

## Appendix A

**COA, COT, and COMT Content Area Percentages**

| <b>CONTENT AREA</b>                          | <b>COA %</b> | <b>COT %</b> | <b>COMT %</b> |
|----------------------------------------------|--------------|--------------|---------------|
| History Taking                               | 8            | 6            | 3             |
| Pupillary Assessment                         | 3            | 5            | 4             |
| Contact Lenses                               | 2            | 3            | 0             |
| Equipment Maintenance and Repair             | 4            | 4            | 3             |
| Lensometry                                   | 3            | 5            | 6             |
| Keratometry                                  | 3            | 5            | 3             |
| Medical Ethics, Legal, and Regulatory Issues | 5            | 3            | 5             |
| Microbiology                                 | 2            | 3            | 5             |
| Pharmacology                                 | 8            | 5            | 8             |
| Ocular Motility                              | 3            | 5            | 11            |
| Assisting in Surgical Procedures             | 7            | 6            | 3             |
| Ophthalmic Patient Services and Education    | 16           | 7            | 10            |
| Ophthalmic Imaging                           | 3            | 7            | 6             |
| Refractometry                                | 6            | 7            | 6             |
| Spectacle Skills                             | 3            | 3            | 0             |
| Supplemental Skills                          | 8            | 9            | 10            |
| Tonometry                                    | 4            | 5            | 5             |
| Visual Assessment                            | 8            | 6            | 6             |
| Visual Fields                                | 4            | 6            | 6             |

### **Skill Areas for the COT Skill Evaluation (Also required for COMT level if not previously COT certified)**

Candidates will be asked to demonstrate their skill in each of the following seven areas:

- **Lensometry:** Demonstrate the ability to perform non-automated lensometry to determine the strength of the distance correction and the bifocal or trifocal add.
- **Visual Fields:** Demonstrate the ability to perform an automated visual field on a specified automated visual field test as determined by JCAHPO.
- **Ocular Motility:** Demonstrate the ability to detect a phoria or tropia, and identify the direction of the deviation using appropriate cover tests.
- **Keratometry:** Demonstrate the ability to perform keratometry.
- **Retinoscopy:** Demonstrate the ability to perform retinoscopy.
- **Refinement:** Demonstrate the ability to perform refinement.
- **Tonometry:** Demonstrate the ability to perform applanation tonometry.

### **Skill Areas for the COMT Performance Test**

Candidates will be asked to demonstrate their skill in each of the following five areas:

- Measure patient's ocular motility using prism and cover tests at a distance.
- Perform manual lensometry: Identify and measure prism.
- Perform fundus photography and identify fluorescein angiography phases.
- Measure, compare, and evaluate pupil function at a distance.
- Evaluate versions and ductions, identifying any abnormalities.

## Appendix A

### COA, COT, and COMT Sub-Content Areas

Higher level examinations may contain areas also found in lower level examinations.

