

Examination Information Pack

Refraction Certificate

19 January 2015

Dear Colleague

Thank you for your enquiry concerning the College's Refraction Certificate Examination.

I enclose copies of the current:

- Registration Information
- Admission Procedure
- Guidance for Candidates with Additional Needs
- Policy on Allegations of Cheating in Examinations
- Language Requirements
- Preparing for Examinations
- Fees Schedule
- Examination Timetable
- Examination Structure
- Standard Setting
- Examination Syllabus
- Reading List
- Application Form
- Equality and Diversity Monitoring Form

Candidates must hold a medical qualification approved by the General Medical Council of the United Kingdom or of Ireland for the purpose of registration.

Please note candidates who are yet to enter the Part 1 FRCOphth examination are required to submit an attested copy of their medical degree in evidence of their eligibility to sit this examination. Medical degree certificates may be attested by a Fellow or Member of *this* College, the British Council or your embassy, a solicitor or the university issuing the certificate. Candidates who are registered with the General Medical Council (GMC) are not required to submit an attested copy of their medical degree but should include their GMC number in the appropriate place on the application form for verification.

No previous experience in ophthalmology will be necessary for candidates to sit the Refraction Certificate but trainees in Ophthalmic Specialist Training are required to pass this examination before they enter into the **fourth** year of specialist training. Please note that from 1 August 2013, candidates are permitted a maximum of six attempts in which to pass this examination. Examination attempts prior to August 2013 do not count towards the number of attempts available.

Candidates are unlikely to pass this assessment if they have not undertaken a large number of clinical refractions in the clinical settings of either the hospital workplace or in optometric establishments.

The above information has been agreed by the Council of The Royal College of Ophthalmologists. I would add that this information is subject to variation at the discretion of the Council.

Emily Beet
Head of the Examinations Department

REGISTRATION INFORMATION

Candidates wishing to confirm the eligibility of their medical degree for the purpose of registration with the General Medical Council may do so by the following means:

You can access the World Health Organisation (WHO) Directory of Medical Schools through the AVICENNA Directory at the below link:

<http://avicenna.ku.dk/database/medicine/>

Candidates who have yet to enter the Part 1 FRCOphth examination are required to submit an attested copy of their medical degree or details of their GMC registration in evidence of their eligibility to sit this examination.

Regulations

The following notes on the regulations concerning applications for admission to the examinations are published for the guidance of candidates:

1. Completed application forms for admission to an examination must reach the Examinations Department **no later than 5.00pm on the closing date**, namely approximately **FIFTY-SIX** days before the exam is held. It is not possible accept applications received after the closing date.
2. The application forms must be accompanied by **the fee** and **such certification as is required by the regulations**. If you cannot supply all the relevant certification **you must contact the Examinations Department or supply a covering letter as to the reasons why**. All outstanding certification must be sent **within 14 days after the closing date**, if not before, otherwise the candidate **will be** withdrawn from the examination and forfeit their examination fee. Applications submitted without the required fee will not be accepted.
3. Upon receipt of application the Examinations Department will send all candidates a written receipt. Detailed instructions including written and clinical examination dates will be dispatched to all candidates within ten days after the closing date for receipt of applications.
4. Applicants wishing to withdraw or transfer their entry for an examination must notify the Examinations Department in writing by 5.00pm on the closing date for receipt of applications. Fees cannot be refunded or transferred after this time.
5. Applicants must apply for entry visas for the United Kingdom in good time prior to the date of the examination. In exceptional circumstances, if written evidence of the refusal of a visa is provided, the Examinations Committee will consider requests for candidates to transfer their examination entry, subject to the receipt of a 20% administration charge.
6. Candidates unable to attend an examination will forfeit their examination fee. In exceptional circumstances, the Examinations Committee will consider requests to transfer a candidate's entry to the next examination sitting subject to receipt of written supplementary evidence (e.g. a detailed medical certificate, a death certificate for a close family member) and subject to a 20% administration charge. Please note that lack of preparation is not considered a suitable reason to withdraw or transfer an examination entry.
7. All candidates will receive feedback regarding their individual performance in the examinations.
8. Results are posted by First Class Mail with the Pass List being displayed on the College Website. Results are only released upon approval of the Senior Examiner. We regret that examination results are not available by telephone or email

