

Name :
Roll No. :
Invigilator's Signature :

**CS/B.OPTM/SEM-4/BO-401/2010
2010**

VISUAL OPTICS (OPTICS-IV)

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

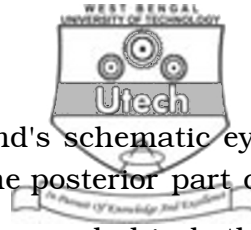
$10 \times 1 = 10$

- i) 1 mm shortening of the eyeball axial length causes
 - a) 1D of hyperopia b) 3D of hyperopia
 - c) 1D of myopia d) 3D of myopia.

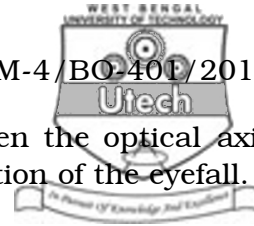
- ii) In listings reduced eye, posterior focal point on retina is behind anterior surface of cornea.
 - a) 22.9 cm b) 22.5 mm
 - c) 24.4 cm d) 22.9 mm.

- iii) Unilateral aphakia causes
 - a) Diplopia b) Anisometropia
 - c) Aniseikonia d) All of these.

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- iv) Regarding cardinal data on Gullstrand's schematic eye the nodal points N_1 and N_2 lie in the posterior part of the lens and behind the anterior surface of the cornea respectively.
- a) 7.80 mm and 6.32 mm
 - b) 1.35 mm and 1.60 mm
 - c) 7.08 mm and 7.33 mm
 - d) 8.07 mm and 6.32 mm.
- v) Even a perfect lens free from aberrations will not focus light to a point due to
- a) refraction
 - b) diffraction
 - c) spherical aberrations
 - d) chromatic aberrations.
- vi) Against the rule astigmatism refers to a condition where the horizontal meridian is curved than vertical meridian.
- a) more
 - b) less
 - c) equally
 - d) none of these.
- vii) Spherical equivalent for + 4.00 D. Sph./-2.00 D CYL \times 90° is
- a) - 3.00 D. Sph.
 - b) + 4.00 D.Sph.
 - c) + 3.00 D. Sph.
 - d) None of these.



viii) Angle is the angle between the optical axis and fixation axis at the centre of rotation of the eyefall.

- a) alpha
- b) gamma
- c) beta
- d) kappa.

ix) Diffraction blur with the small size of the pupil.

- a) decreases
- b) does not change
- c) is absent
- d) increases.

x) The normal angular threshold of discrimination for resolution, measures approximately seconds of an arc (minimum angle of resolution).

- a) 5 to 10
- b) 30 to 60
- c) 20 to 40
- d) 60 to 90.

xi) In Aphakia Prismatic aberration produces roving-ring scotoma, in this case a ring scotoma of about degrees extending from 50° - 65° from central fixation is produced by prismatic effects at periphery of correcting lens when it is placed in front of the eye and eye is in primary position.

- a) 15
- b) 25
- c) 35
- d) none of these.

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GROUP – B

(Short Answer Type Questions)

Write short notes on any *three* of the following.

3 × 5 = 15

2. RSM.
3. Depth of focus.
4. Status of accommodation in uncorrected myopia and hypermetropia in a young boy of 10 years age.
5. Role of heredity in myopia.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

6. Discuss the aetiological hypothesis for pathological myopia. Describe the common findings (signs) you can expect to see in a case of high myopia (Pathological myopia). 5 + 10
7. What is Glare ? Mention the tests for contrast sensitivity function of the eye. 5 + 10
8. Discuss the following :
 - a) Problem of image magnification
 - b) Prismatic aberration in an aphakic eye. $7 \frac{1}{2} + 7 \frac{1}{2}$
9.
 - a) Discuss the factors affecting contrast sensitivity.
 - b) Describe Arden gratings used for contrast sensitivity testing in detail. 5 + 10