| CONTENT AREAS                                       | COA (Basic)                                                                                                                                                                                               | COT (Intermediate)                                                                                                                                                                                                                                                                                                                                                                                  | COMT (Advanced)                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HISTORY TAKING</b>                               | Ocular<br>Medical<br>Medication<br>Social<br>Family                                                                                                                                                       | Ocular<br>Medical<br>Medication<br>Social<br>Family                                                                                                                                                                                                                                                                                                                                                 | Ocular<br>Medical<br>Medication<br>Social<br>Family                                                                                                                                                                                                                                                                                                       |
| <b>PUPILLARY ASSESSMENT</b>                         | Measure<br>Compare<br>Evaluate                                                                                                                                                                            | Measure<br>Compare<br>Evaluate<br>RAPD                                                                                                                                                                                                                                                                                                                                                              | Measure<br>Compare<br>Evaluate<br>RAPD                                                                                                                                                                                                                                                                                                                    |
| <b>CONTACT LENSES</b>                               | Measure<br>Patient Instruction<br>Patient Counsel<br>Fitting                                                                                                                                              | Measure<br>Patient Instruction<br>Patient Counsel<br>Fitting                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                           |
| <b>EQUIPMENT MAINTENANCE AND REPAIR</b>             | Ophthalmic Lenses, Instruments, and Equipment                                                                                                                                                             | Ophthalmic Lenses, Instruments, and Equipment                                                                                                                                                                                                                                                                                                                                                       | Ophthalmic Lenses, Instruments, and Equipment                                                                                                                                                                                                                                                                                                             |
| <b>LENSOMETRY</b>                                   | Neutralize Spectacles <ul style="list-style-type: none"> <li>Automated</li> <li>Manual</li> </ul>                                                                                                         | Neutralize Spectacles <ul style="list-style-type: none"> <li>Automated</li> <li>Manual</li> </ul> Fresnel<br>Ground-in prism<br>Slab-off                                                                                                                                                                                                                                                            | Neutralize Spectacles <ul style="list-style-type: none"> <li>Automated</li> <li>Manual</li> </ul> Fresnel<br>Ground-in prism<br>Slab-off                                                                                                                                                                                                                  |
| <b>KERATOMETRY</b>                                  | Corneal Curvature                                                                                                                                                                                         | Corneal Curvature<br>Keratometer                                                                                                                                                                                                                                                                                                                                                                    | Corneal Curvature<br>Keratometer                                                                                                                                                                                                                                                                                                                          |
| <b>MEDICAL ETHICS, LEGAL, AND REGULATORY ISSUES</b> | Coding<br>Government/institutional rules and regulations<br>Quality assurance<br>Ethical & legal standards<br>Scribing<br>Confidentiality<br>Informed consent                                             | Coding<br>Government/institutional rules and regulations<br>Quality assurance<br>Ethical & legal standards<br>Scribing<br>Confidentiality<br>Informed consent                                                                                                                                                                                                                                       | Coding<br>Government/institutional rules and regulations<br>Quality assurance<br>Ethical & legal standards<br>Scribing<br>Confidentiality<br>Informed consent                                                                                                                                                                                             |
| <b>MICROBIOLOGY</b>                                 | Office antisepsis<br>Universal precautions                                                                                                                                                                | Office antisepsis<br>Universal precautions<br>Specimens and biopsies<br>Cultures                                                                                                                                                                                                                                                                                                                    | Office antisepsis<br>Universal precautions<br>Specimens and biopsies<br>Cultures                                                                                                                                                                                                                                                                          |
| <b>PHARMACOLOGY</b>                                 | Ocular medications (instilling and identifying)<br>Educate patients on medications<br>Drug reactions                                                                                                      | Ocular medications (instilling and identifying)<br>Educate patients on medications<br>Drug reactions                                                                                                                                                                                                                                                                                                | Ocular medications (instilling and identifying)<br>Educate patients on medications<br>Drug reactions                                                                                                                                                                                                                                                      |
| <b>OCULAR MOTILITY</b>                              | Version and Ductions <ul style="list-style-type: none"> <li>Functions</li> <li>Anomalies</li> </ul> Cover Tests<br>Stereoaucity<br>Nystagmus                                                              | Version and Ductions <ul style="list-style-type: none"> <li>Functions</li> <li>Anomalies</li> </ul> Near point convergence<br>Near point accommodation<br>Fusional convergence amplitudes<br>Cover Tests<br>Strabismus with prisms<br>Worth 4-Dot test<br>Maddox rod<br>Krimsky<br>Stereoaucity<br>Nystagmus<br>Amblyopia therapy<br>Convergence training                                           | Version and Ductions <ul style="list-style-type: none"> <li>Functions</li> <li>Anomalies</li> </ul> Near point convergence<br>Near point accommodation<br>Fusional convergence amplitudes<br>Cover Tests<br>Strabismus with prisms<br>Worth 4-Dot test<br>Maddox rod<br>Krimsky<br>Stereoaucity<br>Nystagmus<br>Amblyopia therapy<br>Convergence training |
| <b>ASSISTING IN SURGICAL PROCEDURES</b>             | Instrument preparation<br>Refractive surgery<br>Aseptic technique<br>Non-refractive laser therapy<br>Intraocular injections<br>Yag laser<br>Sterilization<br>Surgical site identification<br>Laser safety | Instrument preparation<br>Refractive surgery<br>Aseptic technique<br>Non-refractive laser therapy<br>Intraocular injections<br>Yag laser<br>Sterilization<br>Surgical site identification<br>Scrub technician duties<br>Surgical ophthalmic equipment <ul style="list-style-type: none"> <li>Phacoemulsifier</li> <li>Vitrectomy units</li> <li>Laser automated keratometer</li> </ul> Laser safety | Instrument preparation<br>Refractive surgery<br>Aseptic technique<br>Non-refractive laser therapy<br>Intraocular injections                                                                                                                                                                                                                               |

