Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination – 28.05.2024

Time: Three Hours | Max. Marks: 80 Marks

Basic Biochemistry and Ocular Biochemistry and Nutrition
Section A – Basic Biochemistry (40 Marks)
(Revised Scheme – 3)
Q.P. CODE: 3101

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. Mention the source, function and factors regulating blood calcium level.
2. Describe the process of protein synthesis in eukaryotes.
3. Describe in detail the aerobic glycolysis. Add a note on its energetics.

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

4. Prostaglandins
5. Mention sources, coenzyme form and deficiency manifestations of Thiamine.
6. Significance of HMP shunt pathway

SHORT ANSWERS 5 x 2 = 10 Marks

7. Name the ketone bodies.
8. What are the types of RNA?
9. Name the muscle proteins.
10. What are antioxidants? Give two examples.
11. What are Uncouplers? Give two examples.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 28.05.2024

Time: Three Hours | Max. Marks: 80 Marks

Basic Biochemistry, 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. Define Nutrition. How is the assessment of nutritional status done?
2. Metabolism of lens in detail.
3. What is tear film? Explain the composition of each layer and function of tear film.

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

4. Write a note on Aqueous humor production.
5. Write a note on Vitamin A deficiencies.
6. Mention the factors affecting cornealtransparency.

SHORT ANSWERS 5 x 2 = 10 Marks

7. Obesity.
8. Define RDA.
9. Give some example of Protein rich food and function of it.
10. What is food guide pyramid? Give example.
11. Define calorie.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 28.05.2024

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 the dietary sources, requirement, functions, absorption and deficiency manifestations of Vitamin A.
2. Explain the various steps involved in Glycolysis. Add a note on the energy yield in glycolysis.
   Or
   Explain the various steps involved in beta oxidation of fatty acid. Write a note on energetics.

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

3. Explain any two factors affecting enzyme action.
4. Explain Wald's visual cycle.
5. Discuss steps of Urea cycle.
   Or
   Discuss deficiency manifestation of Vitamin D
6. What are essential fatty acids? Give its importance.
7. Explain protein energy malnutrition.
8. Role of Vitamin E in diet.
9. Importance of dietary fibre in the body.
10. Measles and associated eye disorders.
    Or
    Define and classify Monosaccharides.
11. What are Isoenzymes? Give three examples.
12. What is biological oxidation? Explain ATP formation.

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

13. Define energy and give its unit.
14. List three functions of Albumin.
15. Name the important vitamins associated with ophthalmic function.
    Or
    Define respiratory quotient.
16. Give two main important functions of phosphorus.
17. Food groups in diet planning.
18. List the three main and buffer systems in the body.
19. Define anti-oxidants and give examples.
20. Write three differences between DNA and RNA.
    Or
    State any three functions of Iron.
21. List the ketone bodies.
22. Draw neat labelled diagram of tRNA.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 30-May-2024

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. Write a neat diagram of the Neuron and label the parts.
2. Classify Plasma Proteins and mention their functions.
3. What are the hazards of Blood Transfusion?

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

4. Sarcomere
5. Autonomic Nervous System
6. Types of connective tissue

SHORT ANSWERS — 5 x 2 = 10 Marks

7. Bile
8. Platelets
9. Goblet cells
10. Hormones
11. S. A. Node

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination – 30-May-2024

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. What are the structures seen in the angle of anterior chamber? Write about aqueous outflow system.
2. Anatomy of visual pathway with diagram. What are the age related changes of lens?
3. Draw and explain the structure of retina. Explain about visual cycle.

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

4. How does arrangement of stromal lamellae affect the corneal transparency?
5. Structure and functions of tear film.
6. Structure of conjunctiva.

SHORT ANSWERS 5 x 2 = 10 Marks

7. What is presbyopia?
8. What are blind spot and yellow spot?
9. What is Hering’s law of equal innervations?
10. What is visual acuity?
11. Dimensions of cornea.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 30-May-2024

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. Mention the parts of digestive system. Explain the anatomy of liver and gall bladder.
   Or
   Name different types of connective tissue in detail.

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

2. Right lung.
3. Spleen
4. List out differences between arteries and veins.
5. Interior of heart.
   Or
   Thyroid gland.
6. Circle of Willis.

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

7. Name dural folds.
8. Parts of Male reproductive system.
9. Cartilage.
10. Bones of skull.
    Or
    Name cranial nerves in order.
11. Lymph node.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 30-May-2024

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. **List the endocrine glands and hormone secreted by them.**

   Or

   Mention digestive juices. Discuss composition, function, phases and regulation of gastric juice.

