CS/B.OPTM/SEM-4/BO-401/09

1. .....
Signature of Invigilator

2. .....
Signature of the Officer-in-Charge

Reg. No. | | | | | | | | | | | | | | |

Roll No. of the Candidate | | | | | | | | | | | | | | |

CS/B.OPTM/SEM-4/BO-401/09

ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009

VISUAL OPTICS (OPTICS – IV) (SEMESTER - 4)

Time : 3 Hours] [Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. a) In **Group – A**, Questions are of Multiple Choice type. You have to write the correct choice in the box provided **against each question.**
   b) For **Groups – B** & **C** you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group – B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

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FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

	Group – A										Group – B			Group – C				
Question Number																	***Total Marks***	***Examiner's Signature***
Marks Obtained																		

.....
Head-Examiner/Co-Ordinator/Scrutineer

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ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009

VISUAL OPTICS (OPTICS – IV)

SEMESTER – 4

Time : 3 Hours] [Full Marks : 70

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

i) Slight under-correction is required in

a) high myopia b) hypermetropia

c) oblique astigmatism d) aphakia. ☐

ii) The colour of pupil in Aphakia is

a) jet black b) black

c) white d) grey. ☐

iii) The position of Nodal Point from the retina in a Myopic eye is

a) further away b) more nearer

c) remain at the same position d) none of these. ☐

iv) The cause of Index Hypermetropia is

a) pathological b) physiological

c) congenital d) old age. ☐

v) In refractive ametropia the R.S.M. is equal to

a) S.M. b) corrected eye image

c) un-corrected eye image d) none of these. ☐

vi) Airy disc develops due to

a) chromatic aberration b) spherical aberration

c) distortion d) diffraction.

vii) Circle of least confusion is on retina in case of

a) uncorrected compound myopic astigmatism

b) uncorrected simple astigmatism

c) uncorrected mixed astigmatism

d) irregular astigmatism.

viii) Spherical equivalent for + 3·50 DSph/– 3·00 DCyl @ 90 is

a) – 2·00 DSph b) + 1·00 DSph

c) +2·00 DSph d) none of these.

ix) In case of hypermetropia, Punctum Remotum is at

a) infinity b) in front of eye

c) behind eye d) none of these.

x) Far point of a patient is at 20 cm in front of his eyes. His refractive error is

a) – 5·00 D b) + 5·00 D

c) + 10·00 D d) none of these.

xi) Blur circle ..... with pupil size.

a) increases

b) decreases.

xii) A patient requires cylindrical lens at 30 degree in one eye & at 150 degree in the other eye. What can be the type of astigmatism ?

a) WTR b) ATR

c) Oblique d) Bi-olique.

GROUP – B

(Short Answer Type Questions)

Write short notes on any *three* of the following. 3 × 5 = 15

2. Circle of least diffusion.

3. Advantages/disadvantages of 10 L, over spectacles in aphakia.

4. Irregular astigmatism.

5. Congenital myopia.

GROUP – C

(Long Answer Type Questions)

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

6. What is blur disc ? How is retinal image size determined using reduced eye model ? Find the size of retinal image formed by an emmetropic eye of an object of height 15 m situated at a distance of 750 m from eye if axial length is 24 mm. 2 + 7 + 6

7. Define astigmatism. Draw & describe refractive types of regular astigmatism. A patient has a far point at 20 cm behind his cornea in uncorrected state. Find out the power of spectacle lens required to his refractive error (assume vertex distance of 12 mm). 2 + 7 + 6

8. What do you mean by spectacle refraction (F) and ocular refraction (K). Give their relation. The far point of a hypermetropic eye is 12·5 cm behind the eye. Find the ocular refraction and spectacle refraction of this eye, when correcting lens to be worn 12 mm in front of cornea. $7\frac{1}{2} + 7\frac{1}{2}$

9. What do you mean by visual acuity ? How will you detect it ? Find the size of image of an object whose height is 10 metre and situated at 800 metre from the eye with an axial length of 21 mm and R.I. is 4/3. 5 + 10

10. With the help of proper diagrams, illustrate the different refractive types of regular astigmatism in the following cases : 3 × 5

a) Simple myopia

b) Simple hypermetropia

c) Compound myopic astigmatism

d) Mixed astigmatism

(Only labelled diagrams, no explanation needed).

END