Reg. No.										

MANIPAL UNIVERSITY

SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2011

SUBJECT: PATHOLOGY AND MICROBIOLOGY
(NEW REGULATION)

Monday, June 06, 2011

Time: 14:00-17:00 Hrs. Max. Marks: 80

- **ANSWER SECTION 'A' AND SECTION 'B' IN TWO SEPARATE ANSWER BOOKS.**
- **Answer ALL the questions. Draw diagrams wherever appropriate:**

SECTION – A : PATHOLOGY : 40 MARKS

1. Define and give the FAB classification of acute leukemias. Describe the differences between the types of acute leukemias?

(1+2+5 = 8 marks)

2. Define shock. Mention the types of shock. Describe the pathogenesis of septic shock.

(1+2+4 = 7 marks)

3. **Write short notes on:**

3A. Leprosy
3B. Thalassemia
3C. Phagocytosis
3D. Types of necrosis with examples
3E. Fate of a thrombus.

(5×5 = 25 marks)

SECTION – B : MICROBIOLOGY : 40 MARKS

4. Classify bacteria based on oxygen requirement and temperature. Explain with the help of a graph the physiology of bacterial growth.

(1+2+5 = 8 marks)

5. Define and classify sterilization. Explain in detail the working principle of the autoclave.

(2+5 = 7 marks)

6. **Write short notes on:**

6A. Louis Pasteur.
6B. Bacterial cell envelope.
6C. Arthus reaction.
6D. Morphological classification of fungi.
6E. Trachoma.

(5×5 = 25 marks)

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MANIPAL UNIVERSITY

SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2011

SUBJECT: PHARMACOLOGY

(NEW REGULATION)

Wednesday, June 08, 2011

Time: 14:00-15:30 Hrs. Max. Marks: 40

Answer All The Questions.

1. Mention two each antiviral, antibacterial and antifungal drugs used in ophthalmic conditions. (3 marks)

2. List two topical mydriatics and miotics. (2 marks)

3. Write briefly on:

3A. Actions and uses of atropine substitutes on eye.
3B. Wetting agents.
3C. Vitreous substitutes.
3D. Role of vitamins in ophthalmic disease.
3E. Ocular routes of drug administration.

(3×5 = 15 marks)

4. Enumerate two groups of antihypertensives with an example for each. (2 marks)

5. List two each centrally and peripherally acting skeletal muscle relaxants. Enumerate two uses of skeletal muscle relaxants. (3 marks)

6. What do you mean by the term antiplatelet drugs? Give two examples and list two uses of antiplatelet drugs. (3 marks)

7. Explain, why ethambutol should be avoided in children. (2 marks)

8. List two differences between diclofenac and paracetamol. Enumerate two uses of paracetamol. (2 marks)

9. Write a brief note with an example:

9A. Teratogenecity.
9B. Prodrugs.
9C. Proton pump inhibitors.
9D. Sulfonylureas.

(2×4 = 8 marks)

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MANIPAL UNIVERSITY

SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2011

SUBJECT: OPTOMETRIC AND DISPENSING OPTICS

(COMMON FOR BOTH OLD AND NEW REGULATION)

Friday, June 10, 2011

Time: 14:00-17:00 Hrs. Max. Marks: 80

1. Answer the Following:

1A. Transpose the prescription into one of its alternate forms:

- $\pm$ / - 4.00DC*55

1B. What is a best form spherical lens?

1C. Name two glass cements.

1D. True or False? Individuals with hair that is just starting to gray will find that choosing a silver frame will make their gray component of their hair more noticeable and should be routinely avoided.

1E. Divide the 4$^{\blacktriangle}$ BU on right eye before both the eyes.

1F. The problem of annoying internal lens reflections occurs most often in

i) High plus-powered clear lenses
ii) Low minus-powered clear lens
iii) Scratch resistant coated clear lens
iv) Anti reflection coated clear lenses
v) Sunlenses

1G. Define the Real field of view of ophthalmic lenses.

1H. Give reason. It is better to use recumbent prisms as a single bar prism which extends across the whole front of the frame.

1I. What is the formula for reflectance?

1J. Name two differences between D-Bifocals and Kryptok Bifocals.

(1×10 = 10 marks)

2. Answer any TEN:

2A. Write short notes on:

i) Mathematical sign convention
ii) Mechanical sign convention

2B. Write short notes on Spherical Aberration.

2C. Write short notes on Polycarbonate lenses.

2D. Write a short note on the selection of spectacles for a High Myope.

