Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - **16-May-2023**

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. Elaborate the sources, functions and deficiency of Vitamin A.
2. Describe schematically citric acid cycle. Add a note on the energetics involved in the cycle.
3. Describe the sources, daily requirement, functions and factors affecting absorption of Calcium.

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

4. Essential fatty acids.
5. Explain the lock and key mechanism of enzyme substrate complex formation.
6. Importance of HMP pathway.

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

7. What are antioxidants? Give two therapeutic uses.
8. Collagens.
9. Name the regulatory enzymes of glycolysis.
10. Pellagra.
11. What is transamination? Give one example.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 16-May-2023

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. Explain different metabolic pathways taking place in crystalline lens.
2. Write a note on Biochemical composition of Aqueous Humor. Mention factors affecting Intra Ocular Pressure.
3. Explain in detail about Food groups with the help of food pyramid.

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

4. What are micro and macro minerals? List its functions.
5. Write the functions of proteins
6. Mention functions of tear film.

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

7. Mention the recommended daily intake of proteins, carbohydrates and fat.
8. Mention the factors affecting corneal transparency.
9. Mention the rate of Aqueous Production and normal range of Intra Ocular Pressure.
10. Goblet cells
11. What is obesity?

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 18-May-2023

Time: Three 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 are blood groups? Discuss the A, B, O blood groups.
2. Write a neat diagram of the long bone and label the parts.
3. Discuss the factors governing blood pressure. Define systolic, diastolic and pulse pressure.

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

4. Sarcomere
5. Functions of spleen
6. Enzymes of the digestive system

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

7. Vermiform appendix
8. Hypophysis cerebri
9. Juxta glomerular apparatus
10. Autonomic nervous system
11. Lymph

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination – 18-May-2023

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. Write a neat diagram of the Lacrimal drainage apparatus and label the parts.
2. Name the layers of the retina. Mention the functions of rods and cones and the pigment epithelium.
3. Describe the detailed anatomy of the crystalline lens, and its location and attachments within the eye.

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

4. What are the functions of tear?
5. Name the muscles in the eyelids, their nerve supply and actions.
6. What are the disjugate movements of the eyes? Describe accommodation.

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

7. Tear film.
8. Yoke muscles.
9. Blind spot.
10. Protanopia.
11. Snellen fraction.

Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 20-May-2023

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 construction and working of LB photometer.
2. Define specific rotation. Explain construction and working of Laurent's Half shade polarimeter.
3. What is diffraction of light? Describe Fraunhofer diffraction at a single slit. What will be the width of the central maxima?

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

4. Obtain the expression for kinetic energy of a body executing simple harmonic motion.
5. In Newton's rings experiment the diameter of the 15^{th} ring was found to be 0.59cm and that of the 5^{th} ring was 0.336cm. If the radius of the plano convex lens is 100cm, calculate the wavelength of light used.
6. Explain with relevant theory Raman Effect.

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

7. Define diffraction.
8. What is anti reflection coating?
9. Mention any two differences between convex lens and zone plate.
10. Define Dichroism.
11. State Brewster's law.

Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 20-May-2023

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. State Fermat's principle and deduce the laws of refraction and reflection by applying the principle.
2. Explain in detail various losses in optical fiber.
3. Explain the principle of a laser. Describe a He-Ne laser. Mention one use of the same.

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

4. Deduce lens maker's formula for a thin lens.
5. What is dispersive power of a prism? Obtain the condition for combination of two thin prisms to produce dispersion without deviation.
6. Two identical thin convex lenses of focal lengths 8cm each are coaxial and 4cm apart. Find the equivalent focal length and the positions of the principal points. Also, find the positions of the object for which the image is formed at infinity.

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

7. What is photo electric effect?
8. Explain in brief aperture stop.
9. Mention the uses of spherical mirrors.
10. State the conditions for total internal reflection.
11. State the Cartesian sign convention.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 16-May-2023

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. Describe steps of Kreb's cycle. Discuss about regulation and Energetics.
2. Mention the sources of Nitrogen. Describe urea cycle.

   Or

   Discuss the chemistry, sources, RDA, Biochemical functions and deficiency manifestation of Vitamin A

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

3. Explain in detail about blood buffer system.
4. Structure and functions of tRNA.
5. Describe the deficiency manifestation of thiamine.

   Or

   Discuss the digestion and absorption of protein.
6. Biochemical function of Iron.
7. Diagnostic importance of enzymes.
8. Therapeutic uses of antioxidants.
9. What are essential fatty acids? List their functions.
10. What are reducing Disaccharides? Explain sources, composition and Biochemical tests to identify them.

    Or

    Discuss oxidative and substrate level phosphorylation.
11. Describe effect of pH and temperature on enzyme action.
12. Explain structure, types and functions of collagen.