## Appendix A

### COA, COT, and COMT Sub-Content Areas

Higher level examinations may contain areas also found in lower level examinations.

| CONTENT AREAS                                      | COA (Basic)                                                                                                                                                                                                                                                                                                                                                                                                                                   | COT (Intermediate)                                                                                                                                                                                                                                                                                                                                                                                                                                            | COMT (Advanced)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OPHTHALMIC PATIENT SERVICES &amp; EDUCATION</b> | Patient Education <ul style="list-style-type: none"> <li>• Surgery</li> <li>• Systemic &amp; ocular diseases</li> <li>• Anatomy &amp; physiology (general &amp; ocular)</li> <li>• Safety glasses</li> </ul> Patient Instruction <ul style="list-style-type: none"> <li>• Medication</li> <li>• Tests</li> <li>• Procedures</li> <li>• Treatments</li> </ul> Eye Dressings<br>Patient flow<br>Triage<br>Forms & Manuals<br>Vital signs<br>CPR | Patient Education <ul style="list-style-type: none"> <li>• Surgery</li> <li>• Systemic &amp; ocular diseases</li> <li>• Anatomy &amp; physiology (general &amp; ocular)</li> <li>• Safety glasses</li> </ul> Patient Instruction <ul style="list-style-type: none"> <li>• Medication</li> <li>• Tests</li> <li>• Procedures</li> <li>• Treatments</li> </ul> Eye Dressings<br>Patient flow<br>Triage<br>Forms & Manuals<br>Vital signs<br>CPR                 | Patient Education <ul style="list-style-type: none"> <li>• Surgery</li> <li>• Systemic &amp; ocular diseases</li> <li>• Anatomy &amp; physiology (general &amp; ocular)</li> <li>• Safety glasses</li> </ul> Patient Instruction <ul style="list-style-type: none"> <li>• Medication</li> <li>• Tests</li> <li>• Procedures</li> <li>• Treatments</li> </ul> Eye Dressings<br>Patient flow<br>Triage<br>Forms & Manuals<br>Vital signs<br>CPR                                                                    |
| <b>OPHTHALMIC IMAGING</b>                          | Slit lamp/anterior segment photography<br>Fundus photography<br>External photography<br>Diagnostic/standardized A-Scan<br>Corneal topography<br>Scanning laser tests for glaucoma/retina <ul style="list-style-type: none"> <li>• HRT</li> <li>• GDx</li> <li>• OCT</li> </ul>                                                                                                                                                                | Slit lamp/anterior segment photography<br>Fundus photography<br>Fluorescein angiography<br>External photography<br>Imaging artifacts<br>Diagnostic/standardized A-Scan<br>B-Scan<br>Corneal topography<br>Scanning laser tests for glaucoma/retina <ul style="list-style-type: none"> <li>• HRT</li> <li>• GDx</li> <li>• OCT</li> </ul>                                                                                                                      | Slit lamp/anterior segment photography<br>Fundus photography<br>Fluorescein angiography<br>External photography<br>Imaging artifacts<br>Diagnostic/standardized A-Scan<br>B-Scan<br>Corneal topography<br>Scanning laser tests for glaucoma/retina <ul style="list-style-type: none"> <li>• HRT</li> <li>• GDx</li> <li>• OCT</li> </ul>                                                                                                                                                                         |
| <b>REFRACTOMETRY</b>                               | Refractive error (automated)<br>Manifest refractometry                                                                                                                                                                                                                                                                                                                                                                                        | Refractive error (automated)<br>Manifest refractometry<br>Retinoscopy                                                                                                                                                                                                                                                                                                                                                                                         | Refractive error (automated)<br>Manifest refractometry<br>Retinoscopy                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>SPECTACLE SKILLS</b>                            | Transpose cylinder readings                                                                                                                                                                                                                                                                                                                                                                                                                   | Transpose cylinder readings<br>Prescriptions<br>Vertex distance <ul style="list-style-type: none"> <li>• Measure</li> <li>• Conversion</li> </ul>                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>SUPPLEMENTAL SKILLS</b>                         | IOL power calculation<br>A/C depth<br>Pachymetry<br>Calibrate biometry instruments<br>Tear Tests <ul style="list-style-type: none"> <li>• Schirmer</li> <li>• BUT</li> <li>• Rose Bengal</li> </ul> Glare testing<br>Color vision testing<br>Contact A-Scan<br>Laser interferometry (IOL Master)                                                                                                                                              | IOL power calculation<br>Low vision<br>A/C depth<br>Pachymetry<br>Tear Tests <ul style="list-style-type: none"> <li>• Schirmer</li> <li>• BUT</li> <li>• Rose Bengal</li> </ul> Calibration <ul style="list-style-type: none"> <li>• Biometry instruments</li> <li>• Topography unit</li> </ul> Anterior chamber depth<br>Exophthalmometry<br>Glare testing<br>Color vision testing<br>Contact A-Scan<br>Wavefront diagnostics<br>Corneal sensitivity testing | IOL power calculation<br>Low vision<br>A/C depth<br>Pachymetry<br>Tear Tests <ul style="list-style-type: none"> <li>• Schirmer</li> <li>• BUT</li> <li>• Rose Bengal</li> </ul> Calibration <ul style="list-style-type: none"> <li>• Biometry instruments</li> <li>• Topography unit</li> </ul> Anterior chamber depth<br>Exophthalmometry<br>Glare testing<br>Color vision testing<br>Contact and Immersion A-Scan<br>Laser interferometry (IOL Master)<br>Wavefront diagnostics<br>Corneal sensitivity testing |
| <b>TONOMETRY</b>                                   | Goldmann applanation tonometer <ul style="list-style-type: none"> <li>• Clean, Disinfect, Calibrate</li> </ul>                                                                                                                                                                                                                                                                                                                                | Goldmann applanation tonometer <ul style="list-style-type: none"> <li>• Clean, Disinfect, Calibrate</li> </ul> Intraocular pressure                                                                                                                                                                                                                                                                                                                           | Goldmann applanation tonometer <ul style="list-style-type: none"> <li>• Clean, Disinfect, Calibrate</li> </ul> Intraocular pressure                                                                                                                                                                                                                                                                                                                                                                              |
| <b>VISUAL ASSESSMENT</b>                           | Visual acuity<br>Potential acuity meter measurement<br>Pinhole acuity                                                                                                                                                                                                                                                                                                                                                                         | Visual acuity <ul style="list-style-type: none"> <li>• Optotype</li> <li>• ETDRS</li> <li>• EVA</li> </ul> Projection chart<br>Contrast sensitivity testing<br>Potential acuity meter measurement<br>Laser interferometry (IOL Master)<br>Pinhole acuity                                                                                                                                                                                                      | Visual acuity <ul style="list-style-type: none"> <li>• Optotype</li> <li>• ETDRS</li> <li>• EVA</li> </ul> Projection chart<br>Contrast sensitivity testing<br>Potential acuity meter measurement<br>Laser interferometry (IOL Master)<br>Pinhole acuity                                                                                                                                                                                                                                                         |
| <b>VISUAL FIELDS</b>                               | Amsler Grid<br>Confrontation fields<br>Automated perimetry                                                                                                                                                                                                                                                                                                                                                                                    | Amsler Grid<br>Goldmann perimetry<br>Confrontation fields<br>Automated perimetry                                                                                                                                                                                                                                                                                                                                                                              | Amsler Grid<br>Goldmann perimetry<br>Confrontation fields<br>Automated perimetry                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## COT Exam Content Areas Effective Through July 31, 2013

