Royal College of Pathologists

Examination regulations – 2020

GENETICS
These regulations must be read in conjunction with the *Regulations and Guidelines – College examinations for Membership and Diplomas*.

ENTRY & TRAINING REQUIREMENTS

There is no specific timing for entry to the examination. Candidates should obtain guidance from their educational supervisor as to when to sit the examination. Planning should take into account completion of training (where applicable) but candidates should apply only when they are ready. Some general guidance is given below, but apart from the sequence in which the examinations can be sat is not intended to be prescriptive.

Part 1

Part 1 will normally be taken following a **minimum** of three years' training in departments or laboratories that are recognised by the College for Part 1 training.

It is recommended the three years' training requirement for Part 1 includes two years of clinical practice, post registration.

Part 2

All candidates must have passed the Part 1 examination. For medical candidates, the Part 2 examination will normally be taken after a minimum of five years' recognised training, including four years of higher specialist training.

For scientists, the Part 2 examination will normally not be taken until eight years after obtaining the degree entry qualification.

Please note this does not necessarily mean there has to be a large gap between Parts 1 and 2. A candidate entering Part 1 at about 6–7 years post-degree or later could progress rapidly to Part 2.

Candidates for the Part 2 examination are required to give evidence of widening their experience over a minimum period of two years of training by examination of a written component and both practical and oral examinations.

STRUCTURE AND FORMAT OF THE EXAMINATION

Part 1

The Part 1 written examination consists of a short answer question (SAQ) paper and an essay paper lasting three hours each. The first paper requires written answers to four out of five questions, in note or essay format. The candidate must answer four out of five questions on this paper. The second paper comprises 20 short answer sections each with several sub-sections, all of which should be answered. The questions will cover both cytogenetics and molecular genetics topics.

Part 2

The Part 2 examination will comprise a written component and a practical and oral examination, which may be taken in any order. However, the proposal for the written component must be approved before candidates may register for the Oral examination.

The Written Component

The written component of Part 2 will be one of the following options:
a) a casebook
b) a dissertation
c) a minimum of three refereed published papers
d) a PhD/MD thesis, normally completed during the training period
e) for HSST trainees undertaking the MAHSE DClinSci, the research project component (C2) may be submitted

For a written submission to be awarded an A grade both examiners must agree. Submissions should be of publication standard and therefore it is expected that as with submissions to journals, examiners will not infrequently request clarifications or amendments. Requests for additional testing or analysis are very rare.

The dissertation option

The purpose of the dissertation is to provide evidence of personal involvement in translational research or innovative practice and a critical analysis of such work. The dissertation will be structured in the format of a scientific publication and should be 4,000-6,000 words in length (excluding bibliography). The candidate should demonstrate an understanding of the underlying biology of their chosen topic, and as appropriate to the area of genetics studied, include consideration of the impact of a robust diagnostic service on the patient pathway, demand management, costs and capacity. A key component will be what criteria are used to reach assessments and conclusions and how results are validated.

The written project should demonstrate a number of the candidate's skills and competencies, in particular scientific and logical rigour, the ability to present an argued case, experimental design and strategy and an awareness of the wider impact of the work within the health service, both with respect to service delivery and to the capacity of service providers.

The PhD option

The research that forms the basis of a PhD thesis or dissertation should be on the topic of human genetics. The work should have been completed during the FRCPath training period (ie post Clinical Scientist registration) and be reasonably up to date. Thus a PhD obtained before registration as a Clinical Scientist will probably not be acceptable for submission but the research work undertaken could be rewritten as a dissertation that brings the results and subject matter up to date in the light of current research and publications in the subject.

The peer reviewed papers option

Peer-reviewed papers should be published during the FRCPath training period (ie post Clinical Scientist registration). The publications should be submitted with a commentary that describes the candidate's contribution to the papers together with a critical analysis of the impact of their research. Papers will be judged on their quality and on the candidate's contribution and, in cases of multi-author papers, the extent and nature of the candidate's contribution should be clearly indicated and certified by the sponsor.

The casebook option

From April 2017 the format of the casebook has changed and further details are available below. Proposals accepted before this date will not be affected but will be expected to be completed within three years of proposal acceptance.

A casebook which must be a comprehensive work to an advanced level, should consist of 6 cases with a total length, excluding references, of 8,000 -12,000 words. The reports should be of a quality fit for peer-reviewed publication. Cases should be selected to cover the domains of the Good Scientific Practice curriculum: Professional Practice, Scientific Practice, Clinical Practice, and Research, Development and Innovation. (The fifth domain, Clinical Leadership, will be assessed at the Part 2 oral examination). A clinical audit could be included as one case.

