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MANIPAL UNIVERSITY

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

SUBJECT: PATHOLOGY AND MICROBIOLOGY

Monday, December 10, 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 inflammation. What are the types of inflammation? Describe the vascular events in inflammation.

(2+3+5 = 10 marks)

2. Write short notes on:

(5×6 = 30 marks)

2A. Fat necrosis.
2B. Pathogenesis of thrombosis.
2C. Phagocytoas
2D. Metaplasia with examples.
2E. Classification of Leukemias.
2F. Hemophilia.

SECTION – B : MICROBIOLOGY : 40 MARKS

3. Classify bacteria based on morphology. Write the differences between prokaryotes and eukaryotes. Add a note on bacterial cell wall.

(2+3+5 = 10 marks)

4. Write briefly on the following:
4A. Hot air oven.
4B. TRIC agents.
4C. Koch's postulates

(5×3 = 15 marks)

5. Write short notes on the following:
5A. Enterovirus eye infection
5B. Disinfectants
5C. Keratomycosis.
5D. Acanthamoeba.
5E. Ig A antibody

(5×3 = 15 marks)

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MANIPAL UNIVERSITY

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

SUBJECT: PHARMACOLOGY

Tuesday, December 11, 2007

Time: 1½ Hrs. Max. Marks: 40

Answer the following questions.

1A. Define the terms pharmacokinetics and pharmacodynamics.
1B. Explain any TWO factors modifying drug action with example.

(1+1+2 = 4 marks)

2. Name TWO mydriatics which act by different mechanism. Explain their effect on intraocular pressure and light reflex.

(1+1½+1½= 4 marks)

3. Mention ONE use of the following with pharmacological basis for each:
i) Mannitol ii) Enalapril iii) Vitamin K

(2×3 = 6 marks)

4. Write briefly on the following:

(3×4 = 12 marks)

4A. Wetting agents.
4B. Biological agents used in ocular surgery.
4C. Prednisolone.
4D. Ketamine.

5A. List two synthetic opioids and two non-steroidal anti-inflammatory (NSAIDs) drugs.
5B. Explain two pharmacological actions of opioid analgesics.

(2+2 = 4 marks)

6. Write the drug treatment of :
6A. Trachoma
6B. Ocular myasthenia.
6C. Glaucoma.
6D. Organophosphorus poisoning.

(1×4 = 4 marks)

7. Mention TWO drugs used in the following clinical conditions.
7A. Viral keratitis
7B. Leprosy.
7C. Tuberculosis.
7D. Night blindness.
7E. Insomnia.
7F. Diabetes mellitus.

(1×6= 6 marks)

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MANIPAL UNIVERSITY

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

SUBJECT: OPTOMETRIC OPTICS

Wednesday, December 12, 2007

Time: 3 Hrs. Max. Marks: 80

1. Answer the following: (1×10 = 10 marks)

1A. Express focal length of a –2.87 D lens in mm.

1B. A prism power of 3 prism dioptres produces a displacement of 3 units at a distance of _____.

1C. Transpose the cross cylinder -4.00 DC x V/ -3.50DC x H into its alternate spherocylindrical form.

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

1E. What is ShapeWastage Factor?

1F. State the axis direction obtained when the following are transposed by Standard notation.
i) 19 ii) $127_{1/2}$

1G. Refractive index of PMMA and polycarbonate lens.

1H. Spectacle tool used for working concave surfaces is _____.

1I. In the bifocal specification, $22x17x2_{1/2}$, cut 5, 17 indicates _____.

1J. Cemented kryptok bifocals is otherwise known as _____ .

2. Answer any **TEN**. (5×10 = 50 marks)

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

2B. i) A –2.00 D periscopic lens is made in glass of refractive index 1.523.State its surface curvatures in reciprocal metres.

ii) An optician's lens measure reads –0.25D on a plane surface and +3.00D on one surface of a spherical lens. If the instrument is calibrated for spectacle crown glass n =1.523, what is the curvature of the surface?

2C. A –6.00 D spectacle lens is to be produced. After finishing the first surface with a. +4.00D spectacle tool workman discovers that in error, he has used glass of refractive index 1.62 of the 1.52 intended. With what spectacle tool must the second surface be worked so that the lens have the correct power of –6.00.

2D. Define using diagrams the following segment location terms jf
i) segment depth ii) segment drop iii) geometrical inset

2E. Short note on Fresnel prism and lenses.

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

2G. i) A lens system is made up from two thin co-axial lenses whose powers are +10.00 D and –10.00D separated by 5cm. Find the front and back vertex powers of the system.

ii) A-12.00 D lens corrects an eye for distance vision when fitted 12 mm from cornea. If the lens is to be repositioned 15 mm infront of the cornea what must its power become inorder to correct the eye.

2H. Consider the prescription R +2.00DS/+2.00DS x90°.Find the prismatic effect introduced by the lens when the eye views through a point 5mm above and 5mm inwards from the optical centre.

2I. Explain what is meant by toughened glass. How do you check that glass has been subjected to toughening process and is satisfactory?