Practical Examination Procedures

1. Unless notified, candidates are **not permitted** to use calculators in any section of the examinations.
2. Candidates are only allowed to bring their own clinical equipment into the examination in a clear plastic pencil case or plastic bag.
3. Candidates are forbidden to communicate in any way with, seek assistance from, give assistance to, or interfere with the work of other candidates or the invigilators in the examination room or elsewhere during the period of the examination, or indulge in any other form of unfair practice.
4. The Senior Invigilator has the power to expel a candidate from the examination.
5. Candidates are advised to read the Policy on Allegations of Cheating and Misconduct in Examinations.
6. Candidates are not allowed to use mobile phones. All mobile phones **must be switched off and must not be kept on the candidate's person**. Clear instructions will be given to candidates regarding the timing of the examination.
7. Photographic identification (such as a passport or photographic driver's licence) will be checked before candidates are admitted to the examination.
8. For clinical examinations, candidates are required to present themselves in good time and are required to wear name badges throughout the examination period (these will be supplied by the Royal College of Ophthalmologists). The start of the examination cannot be delayed for candidates arriving late.
9. For clinical exams candidates must be appropriately dressed and should follow the Department of Health 'Bare Below the Elbows' guidelines.
10. No books, written material or electronic equipment may be consulted during the examination and are not permitted on a candidate's person.
11. Candidates are **not allowed** to use scrap paper, all notes **must be** written on the answer sheet and crossed through as appropriate.
12. Candidates are advised that **no extra time** will be given to complete their mark sheets once the end of the OSCE station has been signalled.

Eligibility

A medically qualified candidate will be eligible to sit the examination provided that he/she:

- a) holds a medical qualification approved by the General Medical Council for the purpose of registration
- b) has completed registration year FY1, or equivalent house officer post for International Medical Graduates (IMG)

Candidates who have yet to enter the Part 1 FRCOphth examination are required to submit proof of their primary medical qualification. Candidates who are registered with the General Medical Council (GMC) should include their GMC number in the appropriate place on the application form for verification. All other candidates are required to submit an attested copy of their medical degree in evidence of their eligibility to sit this examination. Medical degree certificates may be attested by a Fellow or Member of *this* College, the British Council or your embassy, a solicitor or the university issuing the certificate.

Condition of the Examination

No previous experience in ophthalmology will be necessary for candidates to sit the Refraction Certificate but candidates are unlikely to pass this assessment if they have not undertaken a large number of clinical refractions in the clinical settings of either the hospital workplace or in optometric establishments. Feedback from successful candidates indicates that between 50 and 100 full refractions were completed in preparation for the examination.

Candidates in OST will be required to pass this examination before they enter into the **fourth** year of ophthalmic specialist training.

Candidates sitting this examination before commencing OST should note that a pass in this examination will not count towards CCT if taken out of training unless the candidate enters or re-enters the training programme within 7 years of passing.

Exemption

Candidates who have been registered with the General Optical Council as an optometrist in the last five years are exempt from this certificate. Candidates intending to apply for exemption should therefore ensure that they do so within this period. Candidates in ophthalmic specialist training are advised to apply for exemption before the end of year 3.

In order to apply for exemption from this certificate, candidates must submit details of their GOC registration together with a covering letter to the Head of the Examinations Department formally requesting exemption.

Guidance for candidates with Additional Requirements

The Royal College of Ophthalmologists recognise that there may be some candidates who require additional arrangements when undertaking a Royal College of Ophthalmologists' examination.

All candidates who require additional arrangements must adhere to the guidelines set out below. Candidates must note that upon receipt of sufficient evidence additional arrangements may not necessarily be granted.

In awarding additional arrangements the Royal College of Ophthalmologists seek to:

1. Approve valid arrangements and access to written and clinical examinations.
2. Give special consideration to candidates where specific circumstances have arisen at or near to the examination time which have not previously been highlighted.
3. Ensure that no additional arrangement gives an unfair advantage over another candidate

When submitting their application form all applicants must make it clear if additional arrangements are needed in writing and attach this to the application form. Supplementary evidence will be needed from the candidates such as:

- Doctor's note
- Up to date literacy assessment
- A Statement of Special Educational Needs
- A relevant diagnostic report regarding the learning disability
- Historical evidence of the disability

Extra time award:

An additional allowance of up to and including 25% may be awarded to those candidates requesting special consideration for extra time and only on approval of the supplementary evidence.

