



The College of Anaesthetists of Ireland Fellowship Examination

The official FCAI guide



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Introduction

To become a **Member** (MCAI) or **Fellow** (FCAI) of the College of Anaesthetists of Ireland by examination, candidates must pass the Membership and the Fellowship Examinations respectively.

The Examinations are set and supervised by the CAI through a specialist group of Examiners who are Consultant Anaesthetists and experts in their fields. The College is committed to maintaining the **highest possible standards** for its Examinations. In order to maintain this position, the MCAI / FCAI examiners and the Examinations Department **rigorously quality assures all its processes** and actively follows best medical education practice to ensure the pre-eminence of the Membership and Fellowship Examinations.

The CAI overriding concern is to ensure our **assessments endorse**:



College of Anaesthetists of Ireland Examination Department Mission Statement

“The choice of assessment method(s) should be appropriate to the content and purpose of that element of the curriculum”

Methods will be **chosen** on the basis of validity, reliability, feasibility, cost effectiveness, opportunities for feedback, and impact on learning.

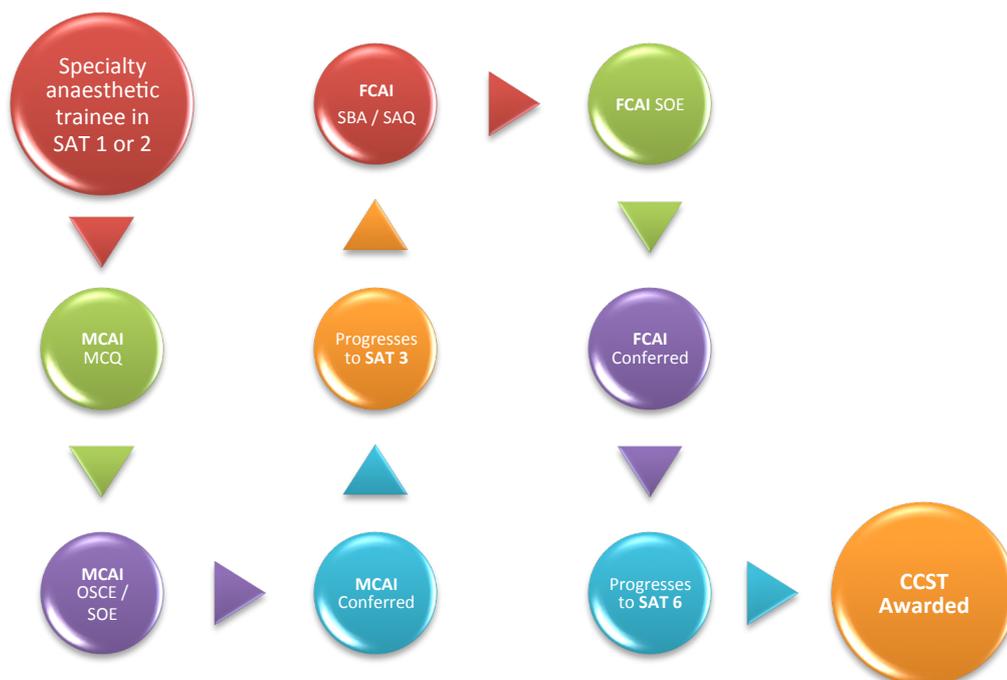
The rationale for the choice of each assessment method is documented and evidence based.

*Over the past two years, the CAI has made **significant changes** to all elements of their examinations, from examiner training, question drafting and review, standard setting, examiner and examinee feedback and quality assurance. These changes have been fully supported by best medical education and assessment practice.*

The Examination Committee feels confident that our **programme of assessment** is valid, fair, acceptable, feasible and effective. It supports examiners to make reliable judgements and is blueprinted to the curriculum, including the generic, shared and specific learning outcomes.

The CAI **assessment processes** are **fully aligned** to the **stated learning outcomes** in the Membership and Fellowship curriculum (Edition 2, 2016):
<https://www.anaesthesia.ie/attachments/article/85/MCAI%20and%20%20FCAI%20Examination%20Syllabus.pdf>

We have **defined levels of performance** at **critical progression points** in our training and assessment programme.



