

MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – SEPTEMBER 2005**SUBJECT: PATHOLOGY AND MICROBIOLOGY**

Monday, September 12, 2005

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 neoplasia. List the differences between benign and malignant tumors.

(2+8 = 10 marks)

2. Write short notes on:

2A. Fate of thrombus.

2B. Healing by secondary intention.

2C. Define any 3 types of necrosis with suitable examples.

2D. Pathogenesis of septic shock.

2E. Hemophilia.

(6×5 = 30 marks)

SECTION – B : MICROBIOLOGY : 40 MARKS

3. Describe the principle, parts and functioning of the laboratory autoclave.

(10 marks)

4. Write briefly about the following:

4A. Tyndallisation

4B. Bacterial spore

4C. Trachoma

(5×3 = 15 marks)

5. Write short notes on the following:

5A. Ribosomes.

5B. Antibiotic sensitivity.

5C. Gonococcal eye infections.

5D. Candida.

5E. Filtration.

(2×5 = 10 marks)

6. Fill in the blanks:

6A. _____ is the organ of adhesion in the bacterial cell.

6B. Pasteurization by the flash process is carried out at _____ temperature.

6C. Cold sterilization refers to _____ radiation.

6D. _____ is an example of a culture media.

6E. _____ is the indicator employed in the Mc Intosh fildes jar.

(5 marks)



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SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – SEPTEMBER 2005

SUBJECT: OPTOMETRIC OPTICS

Tuesday, September 13, 2005

Time: 3 Hrs.

Max. Marks: 80

1. Answer the following:

1A. List two plastic materials used for ophthalmic lenses.

1B. A contour lens shape with four distinguishable sides is called _____.

1C. Name 1 use of Risley prisms.

1D. Define the term datum center.

1E. State the axis direction obtained when the following are transposed by Standard notation.

i) 19 ii) 127_{1/2}

1F. Transpose the following lens into crossed cylinder form. -1.75 DS /+1.50 DCxV.

1G. Radii of curvature in mm of each surface of the lens +0.75D, Base curve -6.00D made up in glass of refractive index 1.5.

1H. The lens having a datum size of 46×42 has a shape difference of ____.

1I. Express the power in prism dioptres of a prism with n = 1.5 and apical angle 5°30'.

1J. Calculate the jump exerted by the lens, +1.00 DS, Add 2.00, 22 segment.

(1×10 = 10 marks)

2. Answer any TEN:

2A. A workman using tools calibrated for glass of n=1.523 wishes to produce a -12.50D sphere in periscopic form using dense barium crown glass of refractive index 1.59. Which tools must he use?

2B. Find the focal length in cm of the following lenses which are made in spectacle crown glass of refractive index 1.523

$$r_1 = -174.3 \text{ mm} \quad r_2 = +174.3 \text{ mm}$$

$$r_1 = +130.75 \text{ mm} \quad r_2 = +34.87 \text{ mm}$$

$$r_1 = -34.87 \text{ mm} \quad r_2 = +20.92 \text{ mm}$$

Sketch the form of the lens

2C. Explain what is meant by the term Effective power? Show that the effective power, F_e of a thin lens, F moved through a distance d metres is given by:

$$F_e = F / 1-dF$$

2D. What are the optical requirements of bifocal lenses? Give a spectacle prescription to a 45 year old clerk OD: +0.50/-1.00×180(6/6), OS: -1.00/-2.00 × 175 (6/6) .Add: +1.25 DS, N₆.

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

$$\overline{F}_{1c} = -2F_1 / (n-1) \quad \overline{F}_{2c} = 2nF_2 / (n-1)$$

$$\overline{F}_{1c} = 2nF_1 / (n-1) \quad \overline{F}_{2c} = -2F_2 / (n-1)$$

2F. Comment briefly on different spectacle lens shapes available.

- 2G. i) A -2.00 D periscopic lens is made in glass of refractive index 1.523 . State its surface curvatures in reciprocal metres.
- ii) A planoconcave lens has a focal length of -20 cm. A lens measure calibrated for glass of refractive index 1.52 reads -0.50 D on the truly plane surface and -4.50 D on the concave surface. Calculate the refractive index of the lens material.
- 2H. Calculate the field of view obtained by a 5.00 D myope and a 5.00 D hyperope assuming the diameters of the lenses, to be 45 mm 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.
- 2I. Derive from the first principles the relationship $d=(n-1)a$. Show 4° of deviation is approximately equal to 7^Δ .
- 2J. Write short note on polarizing filters.
- 2K. Describe the steps involved in laying off the prescription lens $L-3.00/+1.00 \times 135$ for glazing. Show how the finished lens will appear when it is submitted for glazing.
- 2L. Write briefly on the properties of cross cylinders.

($5 \times 10 = 50$ marks)

3. Answer the following:

3A. What is a Progressive Addition Lens? List the types. Briefly explain about the patient selection and dispensing considerations of PAL.

3B. The following thin lenses are placed together in contact. Express the power of combination in toric form with a $+9.00$ D base curve

$$+3.00/-2.00 \times 60^\circ$$

$$+0.25/-2.50 \times 150^\circ$$

$$-2.00/-1.00 \times 120^\circ$$

$$-0.25/-3.00 \times 30^\circ$$

$$+0.50/-2.00 \times 120^\circ$$

($10 \times 2 = 20$ marks)



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SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – SEPTEMBER 2005

SUBJECT: VISUAL OPTICS

Wednesday, September 14, 2005

Time: 3 Hrs.

