

# The Royal College of Ophthalmologists

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FROM THE EXAMINATIONS DEPARTMENT

## Final Report October 2009 Part 1 FRCOphth Examination

### Contents:

#### MCQ Paper

Content page 2

Statistics

Distribution of Scores

Standard Setting page 3

Comparison to Previous Papers page 4

#### CRQ Paper

Content page 5

Statistics

Distribution of scores

Standard setting page 7

Overall Results page 8

Comparison to Previous Part 1 FRCOphth Examinations page 9

Summary page 9

The tenth Part 1 FRCOphth examination took place on 5 October 2009. 101 candidates sat the examination, of whom 56 (56%) fulfilled the criteria to pass the examination overall.

## MCQ examination

### Content

Topic	July 2009	Oct 2009	%
Anatomy/embryology	19	18	15
Genetics	6	9	8
Immunology	10	9	8
Biochemistry/Cell biology	8	10	8
Optics	20	14	12
Pathology/microbiology	18	20	17
Pharmacology	12	13	11
Physiology	17	16	13
Statistics & epidemiology	5	7	6
Investigations	5	4	3
	120	120	100

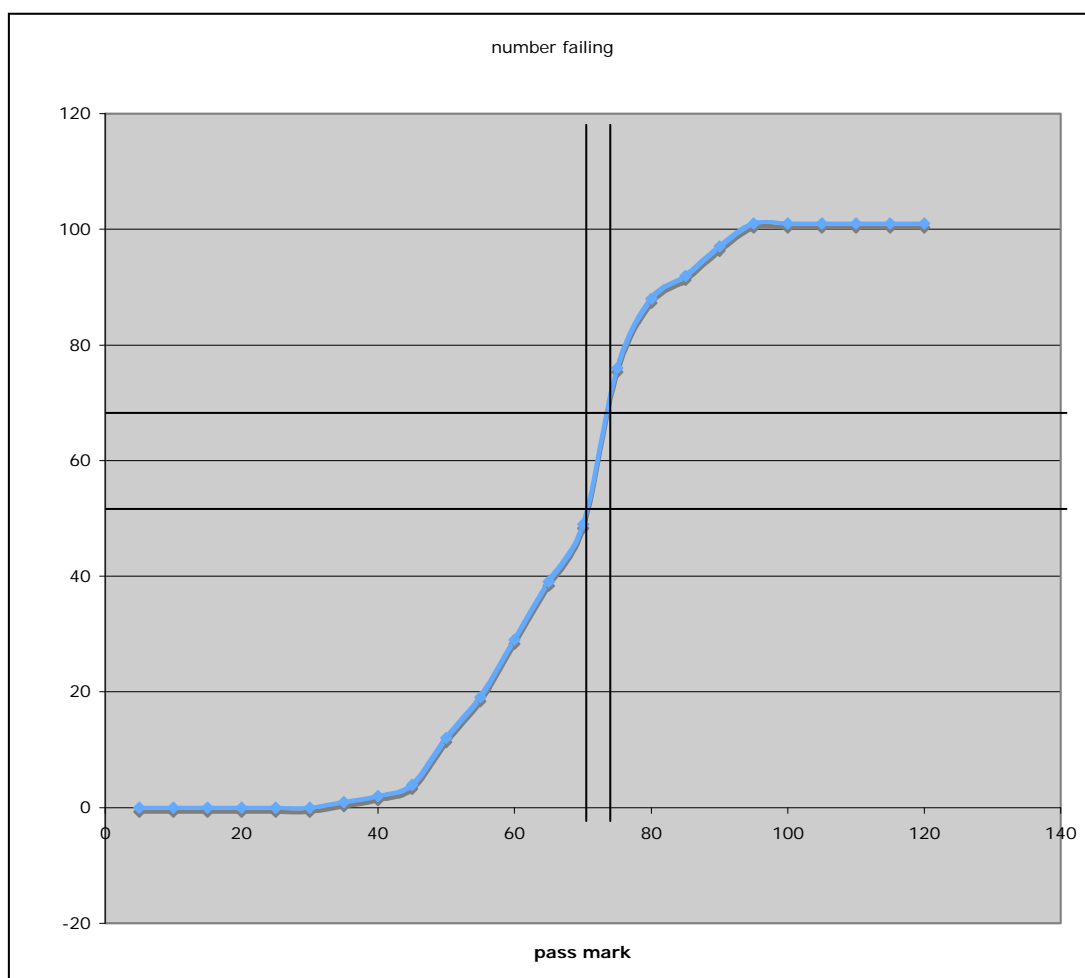
### MCQ paper statistics

Mean score:	67.2 (56%)
Median score:	70 (58%)
Standard deviation:	13 (10.9%)
Candidates:	101
KR20: (measurement of reliability)	0.861
Standard error of measurement (SEM):	4.87
Range of marks:	31-95 (26-79%)
Pass mark derived from Standard Setting:	75/120 (62%)
Adjusted pass mark (-1SEM)	70/120 (58%)
Adjusted pass mark (-2SEM)	65/120 (54%)
Pass rate at -1SEM:	52/101 (52%) candidates passed at this cut-off

### Distribution of results

Range of scores	Distribution curve	Number
1-30		0
31-40	11	2
41-50	11111111111111	13
51-60	11111111111111	14
61-70	111111111111111111111111111111	26
71-80	111111111111111111111111111111111111	33
81-90	1111111111	9
91-100	1111	4
101-120		0
Total		100

