Part 2 MRCSI (Ophth) Written Examination regulations and guidance notes

Eligibility to take the examination
Candidates must have passed MRCSI (Ophth) Part 1 or FRCOphth Part 1. The Part 2 written examination must be passed within four years of success in Part 1 MRCSI (Ophth) or Part 1 FRCOphth. However, if more than four years have lapsed since passing Part 1, that part can be re-taken.

For examinations held after January 1st 2014, candidates must have completed 2 years in training posts in ophthalmology before sitting the Part 2 written examination. The Part 2 written examination must be passed in order to proceed to the Part 2 clinical examination. Candidates applying to sit the Part 2 written and clinical examinations in the same semester who fail the written examination and hence are not eligible to sit the clinical examination are entitled to a full refund of the clinical examination fee. Alternatively, they can transfer the fee to a subsequent attempt.

Examination content
This is an examination of clinical ophthalmology, clinical optics and refraction, and ophthalmic pathology. General basic science questions that have relevance to the practice of ophthalmology will also be asked. See below for a detailed examination syllabus.

Format of the examination
The examination comprises one multiple choice question (MCQ) paper and one data objective structured examination (data OSE) paper. The MCQ paper comprises 100 single best answer questions (also known as type A) and 3 hours is allowed. Each question consists of an initial stem followed by 5 possible answers, identified A, B, C, D and E. Candidates should select one item they believe to be correct. Every other item in that question must be left blank. Questions may include printed photographic reproduction of clinical findings including photographs, imaging and graphical data or pathological material relating to the questions concerned. The data OSE paper comprises 10 questions with 10 minutes allowed for each question. In each question, a clinical scenario or investigation is presented followed by a series of questions relating to this. There is no negative marking in either paper. Some samples questions can be found below.

Standard setting
The pass mark is determined in advance of each examination by the Examinations Committee using the Angoff method of standard setting for the MCQ paper and the data OSE.

Overall result
Candidates will receive a pass or fail based on their performance against the pass mark determined by the standard setting examination committee. Both the MCQ and data OSE papers must be passed. Candidates who fail either the MCQ or the data OSE will be required to repeat both parts at their next attempt.
Limit on attempts
There are no limits to the number of attempts at Part 2 MRCSI.

Timing and venue
The examination is held twice a year at the Royal College of Surgeons in Ireland, 123 St. Stephen’s Green, Dublin 2. The MCQ examination is held in the morning and the data OSE in the afternoon of the same day. Further information can be found under postgraduate examination calendar on the RCSI website.

Recommendations
Candidates should prepare for the Part 2 MRCSI using the recommended reading list or similar texts and by reading the current medical literature to keep up to date with clinically relevant developments in ophthalmology. Clinical experience in suitable training posts is needed to achieve the standard set in this examination. It is recommended that candidates make every effort to avail of learning opportunities that present themselves whilst performing day to day clinical activities. There is a particular emphasis on clinical knowledge, clinical data analysis and problem-solving in the Part 2 MRCSI written examination.

NOTE: These Regulations are under continual review. It is recommended that candidates review the RCSI website to ensure that they have the most up-to-date information. Any changes will be announced on the website.

MRCSI (Ophth) Examinations Committee June 24th 2014
Syllabus

The examination syllabus is designed to complement the curriculum of Basic Specialist Training (BST) of the Irish College of Ophthalmologists. Further details of this curriculum can be found at http://www.eyedoctors.ie/trainees/bst.asp. It is recommended that candidates familiarise themselves with the requirements for completion of BST as described on the ICO website.

Main subjects:
Generic competencies and professionalism
Clinical history taking and examination in ophthalmology
Investigations in ophthalmology
Principles of ophthalmic surgery
Clinical optics
Clinical ophthalmology
  Cornea & external diseases
  Cataract & Refractive surgery
  Oculoplastics, lacrimal and orbital disease
  Glaucoma
  Medical Retinal disease
  Vitreoretinal surgery
  Uveitis
  Ocular oncology
  Neuroophthalmology
  Paediatric Ophthalmology & Strabismus
  General medicine relevant to ophthalmology

Ophthalmic pathology

Generic competencies and professionalism
Professional standards, ethics and good medical practice
Principles of clinical governance
Clinical audit and patient safety
Communication skills:
  Breaking bad news
  Dealing with distressed patients and/or relatives
  Dealing with complaints
  Communicating with colleagues

Visual impairment
  International definitions
  Psychological and social implications for the patient
  Available support resources

Driving and occupational regulations related to visual impairment in Ireland/ United Kingdom

Principles of evidence based medicine
Basic epidemiology and clinical research techniques

Clinical history taking and examination in ophthalmology
Candidates must demonstrate competence in clinical assessment in all areas of ophthalmology and relevant medical specialties.