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

13. List three functions of Albumin.
14. What is hyperlipidemia?
15. List any six factors affecting BMR.

    Or

    Give full forms of GTP, tRNA and VLDL.
16. List any three differences between fat and water soluble vitamins.
17. List the Glycosaminoglycans with their distribution.
18. Define respiratory quotient and write any two significance.
19. Define co-enzyme and give two examples.
20. Discuss any three functions of copper.

    Or

    Discuss measles associated Eye disorders.
21. List rate limiting enzymes of Glycolysis.
22. What is the role of rhodopsin in vision?

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 18-May-2023

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. Classify joints. Describe typical Synovial joint.

   Or

   Draw neat labelled diagram of digestive system of body and describe stomach in detail.

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

2. Cerebellum.
3. Microscopic structure of skin.
4. Name anatomical planes of the body and the terminological used to express relations.
5. Enumerate types of Epithelium.

   Or

   Classify the types of connective tissue and write in detail about structure of Bone.
6. Pituitary gland.

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

7. Pancreas.
8. Villi.
9. Muscles –Types.
10. Name Ear ossicles.

    Or

    Gall bladder.
11. Meninges.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 18-May-2023

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. Describe the steps involved in the synthesis of thyroxine. Explain its physiological functions.

   Or

   Explain excitation contraction coupling in skeletal muscle.

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

2. Clinical features of Cushing's syndrome.
3. Coronary circulation.
4. Locations and functions of centres of respiration.
5. Mismatched blood transfusion reactions.

   Or

   Cystometrogram.
6. Functions of spleen.

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

7. Differentiate rods from cones.
8. Write two functional differences between cardiac and skeletal muscle.
9. Myasthenia gravis.
10. List the functions of Neutrophils.

    Or

    Secondary active transport.
11. What is the normal platelet count? Give two functions of platelets.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 20-May-2023

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

OCULAR ANATOMY, OCULAR PHYSIOLOGY AND OCULAR BIOCHEMISTRY (RS-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. Write in details about production, circulation and drainage of aqueous humour
2. Explain the various anatomical structures involved with Lacrimal drainage system, with the help of a neat diagram

   OR

   Write in details about the gross structure and function of different cells present in the retina

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

3. Write a note on corneal wound healing
4. Explain pupillary pathway with proper flow chart
5. Write a short note on theories of color vision

   OR

   Write a short note on act of accommodation
6. Define presbyopia, mention its clinical features and treatment option available
7. Mention the nuclei, course, relationship with brain and ocular contribution of abducent nerve
8. Write in short about gross anatomy of orbit
9. Mention anatomy, innervation and actions of medial rectus
10. Write short note on layers of cornea

    OR

    Write a note on lesions of visual pathway
11. Write a note on composition of vitreous humour
12. Write a note on coats of the eyeball

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

13. Explain blood retinal barrier
14. Mention the function of ciliary muscles
15. Mention the age related changes in cornea

    OR

    Mention the clinical impression of aqueous humour
16. Mention the test available for diagnosis of dry eye
17. Define visual acuity. What are the various types of refractive error?
18. Mention the functions of tear film
19. Write a note on antioxidants
20. Enlist the angular structures

    OR

    Write the attachments of vitreous
21. Write a note on scotopic and photopic vision
22. Write about the gross structure of eyebrow

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 23-May-2023

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. What is simple harmonic motion? Obtain an expression for the total energy of a simple harmonically vibrating particle.

   Or

   What is diffraction of light? Obtain an expression for the intensity distribution in a single slit Fraunhofer diffraction pattern. Draw the intensity profile as a function of diffraction angle.

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

2. What are coherent waves? Explain how they are produced.

3. State Rayleigh's criteria for resolution of images. Explain why sky is blue in color.

4. Explain the construction and working of Nicol prism.

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

   Or

   Molybdenum has a work function of 4.20 eV. (i) Find the cut off wavelength and cutoff frequency for the photoelectric effect. (ii) What is the stopping potential if the incident light has a wavelength of 18 nm?

6. What is Raman effect? Briefly describe the appearance of stoke and Anti stoke lines.

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

7. What is specific rotation? Explain the terms.

8. Write the applications of optical fibre.

9. Explain – i) Spontaneous emission and ii) Stimulated emission

10. What is Compton effect?

    Or

    A viewing screen is separated from a double slit source by 1.2 m. The distance the slits is 0.030 mm. The second order bright fringe is 4.5 cm from the centre line. Calculate i) The wavelength of the light and ii) The fringe width

11. Explain attenuations and distortions in an optical fiber in brief.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 23-May-2023

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. Deduce the expression for gauss formula for spherical surface and hence arrive at lens marker's formula.

   Or

   Describe the experiment in arriving at laws of photoelectric effect. Give Einstein's explanation of the same.

