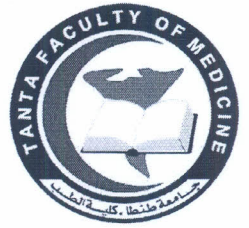


Optics Examination  
Master Degree in Ophthalmology  
February 2021  
Date: 04/03/2021  
Time allowed: 3 hours  
Total marks: 30 marks



**ANSWER ALL QUESTIONS**

**ILLUSTRATE WITH DIAGRAMS WHENEVER APPLICABLE**

**Discuss the following: (5 Marks EACH)**

1. Prisms and reflection of light.
2. Clinical verification of glasses prescription.
3. Image magnification by indirect ophthalmoscope.

**Multiple Choice Questions (1.0 Mark Each. Single answer applies)**

1. The following is true about light:
  - A. Shorter wavelengths have greater energy.
  - B. Two waves in phase with one another result in constructive interference regardless the individual direction of travel.
  - C. Coherent light is composed of waves that are out of phase.
  - D. The photoreceptors of the human eye are sensitive to wavelength between 440 and 780.
  
2. The following is true about anti-reflective coatings:
  - A. The principle of destructive interference applies to anti-reflective coatings.
  - B. They cause the lenses to grow dark in bright light.
  - C. They absorb ultraviolet light.
  - D. They can only be used on plastic lenses.
  
3. The following is true about chromatic aberration:
  - A. Chromatic aberration accounts for 3 diopters of aberration in the human eye.
  - B. Longer wavelengths are deviated more at an optical interface.
  - C. The higher the refractive index of a material the higher its dispersive power.
  - D. Duochrome test is sensitive to a difference of 0.25 diopters.
  
4. The image formed by a convex mirror is:
  - A. Real and located between F and the mirror.
  - B. Erect and located between F and the mirror.
  - C. Erect and located between F and C.
  - D. Inverted and located between F and the mirror.

5. In thin lenses:
- A. The first principal focus is the point to which parallel light rays converge following refraction by a spherical lens.
  - B. The nodal point is the point at which the principal plane and the principal axis intersect.
  - C. Lens power calculation incorporates an adjustment for lens thickness.
  - D. Vergence power is proportional to focal length.
6. The following is true about the prismatic effect of lenses:
- A. If the optical center of a myopic lens is moved nasally, a base out prism will be induced.
  - B. If the optic center of a myopic lens is moved inferiorly, a base down prism will be induced.
  - C. If the optic center of a hyperopic lens is moved temporally, a base in prism will be induced.
  - D. If the optic center of a hyperopic lens is moved superiorly, a base down prism will be induced.
7. Near visual acuity is tested using
- A. Cambridge chart.
  - B. Worth's four-dot test.
  - C. Jaeger's test type.
  - D. Frisby test.
8. The following is true in subjective refraction:
- A. Before starting subjective refraction, 1.5 DS should be added to the retinoscopy results.
  - B. Deducting the working distance helps to reduce the cylinder to about one fourth of its previous value.
  - C. The fellow eye should be occluded.
  - D. The power of the cylinder should be corrected first.

9. While calculating the near addition:
- A. Convex lenses are added to the distance correction to provoke accommodation.
  - B. The approximate value of the near addition for a subject aged 45 years is 3.0 DS.
  - C. In general, it is advisable to give the maximum plus lens.
  - D. The patient should be tested at his / her normal reading distance.
10. Jackson's cross cylinder:
- A. Does not alter the spherical equivalent of an ametropic eye.
  - B. Does not blur the image when placed before an emmetropic eye.
  - C. Does not change the interval of Sturm.
  - D. Is used to check the power of cylinder before its axis.
11. Spherical aberration in human eye is reduced by the following:
- A. The cortex of the lens has a higher refractive index than the nucleus.
  - B. The lens has variable anterior surface curvature.
  - C. The anterior surface of the cornea is flatter peripherally than centrally.
  - D. The vitreous reduces spherical aberration.
12. The original SRK formula is written as follows:
- A.  $P=A-2.5K-0.9L$
  - B.  $P=A+2.5K+0.9L$
  - C.  $P=A-2.5L-0.9K$
  - D.  $P=A+2.5L+0.9K$
13. The following is true during fundus biomicroscopy:
- A. The 90 D lens has a larger angular magnification than the 78D lens.
  - B. The 90 D lens has a larger field of view than the 78D lens.
  - C. Superfield has a larger angular magnification than the 78D lens.
  - D. Panfundoscope has a larger field of view than the 90 D lens.



14. An aphakic patient requires a contact lens of +14 D
- A. A spectacle lens of about 11.5D is required if the back vertex distance is 15 mm.
  - B. A spectacle lens of about 17.5D is required if the back vertex distance is 15 mm.
  - C. A spectacle lens of about 14D is required irrespective of the back vertex distance.
  - D. A spectacle lens of about 16.25D is required if the back vertex distance is 10 mm.
15. During retinoscopy, when there is a break indicates that
- A. The power of cylinder must be incorrect.
  - B. Both the power and the axis of cylinder must be incorrect.
  - C. The true axis of astigmatism is generally between the direction of the reflex in the pupil and the band outside it.
  - D. The true power of astigmatism must be more positive than the trial cylindrical lens.

**GOOD LUCK**



Tanta Faculty of Medicine

Department of General Surgery

Diploma of Ophthalmology ( لائحة 2013 )

General Surgery Examination - February 2021

Time: 3 hours

Total marks: 45

All questions should be answered

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1-Factors affecting wound healing? (15 marks)

2-Clinical picture and treatment of rodent ulcer? (15 marks)

3-Clinical picture and treatment of primary toxic goiter? (15 marks)

Good Luck

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الإمتحان الشفوى والإكلينيكي بقسم الجراحة العامة بالمستشفى التعليمى الفرنساوى الدور السابع  
يوم السبت ٣ أبريل الساعة الثامنة صباحا

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**ANSWER ALL QUESTIONS**

**ILLUSTRATE WITH DIAGRAMS WHENEVER APPLICABLE**

**Discuss the following: (5 Marks EACH)**

1. Spherical lens decentration.
2. Amplitude of accommodation; definition, measurement, and variation with different states of refraction.
3. Optical principle and methods of gonioscopy.

**Multiple Choice Questions (1.0 Mark Each. Single answer applies)**

1. The wavelength 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 summit and the trough of the wave.
  - D. Is the same as the amplitude.
  
2. The following rays have the shortest wavelength:
  - A. Radio waves.
  - B. Ultraviolet rays.
  - C. Gamma rays.
  - D. Cosmic rays.
  
3. Diffraction
  - A. Is a property of particles.
  - B. Increases when a wavefront is projected through a large opening.
  - C. Refers to the interference of secondary waves formed at the edge of an aperture with the main wavefront.
  - D. Does not limit the visual acuity obtained by a pinhole.
  
4. The following is true about prisms:
  - A. The "centrad" measures the image displacement along an arc 1 cm from a prism.
  - B. The "centrad" and "prism diopter" produce the same angle of deviation.
  - C. Prisms may be used in assessment of simulated blindness.
  - D. The Maddox rod is comprised of high powered prisms.