Investigations in ophthalmology
Keratometry
Corneal topography
Pachymetry
Optical coherence tomography of anterior segment
Specular microscopy
Confocal microscopy
Wavefront analysis
Microbiological investigations
  Diagnostic corneal scrape
  Conjunctival swabs
  Intra-ocular samples; vitreous biopsy, anterior chamber tap
Schirmer’s test
Retinal photography
Optical coherence tomography of posterior segment
Fluorescein angiography
Indocyanine green angiography
Scanning laser ophthalmoscopy
Scanning laser polarimetry
A and B scans
Ultrasound biomicroscopy
Doppler ultrasound
Dacryocystography
Plain skull and chest X ray
CT thorax
Orbital and neuro-CT scans
Orbital and neuro-MRI scans
Neuro-angiography
Electroretinography
Electrooculography
Visually evoked potentials
Humphrey and other automated perimeters
Goldmann perimetry
Hess charts
DEXA scans
Urinalysis
Serum biochemistry, haematology, immunology, relevant endocrine blood tests
Investigation of patients with suspected TB, syphilis and other relevant infectious diseases

**Principles of ophthalmic surgery**
Sterilisation
Surgical instrumentation
Sutures and their uses
Common ophthalmic surgical procedures
Management of trauma to the eye and adnexae

**Clinical optics**
Notation of lenses: spectacle prescribing, simple transposition, toric transposition
Identification of unknown lenses: neutralisation, focimeter, Geneva lens measure
Aberrations of lenses: correction of aberrations relevant to the eye, Duochrome test
Optics of the eye: transmittance of light by the optic media, schematic and reduced eye, Stiles-Crawford effect, visual acuity, contrast sensitivity, catoptric images, emmetropia, accommodation, Purkinje shift, pinhole
Ametropia: myopia, hypermetropia, astigmatism, anisometropia, aniseikonia, aphakia
Accommodative problems: insufficiency, excess, AC/A ratio
Refractive errors: prevalence, inheritance, changes with age, surgically induced
Correction of ametropia: spectacle lenses, contact lenses, intraocular lenses, principles of refractive surgery
Problems of spectacles in aphakia: effect of spectacles and contact lens correction on accommodation and convergence, effective power of lenses, back vertex distance, spectacle magnification, calculation of intraocular lens power, presbyopia
Low visual aids: high reading addition, magnifying lenses, telescopic aids - Galilean telescope
Clinical refraction; near and distance vision correction, tests of binocularity
Prescribing prisms
Direct and indirect ophthalmoscopes
Retinoscope
Focimeter
Simple magnifying glass (Loupe)
Lensmeter
Automated refractor
Slit-lamp microscope
Applanation tonometry
Keratometer
Specular microscope
Operating microscope
Zoom lens principle
Corneal pachymeter
Lenses used for slit lamp biomicroscopy (panfunduscope, gonioscope Goldmann lens, 90D lens, etc.)
Fundus camera
Lasers
Retinal and optic nerve imaging devices (OCT, SLO, GDx)

Clinical ophthalmology

Cornea and external eye disease
Clinical anatomy

Infections of the conjunctiva
Cicatricial conjunctival disease: Stevens-Johnson syndrome, mucous membrane pemphigoid; other causes
Allergic conjunctival disease; vernal keratoconjunctivitis, atopic keratoconjunctivitis, seasonal allergic conjunctivitis, giant papillary conjunctivitis
Conjunctival malignancies: ocular surface squamous neoplasia, melanocytic neoplasms
Pterygium
Benign lesions of the conjunctiva

Blepharitis and acne rosacea

Scleritis and episcleritis

Corneal infections: bacterial keratitis, herpes simplex keratitis, varicella zoster keratitis, fungal keratitis, acanthamoeba keratitis
Recurrent corneal erosion syndrome
Dry eye syndrome
Autoimmune corneal disease: peripheral ulcerative keratitis and corneal melting disorders, Mooren’s ulcer
Keratoconus and other ectasias
Pseudophakic/aphakic bullous keratopathy; other causes of corneal oedema
Corneal dystrophies, degenerations and deposits
Neurotrophic keratopathy
Trauma: penetrating, chemical injury
Congenital corneal abnormalities
Contact lenses
Corneal Transplantation, limbal stem cell transplanation
Eye banking