The Fellowship of the College of Anaesthetists of Ireland (FCAI) Examination

The Fellowship examination is in two parts:

1. The written examination
2. The structured oral examination.

The Fellowship examination is a **national test of knowledge** as laid out in the FCAI examination syllabus agreed with the Irish Medical Council. The examination is embedded within the curriculum outcomes and specialty anaesthetic trainees will not progress to SAT6 without possession of this qualification.

1. The Fellowship Written Examination

The Fellowship written examination consists of **two parts**:

- a) 90 single best answer (SBA) questions in 180 minutes
- b) 10 short answer questions (SAQ) paper consisting of multiple subparts, all of which must be attempted in 180 minutes.

The written examination is held twice a year (September and February) in Dublin, Bahrain, Penang, and Perdana.

To pass the written examination, candidates have to be **successful in both** the SBA and SAQ components **individually**.

Single Best Answer (SBA) Examination

The CAI decided to stop using MTF questions in the FCAI due to their poor discriminating ability and lack of testing knowledge application. For the Fellowship examination, we expect candidates to be able to show us that they can apply knowledge and interpret data etc. This is where SBAs are invaluable and have a more robust evidence base.

The SBA questions are written by a core group of examiners who are highly experienced in producing them. We use 5 distractors and develop questions with a fairly detailed clinical scenario.

The SBA paper has **90 compulsory questions** in it, and is machine marked. Each examination contains 'marker questions' from previous examinations. These are used to calibrate the standard and help to ensure that there is continuity of the standard of the FCAI examination over time.

Pass mark determination

The cut score for the SBA paper is determined by **Angoff referencing**. This is undertaken by a group of examiners who have completed training in this method of standard setting and discuss in detail, the notion of the borderline candidate.

To ensure reliability, the cut score is reduced by $1 \times$ standard error of measurement (SEM).

Blueprint

All questions are mapped to a detailed blueprint, with explicit coverage of the entire Fellowship curriculum. Below is an example of a blueprint for this examination.

Fellowship Syllabus area	Number of questions
Specialist Units <ul style="list-style-type: none"> Anaesthesia for neurosurgery, neuroradiology and neurocritical care Cardiac anaesthesia Thoracic anaesthesia Intensive care medicine Obstetrics Paediatrics Pain medicine 	<p>6</p> <p>4</p> <p>4</p> <p>8</p> <p>5</p> <p>7</p> <p>6</p>
General Duties <ul style="list-style-type: none"> Airway management Day surgery General, urological and gynaecological surgery ENT, maxilla-facial and dental surgery Management of respiratory and cardiac arrest in adults and children Non-theatre Orthopaedic surgery Regional anaesthesia Sedation Transfer medicine Trauma and stabilisation Ophthalmic Plastics / burns Vascular surgery 	<p>3</p> <p>2</p> <p>4</p> <p>3</p> <p>2</p> <p>2</p> <p>4</p> <p>4</p> <p>2</p> <p>2</p> <p>3</p> <p>2</p> <p>2</p> <p>2</p>
Advanced sciences which underpin anaesthetic practice <ul style="list-style-type: none"> Anatomy Applied clinical pharmacology Applied physiology and biochemistry Physics and clinical measurement 	<p>3</p> <p>4</p> <p>3</p> <p>3</p>
Total number of questions	90

The Short Answer Question (SAQ) Examination

The aim of the SAQ paper is to test ***higher level thinking and cognition*** including:

- Judgment and common sense
- Clarity of thought
- Safety
- Ability to prioritise and summarise
- Ability to express oneself clearly
- Capability to present an argument clearly and succinctly in writing.

SAQ Structure

- There are **10 short and structured questions** on the paper, all of which **must be answered** – failure to submit an attempt to a question will result in a fail.
- Candidates have **three hours** to complete the examination, approximating 18 minutes per question.

SAQ examinations have long been a **contentious issue** with educationalists, the **main criticism** that such assessments **lack reliability** for a high-stakes postgraduate examination. However, the following changes we have implemented have resulted in excellent reliability.

1. The short answer questions are **highly structured**. Each of the 10 questions contains at least **3 – 6 subparts**.
2. Questions are written containing **verbs** from **Bloom's taxonomy**, to aid **higher-level cognitive testing**. For the Fellowship examination, the Bloom levels of analysis, synthesis and evaluation are particularly sought after.

