

# The Royal College of Ophthalmologists

17 Cornwall Terrace, London. NW1 4QW.

Telephone: 020-7935 0702, Extension 210

Facsimile: 020-7487 4674

Email: Emily.Beet@rcophth.ac.uk

Website: WWW.RCOPHTH.AC.UK



PATRON HRH THE DUKE OF YORK, KCVO, ADC

FROM THE EXAMINATIONS DEPARTMENT

## Final Report January 2011 Part 1 FRCOphth Examination

### Contents:

#### MCQ paper

Content	page 2
Statistics	page 3
Distribution of scores	
Standard setting	
Comparison to previous papers	page 4

#### CRQ paper

Content	page 5
Statistics	
Distribution of scores	page 6
Standard setting	page 7
Comparison to previous papers	

Overall results page 8

Comparison to previous Part 1 examinations page 9  
Breakdown of results page 10

Summary page 12

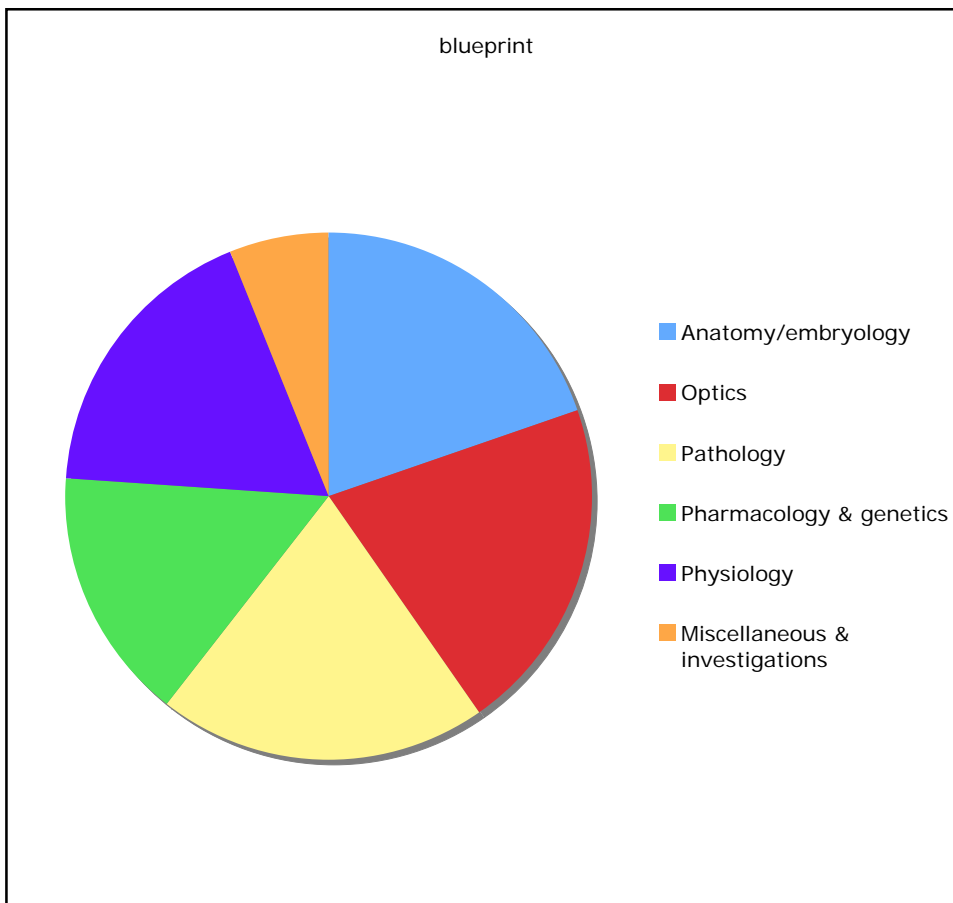
The fourteenth Part 1 FRCOphth examination took place on 17<sup>th</sup> January 2011. 62 candidates sat the examination, of whom 22 fulfilled the criteria required to pass the examination overall.