Cataract and refractive surgery
Clinical anatomy of the lens

Acquired cataract:
Aetiology
Management
  - Biometry and planning of refractive outcome
  - Intraocular lenses
Pre-operative evaluation
Predicting surgical challenges
Surgical methods, equipment and instrument
Anaesthetic techniques
Complications of cataract surgery and local anaesthesia
Managing coexisting cataract and glaucoma
Cataract surgery combined with penetrating keratoplasty
Lens-induced glaucoma
Phacolytic inflammation
Viscoelastics
Intraocular lenses
Cataract surgery post corneal refractive surgery
Managing refractive surprise after cataract surgery
Ectopia lentis
Nd:YAG laser capsulotomy

Congenital cataract including surgical management options
Optical treatment and prevention of amblyopia

Corneal refractive surgery: arcuate keratotomy, laser (LASIK, LASEK, PRK)
Refractive lens surgery; clear lens extraction, phakic IOLs

Oculoplastics, lacrimal and orbital disease
Clinical anatomy

Eyelid malpositions including ectropion, entropion, ptosis, lagophthalmos, lid retraction
Lash abnormalities; trichiasis, distichiasis
Congenital abnormalities of the lids
Abnormal lid swellings and benign and malignant lid lesions
Blepharospasm
Dermatochalasis
Lid trauma
Facial nerve palsy
Principles of oculoplastic surgical technique

The watering eye
Congenital and acquired abnormalities of the lacrimal system
Lacrimal surgery

Orbital cellulitis
Orbital inflammation including thyroid eye disease
Orbital tumours
Orbital trauma
Congenital abnormalities of the orbit
Vascular lesions of the orbit
Evisceration, enucleation and exenteration

Glaucoma
Relevant clinical anatomy and physiology
Epidemiology and screening
Mechanisms of glaucoma
Optic nerve head assessment
Visual field analysis in glaucoma
Tonometry
Gonioscopy
Paediatric glaucoma
Open angle glaucomas
Ocular hypertension
Angle closure glaucomas
Medical management
Laser therapies
Surgical management including complications

Medical Retinal disease
Clinical anatomy

Vascular retinal disorders:
  Diabetic retinopathy
  Arterial and venous occlusive disease
  Ocular ischaemic syndrome
  Hypertensive retinopathy
  Retinal arterial macroaneurysm
  Retinal Vasculitis
  Coat’s disease
  Sickle cell retinopathy
  Eales’ disease
  Retinal features of blood disorders, e.g. anaemia, leukaemia, and myeloma
  Retinal vascular anomalies
Age-related macular degeneration
  Epidemiology, risk factors, and pathophysiology
Management
Retinal dystrophies
  Retinitis Pigmentosa
  Flecked retina syndromes
  Macular dystrophies
  Congenital stationary night blindness
  Choroidal dystrophies and degenerations
  Hereditary vitreoretinopathies
Angioid streaks
Central serous retinopathy
Cystoid macular oedema
Degenerative myopia
Drug-induced retinal disease
Phototoxicity
Radiation retinopathy

Vitreoretinal surgery
Clinical anatomy

Peripheral retinal lesions
Retinal breaks
Retinal detachment
  Rhegmatogenous
  Serous retinal
  Tractional
  Proliferative vitreoretinopathy
Macular hole
Epiretinal membrane
Vitreous haemorrhage
Endophthalmitis
Trauma and IOFB
Retinoschisis

Uveitis
Clinical anatomy of the uveal tract

Congenital abnormalities
Infectious uveitis
Non-infectious immune-mediated uveitis
Uveitis masquerade syndromes
Systemic disease associated uveitis
Investigation of the patient with uveitis
Principles of uveitis management
Management of cataract and glaucoma in uveitis

Ocular oncology
Malignant intraocular tumours
  Retinoblastoma
  Uveal melanoma
Uveal metastases
Lymphoma and leukaemia
Benign intraocular tumours
Choroidal naevus
Choroidal haemangioma
Choroidal osteoma
Retinal hamartomas
Retinal vascular tumours
Investigation and management of intraocular tumours

