

Tanta university, Faculty of medicine.

Ophthalmology department.

MD examination, second semester.

27/08/2019

Time allowed 3 hours

Optics

Discuss the optical principles, clinical applications, and illustrate with diagrams whenever possible: 5 degrees each

1-Reduced eye.

2-High order aberrations.

3-Cross cylinder

Answer all multiple choice questions. Only one answer is allowed, 2 marks each.

1-For a converging lens, light rays travelling parallel to the principal axis refracts

a-In line with the principal focus.

b-Through the secondary focus.

c-Through the optical center.

d-Parallel to the principal axis.

2-A survivor from a ship wreck sees an image of a fish in water, to catch it with his spear he must :

a-Aim above the image of the fish.

b-Aim below the image of the fish.

c-Aim at the image of the fish.

d- Aim behind the fish.

3-On retinoscopy at a distance of 50 cm, no movement of the red reflex means that the eye is:

a-Myope 2 diopter.

b- Myope 1 diopter.

c-Emmetrope

d-Hyperope 1.5 diopters.

4-When a myopic person is always pushing his glasses closer to his eyes, this means his glasses are:

- a-over-corrected.
- b-perfect.
- c-under-corrected.
- d-non of the above.

5- The indirect ophthalmoscope, all true except:

- A. provides a real, inverted aerial image of the patient's illuminated fundus.
- B. when used with stronger lenses provides a larger field of retinal view.
- C. in examination of an emmetropic eye with a 20 diopter lens provides 2X magnification.
- D. produces magnified images of small changes in retinal topography.

6-While doing duochrome test on a myopic patient, the patient reported that he could see the letters in the red half of the chart better than those in the green one, this means that:

- a-He needs adjustment of the optical centers of the glasses.
- b-The glasses overcorrects his myopia.
- c-He needs base down prism addition.
- d-The glasses undercorrects his myopia.

7-Direct ophthalmoscope gives:

- a-Virtual, erect magnified image.
- b-Real, erect, magnified image.
- c-Real inverted magnified image.
- d-Virtual, inverted magnified image.

8-The wave length of light:

- a-Does not change as it passes through a denser medium.
- b-Is inversely proportional to its frequency.
- c-Is the distance between the summits and troughs of the wave.
- d-Is the same as amplitude.

9-The following is true about prisms:

- a-The centrad measures the image displacement along an arc one cm from the prism.
- b-The centrad and prism diopters produce the same angle of deviation.
- c-Prisms may be used in the assessment of simulated blindness.
- d-The Maddox rod is comprised of high power prisms.

10-The following is true about contact lenses:

- a-A high plus contact lenses have a central thin portion.
- b-Hard lenses abolish lenticular astigmatism.
- c-The haptic of a sclera lens is the corneal portion.
- d-The base curve of a contact lens is the curvature of the central portion of the back surface of the lens.

11. Identify the incorrect response:

- A. in retinal photocoagulation, laser light is absorbed by the pigment in the retinal pigment epithelium and choroid.
- B. in most photocoagulation, the energy is uniformly distributed in the light beam.
- C. a tenfold increase in exposure time roughly doubles laser lesion diameter.
- D. brief exposure times produce a small area of extensive damage.

12. Identify the incorrect response:

- A. as a rule, contact lenses that invert the fundus view roughly double the spot size.
- B. whenever, laser spot size is changed, power must be adjusted.
- C. contact lenses giving direct fundus view (e.g. Goldmann three mirror lens) do not change spot size.
- D. small spots with high power are necessary for treating lesions in the posterior pole.

13. The Jackson Cross-Cylinder test, all true except:

- A. involves the principle of placing the circle of least confusion on the retina.
- B. cannot determine the power of the astigmatic correction.
- C. verifies the axis and power of the correcting cylindrical lens.
- D. uses a lens in which the principal powers are equal and opposite in sign.

14. The red-green duochrome test, all true except:

- A. is used for binocular balance.
- B. makes use of the eye's chromatic aberration.
- C. uses a pair of colored slides at 500 nm (green) and 670 nm (red).
- D. is usually presented to a fogged patient.

15. The stenopeic slit, all true except:

- A. acts as a line of pinholes.
- B. can be used to screen for astigmatism.
- C. is most useful in patients who have better than 2/40 (6/12) visual acuity.
- D. is found in most trial lens sets.

Good luck