

**MANIPAL UNIVERSITY**  
**SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2008**  
**SUBJECT: PATHOLOGY AND MICROBIOLOGY**

Monday, June 09, 2008

Time: 3 Hrs.

Max. Marks: 80

- ✍ **ANSWER SECTION 'A' AND SECTION 'B' IN TWO SEPARATE ANSWER BOOKS.**  
 ✍ **Answer ALL the questions.**

**SECTION – A : PATHOLOGY : 40 MARKS**

1. Mention the types of inflammation with examples. Describe briefly about the cellular events in acute inflammation.  
(3+5 = 8 marks)
  
2. Define neoplasia. Mention the possible causes of neoplasms. Give the modes of spread of tumors with examples.  
(1+2+4 = 7 marks)
  
3. Write short notes on:
  - 3A. Aetiology and laboratory investigations in a case of iron deficiency anemia.
  - 3B. Types of necrosis with examples.
  - 3C. Primary pulmonary tuberculosis.
  - 3D. Idiopathic thrombocytopenic purpura and hemophilia comparing their clinical features and laboratory investigations.
  - 3E. The pathogenesis of septic shock.(5×5 = 25 marks)

**SECTION – B : MICROBIOLOGY : 40 MARKS**

4. Discuss the bacterial cell structure with the help of a neat labeled diagram. List the organelles and mention their functions.  
(8 marks)
  
5. Discuss the laboratory diagnosis of ocular infections.  
(7 marks)
  
6. Write short notes on:
  - 6A. Sources of infection.
  - 6B. Autoimmunity.
  - 6C. Trachoma.
  - 6D. Fungal keratitis.
  - 6E. Herpes simplex virus.(5×5 = 25 marks)



**MANIPAL UNIVERSITY****SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2008****SUBJECT: OPTOMETRIC PHARMACOLOGY****SUBJECT: PHARMACOLOGY**

Tuesday, June 10, 2008

Time: 1½ Hrs.

Max. Marks: 40

1. Give two examples and mention two ophthalmic uses for the following class of drug
  - 1A. Antiviral drugs
  - 1B. Glucocorticoids
  - 1C. Miotics
  - 1D. Antifungal drugs
  - 1E. Antimitotic agents

(2×5 = 10 marks)
  
2. Write briefly on:
  - 2A. Vitreous substitutes
  - 2B. Ocular analgesics
  - 2C. Ocular route of drug administration
  - 2D. Drug treatment of glaucoma
  - 2E. Ocular pharmacokinetics

(3×5 = 15 marks)
  
3. Answer the following:
  - 3A. What is cycloplegia? Mention two drugs causing it.
  - 3B. List two classes of antihypertensive drugs with an example for each.
  - 3C. List two objectives of preanesthetic medication with an example for each objective.

(2×3 = 6 marks)
  
4. Give reasons for the following:
  - 4A. Atropine is contraindicated in acute angle glaucoma
  - 4B. Ethambutol is contraindicated in children below 6yrs
  - 4C. Timolol is not preferred for treatment of glaucoma in asthmatics
  - 4D. Ethyl alcohol is used in methyl alcohol poisoning
  - 4E. L-dopa in parkinsonism

(1×5 = 5 marks)
  
5. Define the following terms and give suitable example:
  - 5A. Adverse effect
  - 5B. Wetting agent

(2×2 = 4 marks)



**MANIPAL UNIVERSITY**  
**SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2008**  
**SUBJECT: OPTOMETRIC OPTICS AND DISPENSING OPTICS**

Wednesday, June 11, 2008

Time: 3 Hrs.

Max. Marks: 80

**1. Answer the Following:**

- 1A. Which test would you use to differentiate a Sphero-cylindrical lens from a spherical lens?
- 1B. What do you mean by a thermosetting plastic lens material?
- 1C. Which type of temple curves around the ear following the crotch of the ear where ear and the head meet, extending to the level of the earlobe? This type of temple is usually plastic and is often used in children's and safety frames.
- i) Library                      ii) Skull  
 iii) Riding bow                iv) Convertible
- 1D.  $Q^{\Delta}BD$  and  $BO @ 20$  in Old English Notation = \_\_\_\_\_ in  $360^{\circ}$  Notation.
- 1E. True or False? Single, high level amounts of UV can be damaging, but the eye is able to recover from long-term, low level amounts of UV exposure without being affected.
- 1F. True or False? Progressive addition lens centers should be set lower for the first-time wearer to aid in adapting to the lenses.
- 1G. Write one difference between thermoplastic and thermoelastic materials.
- 1H. Polycarbonate lens materials absorb \_\_\_\_\_ radiations.
- i) UV                              ii) IR  
 iii) Visible Spectrum        iv) X-rays
- 1I. What is the decentration required to produce  $2^{\Delta}BD$  on the right eye by a  $-3.00DS$  lens?
- 1J. Transpose the prescription into one of its alternate forms:  
 $+6.25DC*50 / +5.50DC*140$

