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FROM THE EXAMINATIONS DEPARTMENT

## Final Report October 2012 Part 1 FRCOphth Examination

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## Summary

The nineteenth Part 1 FRCOphth examination took place on 7<sup>th</sup> October 2012. 150 candidates sat the examination, of whom 84 (56%) fulfilled the criteria required to pass the examination overall.

The examination is highly reliable, with both parts meeting GMC standards.

Candidates continue to differ markedly in their preparation for the examination, with variations in marks from 14% to 81% in the CRQ and 25% to 86% in the MCQ paper. 29% of candidates were in ophthalmic specialist training programmes. Of the remainder, 24% were in Foundation training programmes. Whilst there is no statistically significant difference in the examination success of OST and non-OST candidates, foundation and other non-OST candidates were much more likely to be in the lower quartile in both papers.

The pass rate is significantly higher in the October examination, when the majority of candidates sit the papers.

The pass rate in the MCQ paper was the highest to date (63%). The quality of questions is stable with 55% of good or excellent 33% item discrimination, and very few with a facility of less than 0.25.

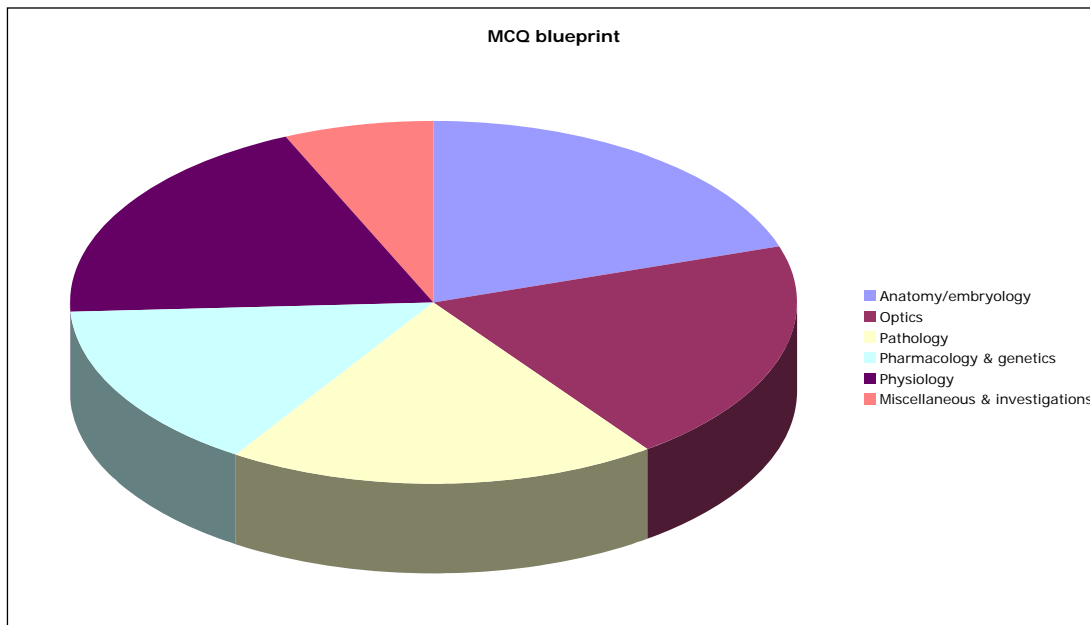
The candidates performed less well in the CRQ paper and had particular difficulty with three questions (interpretation of a histopathological specimen, interpretation of an Esterman visual field and questions on statistics)

# MCQ examination

## Content (Table 1)

Topic	Oct 2010	Jan 2011	May 2011	Oct 2011	Jan 2012	May 2012	Oct 2012
Anatomy/embryology	21	23	25	23	25	23	24
Optics	16	24	25	25	25	24	24
Pathology	33	24	26	23	25	23	23
Pharmacology & genetics	23	18	15	18	17	18	18
Physiology	18	21	22	24	20	23	23
Miscellaneous & investigations	7	7	7	7	8	8	8
Total	118	116	120	120	120	119	117*

\*3 questions were removed after marking.