## MCQ examination

### Content

Topic	Jan 2010	May 2010	Oct 2010	Jan 2011	Blueprint
Anatomy/embryology	19	22	21	23	24
Optics	16	16	16	24	24
Pathology	36	23	33	24	24
Pharmacology & genetics	21	22	23	18	18
Physiology	18	27	18	21	24
Miscellaneous & investigations	10	10	7	7	6
<b>Total</b>	<b>120</b>	<b>120</b>	<b>118</b>	<b>116*</b>	<b>120</b>

\* Four questions were withdrawn from the paper



## MCQ paper statistics

Mean score:	62/120
Median score:	63/120
Standard deviation:	11.38 (9.81%)
Candidates:	62
KR20: (measurement of reliability)	0.815
Standard error of measurement (SEM):	4.9
Range of marks:	36-85
Pass mark derived from Standard Setting:	69
Pass mark – 1 SEM	64
Pass rate:	15/62 (24%)

## Distribution of results

Range of scores	Distribution	Number
1-30		0
31-40	////	5
41-50	////	4
51-60	//// // //	14
61-70	//// // // // // //	25
71-80	//// //	10
81-90	////	4
91-100		0
101-120		0
Total		62

## 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	20	33	53
Important	3	25	22	50
Supplementary	3	7	3	13
Total	6	52	58	116

Results from the examination show the following distribution of questions.

	Difficult	Moderate	Easy	Total
Total	8	93	15	116

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

	Difficult	Moderate	Easy
Essential	0.475	0.625	0.775
Important	0.4	0.5	0.61
Supplementary	0.275	0.3	0.45

## Weighted marks

	Difficult	Moderate	Easy	Total
Essential	0	12.5	25.575	38.075
Important	1.2	12.5	13.42	27.12
Supplementary	0.825	2.1	1.35	4.275
Total	2.025	27.1	40.345	69.47

**The pass mark = 69/120 (59%)**

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

	Jan 09	July 09	Oct 09	Jan 10	May 10	Oct 10	Jan 11
Candidates	79	49	101	50	79	89	62
Mean score	67 (56%)	71 (59%)	67 (56%)	63 (52.6%)	61 (50.6%)	67	62
Reliability (KR 20)	0.871	0.851	0.861	0.794	0.848	0.818	0.815
SEM	4.91	4.67	4.87	4.94	4.89	4.83	4.9
Standard setting	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel
Pass mark	73 (61%)	76 (63%)	75 (62%)	76 (63%)	72 (60%)	72 (61%)	69 (59%)
Modified pass mark	68 (57%)	71 (59%)	70 (58%)	71 (59%)	67 (56%)	NA*	NA*
33% discrimination							
Negative	12	10	10	15	12	17	14
Poor	38	49	51	58	52	54	53
Good	41	44	40	31	38	29	38
Excellent	29	17	19	16	18	18	11
Facility							
Difficult (<25%)	6	8	8	20	15	10	8
Moderate	90	69	85	86	84	86	93
Easy (>75%)	24	43	27	14	21	22	15
Pass rate	34 (43%)	21 (43%)	25 (25%)	15 (30%)	28 (35%)	29 (33%)	15 (24%)

\* The pass mark is no longer reduced by 1 SEM.

## The CRQ paper

The examination on 17<sup>th</sup> January 2011 covered the following areas:

Question	Subject	Topic	Sub-sections	Data provided/comment
1	Anatomy	Orbit	1	Photograph of orbit 10 items to label
2	Anatomy	RPE	2	Diagram to label
3	Pathology	Melanoma	4	Pathology report to interpret
4	Genetics	Inheritance of RP	5	3 generation pedigree
5	Optics	Focimeter	4	Ray diagrams to draw
6	Optics	Aberrations	4	Ray diagram to draw
7	Optics	Correcting lenses	7	
8	Investigations	Carotid ultrasound	5	2 US images
9	Investigations	Retinal imaging	5	5 retinal images
10	Investigations	Head scan	6	Head scan image
11	Investigations	Orthoptics	5	Image to interpret
12	Investigations	Blood tests	6	Report to interpret

## Statistics

Mean score:	141 (59%)
Median score:	145.5 (61%)
Standard deviation:	24.7
Range of scores:	63-179
Reliability: Cronbach alpha	0.869
Standard error of measurement:	9
Pass mark derived from Standard Setting:	140/240 (58%)
Pass mark – 1 SEM	131/240 (56%)
Pass rate	38/62 (61%)

### Distribution of scores

Range of marks	Distribution	Number
<70	/	1
71-80	/	1
81-90		0
91-100	//	2
101-110	//	2
111-120	//// /	6
121-130	//// ////	9
131-140	///	3
141-150	//// //// /	11
151-160	//// //// //// /	16
161-170	///	4
171-180	//// //	7
Total		62

Two examiners marked each question in the CRQ papers and the mark from each was added to produce the candidate mark. Each question has a maximum possible 20 marks, compared to 10 in previous years. Candidate performance was variable for each question, with mean, median, modal, minimum and maximum scores (with standard deviations) of:

