MANIPAL UNIVERSITY

SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2007
SUBJECT: PATHOLOGY AND MICROBIOLOGY
Thursday, June 07, 2007

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. Define shock. Classify the types of shock. Discuss the pathogenesis of septic shock.

(1+2+7 = 10 marks)

2. Write short notes on:

(6×5 = 30 marks)

2A. Spread of tumors

2B. Hemophilia

2C. Types of necroses

2D. Chemotaxis

2E. Healing by primary intention

2F. Pulmonary tuberculosis.

SECTION – B : MICROBIOLOGY : 40 MARKS

3. Define and classify sterilization. What briefly about hot air oven.

(1+2+7 = 10 marks)

4. Write briefly about the following:

4A. Bacterial spore.

4B. Structure of a virion

4C. Gonococcal eye infections

(5×3 = 15 marks)

5. Write short notes on the following:

5A. Keratomycosis.

5B. Acanthamoeba.

5C. Adenoviral eye infection.

5D. Satellitism.

5E. Lacrymal system infections.

(3×5 =15 marks)

MANIPAL UNIVERSITY

SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2007

SUBJECT: PHARMACOLOGY

Friday, June 08, 2007

Time: 1½ Hrs.   Max. Marks: 40

1.   Answer the following questions:

1A. Mention FOUR factors which modify drug action.

1B. Mention TWO drugs belonging to different groups useful in hypertension. Mention one specific adverse effect of each of them.

1C. Name TWO non-steroidal anti-inflammatory drugs and list TWO uses of anyone of them.

1D. Mention FOUR general toxicities of antimicrobial agents.

1E. Name a coagulant and explain its mechanism of action.

                                                                 (2×5 = 10 marks)

2.   Write briefly of the following:

2A. Prednisolone.

2B. Pilocarpine.

2C. Biotransformation.

2D. Preanesthetic medication.

2E. Ocular routes of drug administration.

                                                                 (3×5 = 15 marks)

3.   Answer the following:

3A. i)   List FOUR first line antitubercular drugs with ONE specific adverse effect of each drug.

     ii) Mention TWO drugs useful in fungal infection of the eye.

                                                                 ((2+2)+1 = 5 marks)

3B. i)   List FOUR different agents used in ocular diagnosis.

     ii) Write briefly about requirements of ideal ocular preparations.

     iii) Write a note on vitreous substitutes.

                                                                 (1+2+2 = 5 marks)

3C. Mention 2 drugs used for the following conditions.

     i)   Leprosy   ii) Herpes simplex keratitis   iii) Toxoplasmosis

     iv) Dry eye   v)   Bacterial conjunctivitis.

                                                                 (1×5 = 5 marks)

MANIPAL UNIVERSITY
SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2007
SUBJECT: OPTOMETRIC OPTICS
Saturday, June 09, 2007

Time: 3 Hrs.   Max. Marks: 80

1.   Answer the following:

1A. Express the focal length of -3.50D lens in metres.

1B. Find the radii of curvature in mm of each surface of a -6.50D equiconcave lens made of glass
     of refractive index 1.50.

1C. Transpose the lens -2.00 DS/ +4.00DC x V into cross cylinder form.

1D. Express the angle 25°12' in centrad.

1E. What is Shape Wastage factor?

1F. List two safety glass lenses.

1G. Refractive index of PMMA and polycarbonate lens.

1H. First photochromic lens produced commercially in United States is _____ .

1I. In the bifocal specification, 22x17x2½, cut 5, 17 indicates _____.

1J. Reflection factor for following media in air assuming normal incidence glass, n=1.65.

                                                              (1×10 = 10 marks)

2.   Answer any **TEN**.

2A. Transpose the prescription +9.25 DS/+1.75DCxV into toric form with a -7.00 D sphere curve.

2B. Derive approximate sag relationship, $s=y^2F/ 2000(n-1)$.

2C. Calculate the central thickness of a planoconvex lens made in spectacle crown glass n=1.523.
     The power of the convex lens is +10.00 DS, diameter of lens 40mm and edge substance 1mm.

2D. Short note on Fresnel prism and lenses.

2E. Write briefly on patient selection of Progressive Addition Lenses.

2F. It is required to deposit an antireflection coating upon glass of refractive index 1.60. What
     must be the refractive index of the coating material in order to satisfy the amplitude
     condition? Assuming that the correct coating material can be obtained, what must be its
     thickness if it is desired to produce zero reflection for the wavelength of 555 nm?

2G. Write briefly on aspheric lenses.

2H. Find the vertical and horizontal decentrations necessary to produce the following
     prescriptions

     R +3.00/+2.00x90 1.5^Δ base up and 2^Δ base out.

     L -4.00/-2.00x180 1.5^Δ base down and 2^Δ base out.

2I. Derive from the first principles the relationship d=(n-1)a. Show 4° of deviation is approximately equal to 7^{Δ}.

2J. A+15.00 D lens corrects an eye for distance vision when fitted 12 mm from the cornea. If the lens is to be repositioned 15mm infront of the cornea what must its power become inorder to correct the eye. Repeat the question above for a -12.00D lens.