The MCQ pass mark = 66/117 (56%)

Comparison of pass marks and rates for last 7 MCQ papers (table 6)

	Oct 10	Jan 11	May 11	Oct 11	Jan 12	May 12	Oct 12
Candidates	89	62	95	122	66	104	150
Mean score	67	62	64	67	64	66	70
Reliability (KR 20)	0.818	0.815	0.86	0.87	0.85	0.87	0.87
SEM	4.83	4.9	4.96	4.87	4.95	4.8	4.9
Standard setting	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel
Pass mark	72 (61%)	69 (59%)	65 (54%)	67 (56%)	66 (57%)	67 (56%)	66 (56%)
33% discrimination							
Negative	17	14	9	10	6	5	2
Poor (0-0.249)	54	53	56	44	56	54	51
Good (>0.250)	47	49	52	66	54	60	64
Facility							
Difficult (<25%)	10	8	10	7	5	10	2
Moderate	86	93	92	91	98	85	92
Easy (>75%)	22	15	18	22	13	4	23
Questions	118	116	120	120	116	119	117
Pass number (rate)	29 (33%)	15 (24%)	47 (51%)	67 (55%)	22 (42%)	51 (49%)	95 (63%)

## The CRQ paper

(Table 7)

Question	Subject	Topic	Sub-sections	Data provided
1	Anatomy	Orbital apex	1	Photograph to label
2	Pathology	Lid tumour	5	Photograph to label
3	Pathology	Temporal artery biopsy	4	Photograph to label
4	Optics	Lens magnifier	4	None
5	Optics	Compound microscope	4	None
6	Optics	Refraction	5	None
7	Optics	Lens aberrations	9	3 ray diagrams
8	Investigations	OCT	5	OCT image
9	Investigations	CT scan	5	CT scan images
10	Investigations	Biometry	5	IOL master data
11	Investigations	Visual fields	5	Armaly field
12	Investigations	Statistics	4	Data to analyse

### Statistics

Mean score:	63/120 (52%)
Median score:	65/120 (54%)
Standard deviation:	16.9 (14.0%)
Range of scores:	17-97 (14-81%)
Reliability: Cronbach alpha	0.93
Standard error of measurement:	4.5
Pass mark derived from Standard Setting:	65/120 (54%)
<b>Pass mark used to agree pass list</b>	<b>65/120 (54%)</b>
Pass mark – 1 SEM	60.5/120 (50%)
Pass rate	78/150 (52%)

**Distribution of scores (Table 9)**

Range of marks	Distribution	Number
0-30	//// //	8
31-40	//// ///	9
41-50	//// //// ///	13
51-60	//// //// //// //// ///	23
61-70	//// //// //// //// //// //// //// //// //// //// ////	45
71-80	//// //// //// //// //// //// //// //	32
81-90	//// //// //// /	16
91-100	////	4
101-120		0
Total		

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

**(Table 9)**

Q	Subject	Mean	Median	Min	Max	SD
1	Anatomy	6.0	6.8	0	9.5	2.1
2	Pathology	1.6	1	0	7	1.7
3	Pathology	5.8	5.5	2.5	10	1.8
4	Optics	5.7	6	0	10	2.7
5	Optics	6.2	7	0	10	2.8
6	Optics	6.4	7	0	10	2.7
7	Optics	5.3	5.5	0	10	2.5
8	Investigations	5.6	6	0	9	1.8
9	Investigations	5.8	6	1	10	1.9
10	Investigations	5.7	6	0	10	2.6
11	Investigations	4.7	4	0	9	2.1
12	Investigations	3.7	4	0	8	1.3

Candidates performed badly in or were particularly ill prepared for questions 2 (pathology), 11 and 12 (Investigations).

