The Royal Australasian College of Surgeons

ORTHOPAEDIC SURGERY FELLOWSHIP EXAMINATION

CANDIDATE GUIDE
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PART 1

1.  INTRODUCTION

The RACS examiners comprising the Specialty Court in Orthopaedic Surgery wish to provide guidance and information for candidates who are to sit the Fellowship Examination. This information is provided to enable each candidate to:

- know the philosophy of the Specialty Court in Orthopaedic Surgery
- understand the objectives and mechanism of the examination
- optimise their likelihood of passing the Fellowship Examination.

To achieve these aims, the examiners wish to make the format, tasks and objectives of each component of the examination as clear as possible to the candidates. Strategies have also been put in place to provide reproducible evaluations to ensure that the standards are the same for each candidate in each examination and from year to year.

The examiners expect that, having reviewed this content, the candidate will:

- be familiar with the format of the 7 segments of the Fellowship Examination in Orthopaedic Surgery
- understand the objectives of each segment
- be aware of the strategies established to achieve validity, reliability, transparency, equal opportunity and objectivity
- know that there are opportunities to report special circumstances and opportunities to seek clarification
- anticipate fair and supportive treatment and feedback, when appropriate, before, during and after the examination
- recognise that the standard set in the examination is that of surgical competence; therefore the candidate will not face ranking in excellence nor a fixed percentage pass rate.

2.  EXAMINERS' PHILOSOPHY

The Specialty Court of Examiners in Orthopaedic Surgery commit to ensure the highest standard of safe and comprehensive surgical care for the community. Through the examination process the examiners will assess the:

- knowledge
- clinical skills
- judgement
- decision making
- professional competence of the candidates.

While preparing for and undertaking the examination process, the examiners will:

- uphold the highest standards and professional values
- show respect and empathy
- work with diligence and commitment.

3.  STRUCTURE OF THE EXAMINATION

The examination consists of the following 7 separate segments:

1.  Written paper 1 (multiple choice questions)
2.  Written paper 2 (written)
3.  Clinical viva 1
4.  STANDARDISATION OF THE EXAMINATION

Each segment of the examination is prepared and discussed by the specialty court in advance of the 
examination date during a 2.5-day preparation meeting generally held in February. The bank of 
multiple choice questions (MCQ) is updated annually with new questions and discussed at special 
meetings of the MCQ panel. The results of each MCQ exam are reviewed in order to identify 
"problem" questions. These questions are modified or deleted if necessary.

One examiner co-ordinates the essay component of the examination. Essay topics are suggested by 
him/her to individual examiners who submit their responses prior to the February meeting. All 
responses are then considered based on a range of factors and a selection is made for further 
development into the final exam product. This is a prolonged and detailed process both creating the 
precise wording and outlining expectations in relation to an answer. An answer guideline is available 
to each examiner when marking the essay component.

The Illustrated Short Answer Written (ISAW) component is constructed similarly. Numerous 
submissions are made to the coordinating examiner who proposes the 10 ISAWEs to be included. 
This preliminary list is then modified during the February meeting in order to ensure an appropriate 
breadth of knowledge is assessed. The wording and answer guidelines are carefully constructed.

The examiners responsible for the clinical investigation and management viva and operative surgery 
vivas seek submissions throughout the year. The final examination is generated at the February 
meeting with a balance of cases to ensure that the candidate demonstrates knowledge in a broad 
range of clinical and operative areas. At the examination in May and September the selected cases 
are again discussed in detail on two occasions to ensure that the same standard of examining is 
undertaken by each pair of examiners.

The clinical viva cases are selected by a local co-ordinator who has guidelines regarding the selection 
of appropriate cases for consistency and fairness. The patients used in the clinical vivas are 
examined by pairs of examiners prior to the examination for approximately 1 hour. Two examiners will 
be present with the candidate for the vivas.

All examiners undergo assessment to ensure consistency of marking, by an external assessor 
(usually a retired senior examiner).