Content areas effective after August 1, 2013 are noted in Appendix B

**COT Content Area Percentages**

| <b>CONTENT AREA</b>       | <b>COT%</b> |
|---------------------------|-------------|
| History Taking            | 7           |
| Basic Skills & Lensometry | 8           |
| Patient Services          | 4           |
| Basic Tonometry           | 4           |
| Instrument Maintenance    | 6           |
| General Medical Knowledge | 10          |
| Clinical Optics           | 14          |
| Basic Ocular Motility     | 10          |
| Visual Fields             | 12          |
| Contact Lenses            | 10          |
| Intermediate Tonometry    | 4           |
| Ocular Pharmacology       | 8           |
| Photography               | 3           |

### **Skill Areas for the COT Skill Evaluation**

Candidates will be asked to demonstrate their skill in each of the following seven areas:

- Lensometry - Demonstrate the ability to perform non-automated lensometry to determine the strength of the distance correction and the bifocal or trifocal add.
- Visual Fields - Demonstrate the ability to perform an automated visual field on a specified automated visual field test as determined by JCAHPO.
- Ocular Motility - Demonstrate the ability to detect a phoria or tropia, and identify the direction of the deviation using appropriate cover tests.
- Keratometry - Demonstrate the ability to perform keratometry.
- Retinoscopy - Demonstrate the ability to perform retinoscopy.
- Refinement - Demonstrate the ability to perform refinement.
- Tonometry - Demonstrate the ability to perform applanation tonometry.