## Cumulative raw scores (with pass mark -1 SEM)



### Standard setting

The pass mark for the paper was agreed using the Ebel method.

The examiners agreed the distribution of the questions in each category:

	Difficult	Moderate	Easy	Total
Essential	0	8	32	40
Important	2	34	23	59
Supplementary	6	12	3	21
<b>Total</b>	<b>8</b>	<b>54</b>	<b>58</b>	<b>120</b>

Results from the examination show the following distribution of questions.

	Difficult	Moderate	Easy	Total
<b>Total</b>	<b>8</b>	<b>85</b>	<b>27</b>	<b>120</b>

This suggests that the examiners overestimated the number of easy questions.

The Part 1 FRCOphth Sub-Committee considered the success of a minimally competent candidate in each category as below:

	Difficult	Moderate	Easy
Essential	55% of 0	62% of 8	75% of 32
Important	50% of 2	55% of 34	70% of 23
Supplementary	30% of 6	50% of 12	70% of 3

## Weighted marks

	Difficult	Moderate	Easy	Total
Essential	0	4.96	24	28.96
Important	1	18.7	16.1	35.8
Supplementary	1.8	6	2.1	9.9
Total	2.8	29.66	72.2	74.66

The unadjusted pass mark = 75/120 (62%)

The unadjusted pass mark was only slightly lower than the last sitting of the examination.

## Comparisons of pass marks and pass rates for last 5 MCQ papers

	May 2008	Oct 2008	Jan 09	July 09	Oct 09
Candidates	66	88	79	49	101
Mean score	64.9 (54%)	69 (58%)	67 (56%)	71 (59%)	67 (56%)
Reliability (KR 20)	0.747	0.881	0.871	0.851	0.861
SEM	4.9	4.82	4.91	4.67	4.87
Standard setting	Ebel	Ebel	Ebel	Ebel	Ebel
Pass mark	77 (64%)	74 (62%)	73 (61%)	76 (63%)	75 (62%)
Modified pass mark	68 (56.7%)	70 (58%)	68 (57%)	71 (59%)	70 (58%)
33% discrimination					
Negative	16	11	12	10	10
Poor	64	45	38	49	51
Good	28	28	41	44	40
Excellent	12	35	29	17	19
Facility					
Difficult (<25%)	13	8	6	8	8
Moderate	84	88	90	69	85
Easy (>75%)	23	23	24	43	27
Pass rate	16 (24%)	45 (51%)	34 (43%)	21 (43%)	25 (25%)

