Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - **12-Dec-2022**

Time: Three Hours **Max. Marks: 80 Marks**

Basic Biochemistry Ocular Biochemistry and Nutrition (RS-3)

Q.P. CODE: 3101

Section A – Basic Biochemistry (40 Marks)

Your answers should be specific to the questions asked

Draw neat, labeled diagrams wherever necessary

(Note : Both QP Codes 3101 and 3102 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Explain the sources, RDA, absorption, biochemical functions and deficiency manifestations of Vitamin A
2. Define Glycolysis. Enumerate the steps of Glycolysis. Add a note on its regulation and energetics.
3. Define enzymes. Explain the mechanism for enzyme action. Mention any three diagnostic enzymes and write their clinical importance.

SHORT ESSAYS (Answer any Two) **2 x 5 = 10 Marks**

4. Explain electron transport chain with neat labelled diagram.
5. Describe the structure and functions of collagen.
6. List the biochemical functions of calcium.

SHORT ANSWERS **5 x 2 = 10 Marks**

7. Transamination.
8. Respiratory acidosis.
9. Functions of Zinc.
10. Essential fatty acids.
11. List the blood buffers.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 12-Dec-2022

Time: Three Hours **Max. Marks: 80 Marks**

Basic Biochemistry and Ocular Biochemistry and Nutrition
Section B: Ocular Biochemistry and Nutrition (40 Marks)
(Revised Scheme – 3)
Q.P. CODE: 3102

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note: Both QP Codes 3101 and 3102 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any Two) **2 x 10 = 20 Marks**

1. Write about biochemical composition of tear film and mention its functions.
2. Write a note on formation of Aqueous Humor and mention its functions.
3. Explain in detail about Food groups with the help of food pyramid.

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. Mention the factors affecting Lens transparency.
5. Describe Glucose Metabolism of Cornea.
6. Write a short note on structure and composition of Vitreous Humor.

SHORT ANSWERS **5 x 2 = 10 Marks**

7. What is Balanced Diet?
8. How much energy is derived from 1gm each of Carbohydrate, Proteins and Fat?
9. ATP
10. Rhodopsin and Iodopsin
11. Hyperlipidemia

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination – 14-Dec-2022

Time: 3 Hours **Max. Marks: 80**
Marks

General Anatomy and Physiology, Ocular Anatomy and Physiology
Section A: General Anatomy and Physiology (40 Marks)
(Revised Scheme – 3)
Q.P. Code : 3103

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

(Note : Both QP Codes 3103 and 3104 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any Two) **2 x 10 = 20 Marks**

1. What is arterial blood pressure? How is it measured?
2. Describe neuron. Draw diagram label the parts.
3. Composition of blood

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. Blood groups
5. Plasma protein and their functions
6. Properties of cardiac muscle

SHORT ANSWERS **5 x 2 = 10 Marks**

7. Hormones
8. Aorta
9. Circle of villus
10. Columnar Epithelium.
11. Haemoglobin

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination – 14-Dec-2022

Time: 3 Hours **Max. Marks: 80**

General Anatomy and Physiology, Ocular Anatomy and Physiology
Section B: Ocular Anatomy and Physiology (40 Marks)
(Revised Scheme – 3)
Q.P. Code : 3104

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

(Note : Both QP Codes 3103 and 3104 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any Two) **2x 10 = 20 Marks**

1. Write in details about general arrangements, structure, glands, arteries, veins of conjunctiva
2. Write a note on aqueous humor production, circulation and drainage
3. Write in details about microstructure of retina

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. Write a short note on gross anatomy of ciliary body
5. Write a short note on metabolism of crystalline lens
6. Write a short on corneal wound healing

SHORT ANSWERS **5 x 2 = 10 Marks**

7. Mention the age related changes in lens
8. Mention the functions of ciliary muscles
9. Explain HMP shunt in corneal metabolism
10. How will radiation affect crystalline lens?
11. Mention the composition of vitreous humor

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Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 07-Jan-2022

Time: 3 Hours **Max. Marks: 80 Marks**

Physical and Principles of Lighting, Geometric Optics
Section A: Physical and Principles of Lighting (40 Marks)
(Revised Scheme – 3)
Q.P. Code : 3105

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

(Note : Both QP Codes 3105 and 3106 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any Two) **2 x 10 = 20 Marks**

1. Explain the production, detection and analysis of various kinds of polarized light.
2. Obtain the expression for the wavelength of monochromatic light by setting up Newton's rings.
3. Define the terms, Luminous flux, luminous intensity and intensity of illumination. Mention the units of each one of them. How the reflection factor of a mirror is estimated using a photometer?