# COT Exam Content Areas Effective Through July 31, 2013

Content areas effective after August 1, 2013 are noted in Appendix B

## COT Sub-Content Areas

| CONTENT AREAS                       | COT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HISTORY TAKING</b>               | <p>Presenting Complaint/History of Presenting Illness</p> <ul style="list-style-type: none"> <li>• Signs and symptoms</li> <li>• Triage</li> <li>• Refractive status</li> <li>• Injury</li> <li>• Contact lenses</li> <li>• Confidentiality</li> </ul> <p>Past Ocular History</p> <ul style="list-style-type: none"> <li>• Refractive status problems</li> <li>• Injury</li> <li>• Disease and prescriptions</li> <li>• Surgery and laser</li> <li>• Contact lenses</li> </ul> <p>Family History</p> <ul style="list-style-type: none"> <li>• Diabetes</li> <li>• Glaucoma</li> </ul> | <p>Family History (cont.)</p> <ul style="list-style-type: none"> <li>• Hypertension</li> <li>• Ocular diseases and dystrophies</li> <li>• Strabismus</li> <li>• Other</li> </ul> <p>Systemic Illness, Past and Present</p> <ul style="list-style-type: none"> <li>• Hypertension</li> <li>• Diabetes</li> <li>• Pulmonary problems</li> <li>• Arthritis</li> <li>• Sickle cell disease</li> <li>• Surgical procedures</li> <li>• Major infections</li> <li>• Other</li> </ul> <p>Medications</p> <ul style="list-style-type: none"> <li>• Aspirin-containing medications</li> <li>• Diuretics</li> </ul> | <p>Medications (cont.)</p> <ul style="list-style-type: none"> <li>• Blood pressure medications</li> <li>• Birth control pills</li> <li>• Steroids</li> <li>• Other</li> </ul> <p>Allergies and Drug Reactions</p> <ul style="list-style-type: none"> <li>• Penicillin</li> <li>• Sulfa</li> <li>• Local anesthesia</li> <li>• Fluorescein</li> <li>• Other</li> </ul> <p>Partially Sighted Patient</p> <ul style="list-style-type: none"> <li>• Onset of visual loss</li> <li>• Use of low vision aids</li> <li>• Problems/goals</li> <li>• Home/family/community support</li> </ul> |
| <b>BASIC SKILLS &amp; LENSOLOGY</b> | <p>Method of Measuring/Recording Acuity</p> <ul style="list-style-type: none"> <li>• Distance acuity</li> <li>• Near acuity</li> <li>• Children</li> <li>• Low vision</li> <li>• Illumination of target and background</li> <li>• Pinhole</li> <li>• Artifacts</li> <li>• Recording</li> </ul> <p>Color Vision Testing</p> <ul style="list-style-type: none"> <li>• Color plates</li> <li>• D-15</li> </ul>                                                                                                                                                                           | <p>Color Vision Testing (cont.)</p> <ul style="list-style-type: none"> <li>• Farnsworth-Munsell</li> <li>• Physiology</li> <li>• Children</li> </ul> <p>LensoLOGY</p> <ul style="list-style-type: none"> <li>• Sphere</li> <li>• Cylinder power/axis</li> <li>• Prism</li> <li>• Multifocal power</li> <li>• Multifocal induced prism</li> <li>• Base curve</li> <li>• Lensometer</li> <li>• Lens clock</li> </ul>                                                                                                                                                                                       | <p>LensoLOGY (cont.)</p> <ul style="list-style-type: none"> <li>• Estimation with loose lenses</li> <li>• Aphakic lenses</li> <li>• Recording prescription</li> <li>• Transposition</li> </ul> <p>A-Scan Biometry</p> <p>Exophthalmometry</p> <p>Amsler Grid</p> <p>Schirmer Tests</p> <p>Evaluation of Pupils</p> <p>Estimation of Anterior Chamber Depth</p>                                                                                                                                                                                                                       |
| <b>PATIENT SERVICES</b>             | <p>Ocular Dressings and Shields</p> <ul style="list-style-type: none"> <li>• Indications</li> <li>• Proper use</li> </ul> <p>Drug Delivery (Advantages/Disadvantages)</p> <ul style="list-style-type: none"> <li>• Drops</li> <li>• Ointments</li> <li>• Sustained release</li> <li>• Injections</li> <li>• Systemic</li> <li>• Complications</li> </ul>                                                                                                                                                                                                                              | <p>Spectacle Principles</p> <ul style="list-style-type: none"> <li>• Interpupillary