2J. Explain the characteristics of the following group of filters

i) Contrast filters ii) Yellow absorbing filters iii) Neutral grey filters

2K. The following thin lenses are placed together in contact. Find the power of the thin lens which must be added to the combination in order to neutralize it

+1.50/+0.50 x 90°

-1.75/-0.75 x135°

+0.50/+0.50 x 180°

+0.50/-0.75 x45°

2L. A –20.00D lens is made up in lenticular form using a 20mm aperture. The lens is mounted at a dioptral distance of +37.00 from the eye's center of rotation. Calculate the angular field of view. What diameter must a +10.00 DS made to produce the same field of view as the –20.00 D lens specified above? Assume that the lenses are mount at the same distance from the eye.

3. Answer both.

(10×2 = 20 marks)

3A. i) An uncut spectacle lens is to be produced from a rough glass blank. Describe the various processes to which the blank is subjected during the surfacing operation.

ii) Briefly describe the defects caused on the lens during the production or working of the surface.

3B. i) Show that the catoptric surface powers of a lens in air, whose dioptric surface powersare F_1 and F_2 are given by

$\rightarrow$ $\rightarrow$

$F_1c = -2F_1/(n-1)$ $F_2c = 2nF_2/(n-1)$

$\leftarrow$ $\leftarrow$

$F_1c = 2nF_1/(n-1)$ $F_2c = -2F_2/(n-1)$

ii) A thin lens made in glass of refractive index 1.5 has surface powers of +4.00 D and -8.00 D. Find its catoptric surface powers.

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MANIPAL UNIVERSITY

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

SUBJECT: VISUAL OPTICS

Thursday, December 13, 2007

Time: 3 Hrs. Max. Marks: 80

1. Answer the following questions.

1A. Amplitude of accommodation of a 60 year old man as compiled by Fischer.

1B. A myope reads _____ coloured letters when overcorrected in duochrome test.

1C. An example of compound hyperopic astigmatism.

1D. The smallest retinal image that can be appreciated by a normal eye.

1E. Using a clock dial test for astigmatism under fog, where would you place the cylinder axis if the patient reported that 1-7 O'clock spoke was the most distinct.

1F. Far point of a +5.00 D hyperope.

(1×6 = 06 marks)

2. Answer the following questions.

2A. How can you refine cylinder power with Jackson crossed cylinder?

2B. List the anomalies of accommodation.

2C. Differentiate between i. Facultative hyperopia. ii. Absolute hyperopia.

2D. Define visual acuity. What do you mean when you say that your patient's visual acuity is $\frac{20}{80}$?

2E. Treatment options for a 50 year old presbyope walking into your clinic.

(2 × 5 = 10 marks)

3. Answer the following questions.

3A. What is aphakia? How are you planning to go ahead when a corrected aphake complaints he can read the newspaper better if he keeps it at arms length?

3B. What is the principle of subjective refraction?

3C. Given an uncorrected hyperopic eye with a far point of accommodation located 10cms behind the spectacle plane and a near point of accommodation 25cm behind of the spectacle plane. What are the: i. Range and ii. Amplitude of accommodation?

3D. Brief on 'Jack in the box phenomenon'.

(3 × 4 = 12 marks)

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

4A. Biometry.

4B. Insufficiency of accommodation.

4C. Optics of retinoscopy.

4D. Sturm's conoid.

4E. Bichrome test.

4F. Schematic and reduced eyes.

4G. Aetiology and optical condition in myopia.

4H. Snellen Test types.

(6 × 6 = 36 marks)

5. Define Hyperopia. Explain briefly on aetiology, optical condition, types and clinical features in hyperopia.

(16 marks)

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MANIPAL UNIVERSITY

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

SUBJECT: OPTOMETRIC INSTRUMENTS AND CLINICAL EXAMINATION OF VISUAL SYSTEM

Friday, December 14, 2007

Time: 3 Hrs. Max. Marks: 80

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

1A. The collecting system is made up of _____.

1B. _____ formulae allows us to determine the power of anterior corneal surface.

1C. _____ utilizes a focused crystal in an oscillating probe.

1D. Vergence is directly proportional to _____ of the target.

1E. Forcimeter was first introduced in the year _____.

1F. _____ made the Aimark projection perimeter.

1G. In 1958 _____ reported the virtues of binocular indirect ophthalmoscope.

1H. _____ developed the first ERG electrode embedded in a contact lens.

1I. The EOG ratio increases with increasing level of _____.

1J. Dvorine pseudisochromatic test plate was designed primarily for identifying patients with ___.

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

2A. What are the factors affecting the amplitude of ultrasonography?

2B. What are the advantages of "afocal telescopes"?

2C. What are the factors affecting the size of the aerial image in binocular indirect ophthalmoscopy?

2D. What are the clinical implications of ERG?

2E. What is the principle of fluorescein angiography?

✍ **Answer any FOUR questions [Each question carries 5 marks].**

3A. What is the non-badal principle and what are the disadvantages?

3B. Comment on the scoring and interpretation of results in colour vision testing.

3C. What are the clinical indications for gonioscopy?

3D. Comment on image size and depth and field of view of binocular indirect ophthamoscope.

3E. Write a note on the principles used in autorefractors.

✍ **Answer the following questions [Each question carries 10 marks].**

4A. What are the clinical interpretation for ERG?

4B. Comment on lensometers.

✍ **Answer any ONE [Each question carries 20 marks]**

5A. Comment elaborately on VEP.

5B. What are the commonly used visual field screening procedures? Explain each of them.