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. Give the theory of zone plate.
5. Plane polarized light of wavelength 540nm is incident perpendicularly on a quartz plate cut with faces parallel to optic axis. Find the thickness of quartz plate, which introduces phase difference of 90° between e-ray and o-ray.
6. How do you account for the blue color of the sky?

SHORT ANSWERS **5 x 2 = 10 M arks**

7. Define interference.
8. Define specific rotation
9. Mention any two applications of Michelson interferometer.
10. Define Brewster's law.
11. Define resolving power of a grating.

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Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 07-Jan-2022

Time: 3 Hours **Max. Marks: 80 Marks**

Physical and Principles of Lighting, Geometric Optics
Section B: Geometric Optics (40 Marks)
(Revised Scheme – 3)
Q.P. Code : 3106

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

(Note : Both QP Codes 3105 and 3106 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any Two) **2 x 10 = 20 Marks**

1. Derive thick lens formulas.
2. What are the major defects of the image formed by a convex lens? Discuss in detail.
3. Obtain Gauss formula for refraction at a single spherical surface, and hence the lens maker's formula.

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. What is dispersive power of a prism? Obtain the condition for combination of two thin prisms to produce deviation without dispersion.
5. Derive the mirror equation.
6. In an optical fibre the core material has refractive index 1.6 and refractive index of clad material is 1.5. Calculate the value of angle of acceptance and numerical aperture.

SHORT ANSWERS **5 x 2 = 10 Marks**

7. What are entrance pupil and exit pupil of a lens?
8. Mention the types of mirrors.
9. Mention any four applications of laser.
10. State the conditions for total internal reflection.
11. Write in brief about refractive anomalies of eye.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 03-Jan-2022

Time: Three Hours **Max. Marks: 100 Marks**

BASIC BIOCHEMISTRY AND NUTRITION (RS-4)
Q.P. CODE: 3340

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Explain the sources, RDA, functions and deficiency manifestations of vitamin A.
2. Explain steps of Beta oxidation of fatty acids. Add a note on Energetics.

   Or

   Describe steps of Citric acid cycle and discuss about its regulation and energetics.

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. What are enzymes? Write the classification of enzymes with suitable example.
4. Write the sources, functions of deficiency of Niacin.
5. Role of buffers in regulation of acid base balance.

   Or

   Functions of calcium.
6. Urea cycle and its disorder.
7. Write the composition and functions of Mucopolysaccharides.
8. Explain fluid mosaic model with neat labelled diagram.
9. Differences between DNA and RNA.
10. Describe the digestion and absorption of carbohydrates.

    Or

    Explain absorption, Transport and functions of Iron in the body.
11. What are Biologically important peptides? Give any four examples.
12. Phospholipids and what are phospholipids? List any four functions.

SHORT ANSWER (Question No 15 & 20 choice) **10 x 3 = 30 Marks**

13. Beri Beri.
14. Nitrogen balance.
15. Write the difference between Kwashiorkar and Marasmus.

    Or

    What are Immunoglobulins? Name the different types.
16. Essential fatty acids.
17. Vitamin A cycle.
18. What are free radicals? Give two examples.
19. Vitamin D deficiency.
20. Disorders associated with collagen structure.

    Or

    Low birth weight.
21. Specialized products formed from Phenylalanine and Tyrosine.
22. Causes of Atherosclerosis.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 07-Jan-2022

Time: Three Hours **Max. Marks: 100 Marks**

OCULAR ANATOMY, OCULAR PHYSIOLOGY AND OCULAR BIOCHEMISTRY
(REVISED SCHEME – 4)
Q.P. CODE: 3343

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. What is vitamin A cycle? Brief note on photoreceptor layer of retina with appropriate diagram.
2. Describe the formation of aqueous humour and its outflow system.