distance</li> <li>• Frames</li> <li>• Multifocal</li> <li>• "Safety" lenses and frames</li> <li>• Adjustments and repairs</li> <li>• Care of spectacles</li> <li>• Lens materials</li> </ul>                                                                                                                                                                                                                                                                                                                         | <p>Assisting Patient</p> <ul style="list-style-type: none"> <li>• Physically Disabled</li> <li>• Visually disabled</li> <li>• Pediatric/children</li> </ul> <p>Minor Surgery</p> <ul style="list-style-type: none"> <li>• Assisting surgeon</li> <li>• Instructing patient</li> </ul>                                                                                                                                                                                                                                                                                                |
| <b>BASIC TONOMETRY</b>              | <p>Applanation</p> <ul style="list-style-type: none"> <li>• Principles</li> <li>• Errors</li> <li>• Cleaning and sterilizing</li> <li>• Advantages/disadvantages</li> <li>• Technique</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                      | <p>Non-Contact Complications and Contraindications</p> <p>Scleral Rigidity</p> <ul style="list-style-type: none"> <li>• General concepts</li> <li>• Methods of assessing scleral rigidity</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Factors Altering Intraocular Pressure</p> <ul style="list-style-type: none"> <li>• Squeezing eyelids</li> <li>• Heartbeat</li> <li>• Breath holding</li> <li>• Tight collar</li> <li>• Body position</li> <li>• Other</li> </ul>                                                                                                                                                                                                                                                                                                                                                  |
| <b>INSTRUMENT MAINTENANCE</b>       | <p>Acuity Projectors</p> <p>Ophthalmoscopes</p> <ul style="list-style-type: none"> <li>• Direct</li> <li>• Indirect</li> </ul> <p>Retinoscopes</p> <p>LensoMeters</p>                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>Perimeters</p> <p>Tangent Screen</p> <p>Phoropters</p> <p>Slit Lamps</p> <p>Ultrasound</p> <p>Keratometers</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Lenses</p> <p>Tonometers</p> <p>Muscle Light</p> <p>Special Instruments (Equipment)</p> <p>Surgical Instruments</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>GENERAL MEDICAL KNOWLEDGE</b>    | <p>Cardiopulmonary Resuscitation</p> <ul style="list-style-type: none"> <li>• Fainting</li> <li>• Cardiac Arrest</li> <li>• Acute drug reaction</li> </ul> <p>Anatomy</p> <ul style="list-style-type: none"> <li>• Cardiovascular</li> <li>• Respiratory</li> <li>• Endocrine</li> <li>• Nervous</li> <li>• Ocular</li> </ul> <p>Physiology</p> <ul style="list-style-type: none"> <li>• Cardiovascular</li> <li>• Respiratory</li> <li>• Endocrine</li> <li>• Nervous</li> <li>• Ocular</li> </ul>                                                                                   | <p>Systemic Diseases</p> <ul style="list-style-type: none"> <li>• Diabetes</li> <li>• Hypertension</li> <li>• Cancer</li> <li>• Atherosclerosis</li> <li>• Blood</li> <li>• Infections</li> <li>• Blood dyscrasia</li> <li>• Infectious disease</li> </ul> <p>Ocular Disease</p> <ul style="list-style-type: none"> <li>• Refractive errors</li> <li>• Infection</li> <li>• Injury</li> <li>• Red eye</li> <li>• Presbyopia</li> <li>• Other common disorders</li> </ul>                                                                                                                                 | <p>Ocular Emergencies</p> <ul style="list-style-type: none"> <li>• First aid</li> <li>• Management in the absence of the physician</li> </ul> <p>Metric Conversions</p> <p>Fundamentals of Microbial Control</p> <ul style="list-style-type: none"> <li>• Sanitation</li> <li>• Disinfection</li> <li>• Sterilization</li> <li>• Contamination</li> </ul>                                                                                                                                                                                                                            |