Example methods of assessment and scoring are given in appendix 1. Where a case submission does not fit precisely, eg an educational presentation, the scoring criteria will be adapted and agreed by both examiners.

All cases must provide discussion of the context, review of published literature or relevant practice, and evidence of reflective learning.

The word limit of each case should be 2000 words.

	Type of case	**General content –** this is only a guide and not an exhaustive list of what could be included
1	**Professional practice**	This might be a business case for a new assay or service; or establishment/review of best practice guidelines. Alternatively, to demonstrate communication skills, this might be a patient information leaflet, an educational presentation to other healthcare professionals, providing evidence of the ability to

		communicate with patients, lay people or non-specialists.
2	**Scientific practice**	This may be a review of a specific aspect of clinical or laboratory practice and could include troubleshooting a poorly functioning assay.
3	**Clinical practice**	Description of a single patient or group of patients with regard to investigation, diagnosis or management. **The candidate must demonstrate a substantial personal role in the clinical management and / or laboratory investigation of these cases**.
4	**Research, development and innovation**	This may be establishing a new test, in which case the report should contain details of validation and quality management, or it might be a change in testing strategy, implementation of new guidelines or interpretation tools.
5-6	**Optional**	These cases are flexible and may reflect any of the categories above. An audit could be considered for the Professional, Scientific or Clinical practice categories.

Outcome of marking casebooks:

Grade A: Attainment of 75% of marks, with no serious errors or omissions.

Grade B: Errors or omissions that need rectification before attaining Grade A

Grade C: Poor quality work that cannot be redeemed.

(Award of Grade C will be exceptional).

Candidates are required to submit the written work within three years of having the proposal approved. Candidates who fail to submit the work within that time will be required to apply for an extension, giving reasons, or submit a new proposal.

For further guidance, please see the section on 'Guidance for candidates undertaking written options for the Part 2 examination' in the ***Regulations and Guidelines – College examinations for Membership and Diplomas.***

The practical examination

The practical examination lasts for six hours: three hours in the morning followed by a lunch break, and then three hours in the afternoon. The practical examination contains a mixture of analytical, problem-solving and interpretative questions. Candidates must answer all questions.

The oral examination

The aim of the oral examination is to establish that the candidate has demonstrated a level of competence appropriate for independent practice at consultant level.

The last opportunity to sit sub-speciality oral examinations in molecular genetics and cytogenetics will be Spring 2020. After this date all candidates will sit a combined Genetics oral examination.

The examination will test the candidates':

- scientific knowledge relevant to their branch of genetics (molecular or cytogenetics), including recent relevant literature
- ability to apply basic knowledge appropriately in a clinical context
- communication skills, particularly clinical liaison skills to enable them to offer appropriate advice to their clinical colleagues, and to think through the consequences of advice for patient management.
- understanding of laboratory organisation and direction, including principles of budget control, quality control, safety and staff management.

The oral examination will last for 60 minutes and will be conducted by two pairs of examiners, 30 minutes being spent with each pair of examiners. For each question in each section the panel of examiners will determine the pass standard using a closed marking scheme. Candidates will have to achieve a pass in both sections to secure an overall pass in the oral examination. Compensation of marks between the two sections is possible for candidates with a borderline fail in one section.

Candidates who have sat the old format Part 1 examinations

Candidates who have passed the Part 1 written examination but not the old Part 1 practical examination will transfer to the examination structure described above.

Candidates who have passed the old Part 1 examinations (written and practical) will proceed to the Part 2 Oral Examination in their Part 1 specialty only. In order to pass the entire examination and receive award of FRCPath they will still have to submit a satisfactory written component (dissertation, MD/PhD or portfolio of published works), the proposal for the written component must be approved before candidates may register for the Oral examination.. Candidates will continue to be subject to the maximum number of re-sit attempts stipulated in the Regulations.

The Part 2 examination will be available in this format until 2020; after that date candidates entering for the first time will have to take the Part 2 practical and oral examination.

Re-sitting Candidates
Candidates re-sitting the Oral examination will not be required to take the Part 2 practical examination. They will also not be required to have their proposal for the written component approved prior to registering for an Oral retake, although this is strongly recommended. Post 2020 all candidates will sit a combined Genetics oral examination.

TIMING OF THE EXAMINATIONS

The Part 1 written examination will be offered once a year in Autumn.

The Part 2 practical and oral examinations will be offered once a year in Spring.