5.  THE SPECIALTY COURT IN ORTHOPAEDIC SURGERY

The Specialty Court of Examiners in Orthopaedic Surgery consists of practicing orthopaedic surgeons 
from both Australia and New Zealand. The duty and responsibility of the court is to:

- conduct the Fellowship Examination
- examine candidates and test their competencies
- review the content of the examination (based on the curriculum set by the Education Board)
- review and modify as necessary the examination process
- provide up-to-date information regarding the examination process to trainers and candidates
- train and monitor fellow examiners.

5.1  Meetings of the Specialty Court in Orthopaedic Surgery

The Specialty Court in Orthopaedic Surgery meets in February of each year to discuss and prepare 
the examination material for that year. Separate meetings are held at various other times by panels of
selected examiners to review the multiple choice question banks and to review new questions. The specialty court meets prior to and after each examination to discuss the examination material and each candidate's results.

5.2 Conduct of the Fellowship Examination in Orthopaedic Surgery

The conduct of the examination is undertaken under the direction of the Chair, Court of Examiners and according to the policies and procedures of the Royal Australasian College of Surgeons.

6. HOW THE EXAMINATION IS MARKED

Each segment of the examination is marked separately without reference to any other segment of the examination. Each of the 7 segments is marked by 2 examiners who must agree on a mark. The results are collated by the senior examiner or nominee, and the final result or progress of each candidate remains unknown to individual examiners until the meeting of the specialty court at the conclusion of the examination.

The "close marking system" is used for each segment of the examination. The marks for each segment range from 8 to 9.5 in 0.5 increments.

- A mark of 9 represents a "satisfactory" standard so that a pass in the entire examination requires 7 segments of 9 each = 63 marks.
- A mark of 9.5 is awarded for exceptional performance.
- A mark of 8.5 represents an unsatisfactory performance. Its significance may be modified in light of performance in other segments of the examination and by discussion by all members of the court at the conclusion of the examination before a final decision is taken.
- A mark of 8 represents a fail.

Any candidate achieving an 8 or 8.5 has a written document prepared by the examining pair for that segment, outlining in detail the reasons for failure. This is done immediately after the failure to ensure accuracy of recollection. This is then used for discussion at the specialty court meeting if the final score is borderline. It is also used to provide feedback after the exam to a candidate who ultimately proves to be unsuccessful.

Notwithstanding the final score any candidate may be discussed by the full Court of Examiners (which includes examiners in all surgical specialties) and their result determined by a majority vote. This allows natural justice to be done where applicable.

7. CANDIDATE IDENTIFICATION

During the process of the examination each candidate is identified by his or her "candidate number". This process allows a degree of anonymity during the examination. If a candidate is known to an examiner the examiner may elect to withdraw from examining that candidate in that segment of the examination. Normally the senior examiner or nominee would then replace that examiner for that segment.
PART 2

8. WRITTEN EXAMINATIONS

These examinations consist of 2 separate 2-hour papers that are sat 1 month before the vivas and clinical examinations. The main objective of the written examinations is to test the breadth of the candidate’s training. The questions cover all aspects of the syllabus. The questions will usually evaluate clinical management and decision-making; however, aspects of pathophysiology, pathology, surgical anatomy and operative surgery may also be included.

8.1 Written paper 1

8.1.1 Multiple choice questions (MCQ)

(75 questions in 2 hours) - Each multiple choice question begins with a stem that introduces the topic and this is followed by 5 responses - each of which may be either true or false. Answers to the multiple choice questions are entered on a special mark sensor sheet provided. Incorrectly entered sheets will be rejected. Candidates will receive:

- +1 for each "true" statement identified as true
- +1 for each "false" statement identified as false
- a score of 0 for any incorrect answer
- a score of 0 for any answer left blank.

That is, there is no negative marking. Candidates are advised to attempt all questions.