Bloom's Level	Description	Verbs
Knowledge	Rote memorization, recognition, or recall of facts	Define, repeat, record, list, recall, name, relate, underline.
Comprehension	Understanding what the facts mean	Translate, restate, discuss, describe, recognise, explain, express, identify, locate, report, review, tell.
Application	Correct use of the facts, rules, or ideas	Interpret, apply, employ, use, demonstrate, dramatise, practice, illustrate, operate, schedule, sketch.
Analysis	Breaking down information into component parts	Distinguish, analyse, differentiate, appraise, calculate, experiment, test, compare, contrast, criticise, diagram, inspect, debate, question, relate, solve, examine, categorise.
Synthesis	Combining parts to make a new whole	Judge, appraise, evaluate, rate, compare, revise, assess, estimate
Evaluation	Judging the values or worth of information or ideas	Compose, plan, propose, design, formulate, arrange, assemble, collect, construct, create, set-up, organise, manage, prepare.

3. The **blueprint** for this examination contains the following number of questions from each unit of training:

Fellowship Syllabus Area	Minimum number of questions
<p>Specialist units:</p> <ul style="list-style-type: none"> • Anaesthesia for neurosurgery, neuroradiology and neurocritical care • Cardiothoracic • Intensive care medicine • Obstetrics • Paediatrics • Pain medicine 	5
<p>General units:</p> <ul style="list-style-type: none"> • Airway management • Critical incidents • Day surgery • ENT, Maxillo-facial & dental surgery • General, urological & gynaecological surgery • Management of respiratory & cardiac arrest • Non-theatre • Ophthalmic • Orthopaedic surgery • Plastics / burns • Regional • Sedation • Transfer medicine • Trauma & stabilisation • Vascular surgery 	4
<p>Advanced sciences which underpin anaesthetic practice:</p> <ul style="list-style-type: none"> • Anatomy • Pharmacology • Physiology & biochemistry • Physics & clinical measurement • Statistical basis for trial management 	1*

***Advanced sciences** are tested within five questions. For example, an obstetric question testing knowledge on the management of post dural puncture headache could start with a question on “describe how CSF is made”.

4. **Each question** is marked out of **25**, giving a total of **250 marks** for the **entire examination paper**. Each component of one of the ten questions can have marks awarded proportionately to help guide candidates on which parts to spend more time on.

5. **Highly structured model answers** have been developed making marking easier and more acceptable to examiners.

6. The **pass mark** for every question will be calculated by the **Angoff method**. Therefore, this will take into account how difficult each question is.

The **overall SAQ pass mark** is calculated by totalling the Angoff cut score for each question. A **downward adjustment** to the **Angoff pass mark** is then applied to the SAQ examination, equal to the Standard Error of Measurement (SEM).

$$\text{SAQ Pass mark} = \text{Angoff cut score} - 1 \times \text{SEM}$$

7. A **greater integration** of the **syllabus** within the 10 questions. For example, a question assessing the management of a head injury, which resulted in an acute subdural haemorrhage presented to a district general hospital. The patient needs urgent surgery and so must be transferred to a tertiary referral centre. This question therefore can assess learning outcomes from the neurosurgery and transfer medicine units of the FCAI examination curriculum.

The SAQ is marked by **ten different examiners**, enhancing reliability and fairness.

2. The Fellowship Structured Oral Examination

Candidates may only take the Fellowship structured oral examination (SOE) once they have **been successful** at the Fellowship written examination. The oral examination consists of **three parts**:

- a) Clinical case structured oral examination
- b) Structured oral examination 1 (SOE 1)
- c) Structured oral examination 2 (SOE 2)

Clinical Case Structured Oral Examination

This SOE will test the candidate on **clinical knowledge** combined with their ability to **communicate clearly** and **accurately** and to solve **clinical problems**. The focus of this SOE is on **clinical anaesthesia** centred on a **single case**.

The candidate has:

- **10 minutes** to view a patient's case material followed by
- **30 minutes** (15 + 15 minutes) of **questioning** by 2 examiners.

Cases represent adult, paediatric, obstetric, trauma, operative, general anaesthesia, and regional anaesthetic scenarios. Cases will have **clinical problems**; the patient may be either scheduled for theatre or may have just had surgery.

As well as purely physical medical problems, questions now include ethical, consent and even management issues.