   Or

   Describe the structure of tear film with neat labeled diagram and mention its function.

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Elaborate on visual pathway with neat labeled diagram.
4. Discuss the structure and clinical significance of blood retinal barrier.
5. Explain the glucose metabolic pathways of cornea.

   Or

   Explain the factors affecting lens transparency.
6. Short note on special regions of sclera.
7. Describe the arrangement of lens fibers of crystalline lens.
8. Short note on glands of eyelids.
9. What is near reflex triad? Write its significance.
10. Explain the arrangement of nerve fibers layer of retina.

    Or

    List the photoreceptor layers of retina.
11. Describe the attachment of vitreous and physiological properties of vitreous humor.
12. Write the course, branches and relations of 3rd cranial nerve.

SHORT ANSWER (Question No 15 & 20 choice) **10 x 3 = 30 Marks**

13. Cloquets canal and tenons capsule.
14. Name the muscles present in Iris and its actions.
15. Achromatopsia and Presbyopia.

    Or

    List theories of color vision.
16. Action and nerve supply of lateral rectus muscle.
17. Coats of eyeball.
18. Conjunctival fornices.
19. Ora serrata with labeled diagram.
20. What are agonist and antagonists?

    Or

    Mention structures of eye derived from surface ectoderm.
21. Visual acuity and refractive errors.
22. List the Eye manifestations of Vitamin A deficiency.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 10-Jan-2022

Time: Three Hours **Max. Marks: 100 Marks**

PHYSICAL AND PRINCIPLES OF LIGHTING, GEOMETRIC OPTICS
SECTION A – PHYSICAL AND PRINCIPLES OF LIGHTING (50 MARKS)
(REVISED SCHEME – 4)
Q.P. CODE: 3344

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note : Both QP Codes 3344 and 3345 are to be answered within total duration of 3 hours)

LONG ESSAYS (First Question Choice) **1 x 10 = 10 Marks**

1. Discuss in detail the types of optical fibres.

   Or

   What is photo-electric effect? Deduce Einstein's photo-electric equation. How the experimental observations are explained by Einstein's theory.

SHORT ESSAYS (Question No. 5 choice) **5 x 5 = 25 Marks**

2. Explain the following terms with reference to a simple harmonic motion. – i) Amplitude ii) Wavelength iii) Frequency iv) Period and v) Phase

3. Explain theory of interference of light using young's double slit experiment.

4. Explain in detail Raman effect.

5. Draw a neat diagram of Lummer – Brodhun photometer. Explain how it can be used to compare the luminous intensities of light sources?

   Or

   A parallel beam of light of wavelength = 546 nm is incident at an angle of 30^0 on a plane transmission grating which has 6000 lines/cm. Find the highest order spectrum that can be produced.

6. State and explain Brewster's law and Malus law.

SHORT ANSWER (Question No. 10 choice) **5 x 3 = 15 Marks**

7. What are transverse and longitudinal waves? Explain with examples.

8. What are the conditions required for observing interference pattern with good contrast.

9. What is specific rotation? Explain the terms.

10. What is a visual task? What are the factors affecting visual tasks?

    Or

    In a Newton's rings experiment the diameter of the 15^{th} and 5^{th} rings are 0.590 cm and 0.336 cm respectively. If the wavelength of the light used is 589.3 nm, calculate the radius of curvature of the lens.

11. Write a note on Rayleigh scattering.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 10-Jan-2022

Time: Three Hours **Max. Marks: 100 Marks**

PHYSICAL AND PRINCIPLES OF LIGHTING, GEOMETRIC OPTICS
SECTION B – GEOMETRIC OPTICS (50 MARKS)
(REVISED SCHEME – 4)
Q.P. CODE: 3345

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note : Both QP Codes 3344 and 3345 are to be answered within total duration of 3 hours)

LONG ESSAYS (First Question Choice) **1 x 10 = 10 Marks**

1. State Fermat's principle and deduce the laws of refraction by applying the principle.

   Or

   Obtain the condition for two small angled prisms to produce (a) Deviation without dispersion (b) Dispersion without deviation

SHORT ESSAYS (Question No. 5 choice) **5 x 5 = 25 Marks**

2. What are the cardinal points of a thick lens? Define all of them.
3. The magnification produced by a convex lens was found to be twice as great when the object is 20 cm from it, as when it was 30 cm from it. Calculate the focal length of the lens.
4. What are the laws of reflection and refraction? Explain with diagram.
5. Derive the lens maker's formula for thin lens.

