

1. Physical Properties of Light	1
• Behavior of Eye	2
• Terms used in Physical Optics	2
• Photon	2
• Rays	3
• Points to Remember	5
• Properties of Light	5
• Optics of Laser	6
2. Reflection	9
• Laws of Reflection	9
• Plane Mirror	10
• Spherical Mirror	11
3. Refraction	14
• Refraction at two Interfaces	14
• Refraction of Light through a Slab of Glass with Air All Round	15
• Refraction on two Surfaces Inclined to Each Other	17
• Uses of Prisms in Ophthalmology	19
4. Refraction through Curved Optical Devices	24
• Lens	24
• Toric Surfaces	33
• Sturm's Conoid	34
• Astigmatic Cross	35
• Magnification	38
• Telescopes	40
• Image Characteristics	41
5. Optics of Normal Eye	42
• Components of Vision	42
• Optical Constants	42
• Reduced/Schematic Eyes	43
• Reflection by Optical Components of the Eye and the Purkinje's Image	44
6. Errors of Refraction	46
• Emmetropia	46
• Ametropia	47
• Classification of Ametropia	47
• Anisometropia	66
7. Optical Devices Used to Examine the Eye	69
• Optical Devices	69
• Magnification	69
• Operating Telescopes	71
• Microscope	71
• Spectacle Magnification	72
• Optics of Ophthalmoscopes	72
• Examination of Fundus by Slit Lamp	81
• Gonioscopy	85
• Applanation Tonometry	88
• Uniocular/Binocular Loupes	91
8. Clinical Methods in Error of Refraction	93
• Clinical Methods	93
• External Examinations	95

- Recording of Vision 97
- Near and Distant Vision 98
- Objective Methods of Assessing Refractive Status 106
- Accommodation and Convergence in Relation to Refractive Status of the Eye 120
- Accommodation 120
- Physiological and Physical Accommodation 122
- Presbyopia 125

9. Contact Lenses 129

- Optics of Contact Lens 129
- Materials used in Manufacture of Various Types of Contact Lenses 135
- Keratometers 138
- Topography of Contact Lens 141
- Contact Lens Fitting 142

10. Low Vision Aids 147

- Classification 147
- Characteristics 148
- Causes 148
- Management 149
- History Taking 149
- What are Low Vision Aids? 149
- Recording of Visual Acuity 152

11. Refractive Surgeries 156

- Principle 156
- Classification of Refractive Surgeries 156
- Selection of Cases for Refractive Procedures 157
- Selection of Eyes for Refractive Procedures 158
- Instruments Required for Refractive Procedures 159
- Refractive Procedures for Myopia 160
- Laser Procedures 160
- Nonlaser Procedures for Myopia 165
- Refractive Surgeries for Hypermetropia 168
- Laser-assisted Procedures 168
- Refractive Procedures for Astigmatism 169
- Nonlaser-assisted Procedures used in Astigmatism 169
- Laser-assisted Procedures used in Astigmatism 171
- Refractive Procedures for Presbyopia 172
- Refractive Surgeries for Correction of Near Vision Defect 173

Index 175