(1×10 = 10 marks)

**2. Answer any TEN:**

- 2A. The following four lenses are placed in close contact:

- i)  $f_1 = +25.00cm$   
 ii)  $f_1 = +14.29cm$   
 iii)  $f_1 = -40.00mm$   
 iv)  $f_1 = -100.00mm$

Find the focal length in meters of the thin lens which must be added to the combination in order to neutralize it.

- 2B. A  $-12.00D$  lens corrects an eye for distance when fitted 16mm from the cornea. If the lens is to be repositioned 10mm in front of the cornea what must its power become in order to correct the eye?

2C. Match the correct frame characteristics with the face shape:

SET A

SET B

- |                        |                  |
|------------------------|------------------|
| 1. Oblong              | a. Darker colors |
| 2. Round               | b. Rimless       |
| 3. Inverted Triangular | c. Narrow frame  |
| 4. Triangular          | d. Deep Frame    |
| 5. Oval                | e. Any type      |

2D. Find the prismatic effect introduced by the lens  $+2.00DS/+2.00DC \times 90$ , when the right eye views through a point 5mm above and 5mm inwards from the optical center. Also find their single resultant prismatic effects.

2E. What is Glare? With an example describe the different types of Glare.

2F. Find the vertical and horizontal decentrations necessary to produce the following prescription: OS  $+4.00DS/+4.00DC \times 90$ ; 1 $\Delta$ BU and 3 $\Delta$ BO.

2G. Write about the fitting philosophies for Progressive Addition Lenses.

2H. Transpose the prescription  $+1.00DS/-4.00DC \times 20$  into toric form with a  $-6.00D$  sphere curve.

2I. Write briefly on the following lens defects and also mention one lens inspection technique to identify this defect:

- i) Sleek                      ii) Dig                      iii) Bruise check                      iv) Scratch

2J. Show that the catoptric surface powers of a thin lens in air, whose dioptric surface powers are  $F_1$  and  $F_2$ , are given by:

i)  $\vec{F}_{1c} = -2F_1/(n-1)$                       ii)  $\vec{F}_{2c} = 2nF_2/(n-1)$

iii)  $\vec{F}_{1c} = 2nF_1/(n-1)$                       iv)  $\vec{F}_{2c} = -2F_2/(n-1)$

2K. With the help of a neat figure derive the equation to find the thickness difference of a prism.

2L. Write short notes on Iseikonic lenses and Spectacle magnifiers.

(5×10 = 50 marks)

### 3. Answer Both:

3A. Derive from first principles the relationship  $d = (n-1) a$ . Show that  $4^\circ$  of deviation is approximately equal to  $7^\Delta$ .

3B. Write on:

- i) Ghost images in detail.  
ii) Antireflection coating with reference to its Destructive interference and Amplitude condition.

(10×2 = 20 marks)



**MANIPAL UNIVERSITY**  
**SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2008**

**SUBJECT: VISUAL OPTICS**

Thursday, June 12, 2008

Time: 3 Hrs.

Max. Marks: 80

**1. Fill in the blanks:**

- 1A. \_\_\_\_\_ is a congenital condition of the eye in which axial myopia is seen.
- 1B. Unit of physiological accommodation is \_\_\_\_\_.
- 1C. The Retinoscopy done with the patient's eyes fixed at a near distance is known as \_\_\_\_\_.
- 1D. A spherical lens which has had its surface powers carefully computed to eliminate or at least minimize various peripheral defects is known as \_\_\_\_\_.
- 1E. Ametropia calculated in relation to the first principal plane of the eye gives \_\_\_\_\_.
- 1F. The type of convergence which is induced by awareness of near object and which is independent of accommodation is \_\_\_\_\_.

(1 × 6 = 6 marks)

**2. Answer the following:**

- 2A. Define the following terms:
  - i) Depth of focus
  - ii) Depth of field
- 2B. Define ametropia. What is the difference between axial and refractive ametropia?
- 2C. Mention names of recently introduced refractive surgeries done to correct myopia.
- 2D. Define convergence. What is the unit used to measure the convergence?
- 2E. What is the etiological classification of abnormal aniseikonia?