In summary, a suitable case will allow discussion of:

- Underlying medical / surgical condition(s)
- A patient's full medical history
- The clinical examination of the patient
- Laboratory, imaging and other investigations
- Some anaesthetic problem to be worked around
- The anaesthetic preparation of the case
- Suitable anaesthetic technique(s)
- Appropriate postoperative care (and this might include an ICU topic)
- Acute pain control issues.

Structured Oral Examination (SOE) 1 and 2



Each SOE is composed of **5 questions**, therefore **5 minutes** per question. Although all questions are **structured**, the face-to-face nature of these examinations allows exploration not only of knowledge, but also of the understanding (application) of that knowledge.

Concept of the Structured Oral Examination

The 10 questions asked in SOE 1 and SOE 2, may cover **any aspect** of the FCAI examination syllabus. Each question lasts 5 minutes, and the examiners will move from one topic to another to ensure that adequate time is allocated to allow the candidate to display the necessary knowledge and understanding in each area.

SOE 1

The focus of SOE 1 is to explore FCAI candidate's knowledge of topics specific to **clinical anaesthesia** and **pain management** (acute or chronic). Applied anatomy and regional anaesthesia is also covered in this examination.

In general, every **SOE 1** covers cases involving a question on:

Question	Example
Multisystem diseases with relevance to anaesthesia	Rheumatoid arthritis / acromegaly / sickle cell anaemia
Applied anatomy and regional anaesthesia	Brachial plexus and interscalene nerve block
Critical incident	Massive intraoperative hemorrhage / anaphylaxis / post tonsillectomy haemorrhage
Perioperative medicine	Management of patient presenting for surgery with a drug eluting coronary artery stent
Pain	Topic may be acute pain management or a chronic pain condition e.g. trigeminal neuralgia

Clinical **artefacts** are encouraged, e.g. a 12 lead ECG showing atrial fibrillation, pulmonary function tests etc.

SOE 2

The focus of SOE 2 is to explore FCAI candidate's knowledge of topics specific to **Intensive Care Medicine** and **advanced sciences**, which underpin anaesthesia. Any relevant intensive care topic covered in the FCAI syllabus e.g. the management life-threatening asthma and renal replacement therapy can be examined.

In terms of **advanced sciences, which underpin anaesthesia**, here are some examples of questions previously asked.

Advanced Science Topic	Examples
Applied anatomy	<ul style="list-style-type: none"> • Liver and spleen • Spinal cord blood supply • Coronary artery circulation
Applied physiology and biochemistry	<ul style="list-style-type: none"> • Brainstem death • Pneumoperitoneum • Liver disease • Denervated heart
Applied pharmacology	<ul style="list-style-type: none"> • TIVA • Tricyclic antidepressant overdose • Direct oral anticoagulants • Anticholinesterases
Applied physics and clinical measurement	<ul style="list-style-type: none"> • MRI and anaesthesia • ICP monitoring • Capnography • Cardiac output monitoring • Study design

The College of Anaesthetists role in Improving Oral Examination Utility

The CAI has employed three specific practices, which improves the oral examination utility and acceptability:

1. Use of a Structured approach to the oral including clinical scenarios

Structured oral examinations (SOE) based on a clinical case with well-defined goals can often give great insight into a candidate's knowledge, interpretive ability, problem solving and attitudes thereby improving the inter-rater reliability results.

Most authors agree that **structured** examinations have **better validity and reliability**, with less susceptibility to gender or cultural bias than unstructured examinations (Simpson & Ballard, 2005).

2. Use of multiple assessors

(Norman, 2000) suggested that the oral examination must sample more broadly across cases and examiners to enhance reliability (control observer bias, drift and fabrication) and enhance scope of feedback. In the College of Anaesthetists FCAI structured oral examinations, candidates will meet **six** different examiners across all three SOEs.

3. Assess on multiple occasions

The use of a number of oral examinations has been shown to **enhance reliability** and aid thorough and complete assessment, and enhances perceptions of fairness and accuracy (Drieseen *et al*, 2005). In the College of Anaesthetists FCAI structured oral examinations, candidates complete three separate oral examinations. In total, they have **80 minutes** of oral examination questions.

Marking the SOE

There are **two examiners** at each SOE table. Examiners alternate roles as **questioner** and **observer**. Both questioning and observing examiner **independently grade** each candidate (4,3,2,1) for each question during the SOE. At the end of the SOE, each examiner independently allocates an overall grade to that candidate (4,3,2,1). These overall SOE grades are then discussed between examiners and a final grade for that SOE is **agreed**.