Neurophthalmology
Clinical anatomy
Clinical assessment of ocular motility, diplopia, nystagmus, abnormal eyelid and facial movements, pupils, ptosis, proptosis, cranial nerve function and visual fields
Ocular motility disorders
Cranial nerve palsies
Visual field abnormalities
Pupil abnormalities
Nystagmus
Optic disc abnormalities
Optic neuropathies
Visually evoked cortical potentials
Pituitary and chiasmal disorders
Intracranial tumours
Headache and facial pain
Migraine
Benign intracranial hypertension
Cerebrovascular disease
Optic neuritis and multiple sclerosis
Myasthenia gravis
Parkinson’s disease
Psychosomatic disorders and visual function
Blepharospasm and hemifacial spasm
Periocular Botulinum toxin injection technique

Paediatric Ophthalmology & Strabismus
Clinical anatomy of the extraocular muscles
Physiology of eye movement control
Binocular function
Accommodation anomalies
Assessment of strabismus
Cover, cover-uncover test and alternate cover test
Assessment of ocular movements
Measurement of deviation
Assessment of fusion, suppression and stereo-acuity
Knowledge of Hess Chart/Lees Screen, field of BSV and uniocular fields of fixation
Paediatric strabismus
Infantile esotropia
Acquired esotropia
Intermittent exotropia
Congenital superior oblique weakness
Duane’s syndrome
Brown’s syndrome

Adult

Forced duction test technique
Tests to predict postoperative diplopia
Concomitant strabismus in adults
Third, fourth and sixth cranial nerve palsy
Supranuclear causes of eye movement deficits
Strabismus due to Myasthenia, thyroid eye disease and orbital trauma

Principles of strabismus surgery
Principles of adjustable surgery techniques
Botulinum toxin, role in the management of strabismus
Paediatric refractive errors
Vision testing in children
Amblyopia
Retinopathy of prematurity
Visual loss secondary to neurological disease in infants and children
Leukocoria
Leber’s congenital amaurosis
Albinism
Phakomatoses
Aniridia

**General medicine relevant to ophthalmology**
Systemic diseases with manifestations relevant to ophthalmology in the following specialities:
   - Rheumatological disease
   - Dermatology
   - Respiratory medicine
   - Neurology
   - Endocrinology
   - Cardiology
   - Chromosomai disorders

Medical management of the perioperative patient
Medical emergencies:
Candidates are expected to be able to assess patients with the following life threatening
emergencies and initiate appropriate treatment prior to the arrival of specialised assistance:
   - Cardiorespiratory arrest
   - Shock
   - Anaphylaxis
   - Hypoglycaemia
   - The breathless patient

**Ophthalmic Pathology**
Benign and malignant lesions of the eyelids
Cornea endothelial dysfunction and corneal dystrophies
Glaucoma
Cataract
Diabetes
Age Related Macular Degeneration
Retinal vascular occlusion
Retinal detachment and proliferative vitreo-retinopathy
Ocular tumours
Tissue sampling for pathological investigation; types of biopsy, fine needle aspiration, transport of specimens
Suggested reading

The following is a list of textbooks that are suitable reading material for the examination. Close reference should be made to the examination syllabus when preparing for examination. This list is not exhaustive and there are many other textbooks which are also suitable for exam preparation. In addition, candidates should be aware of the main findings of key clinical trials in ophthalmology that form the evidence base for our clinical practice.


Sample MCQs for Part 2 MRCSI

A 34 year old man presents with a severely painful red right eye of two weeks duration. He has a 3 month history of sinusitis, rhinitis and intermittent epistaxis but has no other past medical history. On examination, the right eye shows severe peripheral ulcerative keratitis, intense episcleral injection and marked tenderness to gentle palpation. Which one of the following investigations is most likely to confirm the aetiology?

A. Serum rheumatoid factor
B. Mantoux test
C. Chest x-ray
D. VDRL/TPHA
E. Serum ANCA

ANSWER: E

A 65 year old myopic male with Type II diabetes mellitus suffers a right isolated sixth nerve palsy with diplopia of 8 pd in the primary position. Which of the following distance glasses would you prescribe?

A. R: -3.00 DS 4 pd BO, L: -2.75 DS 4 pd BO
B. R: -3.00 DS 4 pd BI, L: -2.75 DS 4 pd BI
C. R: -3.00 DS 8 pd BO, L: -2.75 DS
D. R: -3.00 DS, L: -2.75 DS 8 pd BO
E. R: -3.00 DS 8 pd BI, L: -2.75 DS

ANSWER: A

With regard to macular holes, which one of the following statements is true?