Examinations Department
The Royal College of Pathologists
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Appendix 1

Case book marking schemes

Marking scheme for clinical practice

Patient case reports are valuable opportunities to integrate clinical and laboratory findings with background information about genetic mechanisms of disease. While some clinical case reports will describe new or unusual information, novelty is not an essential requirement. Each case report should include an initial background page with a title and contributors. The candidate must state exactly who did what; they must have been responsible for the majority of the work.

Area	**Standard**	**Mark**
States clearly how much of work their own	Fail if not majority.	
Abstract	The abstract of a patient case report should succinctly summarise key issues in the main text of the report.	5
Introduction	The introduction section should provide the subject, purpose, and merit of the case report. It should provide a succinct literature review. (in the word limit of 2000/case a comprehensive and detailed literature review is not possible)	30
Description of case, including **brief** outline of history and examination, and relevant laboratory results	The case presentation section should be in enough detail for the reader to understand the main learning points of the case	30
Discussion	The discussion section should summarise the reasons underpinning the conclusions and the learning points.	30
Conclusion	The conclusion section should be brief and provide a conclusion with a summary of the main learning points.	5

Marking scheme for an audit

The audit report should include an initial background page with title of audit and contributors. The candidate must state exactly who did what; they must have been responsible for the majority of the work. The idea does not have to have been their own, but plan for audit, data collection and data analysis must have been. Just analysing someone else's data would not be deemed sufficient.

Area	**Standard**	**Mark**
States clearly how much of work their own	Fail if not majority and elements of design, data collection and data analysis not stated.	
An acceptable rationale for the audit is provided	This must explain why the audit was worth doing.	20
The audit must be conducted against agreed standards	The origin of the standards must be stated. This must include a reference and state whether the standards are national, regional, network-wide or local. Justification must be given if there is local variation to other accepted standards e.g. nationally published.	10
Sample size and selection	Sample size must be appropriate to the question posed by the audit and in consideration of other factors such as the number of specimens or the audit time frame. The method of sample selection must be described e.g. random selection.	10
Data collection	Methods must be clearly described.	15
Analysis and interpretation	Detail of analysis must be given, with valid interpretation of results.	25
Identification and implementation of any changes required	Details must be given of any actions required to rectify problems identified.	10
Re-audit	Re-audit should be included **if it has been** undertaken. **If not,** a clear plan for re-audit must be given.	10

Marking scheme for a business case

Multiple opportunities should present themselves over a 5 year training period for trainees to be involved in the development of a business case / investment bid. The purpose of including this in the portfolio is that developing a service is an important role of a consultant, and trainees should have a thorough understanding of the processes involved. This is not a test of financial acumen or mathematical ability!

Area	**Standard**	**Mark**
States clearly how much of work their own	Fail if not majority.	
Rationale for the development	Clear background to the development, written in terms that a non-expert can understand.	20
Evidence of strategic thinking	Proposal fits in with identified aims of the department / Trust / NHS.	15
Aims and objectives	Clear definition of aims and objectives, which are realistic and timely.	15
Detail of proposal	Detailed description of the proposal, with time frames and clear implementation plan. Should include detail of implications for other parts of the hospital / department, etc.	35
Evidence that either alternatives to the proposal have been considered and / or consequences of not doing the proposal detailed	Option appraisal / risk assessment (or elements thereof) should be included.	5
Financial, space, staff implications	Costings and impact of proposal, evidence that indirect costs and effects as well as direct have been considered (staffing, skill mix, building work, IT issues, costs, regulatory impact, referral patterns, length of stay, length of reporting times, etc).	10

Marking scheme for scientific practice and research, development and innovation cases

The scientific practice case report might be a review/introduction of a service, an assessment of a specific test/panel, troubleshooting. The clinical case(s) which are presented should include an initial background page with title of report and contributors. The candidate must state exactly who did what; they must have been responsible for the majority of the work. Quality control management is a key aspect of training in clinical laboratory genetics. The plan for the assessment / troubleshooting / introduction of a new test and relevant data analysis must have been their own work.

Area	**Standard**	**Mark**
States clearly how much of work their own	Fail if not majority.	
Background to the issue	Clear description of the issue that is being addressed and its implications	15
Aims and objectives	Clear definition of aims and objectives, which are realistic and timely.	5
Clear and structured assessment and action plan	Include evidence that relevant alternatives have been considered.	20
Analysis and interpretation	Details of analysis must be given, with valid interpretation of results.	20
Discussion of quality management	Should demonstrate detailed, clinically appropriate and critical review of relevant internal QC and external quality assurance procedures.	20
Identification and implementation of any changes required	Details must be given of any actions required and if implemented.	20