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

2. Deduce the prism formula and the expression for the deviation produced by a thin prism?
3. Write a note on telescope.
4. Explain the cardinal points of a thick lens with diagram.
5. Describe a compound microscope.

   Or

   What is dispersive power of a prism? Obtain the condition for combination of two thin prisms to produce dispersion without deviation.
6. What are the laws of reflection and refraction? Explain with diagram.

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

7. What is spherical aberration? How is the same eliminated?
8. What is total internal reflection? Explain with diagram.
9. Define rectilinear propagation of light.
10. Define entrance and exit pupil.

    Or

    Define refractive index.
11. What is simple and compound microscopes?

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 24-Nov-2023

Time: Three 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. Classify the white blood corpuscles. Briefly describe them and their functions.
2. Write a neat diagram of the junctional tissues of the heart and label the parts.
3. Name the contents of an animal cell and mention their functions.

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

4. Cartilages
5. Bone marrow
6. Duodenum

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

7. Cardiac muscle
8. Endoplasmic reticulum
9. Lymphocyte
10. Gastric juice
11. Diastole

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 24-Nov-2023

Time: Three 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) **2 x 10 = 20 Marks**

1. Write about the photochemistry of visual pigments. With a neat diagram explain the visual cycle.
2. Elaborate on lens transparency
3. Essay on anatomy of different components of visual pathway with appropriate diagram

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

4. Brief about the formation of rhodopsin pigment
5. Draw the pathway of light reflex
6. Anatomy of superior oblique muscle

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

7. Define aphakia. What is the difference between aphakia and pseudophakia?
8. What is RAPD? How is it examined?
9. Mention the function of tear film.
10. What are lacrimal glands?
11. Trabecular meshwork.

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Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 27-Nov-2023

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. Derive an expression for radius of curvature of a plano convex lens by setting up Newton's rings.
2. Define simple harmonic motion. Derive an expression for total energy of a body executing simple harmonic motion.
3. Explain the construction and working of ''Lummer-Brodhun'' photometer.

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

4. Explain the production of plane polarized light by reflection.
5. With relevant theory explain 'Raman effect'
6. Two narrow and parallel slits 0.1cm apart are illuminated with a monochromatic light of wavelength 589.3nm. The interference pattern is observed at a distance of 25cm from the slits. Calculate the fringe width.

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

7. Explain the construction of a zone plate.
8. Define luminous intensity and luminous flux. Mention the S.I units.
9. Distinguish between Fresnel and Fraunhofer diffraction.
10. What do you mean by anti-reflection coating?
11. What is double refraction?

Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 27-Nov-2023

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. Explain photoelectric effect. Derive Einstein's photoelectric equation.
2. What is the principle of LASER? Explain the construction and working of He-Ne laser.
3. Obtain the expression for equivalent focal length of two lenses kept a) In contact b) Separated by a distance.

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

4. Write a note on nodal points of thick lens.
5. What is aberration? Explain coma.
6. An object 20cm high is situated 10cm in front of a concave mirror of radius 16cm. Find a) Focal length b) Position of the image c) Magnification.

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

7. State laws of refraction.
8. Define normal shift and lateral shift.
9. What is an ophthalmic prism? Mention its used in optometry.
10. Write the principle of reversibility.
11. Write the principle of optical fibre.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 22-Nov-2023

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

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. Define RNA. Write the structure and functions of various types of RNA
2. Describe the hexose monophosphate shunt and add a note on its significance

   OR

   Write an account of the various factors affecting enzyme activity

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

3. Glycosaminoglycans
4. Diagnostic importance of serum enzymes
5. Explain the factors affecting Basal Metabolic Rate (BMR)

   OR

   Explain the biochemical functions of phospholipids
6. Explain Wald's visual cycle
7. Write the structure and functions of three important disaccharides
8. Explain the classification of lipids with examples
9. Plasma protein
10. What are ketone bodies? Explain ketogenesis

    OR

    Explain the fluid mosaic model of plasma membrane
11. Write a note on sources, RDA, biochemical functions of copper
12. Explain the nutritional aspects of proteins

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

13. Nitrogen balance
14. Functions of fatty acids
15. Antioxidants

    OR

    Coenzymes
16. Lactose intolerance
17. Peptide bond
18. Write any four nucleotides
19. Active site of enzyme
20. Benedict's test

    OR

    Rothera's test
21. Hypocholesterolemic agents
22. Oxidative deamination

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 24-Nov-2023

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

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. Name the parts of respiratory tract and discuss the lungs in detail
   Or
   Describe the anatomy and hormones of thyroid gland

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

2. Discuss accessory structure of eye
3. Describe on the protective covering of brain
4. Extra ocular muscles
5. Enumerate anatomical regions of pharynx. List role of each in respiration
   Or
   Structure of spleen
6. Describe the general features of epithelial tissue

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

7. Neuron
8. Synovial joint
9. Diaphragm
10. Lateral ventricle
    Or
    Name the exocrine glands
11. Arteries

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 24-Nov-2023

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. What are blood cells and their normal values? Explain in brief classification, morphology and functions of leucocytes.