Topics include (but are not confined to):

- surgical treatment of Orthopaedic conditions
- trauma
- Early Management of Severe Trauma (EMST)
- Paediatrics
- imaging
- pathology
- prosthetics
- infection
- sports injury
- ethics
- medico-legal
- rehabilitation
- clinical examination
- surgical approaches
- non-surgical management.

A pass in this segment requires a 75% correct response rate.

For further information regarding the standard setting process for this exam please refer to Appendix 1.
8.2 Written paper 2

8.2.1 Illustrated Short Answer Written (ISAWE) questions and essays

(12 questions in 2 hours) - The candidate should allow 1 hour to complete the 10 illustrated short answer written section and 1 hour to complete the 2 essay questions. The answers are to be written in the space provided beneath the components of the questions.

In the Illustrated Short Answer Written (ISAWE) questions section, there are 10 Illustrated Short Answer Written (ISAWE) questions related to clinical cases or Orthopaedic surgical conditions. The illustrations to which the questions relate will be presented on the opposite (left) side of the answer page. Some written information is available on the illustration page, which may be relevant to the question. Usually there are up to 4 or 5 linked questions that cover the subject of the illustration provided. The format of the questions in this part of the written paper may be, for example:

1. What is the diagnosis and differential diagnosis?
2. What is the aetiology of the condition?
3. What is the pathogenesis of the lesion?
4. What operative procedure is recommended?
5. What is the long-term prognosis?

- Expect many variations and be sure to answer the question concisely and precisely showing advanced clinical reasoning.
- Do not make any answer perfunctory.
- Do not underestimate the importance of predispositions, associations, aetiology or pathogenesis.
- Do not write an essay.

While each of the 10 questions may appear to demand a different magnitude of commitment, it is the intended that it would require approximately 6 minutes to respond to each of the questions. In addition, each sub question may require a variable response time. However, the marks are evenly distributed.

- **Marking of Illustrated Short Answer Written (ISAWE) questions**

These questions are marked as a pass or fail. The candidate must pass 8 questions to pass this paper.

- A candidate who passes 9 or more questions will be ranked 9.5.
- A pass in 8 questions will be ranked at 9.0 for the paper.
- A candidate who passes 7 questions will be ranked 8.5, borderline fail.
- A candidate who passes only 6 questions is ranked at 8.0, which is a clear fail.

8.2.2 Essay questions

In the essay questions section there are 2 questions each of equal value. The questions will usually begin with a clinical scenario and will be followed by a variable number of questions relating to that scenario. Candidates should allow approximately 30 minutes answering each of the 2 essay questions.

Answers to the essay type questions may be in note form. Lists and bulleted point form can be used if appropriate to the question asked. Answers should convey advanced clinical reasoning and demonstrate that the candidate is extremely knowledgeable about the topic and demonstrates in-depth understanding of the relevant and important ideas.

- **Marking of essay questions**
The examiner will mark each short answer according to the following outline:

- a complete answer that is clearly set out with appropriate priorities, logical sequence and no major error of omission or commission - score 9.5
- an almost complete answer, well set out with appropriate priorities with minor omissions and no serious errors of commission - score 9 (a pass)
- an answer that is not clear and has one major error of commission, of omission or failure in prioritisation - score 8.5 (borderline fail)
- an answer with multiple gaps and more than one major error of omission or commission or lack of priorities - rank 8 (fail).

The marks are then averaged for written paper 2 and an overall mark awarded.

9. OTHER WRITTEN EXAMINATION INFORMATION

9.1 Examination book photocopying

As the written paper is photocopied for distribution to several examiners, it is necessary for the candidate to use a black writing device that provides clear reproduction. Coloured writing will not reproduce well. Write your answers only on the lined-side of the answer booklet.

9.2 Source of questions

All questions are created by the examiners and the examiners will write answer guidelines that will be discussed, evaluated and modified to fulfil the expectations of the clearly expressed objectives of the Fellowship Examination. The expectations of the examiners will be limited to that which is achievable within the time allowed.

9.3 Written paper quality control

Every effort is made to ensure that the questions are well set out and clearly expressed. It is necessary to carefully check the point of the question; carefully check that all questions are answered and double check there are no omissions.