# COT Exam Content Areas Effective Through July 31, 2013

**Content areas effective after August 1, 2013 are noted in Appendix B**

## COT Sub-Content Areas

| CONTENT AREAS                 | COT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CLINICAL OPTICS</b>        | Optics <ul style="list-style-type: none"> <li>Geometric</li> <li>Clinical</li> <li>Physiologic</li> </ul> Retinoscopy <ul style="list-style-type: none"> <li>Principles</li> <li>Techniques</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Refractometry <ul style="list-style-type: none"> <li>Fogging</li> <li>Astigmatic dials</li> <li>Cross cylinder</li> <li>Duochrome</li> <li>Accommodation</li> <li>General principles</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                | Advanced Spectacle Principles <ul style="list-style-type: none"> <li>Vertex distance</li> <li>Prism correction</li> <li>Bicentric grinding (slab off)</li> <li>Aphakic spectacles</li> </ul> Low Vision Aids                                                                                                                                                                                                                                                  |
| <b>BASIC OCULAR MOTILITY</b>  | Extraocular Muscle Actions<br>Strabismus <ul style="list-style-type: none"> <li>Phoria/tropia</li> <li>Horizontal deviations</li> <li>Vertical deviations</li> <li>Pseudosstrabismus</li> <li>Paralytic (including primary and secondary deviations)</li> </ul> Amblyopia Detection                                                                                                                                                                                                                                                                                                                                                                    | Evaluation Assessment Methods <ul style="list-style-type: none"> <li>Cover/uncover, alternate cover tests</li> <li>Krimsky/Hirschberg</li> <li>Diagnostic positions of gaze</li> <li>Maddox rod</li> <li>Worth 4 – dot</li> <li>Stereopsis</li> <li>Near point of convergence and accommodation</li> </ul>                                                                                                                                                                                                                                                                                     | Evaluation Assessment Methods (cont.) <ul style="list-style-type: none"> <li>Ductions and versions, head tilt</li> <li>Vergences</li> <li>Risley prism</li> <li>Diplopia (e.g. Red Glass)</li> <li>Fusion (e.g. Bagolini lens)</li> </ul>                                                                                                                                                                                                                     |
| <b>VISUAL FIELDS</b>          | Visual Pathways <ul style="list-style-type: none"> <li>Retina</li> <li>Retinal nerve fiber layer</li> <li>Optic nerve</li> <li>Chiasm</li> <li>Optic tract</li> <li>Lateral geniculate body</li> <li>Optic radiation</li> <li>Occipital cortex</li> </ul> Visual Fields <ul style="list-style-type: none"> <li>Visual field terminology (isopters, threshold, apostilb, decibel)</li> <li>Definition of the visual field</li> <li>The “island of vision” analogy</li> </ul> Methods of Measuring the Visual Fields <ul style="list-style-type: none"> <li>Screening (single stimulus, multiple stimuli, Harrington-Flocks screener, others)</li> </ul> | Techniques <ul style="list-style-type: none"> <li>Manual (confrontation, tangent screen, autoplot, arc perimeter, Goldmann)</li> </ul> Errors in Visual Field Testing <ul style="list-style-type: none"> <li>Machine calibration</li> <li>Recording and printing results</li> <li>Correcting lens (power and positioning)</li> <li>Stimulus selection</li> <li>Patient preparation (instructions, positioning, comfort, special situations, e.g. low vision, wheelchairs)</li> <li>Test selection</li> <li>Catch trials, fixation losses, and fluctuation</li> <li>Artifactual loss</li> </ul> | Visual Field Defects from Disease <ul style="list-style-type: none"> <li>Retinal disease</li> <li>Optic nerve disease (glaucoma, drusen, optic neuritis)</li> <li>Neurological</li> <li>Non-organic</li> </ul>                                                                                                                                                                                                                                                |
