eye injuries by their location.

5. Name the type of scrap metal shown in the drawing.



6. What is the pathology of the iris, shown in the picture, resulted from blunt trauma to the eye?



7. Name the degree of eye burn shown in the drawing.



8. What kind of tumor of the lacrimal gland can be assumed by looking at the image in the picture.



9. What data allow us to speak about the transition of nevus to melanoma?
10. What disease of the eyelids, shown in the picture, can be assumed?



11. Write down which choroid neoplasm is shown in the drawing?

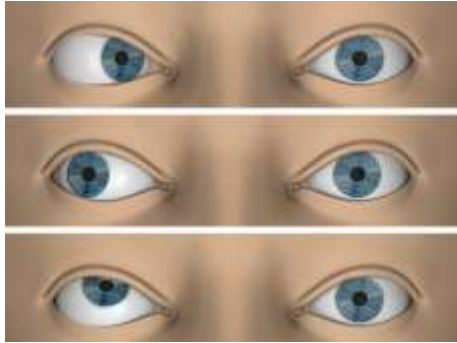


12. Describe the clinical Picture of non-pigmented iris leiomyoma.
13. Describe the corneal changes caused by hydroquinone.
14. Describe the eye damage caused by toxic chemicals that are a combination of organochlorine and organophosphate compounds.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*



## Option 8

1. Define orthophoria.
2. What do we call amblyopia?
3. The direction of deviation of the eyeballs distinguish (sign next to the drawings):



4. What are the main features of gunshot wounds to the eye socket?



5. Write next to the drawing, what damage to the eye is shown in the drawing?



6. What changes in the eye are characteristic of a third-degree burn?
7. Describe the clinic for conjunctival papilloma.



8. How is the intraocular foreign body removed (write the answer next to the drawing)?



9. What is a choroid melanocytoma?
10. Describe the development of the exophytic form of retinoblastoma.



11. What additional research can help in the diagnosis of dermoid cyst of the orbit?
12. What is the prevention of exposure to ionizing radiation on the eye?
13. How manifested ophthalmomyiasis?
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

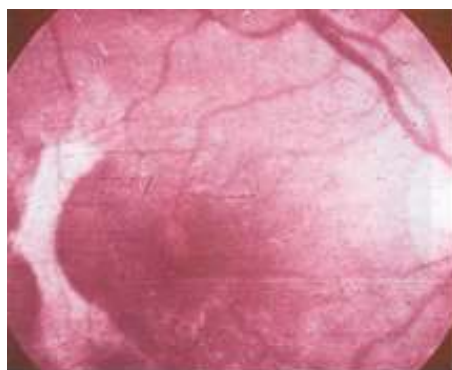
### Option 9

1. Describe the diagnosis of heterophoria.
2. Describe the pathogenesis of accommodative strabismus.
3. What are the types of binocular amblyopia.
4. Where does the blood get into the vitreous during trauma?

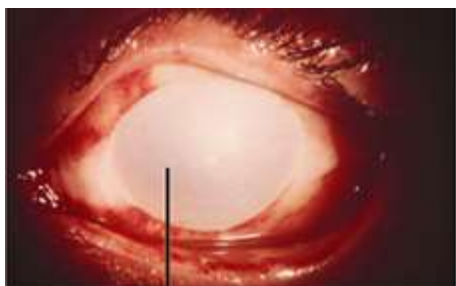
5. What is the name of hemorrhage in the anterior chamber of the eye? What are the principles of its treatment?



6. What changes in the ophthalmoscopic picture after a blunt eye injury are shown in the figure?



7. Name the degree of eye burn shown in the drawing.



8. Describe the clinical picture of the nodular form of basal cell carcinoma of the eyelid.



9. Name the neoplasm of the eyelid shown in the drawing.



10. What explains the growth of pigmented leiomyomas from the dilator of the iris?
11. What are the treatments and prognosis of the adenocarcinoma of meibomian cancer?
12. What eye changes occur in severe benzene poisoning?
13. Name the earliest symptom that appears when arsenic intoxication.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*

### Option 10

1. Describe the method of performing the test with reading with a pencil.

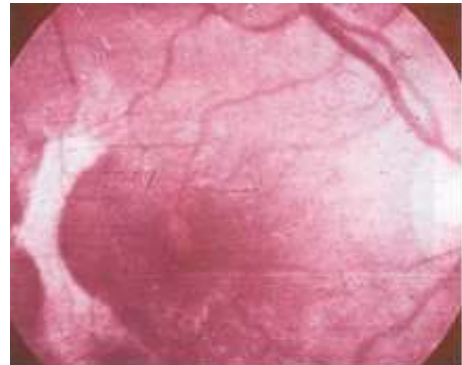


2. Describe when and why you need to start treatment of concomitant strabismus?
3. Give the definition of the nystagmus.

4. What is the name of hemorrhage in the anterior chamber of the eye? What are the principles of its treatment?



5. What changes in the ophthalmoscopic picture after a blunt eye injury are shown in the figure?



6. Name the degree of eye burn shown in the drawing.



7. Where does the blood get into the vitreous during trauma?
8. Describe the clinical picture of the nodular form of basal cell carcinoma of the eyelid.



9. Name the neoplasm of the eyelid shown in the drawing.



10. What explains the growth of pigmented leiomyomas from the dilator of the iris?
11. What are the treatments and prognosis of the adenocarcinoma of meibomian cancer?
12. What eye changes occur in severe benzene poisoning?
13. Name the earliest symptom that appears when arsenic intoxication.
14. Create two interdisciplinary situational tasks on the topic. *Situational tasks are compiled by students independently, indicating questions to the situation and giving correct answers*
15. Create 5 test tasks on the topic. *Test questions are compiled by students independently with marks of correct answers.*