(2 × 5 = 10 marks)

**3. Answer the following questions:**

- 3A. What is presbyopia? What are the symptoms seen in this condition?
- 3B. What is biometry? What are the most commonly used two formulae?
- 3C. Explain briefly about any 2 charts used to measure contrast sensitivity.
- 3D. Explain about Donder's reduced eye concept.

(3 × 4 = 12 marks)

**4. Answer any SIX of the following questions:**

- 4A. Write a note on refractive anomalies and their causes.
- 4B. Define visual acuity. Write briefly about pediatric visual acuity charts.
- 4C. How does vision gets affected in anisometropia.
- 4D. Write a note on increased accommodation.
- 4E. Write about the optical condition in astigmatism.
- 4F. Write in detail about clinical features of myopia.
- 4G. What are the possible sources of error in performing Retinoscopy? Explain.
- 4H. Explain briefly about Jackson Crossed Cylinder.

(6 × 6 = 36 marks)

**5. Define Hypermetropia. Write a note on the following:**

- a) Etiology
- b) Optical condition
- c) Clinical pathology
- d) Clinical features and treatment modalities

(1+3+3+3+6 = 16 marks)



**MANIPAL UNIVERSITY****SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2008****SUBJECT: OPTOMETRIC INSTRUMENTS AND CLINICAL EXAMINATION OF VISUAL SYSTEM**

Friday, June 13, 2008

Time: 3 Hrs.

Max. Marks: 80

**☞ Draw diagrams wherever necessary.****1. Fill in the blanks.**

- 1A. \_\_\_\_\_ is the angle subtended by a 'Stroke' of a 6/60 Snellen letter at 6m.
- 1B. Patient positioning frame of a slit lamp is a part of \_\_\_\_\_ (Observation system/Illumination system/Mechanical support).
- 1C. If the micrometer reading of Applanation Tonometer show 1.2, the IOP will be \_\_\_\_\_ mm of Hg.
- 1D. The tilt of the mirror in Goldmann single mirror Gonioscope is \_\_\_\_\_ degrees.
- 1E. \_\_\_\_\_ introduced Indirect Ophthalmoscope in the year of \_\_\_\_\_.
- 1F. An increase in power of the condensing lens \_\_\_\_\_ the field of view in Indirect Ophthalmoscopy.
- 1G. \_\_\_\_\_ is the percentage of Proparacaine used as topical anesthetic.
- 1H. \_\_\_\_\_ is the suggested chart illumination for Snellen visual acuity chart.
- 1I. The type of telescope used in lensometer is \_\_\_\_\_.
- 1J. The light rays those passes through \_\_\_\_\_ and \_\_\_\_\_ aperture forms the central keratometric mire.

(1×10 = 10 marks)

**2. Answer any FIVE questions.**

- 2A. Name four uses of Corneal Topography.
- 2B. Explain Decimal notation.
- 2C. What are the advantages of Perkin's hand held tonometer?
- 2D. Describe the display of B-Scan.
- 2E. Define field of view. What are the boundaries of visual field?
- 2F. Describe the choroidal flush stage of FFA.

(2×5 = 10 marks)

**3. Answer any FOUR questions.**

- 3A. Record the parts of GAT with a neat diagram. Comment about the Applanation Probe.
- 3B. What you mean by Phoropter? Compare and contrast it with conventional trial set and trial frame.
- 3C. Classify color vision defects. Explain all the terminologies.

3D. Using Javal's rule, what would be the expected refractive astigmatism for each of the following amounts of corneal astigmatism:

- i) Zero;                      ii)  $-1.00 \times 180$ ;                      iii)  $-1.00 \times 90$ ;  
iv)  $-2.00 \times 180$ ;                      v)  $-2.00 \times 90$

3E. Explain briefly about Pelli-Robson contrast sensitivity chart.

( $5 \times 4 = 20$  marks)

**4. Answer the following.**

4A. Write a note on ERG.

4B. Explain the pupillary examination techniques in detail. Write a note on pupillary anomalies.

( $10 \times 2 = 20$  marks)

**5. Answer any ONE.**

5A. Explain Gonioscopy under these headings

- i) Definition                      ii) Indications                      iii) Contraindications  
iv) Direct method of Gonioscopy                      v) Clinical significance

5B. Explain streak retinoscope under following headings.

- i) Plane mirror and Concave optics with neat diagrams.  
ii) Parts of the retinoscope with diagram.  
iii) Advantage over spot retinoscope.

( $20 \times 1 = 20$  marks)