2K. Define using diagrams the following segment location terms:

    i)   Segment depth ii)   Segment drop   iii) geometrical inset

2L. The following four lenses, each of which are infinitely thin are placed together in contact. Find the focal length of the combination in cm

+1.25DS/+0.50 x V

-2.00DC x H/-1.50 DC xV

+0.25 DC x V/-1.25 DC x H

+0.50 DS/ -2.50 DC x V

<div align="right">(5×10 = 50 marks)</div>

3. Answer both.

3A. What is surfacing? Explain briefly the various surfacing processes.

3B. i)   What is meant by the term angular field of view? Show that semiangular field of view produced by a thin lens of power F and diameter 2y mounted 25 mm infront of the center of rotation of the eye can be found from $\tan\phi = \dfrac{y(40-F)}{1000}$.

    ii)   Calculate the field of view obtained by a 5.00D myope and a 5.00D hyperope assuming the diameters of the lenses, to be 45mm and the lenses are to be worn 25 mm from the center of rotation of the eyes. Compare these fields with the apparent field of view.

<div align="right">(10×2 = 20 marks)</div>

MANIPAL UNIVERSITY
SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2007
SUBJECT: VISUAL OPTICS
Monday, June 11, 2007

Time: 3 Hrs.   Max. Marks: 80

1.   Answer the following:
1A. An increase in 1mm of radius of curvature produces a hyperopia of _____.
1B. Amplitude of accommodation of a 36 year old man as compiled by Fischer.
1C. If the convex lens is placed farther from the eye than anterior focal plane, the retinal image _____.
1D. In Snellen equivalent for near vision, 6/6 letter subtends an angle of 5' at an average distance of _____
1E. The lens power in the refractor is +2.00/-1.00 × 90° and examiner finds that retinoscopy is possible only at 20cms. The finding that is recorded is _____.
1F. The required power of a correcting lens if the far point of an uncorrected eye were located 20cm in front of the spectacle plane.

(1×6 = 6 marks)

2.   Answer the following questions.
2A. Differentiate between: i)   Facultative hyperopia.   ii)   Absolute hyperopia.
2B. What is   i)   Optical image   ii)   Retinal image?
2C. List the treatment modalities in regular astigmatism.
2D. What is meant by fogging? What might occur if a patient is not fogged prior to beginning the subjective refraction?
2E. What are the methods to assess visual acuity in infants?

(2×5 = 10 marks)

3.   Answer the following questions.
3A. Differentiate between simple myopic and compound myopic astigmatism with examples.
3B. Amplitude of accommodation of a hyperope with error +3.00 DS, age 45 as compiled by Fischer.
3C. Brief on 'Jack in the box phenomenon'.
3D. Optical condition in hyperopia.

(3×4 = 12 marks)

4.   Write short notes on any SIX:
4A. Anisometropia.
4B. Sturm's conoid.
4C. Cycloplegic refraction.
4D. Schematic and reduced eyes.
4E. Axial and refractive ametropia.
4F. Optics of electric retinoscope.
4G. Jackson crossed cylinder.
4H. Symptoms and treatment modalities in presbyopia.

(6×6 = 36 marks)

5.   Define Myopia. Explain briefly on aetiology, optical condition, types, ophthalmosopic appearance and treatment modalities in myopia.

(16 marks)

☓◖◗◖◗☓

MANIPAL UNIVERSITY

SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2007

SUBJECT: OPTOMETRIC INSTRUMENTS AND CLINICAL EXAMINATION OF VISUAL SYSTEM

Tuesday, June 12, 2007

Time: 3 Hrs.   Max. Marks: 80

1.   Fill in the blanks [Each question carries **ONE** mark].

1A.   _____ is a prototype of Mackay-Marg applanation tonometer.

1B.   Photokeratoscope detects astigmatism upto _____ diopters.

1C.   Forcimeter was invented by _____

1D.   In keratometry _____ and _____ have vertical and horizontal adjustable prisms.

1E.   _____ recommended the projecto- light pointer for tangent screen procedure.

1F.   The a-wave originates from _____ .

1G.   _____ technique of Slit-lamp is useful in detection of holes in the posterior layer of the iris.

1H.   _____ described the trichromatic theory of colour vision.

1I.   The resting retinal potential picked up as the electrical potential across the eye is called _____

1J.   The two types of keratometers are _____ and _____

2.   Answer any **FIVE** questions [Each question carries **TWO** marks]

2A.   Comment on the two scales used for representing corneal topography.

2B.   Define field of view. Boundaries of vision.

2C.   What is the principle used in Gonioscopy?

2D.   Write short note on condensing lens used in Binocular Indirect Ophthalmoscope.

2E.   Write short note on cone monochromatism.

2F.   What is the difference between A-scan and B-scan?

3.   Answer any **FOUR** questions [Each question carries **FIVE** marks]

3A.   Write a short note on Tangent Screen.

3B.   List the parts of Slit-lamp. What are the techniques and adjustments of Slit-lamp?

3C.   Comment on the procedure used in fundus fluorescein Angiography.

3D.   Write briefly on the keratometers.

3E.   Comment on the displaying of ultrasonogram.

4.   Answer the following: [Each question carries **TEN** marks]

4A.   What are the clinical implications of binocular indirect ophthalmoscope?

4B.   Comment on Direct Ophthalmoscope.

5.   Answer any **ONE** [Each question carries **TWENTY** marks]

5A.   Write in detail on clinical implications, applications, interpretation and limitations of Electroretinogram.

5B.   Define the term 'defective colour vision'. Comment on the theory of instrumentation. Comment on 'clinical colour vision test's and its uses in detail.