   Or

   Write in detail about chromatic aberration.
6. Obtain the expression for two thin lenses kept separated.

SHORT ANSWER (Question No. 10 choice) **5 x 3 = 15 Marks**

7. Difference between real and virtual image.
8. What is normal shift? Write the expression for the same.
9. Explain the use of spherical mirrors.
10. Define power of a lens. Mention the unit.

    Or

    What is an ophthalmic prism? Mention its use in Optometry.
11. Define total internal reflection.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 05-Jul-2022

Time: Three Hours **Max. Marks: 80 Marks**

Basic Biochemistry Ocular Biochemistry and Nutrition (RS-3)
Q.P. CODE: 3101

Section A – Basic Biochemistry (40 Marks)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note : Both QP Codes 3101 and 3102 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Describe the digestion and absorption of proteins
2. Explain the ketone body metabolism. Write a note on main causes for the formation of fatty liver
3. Describe the sources, RDA, biochemical functions and disorders of vitamin D

SHORT ESSAYS (Answer any Two) **2 x 5 = 10 Marks**

4. Explain specific dynamic action
5. Discuss the bicarbonate buffer system
6. Write a note on essential fatty acids

SHORT ANSWERS **5 x 2 = 10 Marks**

7. What is Beri-Beri?
8. Explain Mitochondria
9. Write any two differences between DNA and RNA
10. Name the two coenzyme forms of niacin
11. What are glycosaminoglycans?

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 05-Jul-2022

Time: Three Hours **Max. Marks: 80 Marks**

Basic Biochemistry and Ocular Biochemistry and Nutrition
Section B: Ocular Biochemistry and Nutrition (40 Marks)
(Revised Scheme – 3)
Q.P. CODE: 3102

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note: Both QP Codes 3101 and 3102 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any Two) **2 x 10 = 20 Marks**

1. Brief on ocular biochemistry in clinical optometric practice
2. Write briefly about mineral deficiency
3. Composition of aqueous humour and clinical impression

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. Draw and label the diagram of visual cycle. Explain the cycle
5. The functions of tear film and physical and chemical property of it
6. Write a note on iron deficiency

SHORT ANSWERS **5 x 2 = 10 Marks**

7. Write on ageing and corneal changes
8. What are the functions of ciliary body?
9. Give some examples for protein rich food and function of it
10. Write a note on low birth weight
11. Tear substitutes

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination – 07-Jul-2022

Time: 3 Hours **Max. Marks: 80 Marks**

General Anatomy and Physiology, Ocular Anatomy and Physiology
Section A: General Anatomy and Physiology (40 Marks)
(Revised Scheme – 3)
Q.P. Code : 3103

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

(Note : Both QP Codes 3103 and 3104 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any Two) **2 x 10 = 20 Marks**

1. Describe mechanics of respiration.
2. Describe parts of nephron with neat diagram.
3. What is arterial blood pressure? How it is measured?

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. Development of red blood corpuscles.
5. Components of cartilage, types of cartilage with diagram.
6. What are hormones? Mention the difference between endocrine (hormones) and exocrine (enzymes).

SHORT ANSWERS **5 x 2 = 10 Marks**

7. Lymph
8. Cartilage
9. Pancreatic juice
10. Hemostasis
11. Leucocytosis

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination – 07-Jul-2022

Time: 3 Hours **Max. Marks: 80 Marks**

General Anatomy and Physiology, Ocular Anatomy and Physiology
Section B: Ocular Anatomy and Physiology (40 Marks)
(Revised Scheme – 3)
Q.P. Code : 3104

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

(Note : Both QP Codes 3103 and 3104 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any Two) **2x 10 = 20 Marks**

1. Explain in detail about the anatomy of retina, its blood supply & nerve supply.
2. What are the 2 theories that have been put forward to explain the peculiar arrangement of corneal stromal lamellae?
3. Write in detail about the action of vertical and horizontal rectus muscle.

