[LP 0819] AUGUST 2019 **Sub. Code: 2733**

B.OPTOM
(New Syllabus 2018-2019)

FIRST YEAR

PAPER III – PHYSICAL AND GEOMETRICAL OPTICS

Q.P. Code: 802733

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Discuss the construction and working of Thomas Young Expt.
2. Describe the various types Abberrations in a lens and ways to reduce them.
3. Astigmatism.

II. Write notes on: **(8 x 5 = 40)**

1. Resolving power of optical instruments.
2. Double refraction.
3. Spherical abberrations.
4. Total internal reflection.
5. Write short notes on Aphakia.
6. Spatial coherence and temporal coherence.
7. Lambert's law.
8. Flicker's photometer.

III. Short answers on: **(10 x 3 = 30)**

1. Entrance and exit pupil.
2. Define Myopia.
3. Refractive index.
4. Total internal reflection.
5. Glare effect.
6. Angular magnification.
7. Dual nature of light.
8. Explain Emmetropia.
9. Nodal points.
10. Positive and negative crystals.

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[LQ 0220] FEBRUARY 2020 **Sub. Code: 2733**

B.OPTOM
(New Syllabus 2018-2019)

FIRST YEAR

PAPER III – PHYSICAL AND GEOMETRICAL OPTICS

Q.P. Code: 802733

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Laser optics and its applications.
2. Describe the cardinal points of the optical system.
3. Properties of light and spectrum of light and measurement.

II. Write notes on: **(8 x 5 = 40)**

1. Infrared spectrum.
2. Gullstand's schematic eye.
3. How hypermetropia can be remedied?
4. Visual acuity.
5. Wedge shaped thin films.
6. Raman effect.
7. Nodal points and nodal planes.
8. Vitamin A deficiency.

III. Short answers on: **(10 x 3 = 30)**

1. Distortion.
2. Resolving power.
3. Photo electric effet.
4. Define ametropia.
5. Vertex power.
6. Critical angle of glass.
7. Coherence and its types.
8. Prism.
9. Types of lenses according to shapes.
10. Spectrometer.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0321] **MARCH 2021** **Sub. Code: 2733**

(AUGUST 2020 EXAM SESSION)

B.OPTOM

FIRST YEAR (Regulation 2018-2019)

PAPER III – PHYSICAL AND GEOMETRICAL OPTICS

Q.P. Code : 802733

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. Explain the application of LASER in ophthalmology and medicine.
2. Describe the Newton's rings experiment and how it is used to determine the refractive index of a liquid.
3. Classification of myopia and its correction.

II. Write notes on: **(8 x 5 = 40)**

1. Aphakia
2. Types of lenses according to shape.
3. Raman effect
4. Total internal reflection
5. Double refraction
6. Population inversion
7. Properties of cylindrical lenses
8. Glare effect.

III. Short answers on: **(10 x 3 = 30)**

1. Dual natures of light.
2. Emmetropia.
3. Photoelectric effect.
4. Field of view.
5. Laws of refraction.
6. Presbyopia.
7. Polarization of light.
8. Laser pumping.
9. Vergence
10. Dispersion of light.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0422] APRIL 2022 Sub. Code: 2733

(FEBRUARY 2021 & AUGUST 2021 EXAM SESSIONS)

B.OPTOM

FIRST YEAR (Regulation 2018-2019)

PAPER III-PHYSICAL AND GEOMETRICAL OPTICS

Q.P NO. 802733

Time: Three Hours **Answer All questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 =30)**

1. Astigmatism – causes, types and corrections with Lenses.
2. Describe Newton's ring experiment and explain how it is used to determine the wavelength of sodium light.
3. Basic principle of laser, its action and its applications.

II. Write notes on: **(8 X 5=40)**

1. Refraction at plane surface according to Huygens.
2. Wave theory of light.
3. Michelson interferometer.
4. Total internal reflection.
5. Emission and absorption spectra.
6. How hypermetropia can be remedied?
7. Spherical aberration in lenses.
8. Refraction at plane surface according to Fermat.

III. Short Answers on: **(10 X 3=30)**

1. Dual nature of light.
2. Laws of reflection and refraction of light.
3. Prism diopter.
4. Polarization of light.
5. Constructive and destructive interference.
6. Aphakia.
7. Distortion.
8. Population inversion in laser.
9. Myopia and its remedy.
10. Coherence and types.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1122] **NOVEMBER 2022** **Sub. Code: 2733**

B.OPTOM
FIRST YEAR (Regulation 2018-2019)
PAPER III - PHYSICAL AND GEOMETRICAL OPTICS
Q.P NO. 802733

Time: Three Hours **Answer All questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 =30)**

1. Explain the construction and working of Michelson Interferometer.
2. How the different types of polarized light can be distinguished?
3. Etiology, signs, symptoms and treatment of Myopia.

II. Write notes on: **(8 X 5=40)**

1. Total internal reflection.
2. Gullstrand's schematic eye.
3. Presbyopia
4. Photo electric effect.
5. Chromatic aberrations.
6. Lloyd's single mirror.
7. Lasers in Ophthalmic applications.
8. Thomas young experiment.