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

2. Functions of Cerebellum.
3. Spermatogenesis.
4. Lung volumes and capacities and their normal values.
5. Define cardiac output. Mention the factors regulating cardiac output.

   Or

   Name clotting factors. Discuss mechanism of blood clotting.
6. Blood pressure and its regulation.

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

7. Functions of cerebrospinal fluid.
8. J G apparatus.
9. Functions of skin.
10. Platelet and its function.

    Or

    Blood groups.

11 Content and functions of middle ear.

Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 03-Jun-2024

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. Define simple Harmonic Motion. Obtain an expression for the total energy of a body executing simple harmonic motion.
2. Derive an expression for radius of curvature of a plano convex lens by setting up Newton's rings with it.
3. Compare luminous intensities of two light sources using Lumer-Brodhum photometer.

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

4. Explain Rayleigh's criterion for the limit of resolution
5. Explain the production of plane polarized light by reflection. Derive Brewster's law.
6. Green light of Wavelength 5400A^0 from a narrow slit is incident on a double slit. If the overall separation of two fringes on a screen 200cm away is 2cm, find the slit separation.

SHORT ANSWERS 5 x 2 = 10 Marks

7. Write a note on Rayleigh's scattering.
8. Define resolving power of a grating.
9. Write the condition for constructive and destructive interference.
10. Write a note on construction of zone plate.
11. Define specific rotation and write an equation for the same.

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Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 03-Jun-2024

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. Describe astronomical telescope and a compound microscope with neat diagrams and the expression for their magnifying powers.
2. Derive Lens maker's formula and an expression for focal length of a convex lens in terms of object and image distances.
3. What is the principle of optical fiber? Explain the constitution of an optical fiber and its applications.

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

4. Draw the image formation by convex lens when the object is positioned at (a) centre of curvature and (b) between focal point and centre of curvature.
5. How do you determine the focal length of concave lens using convex lens?
6. Find the focal length of a plano convex lens, the radius of curvature being 40cm and refractive index 1.5. Also find the image position of an object, if it is placed 40cm in front of the lens.

SHORT ANSWERS 5 x 2 = 10 Marks

7. What is refraction? Explain with diagram.
8. Distinguish between real and virtual image.
9. Mention the uses of spherical mirror
10. What is population inversion?
11. Define Focal point of a concave mirror.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 03-Jun-2024

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 a note on the biochemical compositions of lens and their role in lens metabolism. What are the physical and physiological changes observed with aging in crystalline lens?
2. Write in detail about the visual pathway and its lesions with a neatly labelled diagram
   OR
   Explain the orbital walls. Write briefly about the origin, innervation and actions of extraocular muscles

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

3. What is Episclera? Summarize the components of the sclera with its foramen
4. Write about the biochemical compositions of aqueous humour. How does the composition vary in anterior and posterior chambers?
5. Explain the histological layers of the eyelid
   OR
   Write about the lesions in the visual pathway and the defects seen in the visual field
6. A short essay on the mechanism of accommodation
7. What is the lacrimal pump mechanism? Explain in detail
8. Describe the anterior angle structure with a drainage system
9. Brief description of layers of cornea and its functions
10. Explain the visual cycle with a schematic diagram
    OR
    Write a note on factors affecting corneal hydration
11. Explain in detail the retinal physiology
12. What are the biochemical components of vitreous and its functions?

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

13. Name the branches of the trigeminal nerve and its supply to the ocular structures
14. Name the various types of refractive errors seen in clinical practice
15. Write a note on the nutritional supply of the retina
    OR
    What are the vitreous zones present in the eye?
16. Differentiate the major circle of iris and the minor circle of the iris
17. What is intra-ocular pressure? How do you measure it?
18. Define the following terminologies: a) Protanopia b) Myopia
19. What are the germinal layers from which the ocular structures are developed? Explain
20. List down the antioxidants present in the retina preventing retinal pathologies
    OR
    Define scotopic and photopic vision. What structures are responsible for the same?
21. What are the protective mechanisms of the eye?
22. Draw a neat labelled diagram of visual cycle

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 05-Jun-2024

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 the resultant motion of a particle when two simple harmonic motions simultaneously act on it right angles to each other.

   Or

   What is interference of light waves? Obtain an expression radius of curvature of a plano convex lens using Newton's ring experiment.

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

2. Give a theory of zone plate.

3. Explain Raman effect.

4. Obtain the expression for L-B- photometer.

5. Obtain the expression for resolving power of a grating.

   Or

   In a Michelson's experiment 200 fringes cross the field of view when the movable mirror is displaced through 0.059 mm. Calculate the wavelength of the light used.

