

APPENDIX B

COT Exam Content Areas Effective Until Mid 2012

CCOA and COT CONTENT AREA PERCENTAGES

CONTENT AREA	CCOA %	COT %
History Taking	20	7
Basic Skills & Lensometry	17	8
Patient Services	16	4
Basic Tonometry	15	4
Instrument Maintenance	11	6
General Medical Knowledge	21	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.

APPENDIX B

CCOA and COT SUB-CONTENT AREAS

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

CONTENT AREAS	CCOA	COT
HISTORY TAKING	<p>Presenting Complaint/History of Presenting Illness</p> <ul style="list-style-type: none"> • Signs and symptoms • Triage • Refractive Status • Injury • Contact Lenses • Confidentiality <p>Past Ocular History</p> <ul style="list-style-type: none"> • Refractive status problems • Injury • Disease and prescriptions • Surgery and laser • Contact lenses <p>Family History</p> <ul style="list-style-type: none"> • Diabetes • Glaucoma • Hypertension • Ocular diseases and dystrophies • Strabismus • Other <p>Systemic Illness, Past and Present</p> <ul style="list-style-type: none"> • Hypertension • Diabetes • Cardiac problems • Pulmonary problems • Arthritis • Sickle Cell disease • Surgical Procedures • Major infections • Other <p>Medications</p> <ul style="list-style-type: none"> • Aspirin-containing medications • Diuretics • Blood pressure medications • Birth control pills • Steroids • Other <p>Allergies and Drug Reactions</p> <ul style="list-style-type: none"> • Penicillin • Sulfa • Local anesthesia • Fluorescein • Other <p>Partially Sighted Patient</p> <ul style="list-style-type: none"> • Onset of visual loss • Use of low vision aids • Problems/goals • Home/family/community support 	<p>Presenting Complaint/History of Presenting Illness</p> <ul style="list-style-type: none"> • Signs and symptoms • Triage • Refractive Status • Injury • Contact Lenses • Confidentiality <p>Past Ocular History</p> <ul style="list-style-type: none"> • Refractive status problems • Injury • Disease and prescriptions • Surgery and laser • Contact lenses <p>Family History</p> <ul style="list-style-type: none"> • Diabetes • Glaucoma • Hypertension • Ocular diseases and dystrophies • Strabismus • Other <p>Systemic Illness, Past and Present</p> <ul style="list-style-type: none"> • Hypertension • Diabetes • Cardiac problems • Pulmonary problems • Arthritis • Sickle Cell disease • Surgical Procedures • Major infections • Other <p>Medications</p> <ul style="list-style-type: none"> • Aspirin-containing medications • Diuretics • Blood pressure medications • Birth control pills • Steroids • Other <p>Allergies and Drug Reactions</p> <ul style="list-style-type: none"> • Penicillin • Sulfa • Local anesthesia • Fluorescein • Other <p>Partially Sighted Patient</p> <ul style="list-style-type: none"> • Onset of visual loss • Use of low vision aids • Problems/goals • Home/family/community support
BASIC SKILLS & LENSOMETRY	<p>Method of Measuring/Recording Acuity</p> <ul style="list-style-type: none"> • Distance acuity • Near acuity • Children • Low vision • Illumination of target and background • Pinhole • Artifacts • Recording 	<p>Method of Measuring/Recording Acuity</p> <ul style="list-style-type: none"> • Distance acuity • Near acuity • Children • Low vision • Illumination of target and background • Pinhole • Artifacts • Recording

APPENDIX B (Continued)