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. Structure of tear film & its function.
5. Aqueous outflow system.
6. Structure of crystalline lens with diagram.

SHORT ANSWERS **5 x 2 = 10 Marks**

7. Plica semilunaris
8. What is papillomacular bundle?
9. Name 2 structure of Angle of anterior chamber.
10. What yoke muscles?
11. What is myopia?

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Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 16-Dec-2022

Time: 3 Hours **Max. Marks: 80 Marks**

Physical and Principles of Lighting, Geometric Optics
Section A: Physical and Principles of Lighting (40 Marks)
(Revised Scheme – 3)
Q.P. Code : 3105

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

(Note : Both QP Codes 3105 and 3106 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any Two) **2 x 10 = 20 Marks**

1. Explain how will you determine the wavelength of light using plane transmission grating (normal incidence).
2. Explain the theory of interference in detail.
3. Deduce the grating equation for (a) minimum deviation (b) normal incidence.

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. What is a zone plate? Compare it with a convex lens.
5. A plane wave front of light of wavelength 500nm falls on an aperture and the diffraction pattern is observed in an eyepiece at a distance of 1m from the aperture. Find the radius of 100^{th} half period element and the area of h.p. zone.
6. Obtain the expression for dispersive power of grating. How it differs from its resolving power.

SHORT ANSWERS **5 x 2 = 10 Marks**

7. What is photo electric effect?
8. What are the differences between emission and absorption spectra?
9. What is Raman effect?
10. Define Malus law.
11. Define PHOT.

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Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 16-Dec-2022

Time: 3 Hours **Max. Marks: 80 Marks**

Physical and Principles of Lighting, Geometric Optics
Section B: Geometric Optics (40 Marks)
(Revised Scheme – 3)
Q.P. Code : 3106

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

(Note : Both QP Codes 3105 and 3106 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any Two) **2 x 10 = 20 Marks**

1. Deduce the prism formula and the expression for the deviation produced by a thin prism?
2. Obtain the expression for equivalent focal length of two lenses kept (a) in contact (b) Separated
3. State the laws of photo electric emission. Deduce Einstein's photo electric equation.

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. State Fermat's law of refraction. Obtain the expression for the same.
5. Derive the mirror equation.
6. A point source of light is located 20cm in front of a convex mirror with focal length 15cm Determine the position and character of the image point.

SHORT ANSWERS **5 x 2 = 10 Marks**

7. Define power of lens.
8. Define dispersive power of a prism.
9. Mention any four applications of laser.
10. Give the uses of spherical mirror.
11. What is the principle of an optical fiber? Mention its applications.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 12-Dec-2022

Time: Three Hours **Max. Marks: 100 Marks**

BASIC BIOCHEMISTRY AND NUTRITION (RS-4)

Q.P. CODE: 3340

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. What are Phospholipids? Classify them with suitable examples. Explain the functions of phospholipids.
2. What is the normal blood urea level? How ammonia is converted to urea?

   Or

   Explain the role of buffers in regulation of acid base balance. Add a note on Metabolic Acidosis.

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Explain the sources and functions of Vitamin D.
4. Define and classify enzymes with examples.
5. Name the plasma proteins. Enumerate the functions of plasma proteins.

   Or

   Discuss deficiency manifestation of Iron.
6. Explain Protein Energy Malnutrition.
7. Write the composition and functions of Mucopolysaccharides.
8. **what is peptide bond. Name biologically important Peptides**
9. Describe the steps and energetics of Glycolysis.
10. Explain the Co-enzyme forms, Biochemical functions of Riboflavin.

    Or

    What are antioxidants? Write about enzyme antioxidant system.
11. Structure of t-RNA.
12. Pellagra.