A. They are equally common in men and women
B. Stage 1 macular holes are managed by observation as they commonly resolve spontaneously
C. The risk of developing a macular hole increases after posterior vitreous detachment
D. They are complicated by rhegmatogenous retinal detachment in approximately 5% of idiopathic cases
E. Progression from stage 2 to stage 3 macular hole is characterised by the appearance of a Weiss ring

ANSWER: B
Sample data OSEs for part 2 MRCSI

**QUESTION 1**

1. **Transpose the following prescriptions:** (2 marks)
   
   a. \(-6.50/+2.50 \times 75\)
   
   b. \(+2.50/-1.00 \times 120\)

   a. \(-4.00/-2.50 \times 165\) (1 mark)
   
   b. \(+1.50/+1.00 \times 30\) (1 mark)

2. **How much prism is induced if a patient looks through a +6.00 D lens 15 mm below its centre?** (2 marks)
   
   a. Prentice rule: prism dioptre = hD; Prism dioptre = 1.5 \times 6 = 9 prism dioptres(base up) (2 marks)

3. **A patient holds a -6.00 D lens in front of the left eye such that the optical centre of the lens is 5 mm lateral to the visual axis. What type of phoria is induced by this lens and how large is it?** (4 marks)
   
   a. Esophoria (2 marks)
   
   b. Prism dioptre = 0.5 \times (-6) = 3 prism dioptres base in (2 marks)

4. **What is the mean spherical equivalent of the following prescriptions?** (2 marks)
   
   a. \(+3.00/-2.00 \times 90\)
   
   b. \(+4.50/-0.50 \times 60\)

   a. +2.00 D
   
   b. +4.25 D

5. **A 3 year old child with an esotropia has the following cycloplegic retinoscopy findings. Write a prescription for glasses for him.** (3 marks)

   **RIGHT EYE**
   
   \(+6.00\)
   
   \(+7.00\)

   **LEFT EYE**
   
   \(+5.50\)

   Working distance 2/3 m
A 10 year old girl with an esotropia has the following cycloplegic retinoscopy findings. Write a prescription for glasses for her. (3 marks)

**RIGHT EYE**

- RE: +4.50/+1.00 X 90° OR +5.50/-1.00 X 180°
- LE: +4.00 DS

**LEFT EYE**

- RE: -5.50/-1.00 X 45° (OR -6.50/+1.00 x 135°)
- LE: -7.00/-0.50 X 35° (OR -7.50/+0.50 X 125°)

7. A telescope has a +2.00 D objective and a -10.00 D eyepiece. What type of telescope is this? What is the magnification of the image? What is the orientation of the image? (4 marks)

- a. Galilean Telescope (1 mark)
- b. Magnification = - eyepiece/objective = -(-10)/2 = 5X (2 marks)
- c. Erect (1 mark)
A 52 year old lady presented with a 2 year history of increasing painless proptosis of her right eye. She had noticed a change in her appearance but had no visual complaints. She had no past ocular or medical history and was in otherwise good general health. Her visual acuity was 6/7.5 OU unaided. Examination revealed non-axial proptosis of 4 mm on the right, inferonasal globe displacement and a 3 mm ptosis.

1. Describe in detail the findings on the CT scan shown in Figure 1. (4 marks)
   a. Well defined/circumscribed round radiopaque lesion (2 marks)
   b. Arising from region of lacrimal fossa (1 mark)
   c. Lack of bone erosion (1 mark)

2. What is the advantage of CT over MRI scanning in the diagnosis of this lesion? (2 marks)
   a. Shows bone erosion if present (2 marks)

3. What is the most likely cause of this lesion? (2 marks)
   a. Pleomorphic adenoma of lacrimal gland

4. What is the differential diagnosis of this lesion? (6 marks)
   a. Dacryops (lacrimal gland ductal cyst) (1 mark)
   b. Adenoid cystic carcinoma (1 mark)
   c. Pleomorphic carcinoma/mixed malignant tumour/Ca ex pleomorphic adenoma (1 mark)
   d. Mucoepidermoid carcinoma or primary adenocarcinoma (1 mark)
   e. Lymphoma (1 mark)
   f. Dacryoadenitis/pseudotumour confined to lacrimal gland (1 mark)

5. How would you manage this patient and what particular considerations are there? (4 marks)
   a. Complete intact surgical excision (2 marks)
   b. Avoid biopsy - risk of tumour seeding and malignant transformation later (2 marks)

6. What is the natural history of this condition if untreated? (2 marks)
   a. Benign lesion but risk of malignant transformation (2 marks)