CONTENT AREAS	CCOA	COT
BASIC SKILLS & LENSOMETRY (Continued)	<p>Color Vision Testing</p> <ul style="list-style-type: none"> • Color plates • D-15 • Farnsworth-Munsell • Physiology • Children <p>Lensometry</p> <ul style="list-style-type: none"> • Sphere • Cylinder power/axis • Prism • Multifocal power • Multifocal induced prism • Base curve • Lensometer • Lens “clock” • Estimation with loose lenses • Aphakic lenses • Recording prescription • Transposition <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>	<p>Color Vision Testing</p> <ul style="list-style-type: none"> • Color plates • D-15 • Farnsworth-Munsell • Physiology • Children <p>Lensometry</p> <ul style="list-style-type: none"> • Sphere • Cylinder power/axis • Prism • Multifocal power • Multifocal induced prism • Base curve • Lensometer • Lens “clock” • Estimation with loose lenses • Aphakic lenses • Recording prescription • Transposition <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>
PATIENT SERVICES	<p>Ocular Dressings and Shields</p> <ul style="list-style-type: none"> • Indications • Proper use <p>Drug Delivery (Advantages/Disadvantages)</p> <ul style="list-style-type: none"> • Drops • Ointments • Sustained release • Injections • Systemic • Complications <p>Spectacle Principles</p> <ul style="list-style-type: none"> • Interpupillary distance • Frames • Multifocal • “Safety” lenses and frames • Adjustments and repairs • Care of spectacles • Lens materials <p>Assisting Patient</p> <ul style="list-style-type: none"> • Physically Disabled • Visually disabled • Pediatric/children <p>Minor Surgery</p> <ul style="list-style-type: none"> • Assisting surgeon • Instructing patient 	<p>Ocular Dressings and Shields</p> <ul style="list-style-type: none"> • Indications • Proper use <p>Drug Delivery (Advantages/Disadvantages)</p> <ul style="list-style-type: none"> • Drops • Ointments • Sustained release • Injections • Systemic • Complications <p>Spectacle Principles</p> <ul style="list-style-type: none"> • Interpupillary distance • Frames • Multifocal • “Safety” lenses and frames • Adjustments and repairs • Care of spectacles • Lens materials <p>Assisting Patient</p> <ul style="list-style-type: none"> • Physically Disabled • Visually disabled • Pediatric/children <p>Minor Surgery</p> <ul style="list-style-type: none"> • Assisting surgeon • Instructing patient
BASIC TONOMOMETRY	<p>Applanation</p> <ul style="list-style-type: none"> • Principles • Errors • Cleaning and sterilizing • Advantages/disadvantages • Technique <p>Non-Contact Complications and Contraindications</p> <p>Scleral Rigidity</p> <ul style="list-style-type: none"> • General concepts • Methods of assessing scleral rigidity <p>Factors Altering Intraocular Pressure</p> <ul style="list-style-type: none"> • Squeezing eyelids • Heartbeat • Breath holding • Tight collar • Body position • Other 	<p>Applanation</p> <ul style="list-style-type: none"> • Principles • Errors • Cleaning and sterilizing • Advantages/disadvantages • Technique <p>Non-Contact Complications and Contraindications</p> <p>Scleral Rigidity</p> <ul style="list-style-type: none"> • General concepts • Methods of assessing scleral rigidity <p>Factors Altering Intraocular Pressure</p> <ul style="list-style-type: none"> • Squeezing eyelids • Heartbeat • Breath holding • Tight collar • Body position • Other

APPENDIX B (Continued)

CONTENT AREAS	CCOA	COT
INSTRUMENT MAINTENANCE	Acuity Projectors Ophthalmoscopes <ul style="list-style-type: none"> • Direct • Indirect Retinoscopes Lensometers Perimeters Tangent Screen Phoropters Slit Lamps Ultrasound Keratometers Lenses Tonometers Muscle Light Special Instruments (Equipment) Surgical Instruments	Acuity Projectors Ophthalmoscopes <ul style="list-style-type: none"> • Direct • Indirect Retinoscopes Lensometers Perimeters Tangent Screen Phoropters Slit Lamps Ultrasound Keratometers Lenses Tonometers Muscle Light Special Instruments (Equipment) Surgical Instruments
GENERAL MEDICAL KNOWLEDGE	Cardiopulmonary Resuscitation <ul style="list-style-type: none"> • Fainting • Cardiac Arrest • Acute drug reaction Anatomy <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Endocrine • Nervous • Ocular Physiology <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Endocrine • Nervous • Ocular Systemic Diseases <ul style="list-style-type: none"> • Diabetes • Hypertension • Cancer • Atherosclerosis • Blood • Infections • Blood dyscrasia • Infectious disease Ocular Disease <ul style="list-style-type: none"> • Refractive errors • Infection • Injury • Red eye • Presbyopia • Other common disorders Ocular Emergencies <ul style="list-style-type: none"> • First aid • Management in the absence of the physician Metric Conversions Fundamentals of Microbial Control <ul style="list-style-type: none"> • Sanitation • Disinfection • Sterilization • Contamination 	Cardiopulmonary Resuscitation <ul style="list-style-type: none"> • Fainting • Cardiac Arrest • Acute drug reaction Anatomy <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Endocrine • Nervous • Ocular Physiology <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Endocrine • Nervous • Ocular Systemic Diseases <ul style="list-style-type: none"> • Diabetes • Hypertension • Cancer • Atherosclerosis • Blood • Infections • Blood dyscrasia • Infectious disease Ocular Disease <ul style="list-style-type: none"> • Refractive errors • Infection • Injury • Red eye • Presbyopia • Other common disorders Ocular Emergencies <ul style="list-style-type: none"> • First aid • Management in the absence of the physician Metric Conversions Fundamentals of Microbial Control <ul style="list-style-type: none"> • Sanitation • Disinfection • Sterilization • Contamination

APPENDIX B (Continued)