2E. It is required to deposit an antireflection coating upon glass of refractive index 1.6.

i) What must be the refractive index of the coating material in order to satisfy the amplitude condition?

ii) Assuming that the correct coating material can be obtained. What must be its thickness if it is desired to produce zero reflection for a wavelength of 555nm?

2F. Solve them:

i) Derive a formula for Thickness difference of a prism.

ii) Divide $4^{\blacktriangle}$BO on right eye before both the eyes.

iii) Convert 3^0 of deviation into prism diopters.

2G. Show that the semi-angular field of view, Φ, produced by a thin lens of power F and diameter 2y mounted 25mm in front of the center of rotation of an eye can be found from: $\tan\Phi = y(40\text{-}F) / 1000$

2H. Write a short note on the effects of Solar Radiation on the ocular tissue.

2I. Mention the Optical and Mechanical requirements of Bifocal lenses.

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

2K. Write briefly about the following designs of Progressive Addition Lenses:

i) Advanced soft design

ii) Mono-design

iii) Symmetric lens design

iv) Multi-Design

v) Soft design

2L. With the help of a neat figure explain the refraction of light rays through a Convex Spherical and Plano-concave lens.

(5×10 = 50 marks)

3. Answer Both:

3A. Describe the parts of a Spectacle Frame and with the help of a neat figure explain the Boxing system.

3B. Write on the patient selection and dispensing of Progressive Addition Lens.

(10×2 = 20 marks)

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MANIPAL UNIVERSITY

SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2011

SUBJECT: VISUAL OPTICS
(NEW REGULATION)
Monday, June 13, 2011

Time: 14:00-17:00 Hrs. Max. Marks: 80

1. Fill in the blanks:

1A. _____ type of astigmatism is present physiologically due to constant pressure of upper eyelid upon the eye.

1B. Examiner records _____ as static Retinoscopy finding if working at a distance of 50 cm, neutral motion is found in the 90-degree meridian with plano and in the 180-degree meridian with +1.00DSph.

1C. In Gullstrand's schematic eye, anterior lens surface is at _____ distance from the corneal surface.

1D. N notation chart used for near vision assessment is otherwise known as _____.

1E. _____ would be the required power of a correcting lens if far point of an uncorrected eye is located at 16.67cm in front of the eye.

1F. Condition of the eye, where near point of accommodation recedes with age _____

(1×6 = 6 marks)

2. Answer the following questions:

2A. A person having refraction OD: +3.00DSph / -1.00DCyl×90. Draw Sturm's Conoid for this particular eye condition and state which type of astigmatism is this?

2B. Write about the optical condition in Aphakia.

2C. What are the near vision charts available in optometry practice?

2D. Which of the horizontal disjunctive movements (convergence or divergence) is more highly developed function? Give evidence.

2E. Using the clock dial test for astigmatism under fog, where would you place the cylinder axis if the patient reported that

i) the 3 to 9 o'clock spoke was the most distinct?

ii) the 11 to 5 o'clock spoke was the most distinct?

(2×5 = 10 marks)

3. Answer the following questions:

3A. In using Jackson Crossed Cylinder for refining cylinder power for a patient who has with the rule astigmatism, where are the vertical and horizontal focal lines

i) When the patient's astigmatism is properly corrected?

ii) When the minus axis of the crossed cylinder is placed at 180 degrees?

iii) When the minus axis of the crossed cylinder is placed at 90 degrees?

3B. Write about the clinical pathology of hypermetropia.

3C. Calculate the amount of ocular accommodation required for a corrected 3.00D myope to see an object placed at 40cm distance.

3D. What are the types of myopia? How do you clinically differentiate them?

(3×4 = 12 marks)

4. Answer any SIX of the following:

4A. What are the types of hypermetropia? Clinically how can you find out which type of hypermetropia is present?

4B. Write a note on etiology, symptoms and treatment of astigmatism.

4C. Define aniseikonia. Write a note on symptoms and treatment given for aniseikonia.

4D. Write short note on biometry.

4E. Write about charts available to measure contrast sensitivity.

4F. Write about clinical pathology of myopia.

4G. What are the tests available to refine the direction of astigmatism? Explain.

4H. What is static retinoscopy? What are the special difficulties in retinoscopy?

(6×6 = 36 marks)

5. What is accommodation? Explain in detail about anomalies of accommodation and their treatment.

(1+15 = 16 marks)

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MANIPAL UNIVERSITY

SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2011

SUBJECT: RESEARCH METHODOLOGY AND STATISTICS
(NEW REGULATION)

Wednesday, June 15, 2011

Time: 14:00-17:00 Hrs. Max. Marks: 80

1A. Briefly explain research process.