Specialist equipment:

The Royal College of Ophthalmologists will consider special request from candidates for specialist equipment such as:

- Additional lighting
- Larger desk to accommodate specialist equipment
- Separate room
- Supervised rest breaks

All additional requirements will be considered by the Chairman of the Examinations Committee.

ALLEGATIONS OF CHEATING AND MISCONDUCT IN EXAMINATIONS

FRCOphth, Refraction Certificate, DRCOphth Examinations and the Certificate in Laser Refractive Surgery

Candidates should note that by entering to sit an examination they are deemed to have read and understood and agreed to abide by all relevant examination regulations.

1.0 Introduction

1.1 Cheating and other misconduct, whether attempted or successful, will be penalised very severely by the Council of the Royal College of Ophthalmologists. Candidates found to be in possession of unauthorised material or equipment, including mobile phones, during an examination will be deemed to be guilty of misconduct whether the items have been used or not. Cheating and misconduct includes, but is not restricted to:

Plagiarism (for the full policy please see www.rcophth.ac.uk/examinations)

Taking unauthorised material into the examination

Taking unauthorised material from the examination

Copying from other candidates or unauthorised material

Talking to other candidates

Passing notes

Failure to respond to the instructions of an invigilator or examiner

Bribery

Unauthorised access to examination papers

Copying or alteration of certificates

Discussing clinical cases with other candidates (if either party has not yet sat the examination)

Unacceptable or disruptive behaviour

1.2 Candidates may **not** take the following items into a written or practical examination:

Spare paper, including revision notes

Electronic equipment

Calculators

In addition:

All mobile phones must be switched off and not on the candidate's person. Candidates should note that invigilators may employ the use of a device to detect the use of mobile phones.

Candidates who have no other personal effects with which to store their switched off mobile phone, should surrender the device to the Senior Invigilator for the duration of the examination.

Alarms on watches/clocks/mobile phones must be turned off

Personal belongings should be placed at the back or side of the examination hall or appropriate place, as advised by the invigilator. Valuables should not be brought to the examination as the College cannot take responsibility for any loss of or damage to personal belongings.

1.3 Candidates are not permitted to talk to, pass information to, or signal to another candidate whilst the examination is in progress.

1.4 Candidates are reminded that it is a serious sanctionable offence to attempt to impersonate another person or to have another person impersonate you during any part of the College's examinations. Photographic identification will be checked by College Staff at the start of every examination.

2.0 Preliminary Procedure

2.1 In the event that a candidate is suspected of cheating or misconduct by an invigilator or College Examiner, the Senior Invigilator shall confiscate any unauthorised materials or equipment in the possession of the candidate. Candidates must, on request, surrender to the Senior Invigilator any materials or equipment reasonably suspected by the invigilator not to be permitted. The Senior Invigilator shall include all such materials with their report and they may be retained at the absolute discretion of the Chairman of the Examinations Committee. If candidates fail to surrender materials or equipment requested by the Senior Invigilator it will be deemed that the alleged offence has occurred.

2.2 Details of the allegation will be made known to the Head of the Examinations Department. The following procedures will be followed:

- i. The invigilator will submit a written report outlining the particulars of the allegation. If an allegation is made during a practical examination, the examiner concerned will note detailed information on the reverse of the candidate's mark sheet.
- ii. If the Head of the Examinations Department considers the suspicion of cheating or misconduct to be well founded, he/she will submit a report to the Chairman of the Examinations Committee immediately following the examination.

Upon receipt of the Head of the Examinations Department's report, the Chair of the Examinations Committee will undertake any further investigation that he/she thinks appropriate.

If the Chair of the Examinations Committee believes there to be no grounds or insufficient evidence to support the allegation of cheating or misconduct no further action will be taken.