9.4 Written examination supplies

The candidate is obliged to provide all of the necessary supplies for the examinations, including several appropriate pens, ruler and eraser. Mobile telephones, PDAs, reference material or iPods are not permitted. You should be allowed fully 2 hours of writing time. Should you have concerns, these issues must be raised with the invigilator at the time.

10. CLINICAL EXAMINATIONS

The clinical examinations are undertaken in a hospital setting, usually in an outpatient's clinic or ward environment. The candidate and a pair of examiners will spend 35 minutes with a selection of standardised live patients. With each patient the candidate will be asked to do one or more of the following:

- gather relevant information from the history and examination
- structure problems and synthesise findings
- provide a differential diagnosis
- formulate an appropriate plan of management.

Candidates will need to demonstrate:

- a required level of competence and maturity
- an appropriate attitude
• an ability to communicate with the patient.

Please note:
• Straight forward examples of common conditions should evoke a complete and accurate history, physical findings and discussion of management.
• In short cases, spot diagnosis, short answer treatment and precise investigation strategy are required and encouraged.
• Unusual, complicated or impossible histories, or physical signs so subtle, so complex or so variable as to be confusing obviously indicate poor selection of cases and are only used selectively to illustrate specific points.

• Marking of clinical examinations

After the conclusion of the viva, the pair of examiners will agree on a mark for that segment along the following guidelines:
- exceptionally good or excellent performance - score 9.5
- pass - score 9
- doubtful - score 8.5
- fail - score 8.

11. VIVAS

11.1 Clinical investigation and management viva

The candidate and a pair of examiners will spend 30 minutes discussing up to 5 standardised case studies. This segment of the examination is computer-based and presented using a Microsoft PowerPoint presentation.

The candidate should present an understanding of the appropriate investigation and management of the individual cases, and candidates will be required to show an understanding of:
- blood screen analysis
- ultrasound
- computed tomography (CT)
- nuclear medicine
- magnetic resonance imaging (MRI)
- appropriate management of the case.

An example of a case study would be the investigation and management of a primary malignant bone tumour.

11.2 Operative surgery vivas

There are 2 operative surgery vivas.

In each of the operative surgery vivas the candidate and a pair of examiners will spend 30 minutes discussing up to 5 standardised case studies. This segment of the examination is computer-based and presented using a Microsoft PowerPoint presentation.

The candidate should present an understanding of:

• the appropriate surgical management of individual cases
• the principles of surgical treatment, including:
  - surgical approaches
  - non-operative management
  - controversial management issues and consent.

An example of a case study would be the surgical approach and management of intra-operative complications for a total hip joint replacement being performed for osteoarthritis of the hip.
11.3 Marking of the vivas

- A complete response that is clearly presented with appropriate priorities, logical sequence
- and no serious and no major error of omission or commission - score 9.5
- An almost complete answer, well presented with appropriate priorities with minor omissions errors of commission - score 9 (a pass)
- An answer that is not clear and has one major error of commission, of omission or failure in prioritisation - score 8.5 (borderline fail)
- An answer with multiple gaps and more than one major error of omission or commission or lack of priorities - score 8 (fail)

The marks are then averaged for all cases and an overall mark awarded.

12. GENERAL ADVICE FOR CANDIDATES

- Demonstrate that you know the art of Orthopaedic medicine as well as the science.
- Do not present for the examination if you do not believe that you should be there.
- The examination is a test of clinical ability and not solely knowledge.
- Engage the examiners in discussion.
- Say “I don’t know” if you don’t.
- Be well presented.
- If you have omitted something, say so. Don't try to make it up.
- Present the positive findings and the pertinent negatives.
- Make sure you are competent in all aspects of the Clinical Examination.
- Listen carefully to the examiners.
- If the questions seem to be getting harder, don't panic; the examiners are testing the limits of your knowledge.
13. EXAMPLES OF EXAMINATION QUESTIONS

- **Multiple choice question (sample)**

  Furbellows’ syndrome is characterized by:

  A. autosomal recessive x-linked inheritance
  B. multiple joint dislocations
  C. posterolateral instability of the knee
  D. narrow, hyper-convex fingernails
  E. viral inclusion bodies in the sarcoplasm of motor end plates.