33% Item discrimination (ID) and facility (F) for each question and examiner:

**(Table 10)**

Q	Subject	33% ID examiner B	F examiner B	33% ID examiner A	F examiner A
1	Anatomy	0.480	70	0.360	82
2	Pathology	0.220	9	0.260	10
3	Pathology	0.440	65	0.280	78
4	Optics	0.520	68	0.520	47
5	Optics	0.540	59	0.660	63
6	Optics	0.560	71	0.600	62
7	Optics	0.600	70	0.620	47
8	Investigations	0.520	81	0.660	49
9	Investigations	0.460	83	0.520	69
10	Investigations	0.420	63	0.460	65
11	Investigations	0.540	43	0.580	42
12	Investigations	0.220	22	0.500	61

Questions 2 and 12 have a very poor facility, and consequently poor discrimination. Question 7 was highly discriminatory.

### 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:

**(Table 11)**

	Topic	Examiners A				Examiners B			
		No. Fail	No. Border	No. Pass	Median Border	No. Fail	No. Border	No. Pass	Median Border
1	Anatomy	30	22	98	4	32	50	68	6
2	Pathology	131	13	6	5	133	10	7	5
3	Pathology	12	52	86	5	51	32	67	5
4	Optics	81	15	54	6	43	14	93	6
5	Optics	49	14	87	6	54	17	79	7
6	Optics	61	23	66	6	35	25	90	6
7	Optics	64	51	35	6	44	26	80	5
8	Investigations	56	60	34	6	38	22	90	5
9	Investigations	28	61	61	5	27	29	94	5
10	Investigations	47	43	60	5	46	31	73	6
11	Investigations	92	10	48	5	86	17	47	5
12	Investigations	61	81	8	4	130	9	11	5
Total					63				66



### Comparison between examiners (Table 12)

Q	Subject	Mean mark examiner B	Mean mark examiner A	Mean diff	t test of difference	Correlation between marks	Correlation between global judgements
1	Anatomy	6	6	1	0.00	0.88	0.69
2	Pathology	2	2	0	0.90	0.93	0.84
3	Pathology	5	6	1	0.00	0.80	0.69
4	Optics	6	5	1	0.00	0.79	0.53
5	Optics	6	6	0	0.68	0.95	0.90
6	Optics	7	6	1	0.00	0.94	0.74
7	Optics	5	5	0	0.01	0.90	0.65
8	Investigations	6	5	1	0.00	0.90	0.67
9	Investigations	6	5	1	0.00	0.79	0.68
10	Investigations	6	5	1	0.00	0.92	0.82
11	Investigations	5	5	0	0.01	0.95	0.95
12	Investigations	4	4	0	0.73	0.87	0.35

### Comparison to previous years (Table 13)

	Oct 10	Jan 11	May 11	Oct 11	Jan 12	May 12	Oct 12
Mean score	52%	59%	55%	57%	47%	58%	52%
Median score	56%	61%	56%	58%	48%	60%	54%
Reliability	0.856	0.869	0.92	0.86	0.87	0.92	0.93
SEM	6	9*	6	6	5	5	4.5
Pass mark	54%	58%	58%	56%	54%	58%	54%
Pass rate	56%	61%	64%	59%	26%	51%	52%
Correlation with MCQ	0.8	0.79	0.79	0.73	0.66	0.70	0.78

The correlation between the two parts of the examination remains at an acceptable level at 0.78.

## 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 131/237 (55%). The minimum mark required in each paper (to meet standard 2 above) was 61/117 in the MCQ paper and 61/120 in the CRQ paper.

87 candidates gained a total mark that met standard 1 above but 3 candidates failed to obtain the minimum mark required in the MCQ paper and therefore failed the examination overall.

**84 (56%) candidates passed the examination.**

### Distribution of scores (Table 14)

Range of marks	Distribution	Number
<60	/	1
61-70	//	2
71-80	//// /	6
81-90	//// /	6
91-100	//// ///	8
101-110	///	4
111-120	//// //// //// ////	20
121-130	//// //// //// /	16
131-140	//// //// //// //// //// //// //	27
141-150	//// //// //// ///	18
151-160	//// //// //// ////	20
161-170	//// ////	10
171-180	///	4
181-190	//// //	7
191-200	/	1
Total		150

Mean 132/237 (56%) Median 133/237 (56%) Range 47-191 (20-81%)