3.0 Investigation Procedure

3.1 If the Chair of the Examinations Committee believes there are grounds that require further investigation, he/she will notify the candidate to inform them:

- i. They are under investigation following an allegation of cheating or misconduct and that the results of their examination will be withheld pending an investigation.
- ii. The candidate will be sent a copy of the Head of the Examination Department's report and any further evidence obtained by the Chair of the Examinations Committee. The candidate will be invited to submit a response to the allegations within a period of 28 days.
- iii. The Chair of the Examinations Committee will call an Investigatory Board consisting of two Consultant Fellows, who are not Senior Examiners or current Council Members, and one member of the Lay Advisory Group who will review all the particulars of the case. The investigatory process will be kept confidential.
- iv. The Head of the Examinations Department will act as Secretary to the Investigatory Board and will attend the Board as an observer. The Investigatory Board will otherwise conduct its inquiry in private and will decide whether it finds the allegation of cheating or misconduct proved on the balance of probabilities.

v. Where the Investigatory Board finds an allegation of cheating or misconduct proved on the balance of probabilities, the Head of the Examinations Department shall notify the candidate of the outcome and inform them they have 28 days from the date of the outcome letter to appeal the Investigatory Board decision.

vi. If, after 28 days, no further communication has been received from the candidate, the findings of the Investigatory Board shall be reported to the College Council at their next meeting. The College Council shall impose penalties on the candidate as it sees fit. Penalties for cheating and misconduct include, but are not restricted to:

- a. Ruling the candidate's examination attempt as invalid
- b. Referring the matter to the candidate's employer and, if in Ophthalmic Specialist Training, their deanery
- c. Referring the matter to the General Medical Council or relevant Medical Board.

The candidate will be informed of the College Council's decision within 14 days after the Council meeting.

Appeal against the Outcome of the Investigatory Board

If the candidate wishes to appeal the findings of the Investigatory Board, a notice of appeal must be sent to the Chair of the Examinations Committee **to arrive within 28 days of the date of the outcome letter following the Investigatory Board**. Included in the notice of appeal must be the detailed grounds of appeal and all of the evidence that the candidate wishes to be considered.

A fee of £1000.00 must be received which will be refunded should the appeal be successful.

If reasonably practicable, the Chair of the Examinations Committee will convene an Appeal Panel within 8 weeks of a notice of appeal being received. The Appeal Panel shall be comprised of two Consultant Fellows and a member of the Lay Advisory Group who have not previously been involved in any aspect of the candidate's examination or the Investigatory Board and have no current or previous connection with the candidate. One of the members of the Panel shall be appointed Chair.

The Head of the Examinations Department will act as Secretary to the Appeals Panel and attend the Panel as an observer. He/she will agree the date of the hearing with the candidate.

The candidate will be invited to present his or her case in person to the Appeal Panel and is entitled to be accompanied by a friend whom the candidate shall identify in advance, providing 10 days' notice. The friend may advise and counsel the candidate but will not be allowed to make statements or take any part in the proceedings.

The Appeal Panel will review the findings of the Investigatory Board and may invite the Investigatory Board or the candidate to produce further evidence prior to the hearing. The Appeal Panel may summon any person to give evidence before it. Members of the Panel and the candidate may question any person before it.

The candidate will be informed of the outcome within 28 days of the hearing by the Secretary to the Appeal Panel. If the appeal is rejected, the Secretary to the Appeal Panel will inform the candidate of the reasons for the Panel's decision.

If the finding of the Appeal Panel is that the decision of the Investigatory Board be overturned no further action will be taken and the candidate's examination result published.

If the finding of the Appeal Panel supports that of the Investigatory Board, the Panel's findings shall be reported to the College Council at their next meeting as per Regulation 3.1vi above.

The candidate will be informed of the College Council's decision within 14 days of the date of the Council meeting.

4.10 There is no further right of appeal.

4.11 Any question arising in connection with the conduct of an appeal shall be determined fully and finally by the Chair of the Appeal Panel, who may take whatever steps he/she considers necessary to ensure that the appeal is handled fairly and efficiently.

Appeals Procedure

The College's appeal procedure is available online at www.rcophth.ac.uk/examappeal.

Language Requirements

All examinations run by the Royal College of Ophthalmologists are conducted in English.

Although candidates are not expected to undertake examinations such as IELTS or PLAB it is expected that candidates should be equivalent to IELTS Level 7.

Preparing for the examinations

The Royal College of Ophthalmologists recommend that candidates preparing for examinations should:

- Read the appropriate text, syllabi and curriculum for the relevant examination.
- Gain clinical experience in ophthalmology in hospitals this may also include working within other specialties such as Medicine and Pathology.
- Attend courses – A list of courses for examinations can be found on the College website (the College does not run or endorse any of the listed courses).
- Ensure they are familiar with principles and values of the General Medical Council's Good Medical Practice (<http://www.gmc-uk.org>).