| <b>CONTACT LENSES</b>         | Basic Principles <ul style="list-style-type: none"> <li>Hard lenses</li> <li>Soft lenses</li> <li>Toric lenses</li> <li>Astigmatism</li> <li>Bifocal</li> <li>Aphakic</li> <li>Extended wear</li> <li>Gas permeable</li> <li>Truncated</li> <li>Bandage lenses</li> <li>Oxygen permeability</li> <li>Lens characteristics</li> <li>Rigid lenses</li> </ul> Fitting Procedures <ul style="list-style-type: none"> <li>Keratometry</li> <li>Corneal diameter</li> <li>Pupil diameter</li> <li>Tear secretion</li> </ul>                                                                                                                                  | Fitting Procedures (cont.) <ul style="list-style-type: none"> <li>Eyelid tightness and fissure size</li> <li>Fluorescein pattern</li> <li>Spectacle prescription conversion</li> <li>Over-refraction</li> <li>Pediatric</li> <li>Contraindications</li> </ul> Patient Instruction <ul style="list-style-type: none"> <li>Insertion</li> <li>Removal</li> <li>Cleaning</li> <li>Storage</li> <li>Hygiene</li> <li>Solutions</li> <li>Wearing time</li> </ul> Troubleshooting Problems <ul style="list-style-type: none"> <li>Tight</li> <li>Loose</li> <li>Vascularization</li> </ul>           | Troubleshooting Problems (cont.) <ul style="list-style-type: none"> <li>Ulcers</li> <li>Spectacle blur</li> <li>Giant papillary conjunctivitis</li> <li>Deposits</li> <li>Pain</li> <li>Keratoconus</li> <li>Edema</li> <li>Solutions</li> <li>Modifications</li> <li>Vision</li> </ul> Verification of Lenses <ul style="list-style-type: none"> <li>Power</li> <li>Base Curve</li> <li>Diameter</li> <li>Central Thickness</li> <li>Edge profile</li> </ul> |
| <b>INTERMEDIATE TONOMETRY</b> | Aqueous Humor Dynamics<br>Glaucoma <ul style="list-style-type: none"> <li>Basic mechanisms</li> <li>Angle closure</li> <li>Open angle</li> <li>Cupping</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Glaucoma (cont.) <ul style="list-style-type: none"> <li>Basic medical management</li> <li>Basic surgical management</li> </ul> Indentation <ul style="list-style-type: none"> <li>Principles</li> <li>Errors</li> </ul>                                                                                                                                                                                                                                                                                                                                                                        | Indentation (cont.) <ul style="list-style-type: none"> <li>Cleaning and sterilizing</li> <li>Advantages/disadvantages</li> <li>Technique</li> </ul>                                                                                                                                                                                                                                                                                                           |
| <b>OCULAR PHARMACOLOGY</b>    | Types, Strengths, Actions and Complications<br>Anesthetics<br>Mydriatics and Cycloplegics<br>Epinephrine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Beta-Blockers<br>Miotics<br>Steroids<br>Antibiotics<br>Carbonic Anhydrase Inhibitors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Vasoconstrictors<br>Antihistamines<br>Osmotic Agents<br>Nonsteroidal Anti-Inflammatories<br>Others                                                                                                                                                                                                                                                                                                                                                            |
| <b>PHOTOGRAPHY</b>            | Basics of Photography <ul style="list-style-type: none"> <li>Film</li> <li>Exposure</li> <li>Focal length</li> <li>Depth of field</li> <li>Synchronization</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Basics of Photography (cont.) <ul style="list-style-type: none"> <li>Beam splitters</li> <li>Reticles</li> <li>Ocular</li> <li>Focus</li> <li>Video</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                 | Basics of Photography (cont.) <ul style="list-style-type: none"> <li>Astigmatic correction</li> </ul> Fundus Photography<br>Defects/Artifacts                                                                                                                                                                                                                                                                                                                 |