6. Explain Nicol prism as analyser and polarizer.

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

7. Explain the terms:- i) Reflection phases shifts ii) Optical path length.

8. What are transverse and longitudinal waves?

9. Explain Rayleigh and Mie scattering.

10. What are step index and graded index optical fibers?

    Or

    X-rays of wavelength λ_o = 0.020 nm are scattered form a block of material. What is the wavelength of X-rays scattered at an angle of 45^0

11. Explain briefly applications of laser.

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 05-Jun-2024

Time: Three Hours Max. Marks: 100

PHYSICAL OPTICS 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 prism formula and expression for the deviation produced by a thin prism
   OR
   Obtain the expression for equivalent focal length of two lenses kept
   a) In contact b) Without contact

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

2. What is dispersive power of a prism? Obtain the condition for combination of two thin prism to produce dispersion without deviation
3. Derive lens maker formula of thin lens
4. Derive refraction matrix for a lens
5. **Explain briefly about GRIN systems,**
   Or
   A critical angle for glass is 41^0 48' and for water is 48^0 36'. Calculate the critical angle for glass-water interface.
6. Derive mirror equation

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

7. Draw a neat diagram to represent the working of compound microscope
8. Write about pincushion distortion
9. State the Cartesian sign convention
10. Mention the uses of spherical mirror
    OR
    State conditions for total internal reflection
11. State laws of refraction

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Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 15-Nov-2024

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 steps of B-oxidation of fatty acids. Add a note on the energy yield in Palmitic acid.
2. Explain the requirement, sources, and factors affecting absorption, functions and deficiency of Iron.
   Or
   Explain Watson and Crick model of DNA structure with a neat labelled diagram.

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

3. Protein Energy Malnutrition.
4. Explain Buffer system in Blood.
5. List the types of RNA and discuss the structure of tRNA.
   Or
   Discuss the digestion and absorption of carbohydrates.
6. What is Transamination? Give two examples.
7. Coenzymatic forms, functions and deficiency manifestations of Vitamin B12.
8. Define BMR and explain any four factors affecting BMR.
9. Discuss Biochemical functions of Phosphorus.
10. Define balanced diet. Describe its importance and the factors affecting the planning of balanced diet.
    Or
    Nitrogen balance.
11. Elucidate the steps of Citric acid cycle.
12. What is Respiratory quotient? Explain its importance.

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

13. Monounsaturated fatty acids.
14. Essential amino acids.
15. Ocular manifestation of Vitamin A
    Or
    Diagnostic enzymes in Myocardial infarction.
16. What is Keratomalacia?
17. Biochemical functions of Calcium.
18. List the basic five food group plan.
19. Disorders associated with copper metabolism.
20. What are free radicals? Give an example
    Or
    Lactose intolerance
21. What are Coenzymes? Give examples.
22. List differences between DNA and RNA.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 20-Nov-2024

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. Mention the parts of respiratory system. Describe the location, relation, parts, internal structure and blood supply of lung.

   Or

   List the parts of digestive system. Discuss in detail anatomy of exocrine and endocrine pancreas.

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

2. Explain spinal cord and its cross section.
3. Male reproductive system.
4. Classify connective tissue. Write briefly the macroscopic structure of typical long bone.
5. Discuss the external and internal structure of heart with neat labelled diagram.

   Or

   Anatomy of Cerebrum.
6. Lymph node – structure, distribution and diagram.

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

7. Types and location of tonsil.
8. Difference between male and female urethra.
9. Muscles of facial expression.
10. What are endocrine glands? Give three examples.

    Or

    What are exocrine glands? Give three examples.
11. Name cranial nerves in order.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 20-Nov-2024

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. Define Erythopoeisis. Discuss the stages and factors affecting erythropoeisis.
   Or
   What are functions of three types of muscle? Write a brief note on physiology of muscle contraction in skeletal muscle.

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

2. Functions of liver.
3. Define cardiac output. Mention the factors regulating it.
4. What is excretion? Describe the process of urine formation with diagram of nephron.
5. Synthesis, action and functions of thyroid hormones.
   Or
   Zones of adrenal cortex-hormones and functions.
6. Mechanism of respiration.

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

7. What is fertilization, ovulation and gametogenesis.
8. Islet cell of langerhans and its function.
9. Functions of large intestine.
10. Define Synapse and its types.
    Or
    Define Neuron and its types.
11. Heart sounds.

Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 22-Nov-2024

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. Define interference of light. Give the theory of interference.
2. Explain the production and detection of different types of polarized light.
3. What is diffraction? Explain Frunhofer diffraction at a single slit.

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

4. Derive an expression for width of a fringe formed by wedge shaped film.
5. Explain the construction and working of a Nicol Prism.
6. Newton's rings are observed in reflected light of wavelength 5.9×10^{-5}cm. the diameter of 10^{th} dark ring is 0.5cm. Find the radius of curvature of the lens and thickness of the air film.

SHORT ANSWERS 5 x 2 = 10 Marks

7. Distinguish between stokes and Antistokes lines.
8. Explain the principle of Photometry.
9. What is Mie Scattering?
10. Explain colours in thin film.
11. Describe specific rotation.

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Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – 22-Nov-2024

Time: 3 Hours Max. Marks: 80

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 the combination of prism producing dispersion without deviation and deviation without dispersion
2. Derive thick lens formula
3. What is aberration? Explain chromatic aberration. How are they eliminated?

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

4. Explain the construction and working of He-Ne-laser
5. Derive mirror equation
6. Explain different types of optical fibre

SHORT ANSWERS 5 x 2 = 10 Marks

7. What is total internal reflection?
8. Write the applications of convex lens
9. Write the expression for lateral shift and explain the terms
10. **Define principles of Reversibility.**
11. State the Law of refraction

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 15-Nov-2024

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 steps of B-oxidation of fatty acids. Add a note on the energy yield in Palmitic acid.
2. Explain the requirement, sources, and factors affecting absorption, functions and deficiency of Iron.
   Or
   Explain Watson and Crick model of DNA structure with a neat labelled diagram.

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

3. Protein Energy Malnutrition.
4. Explain Buffer system in Blood.
5. List the types of RNA and discuss the structure of tRNA.
   Or
   Discuss the digestion and absorption of carbohydrates.
6. What is Transamination? Give two examples.
7. Coenzymatic forms, functions and deficiency manifestations of Vitamin B12.
8. Define BMR and explain any four factors affecting BMR.
9. Discuss Biochemical functions of Phosphorus.
10. Define balanced diet. Describe its importance and the factors affecting the planning of balanced diet.
    Or
    Nitrogen balance.
11. Elucidate the steps of Citric acid cycle.
12. What is Respiratory quotient? Explain its importance.

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

13. Monounsaturated fatty acids.
14. Essential amino acids.
15. Ocular manifestation of Vitamin A
    Or
    Diagnostic enzymes in Myocardial infarction.
16. What is Keratomalacia?
17. Biochemical functions of Calcium.
18. List the basic five food group plan.
19. Disorders associated with copper metabolism.
20. What are free radicals? Give an example
    Or
    Lactose intolerance
21. What are Coenzymes? Give examples.
22. List differences between DNA and RNA.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 20-Nov-2024

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. Mention the parts of respiratory system. Describe the location, relation, parts, internal structure and blood supply of lung.

   Or

   List the parts of digestive system. Discuss in detail anatomy of exocrine and endocrine pancreas.

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

2. Explain spinal cord and its cross section.
3. Male reproductive system.
4. Classify connective tissue. Write briefly the macroscopic structure of typical long bone.
5. Discuss the external and internal structure of heart with neat labelled diagram.

   Or

   Anatomy of Cerebrum.
6. Lymph node – structure, distribution and diagram.

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

7. Types and location of tonsil.
8. Difference between male and female urethra.
9. Muscles of facial expression.
10. What are endocrine glands? Give three examples.

    Or

    What are exocrine glands? Give three examples.
11. Name cranial nerves in order.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 20-Nov-2024

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. Define Erythopoeisis. Discuss the stages and factors affecting erythropoeisis.
   Or
   What are functions of three types of muscle? Write a brief note on physiology of muscle contraction in skeletal muscle.

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

2. Functions of liver.
3. Define cardiac output. Mention the factors regulating it.
4. What is excretion? Describe the process of urine formation with diagram of nephron.
5. Synthesis, action and functions of thyroid hormones.
   Or
   Zones of adrenal cortex-hormones and functions.
6. Mechanism of respiration.

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

7. What is fertilization, ovulation and gametogenesis.
8. Islet cell of langerhans and its function.
9. Functions of large intestine.
10. Define Synapse and its types.
    Or
    Define Neuron and its types.
11. Heart sounds.