Candidates may also find useful information from the National Advice Centre for Postgraduate Education. (<http://www.nhscareers.nhs.uk/nacpme/>)

EXAMINATION FEES 2015

PART 1 FELLOWSHIP EXAMINATION

Fee to sit examination £540

REFRACTION CERTIFICATE

£640 (UK Centres)
£915 (Kuching, Malaysia)

PART 2 FELLOWSHIP WRITTEN EXAMINATION

Fee to sit examination £390

PART 2 FELLOWSHIP ORAL EXAMINATION

Fee to sit examination £620

DIPLOMA IN OPHTHALMOLOGY EXAMINATION

Fee to sit examination £775

CERTIFICATE IN LASER REFRACTIVE SURGERY

Fee to sit examination (per attempt) £1290

An attempt constitutes the submission of Portfolio Assessment and any subsequent amendments prior to the proposed interview date.

Candidates deemed as unsuccessful after the submission shall not be permitted to attend the Portfolio Interview or Structured Vivas. Candidates are required to submit payment of the fee for each attempt.

Additional Payments:

Replica certificates	£75 + VAT ¹
Appeal procedure	£250
Duke Elder	£10 (Undergraduate Prize Examination)

¹ From 1 January 2011 VAT is payable at the rate of 20%

REFRACTION CERTIFICATE EXAMINATION

TIMETABLE 2015

April 2015

Opening Date for Receipt of Applications: Mon 19 January 2015

Closing Date for Receipt of Applications: Mon 16 February 2015

Mon13 – Weds 15 April 2015 School of Vision Sciences, Aston University, Birmingham

June 2015

Opening Date for Receipt of Applications: Tues 24 February 2015

Closing Date for Receipt of Applications: Tues 21 April 2015

Tues 16 – Thurs 18 June 2015 University of Malaysia Sarawak, Kuching, Malaysia*

July 2015

Opening Date for Receipt of Applications: Mon 4 May 2015

Closing Date for Receipt of Applications: Mon 16 May 2015

Mon 13 – Wed 15 July 2015 Caledonian University School of Optometry, Glasgow

December 2015

Opening Date for Receipt of Applications: Mon 7 September 2015

Closing Date for Receipt of Applications: Mon 12 October 2015

Mon 14 – Wed 16 December 2014 Venue TBC

There will be a limited number of examination spaces available per examination. Should the number of applications exceed the examination spaces available the Examinations Committee have agreed the following criteria will be applied:

- Priority will be awarded, in the first instance, to applicants in years 5-7 of Ophthalmic Specialist Training (OST).
- Should additional spaces be available, second priority will then be awarded to candidates who have previously applied but not been allocated a place.
- All remaining places will be awarded on a first come, first served basis.

*Candidates should note that a minimum of 15 applications are required for this examination to proceed. A maximum of 40 candidates will be admitted to this examination so early application is advised.

Refraction Certificate Examination - Introduction

Please note that from 1 August 2013, candidates are permitted a maximum of six attempts in which to pass this examination. Examination attempts prior to August 2013 do not count towards the number of attempts available.

Candidates sitting this examination before commencing OST should note that a pass in this examination will not count towards CCT if taken out of training unless the candidate enters or re-enters the training programme within 7 years of passing.

Candidates who have entered Ophthalmic Specialist Training (OST) must have passed this examination by the end of the third year of run-through training.

The Refraction Certificate Examination is designed to assess the following practical skills from the curriculum for ophthalmic specialty training, which can be viewed in detail at:

<http://curriculum.rcophth.ac.uk/>:

- CA2 **Assess vision**
- CA7 **Perform a cover test and assess ocular motility**
- PM1 **To formulate and agree with the patient a management plan based upon clinical assessment and investigations, with reference to established protocols and guidelines**
- PM14 **To use spectacle lenses and prisms when indicated**
- PS2 **Perform a refractive assessment and provide an optical prescription**
- C1 **Establish a good rapport with patients and relatives**
- C11 **Keep clinical records**
- BCS6 **Optics and Medical Physics**

Structure of the Examination

The examination will consist of an Objective Structured Clinical Examination (OSCE).