Q	Subject	Mean	Median	Mode	SD	Min	Max	Correlation between 2 markers
1	Anatomy	14.2	15	16	2.9	6	19	0.92
2	Anatomy	13.7	13.5	13	3.5	4	20	0.84
3	Pathology	12.9	13	13	2.6	7	18	0.8
4	Genetics	13.2	14	16	3.3	1	19	0.77
5	Optics	4.7	4	0	4.2	0	17	0.78
6	Optics	9.5	10	0	6	0	19	0.91
7	Optics	10.8	11.5	14	5	0	19	0.87
8	Investigations	12.6	13	13	3	5	19	0.66
9	Investigations	11.8	12	10	4.2	0	19	0.81
10	Investigations	13.2	13.5	16	3.2	3	19	0.87
11	Investigations	13.2	14	15	4.3	2	20	0.89
12	Investigations	11.5	12	14	3	4	17	0.81

Candidate's performance in the optics questions was noticeably worse than the other questions on the paper. Correlation between examiner marks was reasonable, but the marks given for question 8 had the poorest correlation (0.66). This supports the continuance of the double marking policy introduced since the last examination.

Examiners	Mean mark	Pass mark	Reliability	SEM	Pass rate	Correlation
B	71	68.5 (57%)	0.722	6	24/62	0.95
A	70	71.5 (60%)	0.749	7	29/62	

Double marking has resulted in an increase in the pass rate for the CRQ paper.

## Comparison to previous years

	Jan 09	July 09	Oct 09	Jan 10	May 10	Oct 10	Jan 11
Mean score	59%	58%	56%	61%	53%	52%	59%
Median score	62%	61%	58%	63%	53%	56%	61%
Standard deviation	11.5%	13%	16%	16%	13%	13%	10.3%
Reliability	0.78	0.89	0.88	0.82	0.843	0.856	0.869
SEM	6	5.3	6.5	6.6	6.5	6	9*
Pass mark	57%	58%	56%	58%	57%	54%	58%
Modified pass mark	52%	54%	51%	53%	52%	NA	NA
Correlation with MCQ	0.76	0.80	0.75	0.79	0.72	0.8	0.79

\* The introduction of double marking has artificially raised the SEM as the total mark for the paper is now 240.

## 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	Correl AB	Examiners A				Examiners B			
			No. Pass	No. Fail	No. Border	Median Border	No. Pass	No. Fail	No. Border	Median Border
1	Anatomy	0.84	33	14	15	6	42	5	15	6
2	Anatomy	0.66	37	10	15	7	36	6	20	6
3	Pathology	0.58	28	16	18	6	35	4	23	6
4	Genetics	0.69	37	10	15	6	32	14	16	6
5	Optics	0.46	5	42	15	5	3	53	6	5
6	Optics	0.79	21	29	12	5.5	25	27	10	6
7	Optics	0.75	8	30	24	7	17	36	9	7
8	Invest	0.51	22	12	28	6	51	1	10	5
9	Invest	0.69	35	13	14	5	31	15	26	5.5
10	Invest	0.82	36	11	15	6	39	9	22	6
11	Invest	0.75	38	13	11	6	40	10	11	5
12	Invest	0.66	19	24	19	6	33	14	15	5
						71.5				68.5

Pass mark = 140/240 (58%)

Questions, were 'easy' or well prepared for with >50% of candidates passing  
 Questions were 'difficult' or ill prepared for with >50% of candidates failing.

## 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 obtained by the standard setting exercise explained above.
2. Obtain a mark in both papers that equals or exceeds the pass mark minus 1 standard error 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 209/356 (59%). The minimum mark required in each paper (to meet standard 2 above) was 64/116 (55%) in the MCQ paper and 131/240 (56%) in the CRQ paper.

32 candidates (52%) gained a total mark that met standard 1 above but 9 candidates failed to obtain the minimum mark required in the MCQ paper and therefore failed the examination overall.