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I Year B.Sc. Optometry Degree Examination - 22-Nov-2024

Time: Three Hours | Max. Marks: 100 Marks

OCULAR L.ANATOMY, OCULAR PHYSIOLOGY AND OCULAR BIOCHEMISTRY
(REVISED SCHEME – 4)
Q.P. CODE: 3343
(QP contains two pages)

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 the gross anatomy of bony orbit, its relation with surrounding structure, draw and label the structures passing through orbital apex.

2. Define glycolysis. Write the pathway for aerobic glycolysis. Add a note on energetics.
   Or
   Describe the anatomy/course, distribution, clinically applied aspect and lesions of oculomotor nerve.

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

3. Write short note on protein content of tear film.

4. Describe the anatomy of optic chiasma.

5. Short note on visual cycle with diagrammatic representation.
   Or
   Factor effecting corneal hydration.

6. Draw a diagram to show the components of the precorneal tear film.

7. Write down the physiological functions of aqueous humour.

8. **Describe the aqueous humour dynamics**

9. Explain the glucose metabolic pathways in cornea.

10. Describe the anatomy of superior, inferior oblique muscle.
    Or
    Describe the concept of trichromacy and colour vision defect.

11. Discuss the causes and mechanism of cataract formation.

12. Describe the structure, composition and functions of vitreous.

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

13. Sympathetic innervation of eye.

14. Schirmer's test.

15. List the metabolic changes seen in aging lens.
    Or
    Blood- retinal barrier.

16. Hene's nerve fiber layer of retina.

17. Tear film and composition of tears.

18. Optic tract.

19. Composition of sclera.

20. Corneal endothelium.
    Or
    Optic chiasma.

21. Visually evoked potentials.

22. Mention the antioxidants in Retina and RPE.

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I Year B.Sc. Optometry Degree Examination - 25-Nov-2024

Time: Three Hours Max. Marks: 100

PHYSICAL OPTICS AND PRINCIPLES OF LIGHTING, GEOMETRIC OPTICS
SECTION A – PHYSICAL OPTICS 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 the different theories of light and highlight the dual nature of light
   OR
   Explain production and detection of various kinds of polarized light

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

2. Explain diffraction at a single slit
3. Obtain the expression for fringe width in young double slit experiment
4. Explain Einstein photoelectric effect
5. What is the radius of first half period zone in a zone plate behaving like a convex lens of focal length 0.6m for light of wave length 600nm?
   OR
   Explain Rayleigh and Raman scattering
6. Derive the expression for velocity and acceleration of a particle executing S.H.M

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

7. Write a note on zone plate
8. Write the conditions for constructive and destructive interference
9. Define luminous flux and candela
10. State Brewster's Law
    OR
    Define simple harmonic motion and write examples
11. Write the application of optical fiber

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 25-Nov-2024

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. What is Refraction of light? State and explain Snell's law. Illustrate the graphical construction for the refraction of light.

   OR

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

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

2. Obtain Gauss formula for spherical surfaces.
3. Explain critical angle. Illustrate total internal reflection with diagram.
4. Explain the cardinal points.
5. Briefly explain the function of the eye.

   Or

   A 45^{o} Flint glass prism has a refractive index of 1.67 for sodium yellow light and is adjusted for minimum deviation. Find i) Angle of minimum deviation ii) The angle of incidence
6. Illustrate spherical aberration of a lens. Explain how it can be minimized.

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

7. What are the significance of velocity of light?
8. Explain conjugate points.
9. Draw ray diagram showing image formation in a convex lens.
10. Write applications of spherical mirrors.

    Or

    Draw the ray diagram showing the image formation in a compound microscope.
11. Define dispersive power of a prism.

Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 25-Nov-2024

Time: Three Hours Max. Marks: 100

PHYSICAL OPTICS AND PRINCIPLES OF LIGHTING, GEOMETRIC OPTICS

SECTION A – PHYSICAL OPTICS 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 the different theories of light and highlight the dual nature of light
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3. Obtain the expression for fringe width in young double slit experiment
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5. What is the radius of first half period zone in a zone plate behaving like a convex lens of focal length 0.6m for light of wave length 600nm?
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9. Define luminous flux and candela
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    OR
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I Year B.Sc. Optometry Degree Examination - 25-Nov-2024

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)

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10. Write applications of spherical mirrors.

    Or

    Draw the ray diagram showing the image formation in a compound microscope.
11. Define dispersive power of a prism.

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Correction 25.11.2024 Morning

Q.P Code: 3345

Read the question No. 1 as

1. What is Refraction of light? State and explain Snell's law. Illustrate the graphical construction for the refraction of light.

   OR

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