Candidates will be examined on 12 OSCE stations in four rooms (see below). Six of these stations are retinoscopy stations during which candidates will examine three patients, performing retinoscopy on each eye. The time allowed will be 10 minutes for each double retinoscopy station during which time both eyes must be assessed. Candidates are permitted to divide the 10 minute period between the eyes as they wish. After 10 minutes there will be a 1 minute change over period. A 5 minute OSCE station will then follow. Each station will be timed precisely. A one minute warning will be given before the end of each OSCE (after 9 minutes for the double OSCE and after 4 minutes for the single OSCE).

The fourth room will also start with a double OSCE lasting 10 minutes. This will also be an examination on one patient and again the candidate will be allowed to use the time flexibly. The candidate will be required to carry out the sphere refinement of subjective refraction on each eye of a patient followed by a binocular balance/plus one blur back or duochrome test. Following completion of the double OSCE, there will be a 1 minute change over period, followed by the final, 5 minute OSCE station. Similarly a one minute warning will be given before the end of each station (after 9 minutes for the double OSCE and 4 minutes for the single OSCE).

The OSCE times will be strictly enforced and no further writing is allowed after the end of the OSCE. Please bear this in mind during your practice.

Candidates will be examined on 12 OSCE stations. Each station will be timed for precise periods of 5 minutes. Candidates are advised to prepare for all of the listed OSCE stations. One examiner will be present in each station for the duration of the cycle.

Summary of OSCE Stations

The composition of OSCE stations and rooms are as follows:

Room 1

Station 1: Cycloplegic Retinoscopy 1 – Patient A: First Eye

Station 2: Cycloplegic Retinoscopy 2 – Patient A: Second Eye

Station 3: Subjective Refraction: Cylinder – Patient B: One Eye, as directed by examiner

Room 2

Station 4: Cycloplegic Retinoscopy 3 – Patient C: First Eye

Station 5: Cycloplegic Retinoscopy 4 – Patient C: Second Eye

Station 6: Lens Neutralisation with or without a focimeter

Room 3

Station 7: Non-Cycloplegic Retinoscopy 1 – Patient D: First Eye

Station 8: Non-Cycloplegic Retinoscopy 2 – Patient D: Second Eye

Station 9: Visual Acuity and Trial Frame Fitting – Patient E

Room 4

Station 10: Subjective Refraction: Sphere – Patient F: Both Eyes

Station 11: Subjective Refraction: Binocular Balance – Patient F: Both Eyes

Station 12: Near Addition: Patient G

Detailed information on the format and conduct of the examination is available in the *Refraction Certificate - Instructions to Candidates* and you are strongly advised to review the *Instructions* prior to submitting your application.

Standard Setting

All examinations are standard set. The Refraction Certificate OSCE is standard set using the Hofstee method. All questions are reviewed in the light of performance and modified accordingly.

Overall Result

Candidates are required to pass the OSCE. If awarded a fail, candidates must re-sit the entire examination, even if a pass was previously achieved in any station.

Results

Results will be released four weeks after the examination, once verified by the Senior Examiner. Candidates are not permitted to telephone the College for examination results. All results will be sent to candidates by first class post and the pass list will be displayed on the College website.

Refraction Certificate Syllabus

The Fellowship of the Royal College of Ophthalmologists examinations are designed to assess the knowledge, skills and professional attitudes required of a doctor who wishes to practice as an ophthalmologist in the United Kingdom. A pass in the Part 1 FRCOphth, Refraction Certificate and Part 2 FRCOphth examinations represents a high level of achievement. The FRCOphth is a necessary but insufficient requirement for the Certificate of Completion for Training in Ophthalmology.

The three examinations that comprise the FRCOphth are based upon the curriculum for ophthalmic specialist training and candidates are **strongly advised to become familiar with the curriculum** (available at: <http://curriculum.rcophth.ac.uk/>).

The Refraction Certificate assesses understanding of clinical refraction of a patient especially with respect to retinoscopy. It also assesses the understanding of the instruments related to clinical refraction. Candidates are unlikely to pass this assessment if they have not undertaken a large number of clinical refractions in the clinical settings of either the hospital workplace or in optometric establishments. The specific learning outcomes from the RCOphth Ophthalmic Specialist Training curriculum that the examination assesses are:

BCS6 - Optics

All trainees must understand and apply knowledge of optics, ultrasound and electromagnetic wavelengths relevant to ophthalmic practice. They must have a basic understanding of medical physics. They must be able to use this knowledge when interpreting clinical symptoms, signs and investigations and in the practice of ophthalmic medicine and surgery.