SHORT ANSWER (Question No 15 & 20 choice) **10 x 3 = 30 Marks**

13. Functions of Vitamin K
14. Essential Fatty acids.
15. Name the different Muscle Proteins and their function.

    Or

    Name the specialized products formed from Glycine.
16. Ocular manifestation of Vitamin A
17. Nitrogen balance.
18. What are Ketone bodies? Name the test done for the detection?
19. List any two significance of HMP shunt pathway.
20. Write the biological reference interval of a) Serum Calcium b) Serum Sodium c) Serum Creatinine

    OR

    What are essential amino acids? Give examples.
21. Disorders associated with collagen.
22. Scurvy.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 14-Dec-2022

Time: Three Hours **Max. Marks: 100 Marks**

GENERAL ANATOMY AND GENERAL PHYSIOLOGY (RS-4)
Section A: GENERAL ANATOMY– (50 Marks)
Q.P. CODE: 3341

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note: Both QP Codes 3341 and 3342 are to be answered within total duration of 3 hours)

LONG ESSAYS (First Question Choice) **1 x 10 = 10 Marks**

1. List the parts of digestive system and explain in detail stomach.

   Or

   What is endocrine gland? List the endocrine glands. Write the anatomy of pituitary gland.

SHORT ESSAYS (Question No 5 choice) **5 x 5 = 25 Marks**

2. Write difference between Artery and Vein with diagram.
3. Thin skin.
4. Name bones of Orbit.
5. Structure of Kidney.

   Or

   Name different parts of central nervous system and write a note on cerebrum.

6. Anatomy of Lungs.

SHORT ANSWER (Question No. 10 choice) **5 x 3 = 15 Marks**

7. Draw a neat labelled diagram of Neuron.
8. Name cranial nerves in order.
9. Parts of internal ear.
10. Ovary.

    Or

    Name ventricles of Brain.

11. Name salivary glands.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 14-Dec-2022

Time: Three Hours **Max. Marks: 100 Marks**

GENERAL ANATOMY AND GENERAL PHYSIOLOGY (RS-4)
Section B: GENERAL PHYSIOLOGY– (50 Marks)
Q.P. CODE: 3342

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note: Both QP Codes 3341 and 3342 are to be answered within total duration of 3 hours)

LONG ESSAYS (First Question Choice) **1 x 10 = 10 Marks**

1. Using neat, labelled diagram. Explain the various stages of erythropoiesis. Add a note on factors affecting erythropoiesis.

   Or

   Enumerate the hormones of the anterior pituitary gland, explain the detail the action of Growth Hormone.

SHORT ESSAYS (Question No 5 choice) **5 x 5 = 25 Marks**

2. Functions of Basal Ganglia.
3. Contraceptive methods in Males.
4. Define blood pressure. Describe short term regulation of blood pressure.
5. Oxygen dissociation curve.

   Or

   With labelled diagram explain the parts of the conducting system of the heart.
6. Coronary circulation.

SHORT ANSWER (Question No. 10 choice) **5 x 3 = 15 Marks**

7. Hypoxia.
8. Anaemia.
9. Functions of Saliva.
10. Draw and label the parts of a Nephron.

    Or

    Refractive errors of the eye.
11. Myasthenia Gravis.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 16-Dec-2022

Time: Three Hours **Max. Marks: 100 Marks**

OCULAR ANATOMY, OCULAR PHYSIOLOGY AND OCULAR BIOCHEMISTRY
(REVISED SCHEME – 4)
Q.P. CODE: 3343

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Mention the blood supply of nervous coat of eyeball. Brief on structure of fovea centralis.
2. Describe the layers of cornea and factors affecting its transparency.

   Or

   Explain the biochemical composition and functions of tear film. Describe the structure of tear film with the help of neat labeled diagram.

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Draw a neat labeled diagram of eyeball and elaborate on coats of eyeball.
4. Describe the aqueous outflow system.
5. Explain Glucose metabolic pathways of crystalline lens.

   Or

   Describe the photoreceptor layer of retina.
6. Explain Wald's visual cycle.
7. Explain blood aqueous barrier.
8. What are yoke muscle, synergist and antagonists?
9. Mention the action and nerve supply of muscles present in eyelids.
10. Explain the lesions of visual pathway.