1B. What do you mean by validity of a tool? Define the various types of validity.

(5+5 = 10 marks)

2A. Discuss quantitative and qualitative variables with examples.

2B. Present the following data using a pie diagram.

Causes of low birth weight in 360 children in a city

Causes	No. of Children
Maternal malnutrition	180
Lack of antenatal care	90
Systemic disease of mother	30
Congenital defects in children	15
Multiple pregnancy	45

(5+5 = 10 marks)

3A. With the help of an example explain stratified random sampling.

3B. Briefly explain case report studies.

(5+5 = 10 marks)

4A. Define range, inter quartile range, variance, standard deviation and coefficient of variation.

4B. Erythrocyte Sedimentation Rate (ESR) readings (in mm) of 12 tuberculosis patients are given below. Calculate the various measures of central tendency for this data.

12	8	11	9	8	15	8	12	8	9	11	10

(5+5 = 10 marks)

5. From the following data of a city during the year 2005, Calculate:

i. Infant mortality rate

ii. Post Neo-natal Mortality Rate

iii. Crude birth rate

iv. Maternal mortality rate

v. Peri-natal Mortality Rate

Data:

Mid-year population for the year 2005	440,000
Late fetal deaths	29
No. of live births	5200
No. of infant deaths	423
No. of maternal deaths	89
No. of infants deaths in the 1st month of life	168
No. of infants deaths within 7 days of age	83

(10 marks)

6. Write short notes on:

6A. Prevalence and incidence with examples.

6B. Scales of measurements.

6C. Histogram with an example.

6D. Health information system and its requirements.

6E. Normal distribution and its properties.

6F. Correlation.

(5×6 = 30 marks)

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MANIPAL UNIVERSITY

SECOND YEAR B.Sc. OPTOMETRY DEGREE EXAMINATION – JUNE 2011

SUBJECT: OPTOMETRIC INSTRUMENTS AND CLINICAL EXAMINATION OF VISUAL SYSTEM (NEW REGULATION)

Friday June 17, 2011

Time: 14:00-17:00 Hrs. Max. Marks: 80

✍ **Draw diagrams wherever necessary.**

1. Fill in the blanks:

1A. The clinical procedure used to measure the curvature of anterior surface of cornea is known as _____.

1B. Corneal topographers utilizes _____ (Refraction / Reflection) property of the cornea to capture its images.

1C. A 'with' motion in retinoscopy while using plane mirror can be neutralized by _____ lens.

1D. The type of trial set lenses designed for refraction is called _____.

1E. _____ (High/Low) is the preferred magnification while performing diffuse illumination technique.

1F. _____ is the diameter of Applanation probe.

1G. _____ is the angling of all the 4 mirrors in Zeiss 4 mirror goniolens.

1H. The higher frequency of an ultrasound wave causes _____ (more/less) penetration.

1I. _____ lens provides a non-contact method of direct fundus biomicroscopy.

1J. _____ described the procedure of static perimetry.

(1×10 = 10 marks)

2. Answer any FIVE questions:

2A. Comment about Sodium Fluorescein.

2B. What are the uses of afocal telescope in Lensometer?

2C. Define angle of anterior chamber. Record the AC angle structures starting from posterior to anterior.

2D. Define scotoma.

2E. Name the theories of color vision.

2F. Write down the theory of FFA.

(2×5 = 10 marks)

3. Answer any FOUR questions:

3A. Explain in detail about the parts of illumination system of a slit-lamp.

3B. Comment on Tonometric Mire.

3C. Explain the optical principle and clinical procedure of Keratometry.

3D. Explain all the designs employed in Pseudo isochromatic plate tests for color vision assessment.

3E. Explain the clinical procedure of Inter Pupillary Distance measurement.

(5×4 = 20 marks)

4. Answer the following:

4A. Explain the changes that happen in a streak retinoscope (Heine – Beta 200) while moving the sleeve 'up or down' with neat diagrams.

4B. Write a note on Videokeratography and its role in Refractive surgery.

(10×2 = 20 marks)

5. Answer any ONE:

5A. Explain the principle of Indirect Gonioscopy. Discuss various indirect gonioscopes in detail with its clinical procedures.

5B. What are the uses of Ultrasonography in Ophthalmic practice? Explain A-Scan in detail.

(20×1 = 20 marks)