CLINICAL OPTICS

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 vision aids: High reading addition, magnifying lenses, telescopic aids - Galilean telescope

BCS14 - Instrument technology

All trainees must understand and apply knowledge of instrument technology relevant to ophthalmic practice. They must be aware of the limitations of technology and the risks involved in their use. They must be able to maintain an understanding of new developments in relevant technologies.

This assessment will specifically test competence in the following instruments:

Visual acuity measurement charts (near and distance)

Duochrome test

Retinoscope

Focimeter / lensmeter

Keratometer

Stereo tests

Jackson Cross-cylinder

Maddox Rod

Maddox Wing

Prism bar

Auto refractor

Colour vision tests

PS2 - Perform a refractive assessment and provide an optical prescription

All trainees must be able to assess a patient's refractive error. They must be able to assess a patient's spectacle lenses using neutralisation techniques and focimetry. They must be able to perform retinoscopy and an accurate subjective refraction and provide an appropriate prescription. They must be able to assess a patient's binocular co-operation and advise on whether this should be corrected optically. They must be able to perform an accurate cycloplegic refraction (especially on a child) and provide an appropriate prescription

CLINICAL REFRACTION

Retinoscopy

Subjective refraction

Measurement of BVD

Muscle balance tests

Accommodative power

Measurement of IPD

Decentration of lenses and prismatic effect

Best form lens

Prescribing multifocal lenses

Prescribing for children

Cycloplegic refraction

In addition the following learning outcomes are also assessed:

CA1- Take a directed clinical history

All trainees must be able to take a clinical history from a patient, which is appropriate for the clinical problem and the individual patient's needs.

CA2 – Assess vision

All trainees must be able to assess visual acuity for near and distance using an appropriate method and interpret the results. They must be aware of and be able to interpret and apply newer methods of assessing visual acuity when they are introduced into clinical practice. They must be able to test colour vision using an appropriate method and interpret the results. They should also know the principles of the assessment of contrast sensitivity. They must be able to assess vision in children and in adults who have language and other barriers to communication. They must be able to assess vision in circumstances outside the OPD environment.

CA7 – Perform a cover test and assess ocular motility

All trainees must be able to perform a cover test, assess ocular movements and interpret the findings. They must be able to perform a prism cover test. They must also be able to recognise and describe nystagmus if present.

PM14 – To use spectacle lenses and prisms when indicated

All trainees must be able to identify when a patient may benefit from the use of spectacle lenses and prisms. They must be able to assess the type and strength of lens or prism and provide an appropriate prescription. They must be able to liaise with and, where indicated, seek advice from optometrists and orthoptists. They must be able to advise a patient on the purpose, duration and optical effects of the prescription.

PS21 – Perform the correct hand hygiene technique

All trainees must be able to reduce the risk of cross infection by adopting the correct technique of hand cleaning and maintaining hand hygiene. They must understand and apply local and national hand hygiene policies.

C1 - Establish a good rapport with patients and relatives

All trainees must be able to establish a trusting relationship with a patient, their carers and relatives. They must be able to recognise when there could be problems with establishing rapport and make attempts to mitigate possible effects on the clinical relationship

C2 - Communicate effectively and sensitively with patients, relatives and carers, particularly with regard to active listening, questioning and conclusion

All trainees must be able to communicate effectively and sensitively. They must be able to demonstrate active listening throughout a consultation. They must be sensitive during questioning and be able to draw the consultation to a satisfactory conclusion

C12 - Write and dictate clearly and effectively

All trainees must be able to communicate through effective writing and dictation.

Trainees will need to complete a specific answer sheet during the course of this assessment. They will need to write clearly and enter specific details such as the retinoscopy in standard notation. They will also have to write the intended prescription for a particular patient in such a format that this can be taken to an optometrist for dispensing.

As with all examinations, the final learning outcome is also relevant and will be assessed in the Refraction Certificate.

AER 16 – Able to manage time effectively and deal with stress

All trainees must be able to carry out their responsibilities in a timely fashion. Trainees must be able to prioritise tasks, ensuring urgent and important matters are dealt with promptly. Trainees must be able to recognise stress in themselves and others and develop strategies for coping with stress.