Michigan State Board of Examiners in Optometry

NOVEMBER 4TH AND 5TH, 1913

ANATOMY, PHYSIOLOGY AND PATHOLOGY

(Answer not less nor more than ten questions).

1. What muscles control the eye lids?
2. How is the cornea nourished?
3. What are the functions of the sclerotic and choroid coats?
4. Where is the foramen located and what is its use?
5. What is the tarsus?
6. How many different kinds of cataracts are there? Describe each.
7. Describe the papilla lachrymalis.
8. Name the three subdivisions of Asthenopia.
9. Describe the pathological conditions and symptoms of iritis.
10. Define photophobia; also state whether you consider it a symptom or a disease.
11. What is aphakia? Explain how this condition effects the accommodation power of the eye.
12. Name the appendages of the eye.
13. What are the functions of the spaces of Fontana?
14. What are the symptoms in a case of Glaucoma, and what is the theory as to its cause?
15. What is ophthalmia Neonatorum?
16. What are the functions of the second Tunic of the eye?
17. How is the crystalline lens held in position?
18. What are the angles of the eye lids called?
19. Differentiate between hordeolum, chalazion and blepharitis.
20. Define amblyopia. State causes for toxic amblyopia. How could you proceed to determine whether such a case was temporary or permanent?

Michigan State Board of Examiners in Optometry

May 6th and 7th, 1914

PRACTICAL OPTOMETRY

Answer not less nor more than ten questions

1. What is accommodation? What is convergence? How are they determined?
2. Give relations of accommodation and convergence.
3. What are conditions of convergence with —3.D Myopia, at infinity, 1 metre, 30 centimetres. State conditions of accommodation in above case.
4. What are conditions of accommodation and convergence with 3.D hypermetropia, at infinity, 50 centimetres, and 30 centimetres?
5. Define subjective and objective testing.
6. Describe method of testing refraction with Retinoscope.
7. Define Static and Dynamic testing.
8. In testing with the Retinoscope at 40 inches if the shadow has straight edge and is neutralized with plus 1.D, what is the error of refraction?
   If in above case the shadow has curved edge and moves against the light, what is the error of refraction?
9. Give power of lens required to correct vision if plus 2.D lens neutralizes in the vertical and plus 1.D in the horizontal meridan? Testing at 40 inches.
10. Define Heterephoria and Exophoria and give correction.
11. Give rule for base of Prisms in correcting the 'phorias.
12. Give rule for decentering lenses to get prismatic effect.
13. Demonstrate the use of the Opthalmoscope, direct and indirect methods, and give kind of images formed.
14. Give practical use of Opthalmoscope in making examinations?
15. Of how many colors is white light composed? Give the colors and their order of refraction. Would you prescribe colored lenses and under what conditions?

THEORETIC OPTICS AND OPTOMETRY

Fifteen questions, ten and no more must be answered.

No. 1. A ray of light passes from a rare medium through a denser medium into the rare medium and it is apparently refracted from a straight line, why does it not continue in the same course after emerging from the denser medium as it assumed while passing through the denser medium?

No. 2. In looking through a lens at an object, and moving the lens, the object seems to have motion. Why is this?

No. 3. What is the conjugate focus to a point 36 centimeters from a bi-convex lens of 3.50 D.?

No. 4. A certain lens focuses parallel light at 20 centimeters. What lens must be placed in front of it to place the focus back to one meter?

No. 5. What changes must be made with incident parallel rays of light so as to have them focus on the retina when it is situated beyond the principal focus of the dioptric system of the eye?

No. 6. What is meant by the point of reversal in retinoscopy? Where is this point located?

No. 7. Describe the apparent movement of the retinal illumination, with the plane mirror, within, at and beyond the point of reversal.

No. 8. How is the contour of the shadow influenced by the different kinds of ametropia?

No. 9. Describe the different shadow motions with the plane and concave mirrors and the character of the refractive error as indicated by each motion.

No. 10. Describe the principle and object of dynamic retinoscopy.

No. 11. What condition of the ocular pupil frequently causes lenses of one quarter or one half diopter to produce marked improvement in the visual acuity of corresponding ametropes? Explain the reasons.

No. 12. How is the amplitude of convergence measured? The amplitude of accommodation?

No. 13. Draw and describe a diagram illustrating the paths of light, both entering into and emerging from a hyperopic eye, as observed by the direct method of ophthalmoscopy.

No. 14. Explain fully to what extent the ophthalmometer may be relied on in making measurements of astigmia.

No. 15. State the relation between the prism diopter and the lens diopter.

ANATOMY

Ten questions, seven and no more of which must be answered.