Responses to the questions are assessed using the numerical rating scale below.

Descriptor	Grade
Excellent	4
Pass	3
Borderline	2
Outright fail	1

The minimum grades necessary to pass the FCAI SOE are: 3, 3, 2.

Criteria for answers can provide clear guidelines on what is and is not an acceptable answer to the examiner's questions. Checklists, as employed by the CAI have been suggested as a mechanism to reduce the variability in content of questions and grading. It may be that: "the more rigid the structure of oral, the higher the reliability" (Muzzin, 1985).

Reasons for failure

These must be entered on the appropriate mark sheet whenever a grade **below 3** is awarded. Examples include:

- A. Inability to organize and thoughts clearly
- B. Unsound judgement in decision making / problem solving
- C. Lack of knowledge of basic science
- D. Clearly unable to recognise and interpret clinical relevance of basic science
- E. Unable to demonstrate or illicit important clinical signs
- F. Insufficient knowledge of important areas
- G. Slow to respond and insufficient grounds covered
- H. Needed frequent prompting.

The use of Oral Examinations in the CAI Examinations

Oral examinations have a **long-standing tradition** as an **assessment tool** used in the evaluation of trainees at membership and fellowship level in anaesthesia training. The value of these oral examinations, however, has been questioned, particularly in regard to whether and how oral examinations assess **competence** in ways not evaluated in other assessment tools. There are issues surrounding their reliability as one examiner may ask a question in a different format from another.

However, **evidence has shown** (Joughin, 1998) that oral examinations provide rich opportunities for testing **many competencies** that are **important** in clinical practice. A number of the qualities evaluated by examiners such as communication, decisiveness, and critical thinking are not well addressed or not tested at all in other assessment tools.

These skills are imperative for the safe and effective practice of anaesthesia and intensive care medicine.

Effectiveness of oral exams

The oral exams format enables examiners to test the candidates on all six cognitive domains of **Bloom's taxonomy**.

For example, consider the type of questions and questioning one can use in the FCAI SOE setting.

- The examiner can ask the candidate about their **knowledge** and **comprehension** (knowledge and comprehension),
- Can use the exam to see if they can **apply the concepts** (application),
- Can use a case to test the candidates **analytical ability** (analysis),
- Can determine if the candidate can **combine concepts** into a new whole (synthesis), and
- Can even determine if the candidate can **evaluate** or **critically assess** various **concepts or theories** (evaluation).

While many of these domains can be assessed through the written exams (MTF / SBA / SAQ), the structured oral exam allows the examiner to **probe these areas to ascertain** if the candidate "really knows they are talking about". Oral exams thus cover **several cognitive domains** and also the psychomotor skill of oral expression.

FCAI Testing Time

The FCAI curriculum is extensive and the CAI has a duty to ensure that candidate's knowledge, skills and behaviours are tested adequately. You can see from the table below, that a FCAI candidate will have a minimum examination time of 450 minutes or 7.5 hours, providing they pass each examination on the first attempt.

Examination	Time (minutes)
FCAI SBA	180
FCAI SAQ	180
FCAI Clinical Case SOE	40
FCAI SOE 1	25
FCAI SOE 2	25
Total testing time	450 minutes (7.5 hours)

Fellowship by Examination

In accordance with the Standing Orders of the College of Anaesthetists of Ireland, a candidate who has successfully passed the Final Fellowship Examination of the College and who has complied with such provisions as determined by the Council shall be entitled to be admitted a Fellow of the College. On conferring, the Fellow shall be entitled to use the post-nominal letters FCAI.

Summary of the FCAI Examination



Quality Assurance Assessors

The CAI has a quality assurance (QA) examiner. Their role is:

- To assess the process and conduct of the MCAI/FCAI examinations to ensure there is a uniform and fair standard applied by all examiners, and that there is no unlawful discrimination in relation to any of the protected characteristics described in equality legislation.
- To contribute to the appraisal and performance review of examiners in their role as an examiner.
- To provide feedback on the conduct of the examination to the body setting the examination.
- To develop standard operating procedures for the following aspects of examinations: question writing and review, paper generation and ensuring alignment to blueprint, marking, standard setting of cut score and post examination analysis and psychometric analysis review.
- Generate a QA report following each examination, reviewing the performance statistics and outlining areas of good and perhaps not so good practice. An action plan is also attached for consideration by the Examination's Committee.
- A visiting examiner from the RCoA also annually reviews and provides feedback on our examination processes pertaining to the SOEs and OSCE.