**23 (37%) candidates passed the examination.**

### Distribution of scores

Range of marks	Distribution	Number
<100		0
101-120	//	2
121-140		0
141-160	////	5
161-180	//// //	7
181-200	//// ////	10
201-220	//// / / / / / / / /	18
221-240	//// //// / / /	13
241-260	//// /	6
261-280	/	1
Total		62

/ Candidate scored 208    / Candidate scored 210  
Mean                    203                    Median                210  
Mode                    212                    Range                103-264

Without double marking the pass rate would have been as follows:

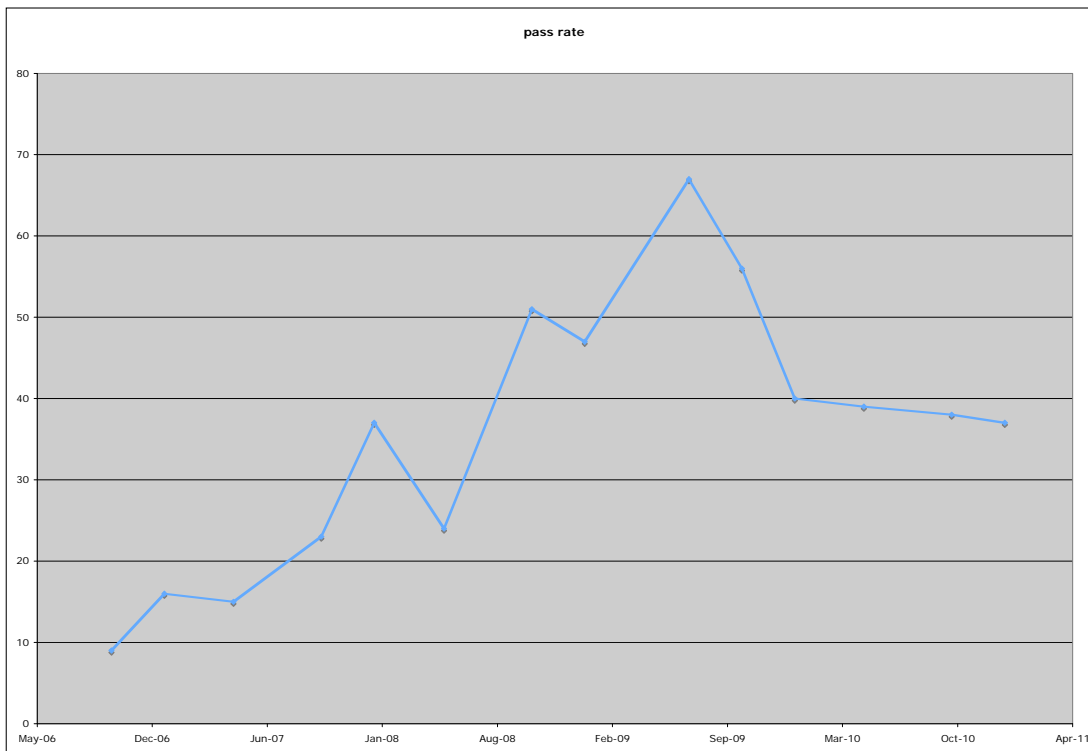
Examiners B pass mark 138/236 (58%) pass rate 23/62 (37%)

Examiners A pass mark 141/236 (60%) pass rate 22/62 (35%)



### 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	48
<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
<b>Jan 2010</b>	50	20	40	63	58
<b>May 2010</b>	79	31	39	60	57
<b>Oct 2010</b>	89	34	38	61	54
<b>Jan 2011</b>	62	23	37	59	58



#### Breakdown of results by training

	<b>Failed</b>	<b>Passed</b>	<b>Total</b>
In OST	23	15	38
Not in OST	17	7	24
Total	40	22	62

These differences are not significant (p=0.43)

#### Breakdown of results by deanery

Deanery	<b>Failed</b>	<b>Passed</b>	<b>Total</b>
East Midlands	0	1	1
East Scotland	0	0	0
East of England	2	1	3
London	3	4	7
Mersey	2	0	2
North Western	1	0	1
Northern	1	1	2
N Ireland	0	1	1
Oxford	1	0	1
Peninsula	0	0	0
S Yorks & S Humber	1	2	3
SE Scotland	1	0	1
Severn	1	1	2
West Midlands	3	2	5
West Scotland	1	0	1
Wales	0	1	1
Wessex	6	1	7
Yorkshire	0	0	0
Total	23	15	38

#### Breakdown of results by stage of training

<b>Stage (includes FTSTA)</b>	<b>Failed</b>	<b>Passed</b>	<b>Total</b>
F2	5	0	5
ST1	10	5	15
ST2	7	6	13
ST3	2	1	3
Unknown	4	3	6
Total in OST	23	15	38

#### Breakdown of results by gender

	<b>Failed</b>	<b>Passed</b>	<b>Total</b>
Female	20	10	30
Male	20	12	32
Total	40	22	62

These differences are not significant (p=0.79)