Max. Marks: 80

1. Answer the following questions:

- 1A. The best treatment modality for an anisometropia, OD:+6.00 DS and OS :+0.50 DS, age 25.
- 1B. +4.00/-1.00×90° is an example of _____.
- 1C. A hyperope of 2D must employ _____ of accommodation to look at an object 40 cms away.
- 1D. The phenomenon of micropsia occurs in _____.
- 1E. For a visual acuity of 0.5, the letter size would be _____.
- 1F. Far point of a -8.00 D myope.

(1×6 = 6 marks)

2. Answer the following questions:

- 2A. What are the procedures you would do to confirm your neutralization point during retinoscopy?
- 2B. Define visual acuity. What do you mean when you say that your patient's visual acuity is $\frac{6}{18}$?
- 2C. What would be the effect on static retinoscopy finding
 - i) scoping at too close a working distance?
 - ii) scoping at too great a working distance?
- 2D. What is accommodation? Write briefly on how accommodation is brought about.
- 2E. A patient's near point has receded to 50 cms and he is an emmetrope. He wishes work at 25 cms. What is the lens power he requires to work comfortably at 25 cms?

(2×5 = 10 marks)

3. Answer the following questions:

- 3A. What is oblique and bi oblique astigmatism? Differentiate with the help of examples.
- 3B. What is aphakia? How are you planning to go ahead when a corrected aphake complains he can read the newspaper better if he keeps it on the desk?
- 3C. Write briefly on astigmatic fan.
- 3D. Given an uncorrected myopic eye with a far point located 50 cms in front of spectacle plane and a near point of accommodation 10 cm in front of the spectacle plane. What are the
 - i) Range and
 - ii) Amplitude of accommodation?

(3×4 = 12 marks)

4. Write short notes on any **SIX**.

- 4A. Anisometropia.
- 4B. Symptoms and treatment modalities in presbyopia.
- 4C. Schematic and reduced eyes.
- 4D. Axial and refractive ametropia.
- 4E. Position and nature of image formed for the following object positions in a convex lens:
 - i) Distance greater than 2f
 - ii) At 2f
 - iii) At a distance less than f
 - iv) At infinity
- 4F. Jackson crossed cylinder.
- 4G. Snellen test types.
- 4H. Mohindra's near retinoscopy.

(6×6 = 36 marks)

5. What is retinoscopy? Write briefly on optics of retinoscopy and the procedure you are going to follow if your patient's visual acuity improves with pinhole.

(16 marks)



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SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – SEPTEMBER 2005**SUBJECT: OPTOMETRIC INSTRUMENTS AND CLINICAL EXAMINATION OF VISUAL SYSTEM**

Thursday, September 15, 2005

Time: 3 Hrs.

Max. Marks: 80

1. Fill in the blanks
 - 1A. _____ introduced the indirect method of ophthalmoscopy.
 - 1B. _____ was first to propose the mechanism of colour vision.
 - 1C. The b-wave of ERG originates from _____.
 - 1D. _____ technique of Slit-lamp is useful in detection of nebular and macular opacities of the cornea.
 - 1E. Ophthalmic ultrasound is produced in _____ range.
 - 1F. _____ number of variables are required to calculate the power of the lens.
 - 1G. The synmed fieldmaster was designed by _____.
 - 1H. The a-wave originates from _____.
 - 1I. A device for stereoscopic examination of ocular fundus was described by _____.
 - 1J. _____ is used for assessing the details of the angle of the anterior chamber.

(1×10 = 10 marks)

2. Answer any **FIVE** questions:
 - 2A. Comment on magnification and field of vision of direct ophthalmoscope.
 - 2B. What is Achromatopsia? What are the two types of Achromatopsia?
 - 2C. Define scotoma.
 - 2D. What is the principle used in Gonioscopy?
 - 2E. Write short note on Projecto-light pointer.
 - 2F. What are the components of Electroretinogram?

(2×5 = 10 marks)

3. Answer any **FOUR** questions
 - 3A. Write briefly on the keratometers.
 - 3B. Comment on Confrontation procedure.
 - 3C. Comment on the displaying of ultrasonogram.
 - 3D. What are the indications and contra- indications of fundus angiography?

3E. Write a short note on slit-lamp biomicroscope. What are the techniques used? List the accessories used in slit-lamp biomicroscope.

(5×4 = 20 marks)

4. Answer the following:

4A. What are the clinical implications of colour vision testing procedures?

4B. Discuss elaborately on autorefractors.

(10+10 = 20 marks)

5. Answer any **ONE**.

5A. Write about:

- i) The clinical use of Binocular Indirect Ophthalmoscope.
- ii) List the conditions in which Binocular Indirect Ophthalmoscopy should be considered when it is not done on a routine basis.
- iii) The clinical procedure and clinical implications of Binocular Indirect Ophthalmoscope.

5B. Write about:

- i) The theory of instrumentation of gonioscopy.
- ii) Clinical uses of gonioscopy.
- iii) Comment on Goldman gonioscopic lens.
- iv) Clinical implications of gonioscopy.

(20 marks)