The **Examination Committee** who meet approximately five times per year, also discuss all aspects of QA and will take action to ensure that the CAI follow best practice. The Irish Medical Council also dictate specific standards, which the CAI endeavours to implement and

Question Writers

Examiners selected to contribute to question writing must demonstrate that they are:

- Up to date in their specialty (anaesthesia / pain / ICM / biomedical science).
- A substantive Consultant.
- Understand the level of knowledge, skills and attitudes required of the candidate to pass the exam.
- Able to devote the time required to develop appropriate questions.
- Able to develop questions that minimise bias for candidates from the groups protected by equality legislation.

MCAI / FCAI Examiners will:

- Be on the IMC / GMC Specialist register.
- Be a Fellow of the CAI in good standing.
- Be in a substantive Consultant post for at least two years, and must demonstrate awareness of the training standard required of the candidates, before becoming an examiner.
- Provide evidence (for example, references) to confirm that management and/or clinical colleagues agree to the examiner taking up this role, if appropriate.

- Be able to provide evidence of satisfactory completion of examiner training after selection.

Examiner Training

All newly appointed examiners are required to attend an examiner training day, which covers:

- The structures of the MCAI / FCAI examination
- Their role as an examiner
- Principles of assessment and basic psychometrics
- Standard setting
- Interactive Angoff session
- How to write SBAs / SAQs
- How to ask structured oral examination questions
- Objectively structured clinical examination
- Equality and diversity

Further educational needs are supported with the edition of **examiner guidance manuals** including how to write examination questions, standard-setting procedures and how to understand post examination analysis.

Lead examiner and quality assurance reports emphasize areas of good examination practice and recommendations on how to improve areas falling short of the CAI high standards.

Equality and Diversity in the CAI Examinations

The CAI actively **appoint examiners** from all ethnic backgrounds, and we feel that this diversity **is important** given that we have a large proportion of non-Irish doctors attempting our examinations.

As examiners and those involved in the examination process, it is crucial that they understand key equality legislation and what some of the implications could be in the examination process. This is covered during the examination training day, and our examiner guidance manual covers this in explicit detail.

The **CAI advocates** that a candidate's performance in an examination should never be compromised by any of the nine protected characteristics of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion and belief, sex and sexual orientation. The CAI is considering the requirement of compulsory completion of an e-learning module covering equality and diversity issues in examinations by all its examiners.

Differential attainment in the MCAI / FCAI examinations cannot be attributed to a single identifiable cause, but results from a combination of factors. The CAI reviews performance from all its candidates looking for areas of different attainment by different groups. The Examinations Committee and College Council take the issue of differential attainment very seriously and are committed to delivering the fairest examination possible.

Disability

The CAI has a duty to make a reasonable adjustment where practices place a disabled candidate at a substantial disadvantage. Demonstrating understanding of a candidate's impairment and being supportive of their concerns is an important part of the process of applying reasonable adjustments.

All requests from candidates with a disability must include a written statement of support from the employer's Occupational Health Department (OHD) and/or College Tutor confirming that the candidate's difficulties warrant special examination arrangements. Each request will be considered individually.

Full details are available in the CAI Examination Regulations:

<https://www.anaesthesia.ie/attachments/article/85/Examinations%20Regulations%202018.pdf>

Examination Validity

MCAI

A candidate has a maximum number of **six attempts** at the MCAI MCQ.

Once a candidate has passed the MCAI MCQ the result remains valid for a period of **three years** (six sittings) for OSCE and SOE attempts measured from the published start date of the first OSCE/SOE undertaken. Candidates can only progress to the OSCE/SOE section of the MCAI examination if they have passed the MCQ examination.

A pass in the whole Membership Examination is valid for 10 years for entry to the Final FCAI Examination.

Candidates must pass the MCQ paper before they can apply to sit the OSCE and SOE.

FCAI

Candidates must pass the written section (SBA / SAQ) before they can apply to sit the SOE.

A pass in the written section will be valid for **three years** to the date of the sitting applied for.

Candidates will be allowed **six attempts** at each section.

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