1. What part of the eye is spoken of as the blind spot?
2. Name the membrane composing the second anterior layer of the cornea.
3. Describe the Meibomian glands.
4. Describe Fontana's canals or spaces, also their location.
5. Name the humors of the eye.
6. Name the muscles that raise the upper lids.
7. What pair of nerves supply the external rectus?
8. Describe the papilla lachrymalis.
9. Of how many layers is the retina composed?
10. What constitutes the uveal tract?

PHYSIOLOGY

Five questions, three of which and no more must be answered.

1. What is the function of the external rectus muscle?
2. Describe the function of convergence and name all the muscles of the eye that participate in this function.
3. What is the function of the optic nerve?
4. Is hyperæmia or conjestion of the eye due to improper function of the arteries or of the veins?
5. What is the function of the lachrymal gland?

PATHOLOGY.

Five questions, three and no more of which must be answered.

1. Name the three subdivisions of Asthenopia.
2. Name some of the sequels of progressive myopia.
3. Describe as fully as possible the pathological conditions and symptoms of iritis.
4. Define photophobia; also state whether you consider it a symptom or a disease.
5. Define cataract and describe your method for detecting same.

PRACTICAL OPTOMETRY

Fifteen questions, ten and no more must be answered.

1. What lens can be combined with a + 1. sph. ⌒ + 1.50 cyl. axis 90 that will increase the sphere and decrease the cylinder?

2. If with retinoscope at 10 inches the point of reversal is reached with + 2. sph. ⌒ — 1.50 cyl. axis 180, what would be the prescription for distance glasses?

3. Transpose into a contra-generic compound + 2. cyl. axis 85 ⌒ + 1.25 cyl. axis 175 and transpose into cross-cylinder + 3.25 sph. ⌒ — 2.50 cyl. axis 110.

4. State amount of decentration necessary to produce 2.° prism base in on a pair of + 4. cyl. lenses axis 90.

5. State amount and direction of decentration necessary to produce 3.° prism base out on a pair of minus 5. spheres.

6. What is the cause of concomitant strabismus? Explain fully.

7. How would you measure the power of the abductors? Also amplitude of convergence?

8. With candle frame one meter from two + 3. lenses placed 13 inches apart, where would screen be placed to receive perfect image?

9. What is orthoporia? Esotropia? Exophoria?

10. What is the difference between range of accommodation and amplitude of accommodation?

11. A patient aged fifty requires o. u. — 1.25 sph. ⌒ — .75 cyl. axis 90 for distance and has 5.° esophoria. Write prescription for reading glasses, also for cement bifocals and give both curves of wafers.

12. Write a prescription for toric lenses to correct mixed astigmatism and give both inner and outer curvature of lenses.

13. Make drawing showing conjugate foci and explain how it applies to retinoscopy?

14. Define normal vision, visual acuity, emmetropia, symmetric astigmatism, irregular astigmatism.

15. What do you understand by punctum proximum? Dynamic refraction? Chromatic aberration? Virtual focus?

Write answer to the following questions, be brief with your answer:

What do you understand by

Clonic Spasm

Tonic Spasm

Psuedo Myopia

Megal - Cornea

Micropsia

Robinson Argyle pupil

What are the functions of the intrinsic muscle?

Name the nerve supplies of the muscles of Eye lids.

What are the functions of the Meibomian Glands.

The Lachramal Glands.

How fast does light travel through air?

What makes the grass appear to us as Green?

The Rose as Red?

What reason can you give why some objects we see as white?

Others as Black?

Name the colors in the Solor Spectrum.

What does the Solor Spectrum teach us?

Give answer to the meaning of the following names:

Antimetropia

Anisometropia

Hypometropia

Hypermetropia

Hypertropia

Hypophoria

Answer the following questions. Be brief with your answers.

Name the primary colors in the Spectrum.

A + 10 inch lens 30 inches from candle flame locate image of the flame.

If a patient being emmetropic having 4.00 Diopter amplitude of accommodation, would you consider the patient presbyoptic?

How many M M to a Meter.

" " C M to 100 M M

" " M M to one C M

" " C M to the Meter

" " M M (aprox) to an inch.

" " C M (aprox) to an inch.

Answer the following questions, be brief with your answers.

A + 20 inch lens placed 15 inches from candle flame, on which side of the lens is the image?

Why?

Is the image real or virtual?

A + 10 inch lens placed 40 inch from candle flame, on which side of the lens is the image?

Why?

Is the image real or virtual?

A 15 inch concave lens placed 15 inches from candle flame, locate image.

Is the image real or virtual?

A + 12 inch lens placed 12 inches from candle flame, locate image?

An object placed 20 inches from a plus lens and the image being 30 inches on the opposite side of the lens, what is the distance between the conjugate foci?