Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/B.OPTM/SEM-4/BO-401/2012

2012

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 the following :

$10 \times 1 = 10$

   i)   Correction of aphakic eye with spectacle produces magnification of image of

   a)   20—50%   b)   40—80%

   c)   60—80%   d)   5—10%.

   ii) The position of Nodal point from the retina in a myopic eye is

   a)   further away   b)   more nearer

   c)   at the same position   d)   None of these.

4022   [Turn over

iii) In schematic eye the number of principal planes is

    a) one   b) two

    c) three   d) four.

iv) Accommodation in Aphakic eye absent

    a) completely   b) partially

    c) alternatively   d) all of these.

v) In Aphakia prismatic aberration produces Scotoma of

    a) 15"   b) 20"

    c) 50"   d) 60".

vi) The colour of pupil in Aphakia is

    a) Jet black   b) Red glow

    c) White   d) Grey.

vii) .... aberrations occur because spherical lens refracts peripheral rays more strongly than paraxial rays.

    a) Spherical   b) Oblique

    c) Chromatic   d) Coma.

viii) Depth of field is .... related to pupillary size.

    a) directly   b) inversely

    c) no relation   d) none of these.

ix) The relationship between spectacle refraction and ocular refraction is

a) $K = \dfrac{F}{1 - dF}$ b) $K = \dfrac{F}{1 + dF}$

c) $K = \dfrac{1 - dF}{F}$ d) $K = \dfrac{1 + dF}{F}$.

x) Depth of focus is .... related to pupil size.

a) directly b) inversely

c) no relation d) none of these.

GROUP – B

(Short Answer Type Questions)

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

$3 \times 5 = 15$

2. Entrance and Exit pupil.

3. Role of pupil in minimizing aberrations.

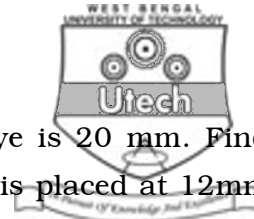4. Relative spectacle magnification.

5. Irregular astigmatism.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

6. Define the relationship between spectacle refraction (*F*) and ocular refraction (*K*). Find the image of an object whose height is 15 metres and situated at 900 metres from the eye with an axial, length 21 mm and RI is 4/3.

7. The length of an axially hypermetropic eye is 20 mm. Find the power of the thin correcting lens that is placed at 12mm from the principal point of the reduced eye. How can you correct ametropia by a thick lens ? 7 + 8

8. Discuss about the concept of clear and blurred images in the reduced eye. Write a note on the effect of change in vertex distance. 8 + 7

9. Discuss the various theories of development of congenital myopia. Mention the common findings (sign) that you can find in a case of high (Pathological) myopia.

10. a) What do you mean by visual acuity, how do we record it ?

    b) Find the size of an image, of an object, whose height is 10 metres and situated at 800 metres from the eye, with an axial length of 21 mm and R.I. of 4/3 . 5 + 10