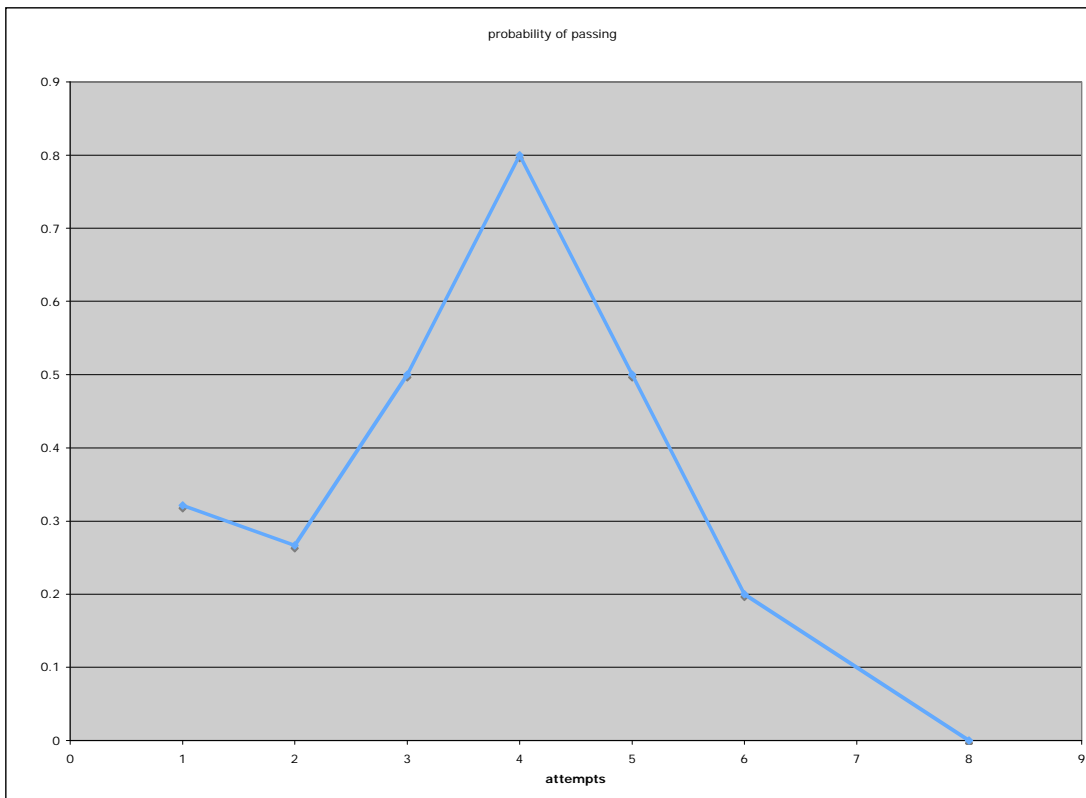
#### Breakdown of results by country of qualification

	<b>Failed</b>	<b>Passed</b>	<b>Total</b>
UK	21	13	34
Outside UK	19	9	28
Total	40	22	62

These differences are not significant (p=0.79)

### Breakdown of results by number of previous attempts

Attempts	Failed	Passed	Total
1 (First)	19	9	28
2	11	4	15
3	3	3	6
4	1	4	5
5	1	1	2
6	4	1	5
8	1	0	1
Any resit	21	13	34
Total	40	22	62



## **Summary**

The Part 1 FRCOphth examination remains a significant hurdle for candidates. The examination is reliable but the pass rate for the MCQ examination is poor at only 24%. Implementing the GMC conditions with regard to the use of the SEM has contributed to this decline in the pass rate. Had the College continued with the practice of reducing the pass mark by 1 SEM, the pass rate in the MCQ examination would have been 45%.

Candidate performance in the MCQ had a normal distribution around 63/116 (53%). Four questions were removed from the examination after marking because of errors that had not been identified at the paper setting meeting.

The CRQ paper remains much easier than the MCQ paper with a 61% pass rate. Candidate performance was much more varied, with a markedly negative skew. Candidates found the optics questions most difficult, especially question 5. The CRQ paper was double marked for the first time, which is a significant extra burden for the Part 1 Sub-Committee. The process made a significant difference to the pass list. 34 candidates achieved a pass from both examiners A and B. Six candidates were passed by examiners B but not A. Examiners A, but not B, passed one candidate.

The overall pass rate in the examination was disappointing. 34 candidates achieved a high enough total mark to pass, but the poor performance of 9 in the MCQ meant that only 23 were successful.

Mr Michael Nelson BSc (Hons) FRCOphth MAEd  
**Education Advisor**

February 2011