    Or

    Describe the circulation and drainage of aqueous humour.
11. Brief on superior oblique muscle-origin, course, action and nerve supply.
12. What is binocular vision? Mention prerequisites of binocular vision.

SHORT ANSWER (Question No 15 & 20 choice) **10 x 3 = 30 Marks**

13. Ciliary processes.
14. Refractive errors.
15. Muscles present in iris and its actions.

    Or

    Orbicularis oculi muscle action and nerve supply.
16. Henles layer and crypts of henle.
17. Protanopia.
18. Factors affecting IOP.
19. Composition of vitreous humour.

20. Glands of eyelids.

Or

Mention the parts of conjunctiva.

21. Schirmers test 1

22. What is hue and saturation?

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I Year B.Sc. Optometry Degree Examination - 19-Dec-2022

Time: Three Hours **Max. Marks: 100 Marks**

PHYSICAL AND PRINCIPLES OF LIGHTING, GEOMETRIC OPTICS
SECTION A – PHYSICAL AND PRINCIPLES OF LIGHTING (50 MARKS)
(REVISED SCHEME – 4)
Q.P. CODE: 3344

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note : Both QP Codes 3344 and 3345 are to be answered within total duration of 3 hours)

LONG ESSAYS (First Question Choice) **1 x 10 = 10 Marks**

1. With a neat diagram explain Fermat's law of reflection and refraction.

Or

What is interference of light? Give the theory of interference using Young's double slit experiment.

SHORT ESSAYS (Question No. 5 choice) **5 x 5 = 25 Marks**

2. How is elliptically polarized light produced and analyzed?

3. What is optical fiber? Write the application of optical fiber.

4. A parallel beam of light of wavelength 5460A is incident at angle of 30^0 on a plane transmission grating having 6000 **lines** per cm. Find the highest order spectrum that can be observed.

5. Describe a He-Ne laser. Mention one use of the same.

Or

State and explain Brewster's law and malus law.

6. Why sky is blue in color? Explain Rayleigh scattering?

SHORT ANSWER (Question No. 10 choice) **5 x 3 = 15 Marks**

7. What are retardation plates? State their uses.

8. Write a note on Zone plate.

9. Define S.H.M with an example.

10. Explain Raman effect.

Or

What is the principle of Laser? Mention the applications of Laser.

11. What are anti-reflection coatings? Where are they used?

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 19-Dec-2022

Time: Three Hours **Max. Marks: 100 Marks**

PHYSICAL AND PRINCIPLES OF LIGHTING, GEOMETRIC OPTICS
SECTION B – GEOMETRIC OPTICS (50 MARKS)
(REVISED SCHEME – 4)
Q.P. CODE: 3345

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note : Both QP Codes 3344 and 3345 are to be answered within total duration of 3 hours)

LONG ESSAYS (First Question Choice) **1 x 10 = 10 Marks**

1. Obtain Gauss formula for refraction at a single spherical surface, and hence the lens maker's formula.

   Or

   State the laws of photo electric emission. Deduce Einstein's photo electric equation.

SHORT ESSAYS (Question No. 5 choice) **5 x 5 = 25 Marks**

2. **Obtain the expression for two thin lens in contact.**
3. Explain about the Cartesian Sign convention with the diagram.
4. **In an optical fiber, the core and cladding materials have refractive indices 1.6 and 1.4. What is the value of the critical angle ? Also calculate the acceptance angle**
5. What is laws of refraction? What is lateral shift? Obtain an expression for the same.

   Or

   Explain about the mono-chromatic aberration.
6. Obtain the condition for two small angle prisms to produce the deviation without dispersion.

SHORT ANSWER (Question No. 10 choice) **5 x 3 = 15 Marks**

7. Explain the uses of spherical mirrors.
8. State the conditions of total internal reflection.
9. What are GRIN lenses? Write the uses of it.
10. The critical angle of glass is 42 degree, calculate the polarizing angle.

    Or

    What are entrance pupil and exit pupil of a lens.
11. Define power of lens. Mention the unit.

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