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BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Optomtry-2021/B.Optomtry-2022/B.Optomtry-2023/B.Optomtry-2024

Course Name – Optometric Instrumentation

Course Code - BOPTOC302

(Semester III)

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Brainware University
399, Ramkrishnapur Road, Barasat
Kolkata, West Bengal-700125

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) A lens where one side has no power and 90° away has power, this is _____ lens.
 - a) Cylindrical
 - b) Plano
 - c) Spherical
 - d) Plano cylindrical
- (ii) The ability to distinguish between 2 laterally displaced end-to-end lines from one than the other can be defined as.
 - a) Grating Acuity
 - b) Visual Acuity
 - c) Separable Acuity
 - d) Recognisable Acuity
- (iii) Choose the correct option from the following: The Snellen Notation 20/200 is equivalent to.
 - a) 6/6
 - b) 6/7.5
 - c) 6/60
 - d) 6/30
- (iv) Select the correct decimal notation for VA of 20/40 from the following.
 - a) 0.55
 - b) 0.35
 - c) 0.25
 - d) 0.5
- (v) When the horizontal meridian is more curved than the vertical meridian, it is called _____.
 - a) With-the-rule Astigmatism
 - b) Against-the-rule Astigmatism
 - c) Oblique Astigmatism
 - d) Mixed Astigmatism
- (vi) _____ and _____ prisms helps in doubling principle used in Keratometer.
 - a) Base-out and base-up
 - b) Base-down and base-in
 - c) Base-out and base-in
 - d) Base-in and base-up
- (vii) Indicate the type of retinoscope from the following that do not provide concave mirror effect.

- a) Plane Mirror Retinoscope
 c) Spot Retinoscope
- b) Priestley-Smith Mirror Retinoscope
 d) Streak Retinoscope
- (viii) Keratometer measures the radius of curvature of _____ central cornea.
 a) 5mm
 c) 3mm
 b) 4mm
 d) 2mm
- (ix) Select the instrument which is commonly used to measure corneal curvature.
 a) Manual keratometer
 c) Autorefractor
 b) Ophthalmoscope
 d) Slit lamp
- (x) A patient is not able to read the letters from 6 meters distance. So, you bring him closer to the chart at 3 meters. How will you document the measurement?
 a) 6/60
 c) 20/60
 b) 3/60
 d) 20/30
- (xi) The mirror of the retinoscope is tilted at an axis of _____.
 a) 45°
 c) 25°
 b) 15°
 d) 50°
- (xii) In case of diffuse illumination system, the angle between the observation and illumination system is _____.
 a) 45 degree
 c) 50 degree
 b) 60 degree
 d) 95 degree
- (xiii) Green Color deficiency is termed as _____.
 a) Tritanope
 c) Protanope
 b) Deutanope
 d) None of these
- (xiv) If the contrast threshold increases, then the contrast sensitivity _____.
 a) Constant
 c) Increases
 b) Decreases
 d) None of these
- (xv) During Pelli-Robson Contrast sensitivity test the patient should sit or stand at a distance of _____.
 a) 1 meter
 c) 3 meters
 b) 2 meters
 d) 4 meters

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Define the term visual acuity. (3)
3. Explain the importance of green /red-free filter that are used in direct ophthalmoscopes. (3)
4. Discuss about the components of Visual Acuity. (3)
5. What do you understand by Contrast, Contrast threshold and Contrast Sensitivity? (3)
6. How trial frames can be used to confirm whether the patient's PD is aligned or not? (3)

OR

I am not a lens, yet I help in refraction. I am a thin opening that lets light pass only through one meridian. Identify the instrument and write its clinical significance. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Write the limitations and sources of error of a keratometer. (5)
8. Illustrate the illumination system of the slit lamp biomicroscope. (5)
9. How does optics of Copeland retinoscope varies from Welch Allyn retinoscope? (5)
10. Explain the mechanical parts of the slit lamp biomicroscope. (5)
11. Illustrate the optics of reflex movement while performing retinoscopy from 1metre on a 4D myopic patient. (5)

12. A patient shows K- readings of: 6.7mm @180°/7.0mm D @ 90°. The refraction value is -2.50 DS / -3.5 DC x 180°. Find the corneal astigmatism and calculate the internal astigmatism and classify it as ATR/WTR/ oblique. (5)

OR

Calculate the corneal astigmatism for a patient having radius of curvature 7.7mm @ 180° and 7.9mm @ 90° and analyse the steeper & flatter meridians. (5)

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