- **Essay question (sample)**

  A 2-day-old male infant is referred to the Orthopaedic outpatients clinic with equino-varus deformities of both feet.

  - Discuss the possible etiology(s) of this deformity.
  - Discuss any further examination and investigations you would undertake.
  - Discuss treatment.
  - Discuss the likely outcome of treatment for this problem, and the natural history of the untreated foot.

- **Illustrated Short Answer Written (ISawe) question (sample)**

  A 65-year old man develops a haematoma secondary to over-anticoagulation 4 weeks after a knee joint replacement.

  1. Outline your usual protocol for prevention of deep venous thrombosis and pulmonary embolism after knee joint replacement.
  2. How would you manage this case now?
• Clinical viva (examples)

The following are examples of clinical viva cases:

- osteoarthritis of the hip or knee
- hallux valgus
- scoliosis
- Dupuytren's contracture
- brachial plexus palsy
- leg length discrepancy.

• Operative surgery viva (example)

History

- 45-year-old accountant
- 12-month history of hand weakness
- no known medical conditions
Clinical imaging and management case (example)

History

- 47-year-old man
- painter and paperhanger
- past history of malignant melanoma excised from forearm
- 6-month pain in the left leg

![X-ray images of the left leg](image_url)
APPENDIX 1

SETTING THE PASS MARKS FOR THE ORTHOPAEDIC MCQ EXAMINATIONS

There are 2 Orthopaedic MCQ examinations controlled by the RACS Orthopaedic Court of Examiners, the OPBS exam and the Final Fellowship MCQ segment.

The OPBS exam consists of 200 Type X MCQ questions (an introductory statement and 5 true/false responses). The Final Fellowship examination MCQ consists of 75 Type X MCQ questions.

It is anticipated that all candidates who present for the examination should pass the examination.

The questions are submitted by individual examiners to a chosen panel of 5-10 examiners tasked with reviewing these questions for correct wording and grammar, absence of ambiguity, checking references, and for currency and validity of the question and responses. A consensus is obtained on whether the question is fair and could be answered correctly by a minimally competent candidate. Individual questions are reviewed every 5 years for currency.

A small subset of questions is repeated at each examination to test the difference between groups of candidates sitting to determine the calibre of the group as a whole i.e. whether the group is weaker or stronger than those who have sat previously.

Based on averaged estimates of correct responses by minimally competent candidates, determined by the examination review panel, an “absolute” pass mark (criterion referenced) is set for each of the two examinations, 70% correct responses for the OPBS examination, and 75% for the FEX MCQ examination. The reason for the difference is that the OPBS exam is perceived as being a more difficult examination then the FEX MCQ.

Following the examination the candidate results and the item analysis supplied by the University of New South Wales are reviewed by the Senior Examiners (Australia & New Zealand) and the examiner “in charge" of the MCQ bank.

All responses that score poorly i.e. where the percentage of correct responses to that alternative is below 30% are checked for errors within the question or for incorrect transcription of answers. Questions where the top 25% score significantly lower than average are also reviewed.

If errors are found then this is used to adjust the absolute pass mark always in favour of the candidates. Any such adjustment is on agreement or consensus between the reviewing examiners.

In addition a statistical analysis is performed on the candidate scores to determine the mean, standard deviation, standard error, variation, quarterly percentiles and normality testing with histograms and normal probability plots. These results are used to test the calibre and spread of candidates compared to previous groups.
In the FEX MCQ examination a standard setting norm-reference method is used to determine the bands (8, 8.5, 9 & 9.5) using a historical control based on the performance of candidates in the last 5 years.

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Orthopaedic Surgery