## The CRQ Paper

The examination in October 2009 covered the following areas:

Question	Subject	Topic	Sub-sections	Data provided
1	Anatomy	Orbit	1	Diagram to label
2	Pathology	Endophthalmitis	7	Section through globe
3	Investigations	Ultrasound	5	Ultrasound and histological section
4	Optics	Keratometer	4	None
5	Optics	Convex lens	5	None
6	Investigations	Tonometry	6	Photograph of tonometer
7	Optics	Slit lamp	2	None
8	Investigations	Amsler chart	5	Amsler grid
9	Investigations	ERG	5	None
10	Investigations	OCT	5	OCT
11	Investigations	Visual fields	5	Humphrey field
12	Statistics	Screening	5	Table

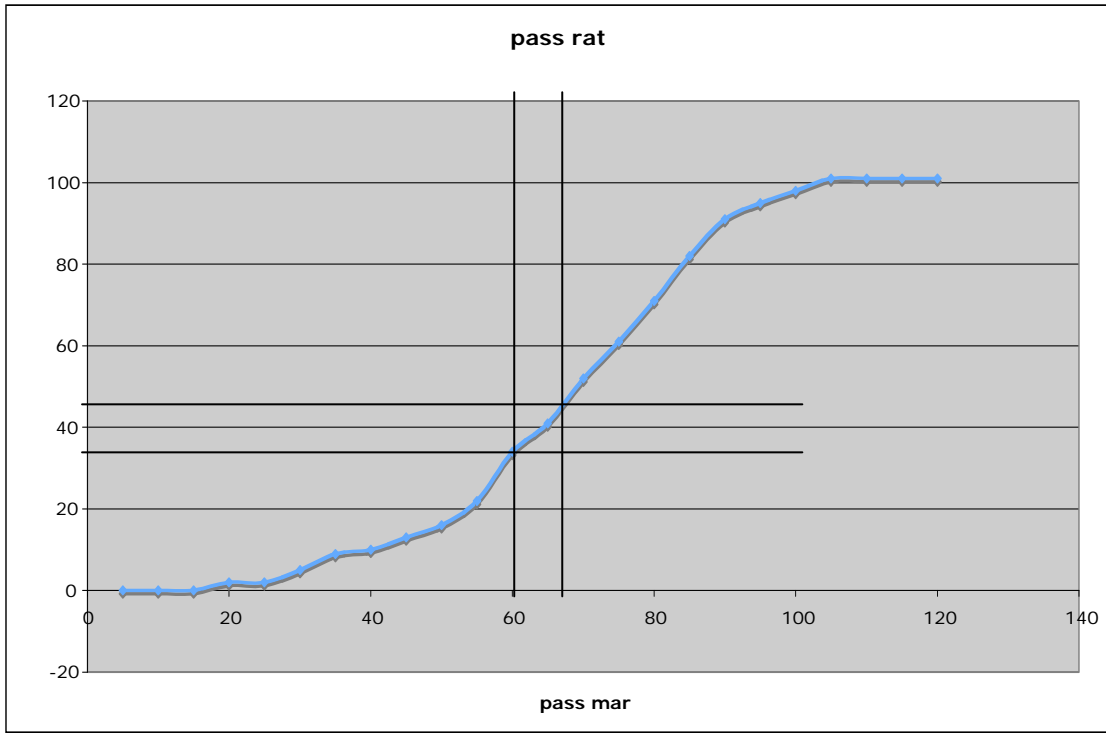
### Statistics

Mean score:	67/120 (56%)
Median score:	69/120 (58%)
Standard deviation:	19.23 (16.03%)
Range of scores:	16-101 (13-84%)
Reliability: Cronbach alpha	0.88
Standard error of measurement:	6.5
Pass mark derived from Standard Setting:	67/120 (56%)
Adjusted pass mark (-1SEM):	61/120 (51%)
Adjusted pass mark (-2SEM):	55/120 (46%)
Pass rate at -1SEM:	66/101 (66%) candidates passed at this cut off