CONTENT AREAS	CCOA	COT
<p align="center">CLINICAL OPTICS</p>		<p>Optics</p> <ul style="list-style-type: none"> • Geometric • Clinical • Physiologic <p>Retinoscopy</p> <ul style="list-style-type: none"> • Principles • Techniques <p>Refractometry</p> <ul style="list-style-type: none"> • Fogging • Astigmatic dials • Cross cylinder • Duochrome • Accommodation • General principles <p>Advanced Spectacle Principles</p> <ul style="list-style-type: none"> • Vertex distance • Prism correction • Bicentric grinding (slab off) • Aphakic spectacles <p>Low Vision Aids</p>
<p align="center">BASIC OCULAR MOTILITY</p>		<p>Extraocular Muscle Actions</p> <p>Strabismus</p> <ul style="list-style-type: none"> • Phoria/tropia • Horizontal deviations • Vertical deviations • Pseudostrabismus • Paralytic (including primary and secondary deviations) <p>Amblyopia Detection</p> <p>Evaluation Assessment Methods</p> <ul style="list-style-type: none"> • Cover/uncover, alternate cover tests • Krimsky/Hirschberg • Diagnostic positions of gaze • Maddox rod • Worth 4 – dot • Stereopsis • Near point of convergence and accommodation • Ductions and versions, head tilt • Vergences • Risley prism • Diplopia (e.g. Red Glass) • Fusion (e.g. Bagolini lens)
<p align="center">VISUAL FIELDS</p>		<p>Visual Pathways</p> <ul style="list-style-type: none"> • Retina • Retinal nerve fiber layer • Optic nerve • Chiasm • Optic tract • Lateral geniculate body • Optic radiation • Occipital cortex <p>Visual Fields</p> <ul style="list-style-type: none"> • Visual field terminology (isopters, threshold, apostilb, decibel) • Definition of the visual field • The “island of vision” analogy <p>Methods of Measuring the Visual Fields</p> <ul style="list-style-type: none"> • Screening (single stimulus, multiple stimuli, Harrington-Flocks screener, others) <p>Techniques</p> <ul style="list-style-type: none"> • Manual (confrontation, tangent screen, autoplot, arc perimeter, Goldmann)

APPENDIX B (Continued)

CONTENT AREAS	CCOA	COT
VISUAL FIELDS (Continued)		<p>Errors in Visual Field Testing</p> <ul style="list-style-type: none"> • Machine calibration • Recording and printing results • Correcting lens (power and positioning) • Stimulus selection • Patient preparation (instructions, positioning, comfort, special situations, e.g. low vision, wheelchairs) • Test selection • Catch trials, fixation losses, and fluctuation • Artfactual loss <p>Visual Field Defects from Disease</p> <ul style="list-style-type: none"> • Retinal disease • Optic nerve disease (glaucoma, drusen, optic neuritis) • Neurological • Non-organic
CONTACT LENSES		<p>Basic Principles</p> <ul style="list-style-type: none"> • Hard lenses • Soft lenses • Toric lenses • Astigmatism • Bifocal • Aphakic • Extended wear • Gas permeable • Truncated • Bandage lenses • Oxygen permeability • Lens characteristics • Rigid lenses <p>Fitting Procedures</p> <ul style="list-style-type: none"> • Keratometry • Corneal diameter • Pupil diameter • Tear secretion • Eyelid tightness and fissure size • Fluorescein pattern • Spectacle prescription conversion • Over-refraction • Pediatric • Contraindications <p>Patient Instruction</p> <ul style="list-style-type: none"> • Insertion • Removal • Cleaning • Storage • Hygiene • Solutions • Wearing time <p>Troubleshooting Problems</p> <ul style="list-style-type: none"> • Tight • Loose • Vascularization • Ulcers • Spectacle blur • Giant papillary conjunctivitis • Deposits • Pain • Keratoconus • Edema • Solutions • Modifications • Vision <p>Verification of Lenses</p> <ul style="list-style-type: none"> • Power • Base Curve • Diameter • Central Thickness • Edge profile

APPENDIX B (Continued)

CONTENT AREAS	CCOA	COT
<p align="center">INTERMEDIATE TONOMETRY</p>		<p>Aqueous Humor Dynamics Glaucoma</p> <ul style="list-style-type: none"> • Basic mechanisms • Angle closure • Open angle • Cupping • Basic medical management • Basic surgical management <p>Indentation</p> <ul style="list-style-type: none"> • Principles • Errors • Cleaning and sterilizing • Advantages/disadvantages • Technique
<p align="center">OCULAR PHARMACOLOGY</p>		<p>Types, Strengths, Actions and Complications Anesthetics Mydriatics and Cycloplegics Epinephrine Beta-Blockers Miotics Steroids Antibiotics Carbonic Anhydrase Inhibitors Vasoconstrictors Antihistamines Osmotic Agents Nonsteroidal Anti-Inflammatories Others</p>
<p align="center">PHOTOGRAPHY</p>		<p>Basics of Photography</p> <ul style="list-style-type: none"> • Film • Exposure • Focal length • Depth of field • Synchronization • Beam splitters • Reticles • Ocular • Focus • Video • Astigmatic correction <p>Fundus Photography Defects/Artifacts</p>