III. Short Answers on: **(10 X 3=30)**

1. Critical angle of Glass.
2. Vertex distance.
3. Nicol Prism.
4. Polarization of light.
5. Astigmatism.
6. Fermat's Principle.
7. Spectacle magnification.
8. Raman Effect.
9. Argon lasers and its uses.
10. Laser pumping.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0423] **APRIL 2023** **Sub. Code: 2733**

B.OPTOM
FIRST YEAR (Regulation 2018-2019 onwards)
PAPER III - PHYSICAL AND GEOMETRICAL OPTICS
Q.P. Code: 802733

Time: Three Hours **Answer All questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 =30)**

1. Aberrations in Optics.
2. Refraction of light on a plane surface according to Fermat's principle.
3. Etiology, signs, symptoms and treatment of Hypermetropia.

II. Write notes on: **(8 X 5=40)**

1. Thomas young experiment.
2. Astigmatism and its types.
3. Michelson interferometer.
4. Total internal reflection.
5. Emission and absorption spectra.
6. Ultraviolet spectrum.
7. Double refraction.
8. Weber's law.

III. Short Answers on: **(10 X 3=30)**

1. Raman effect.
2. Huygen's wave theory.
3. Photoelectric effect.
4. Polarization of light.
5. Constructive and destructive interference.
6. Biquartz.
7. Optical activity.
8. Laws of reflection.
9. Myopia and its remedy.
10. Dispersion of light.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1123] **NOVEMBER 2023** **Sub. Code: 2733**

B.OPTOM
FIRST YEAR (Regulation 2018-2019)
PAPER III - PHYSICAL AND GEOMETRICAL OPTICS
Q.P. Code: 802733

Time: Three Hours **Answer All questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. Gullstrand's Schematic eye.
2. Aberrations in Optics.
3. Cylindrical and Sphero Cylindrical Lenses.

II. Write notes on: **(8 X 5 = 40)**

1. Fresnel prism.
2. Oblique Astigmatism.
3. Dispersive power of Prism.
4. Uses of lasers in Ophthalmology.
5. Glare : Definition and types of Glare.
6. Strum's conoid.
7. Nodal points and nodal planes.
8. Convex and concave lenses.

III. Short answers on: **(10 x 3 = 30)**

1. Radiometer.
2. Field of view
3. Refractive index.
4. Prentice rule.
5. Angular Magnification of Spectacles.
6. Laws of reflection.
7. Diffraction.
8. Huygen's wave theory of Light.
9. Refraction.
10. Define power of a lens. What is the unit of Measurement?

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0424] **APRIL 2024** **Sub. Code: 2733**

B.OPTOM
FIRST YEAR (Regulation 2018-2019)
PAPER III - PHYSICAL AND GEOMETRICAL OPTICS
Q.P. Code: 802733

Time: Three Hours **Answer All questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. Write in detail about Constructions and working of Spectrometer.
2. Write in detail about Myopia and its management.
3. Write in detail about Polarization and its applications.

II. Write notes on: **(8 X 5 = 40)**

1. Principle of Lasers - Spontaneous and Stimulated Emission.
2. Spectacle magnification and Relative Spectacle Magnification.
3. Aphakia.
4. Schematic Eye and Reduced Eye.
5. Emmetropia and Amteropia.
6. Michelson's Interferometer.
7. Oblique Astigmatism Aberration.
8. Electromagnetic Spectrum.

III. Short answers on: **(10 x 3 = 30)**

1. Back Vertex Power.
2. Angular magnification.
3. Depth of field.
4. With the rule Astigmatism.
5. Presbyopia.
6. Laser Pumping – population inversion.
7. Chromatic Aberration.
8. Prism diopter.
9. Nodal points.
10. Sagitta.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1125] **NOVEMBER 2025** **Sub. Code: 2733**

B.OPTOM
FIRST YEAR (Regulation 2018-2019 onwards)
PAPER III-PHYSICAL AND GEOMETRICAL OPTICS
Q.P. Code: 802733

Time: Three Hours **Answer All questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. Write in detail about various types of Aberrationsarising from the lenses and its remedies.
2. Write in detail about Hypermetropia and its management.
3. Write in detail about Laser and its application in the field of Ophthalmology.

II. Write notes on: **(8 x 5 = 40)**

1. Depth of field and depth of focus.
2. Strum's conoid.
3. Cardinal points of the convex lens with neat diagram.
4. Properties of Light.
5. Constructive and destructive Interference.
6. Huygen's wave theory of Light.
7. Front and back vertex power of the lens.
8. Simple and compound Microscopes.

III. Short Answers on: **(10 x 3 = 30)**

1. Weber's Law.
2. Laws of Reflection.
3. Relative spectacle magnification.
4. Image formation in cylindrical lenses.
5. Raman effect.
6. Fermat's principle.
7. Manifest Hypermetropia.
8. Amplitude of Accommodation.
9. Snell's law of Refraction.
10. Polarization.

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