### Distribution of scores

Range of marks	Distribution curve	Number
< 20	11	2
21-30	111	3
31-40	11111	5
41-50	1111111	7
51-60	111111111111111111	18
61-70	111111111111111111	18
71-80	11111111111111111111	21
81-90	111111111111111111	18
91-100	11111111	8
101-110	1	1
Total		101

# Cumulative scores (with pass mark – 1 SEM)



## Standard Setting

The borderline candidate method was used to identify the pass mark for the CRQ. The examiners who marked the CRQ paper were asked to allocate a mark according to the marking scheme provided and, in addition, class the candidate's performance as a pass, fail or borderline. The sum of each median borderline mark was used to produce the pass mark:

	Topic	No. Pass	No. Fail	No. Borderline	Median Borderline mark
1	Anatomy	91	1	9	4
2	Pathology	29	26	46	6
3	Investigations	19	59	23	5
4	Optics	33	60	8	6
5	Optics	56	27	18	4
6	Investigations	56	17	28	7
7	Optics	22	70	9	6
8	Investigations	62	30	9	6
9	Investigations	56	34	11	6
10	Investigations	45	33	23	6
11	Investigations	56	39	6	5
12	Statistics	30	66	5	6
					67

Unadjusted Pass mark = 67/120 (56%)

Correlation between MCQ and CRQ papers (0.75)

## Overall Results

To pass the Part 1 FRCOphth examination candidates are required to:

1. Obtain a combined mark from both papers that equals or exceeds the combined pass marks (minus 1 standard error of measurement) obtained by the standard setting exercise explained above.
2. Obtain a mark in both papers that equals or exceeds the pass mark minus 2 standard errors of measurement for each paper.

A candidate is therefore allowed to compensate a poor performance in one paper by a very good performance in the other paper. They cannot compensate for an extremely poor performance in one paper whatever the combined mark.

The minimum mark required in order to meet standard 1 above for this examination was 131/240 or 55%. The minimum mark required in each paper (to meet standard 2 above) was 65/120 (54%) in the MCQ paper and 55/120 (46%) in the CRQ paper.

61 (60%) candidates gained a total mark that met standard 1 above but 5 candidates failed to obtain the minimum mark required in the MCQ paper and therefore failed the examination overall.

**56 (56%) candidates passed the examination.**

### Distribution of scores

Range of marks	Distribution curve	Number
<60	1	1
61-70	11	2
71-80	111	3
81-90	11111	5
91-100	11111	4
101-110	1111111	6
111-120	11111111	7
121-130	11111111111111	12
131-140	11111111111111	12
141-150	1111111111111111	15
151-160	1111111111111111	14
161-170	11111111111111	11
171-180	11111	4
181-190	11111	4
191-200	1	1
Total		

Mean: 134

Median: 139

Mode: 121

Range: 47-191



## Comparison to previous years:

Examination	Candidates	Passed examination	% passed	MCQ pass mark %	CRQ pass mark %
<b>Oct 2006</b>	33	3	9	58	62
<b>Jan 2007</b>	24	4	16	60	43
<b>May 2007</b>	32	5	15	50	64
<b>Oct 2007</b>	56	13	23	51	59
<b>Jan 2008</b>	73	27	37	56	55
<b>May 2008</b>	66	16	24	57	47.5
<b>Oct 2008</b>	88	45	51	58	51
<b>Jan 2009</b>	79	37	47	61	57
<b>July 2009</b>	49	33	67	63	58
<b>Oct 2009</b>	101	56	56	62	56

## Summary

The Part 1 FRCOphth examination continues to be a reliable assessment of the knowledge required to make progress as an ophthalmic trainee in the UK. The pass rate has stabilised over the last four sittings at around 50% with a stable pass mark. Candidates appear to be better prepared as the syllabus and standard required become more widely known but there are still many candidates who are poorly prepared.

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**Educational Adviser**

October 2009