   Or

   Define respiration. Discuss the mechanism and regulation of respiration.

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

2. Name hormones secreted by pituitary gland. Write an essay on action and functions of growth hormone.
3. With a neat labelled diagram explain Neuromuscular transmission.
4. Structure and function of skin.
5. Write in detail about Female reproductive cycles.

   Or

   Write in detail about the Gametogenesis.
6. Cardiac cycle-definition, duration and events.

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

7. Function of hypothalamus.
8. Mention functions of kidney.
9. Transport mechanism across cell membrane.
10. Define reflex and reflex arc

    Or

    Define synapse and types of synapse.
11. List functions of Stomach.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 27-Nov-2023

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

OCULAR ANATOMY, OCULAR PHYSIOLOGY AND OCULAR BIOCHEMISTRY (RS-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. Write in detail about the ten microscopic layers of retina. Explain the gross anatomy of retina observed through opthalmoscope.
2. What is accommodation? What are the changes observed during the act of accommodation within the eye? Write a note on factors responsible for maintaining the lens transparency.

   Or

   Explain briefly about Vitreous zones. Enlist the vitreal attachments in an order from strongest to weakest.

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

3. Write short note on development of optic cup and lens vesicle.
4. Explain in detail about histological layers of conjunctiva.
5. Write short note on the layers of cornea.

   Or

   Explain the fissures and foramen present in the orbital walls. Write about their significance.
6. Differentiate versions and vergence. Write a note on laws governing extraocular motility.
7. What are the histological layers of Iris?
8. Write short note on light reflex pathway.
9. Explain the physiology of eyelid opening and closure.
10. Explain the glucose metabolism in the cornea.

    Or

    Explain conventional and unconventional aqueous outflow.
11. What are the functions of tear film? Enumerate the chemical composition of tear film.
12. What are the biochemical compositions of lens and its functions?

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

13. Brief on the structures lining the anterior chamber.
14. What are the layers of Choroid? Write short note.
15. What are the soft tissues of orbit?

    Or

    Write a note on muscle of ciliary body.
16. Which cranial nerve innervates the four of six extraocular muscles? Which other parts of eye does it supply?
17. What is intra ocular pressure? How do you measure it?
18. What are limbal stem cells? How do they help in cornea wound healing?
19. What is stereopsis? Give two examples of situations in day-to-day life where stereopsis is utilized.

20. Write the location and function of Blood Retinal Barrier.

Or

Mention various types of collagen fibers present in the ocular structures.

21. What is Wald's visual cycle?

22. List the biochemical composition of Vitreous.

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I Year B.Sc. Optometry Degree Examination - 29-Nov-2023

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. Explain in detail production and detection of different kinds of polarized light.

Or

Describe the construction and action of Lummer-Brodhun photometer. How the transmission coefficient of a glass is determined using the L-B photometer?

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

2. obtain the expression for the total energy of a body executing S.H.M

3. Deduce the expression for Radius of curvature using Newton's Rings experiment

4. What is the radius of the first half period zone on a zone plate of focal length 0.6 m and designed for a wavelength of 589 nm?

5. Explain in brief attenuation in optical fiber.

Or

Explain Raman scattering with relevant theory.

6. Write a short note on Nicol Prism.

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

7. Define Brewster's Law. Write the expression for the same.

8. Explain transverse and longitudinal waves.

9. The critical angle of glass is 42^0, calculate the polarizing angle.

10. Write a note double refraction.

Or

Write a note on Rayleigh and Mie scattering.

11. Define resolving power of a grating.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 29-Nov-2023

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. Derive thick lens formula.

   Or

   Derive prism formula. Obtain the expression for deviation produced by thin prism.

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

2. Explain i) Principle of reversibility ii) Total internal reflection.
3. What are direct vision prisms? Deduce the expression for dispersion without deviation.
4. What are the laws of reflection and refraction? Explain with diagram.
5. Explain the construction and working of compound microscope. Obtain an expression for its magnification.

   Or

   Deduce Gauss formula for spherical surfaces.
6. Obtain the expression for lateral shift.

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

7. Write an expression for normal shift. Explain the terms.
8. Draw the ray diagram of image formation in a concave lens.
9. Explain coma aberration.
10. Draw the ray diagram showing the entrance and exit pupils of a convex lens with a stop in front of it. What is the purpose of a stop?

    Or

    Write the applications of spherical mirror.
11. What are the significance of velocity of light?

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