**Comparison to previous years: (Table 15)**

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
<b>May 2011</b>	95	47	49	54	57
<b>Oct 2011</b>	122	63	52	56	56
<b>Jan 2012</b>	66	20	33	57	54
<b>May 2012</b>	104	53	51	56	58
<b>Oct 2012</b>	150	84	56	56	54

**Cumulative pass rates (table 16)**

Month of examination	Candidates	Pass rate (%)
<b>January</b>	354	37
<b>May</b>	425	44
<b>October</b>	639	47
<b>All examinations</b>	1418	43

There is a statistically significant difference in the success rates for examinations in January, May and October (Chi squared 8.62 p = 0.013). More candidates take the examination in October and are more likely to be successful compared to the January and May sittings. This is more likely to represent a difference in candidate preparedness than examination difficulty.

**Breakdown of results by training (Table 17)**

	Failed	Passed	Total
In OST	15	28	43
Not in OST	51	56	107
Total	66	84	150

These differences are not statistically significant (p=0.2)

### Breakdown of results by deanery (Table 18)

Deanery	Failed	Passed	Total
East Midlands	1	1	2
East Scotland	0	0	0
East of England	3	2	5
London & KSS	2	7	9
Mersey	1	1	2
N Scotland	0	0	0
North Western	2	1	3
Northern	0	1	1
N Ireland	2	1	3
Oxford	0	2	2
Peninsula	0	0	0
SE Scotland	0	0	0
Severn	0	1	1
West Midlands	2	6	8
West Scotland	1	0	1
Wales	1	2	3
Wessex	1	1	2
Yorkshire	0	3	3
Total			

### Breakdown of results by stage of training (Table 19)

Stage (includes FTSTA)	Failed	Passed	Total
Foundation	21	15	36
ST1	5	8	13
ST2	6	19	25
ST3	0	0	0
Unknown	4	1	5
Total in OST	15	28	43

### Comparison between OST, foundation and other candidates by quartile in each examination (Table 20)

Candidates	OST (43)	Foundation (36)	Others (71)
<b>CRQ paper</b>			
Lower quartile	4 (9%)	16 (44%)	18 (25%)
Upper quartile	15 (35%)	5 (14%)	18 (25%)
<b>MCQ paper</b>			
Lower quartile	10 (23%)	14 (39%)	10 (14%)
Upper quartile	11 (26%)	6 (17%)	21 (30%)

**Breakdown of results by gender (Table 21)**

	Failed	Passed	Total
Female	38	37	75
Male	28	44	72
Total	66	81	147*

(3 undeclared)

These differences are not statistically significant ( $p=0.19$ )

**Breakdown of results by country of qualification (Table 22)**

	Failed	Passed	Total
UK	38	50	88
Outside UK	28	34	62
Total	66	84	150

These differences are not statistically significant ( $p=0.86$ )

**Breakdown of results by declared ethnicity (Table 23)**

Ethnicity	Failed	Passed	Total
White	20	18	38
Non-white	35	53	88
Unknown	11	13	24
Total	66	84	150

These differences are not statistically significant ( $p=0.24$ )

**Breakdown of results by first language (Table 24)**

	Failed	Passed	Total
English	40	51	91
Other	19	22	41
Unknown	7	11	18
Total	66	84	150

These differences are not statistically significant ( $p=0.85$ )

**Breakdown of results by number of previous attempts (Table 25)**

Attempts	Failed	Passed	Total
1 (First)	41	62	103
2	16	12	28
3	4	5	9
4	2	1	3
5	0	2	2
6	0	0	0
7	2	1	3
8	0	0	0
9	0	1	1
10	0	0	0
11	1	0	1
12	0	0	0
Any resit	25	22	47
Total	66	84	150

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December 2012



**Appendix 1****Overall results for each deanery**

Result data by deanery has been available since October 2010. The summary results for each deanery are listed below:

Deanery	Number of candidates	Pass rate
East Scotland	3	100
Yorkshire	24	83
SE Scotland	9	78
N Scotland	7	71
London	56	61
Severn	10	60
East Midlands	16	50
Northern	16	50
Oxford	6	50
Wales	16	50
Mersey	11	45
North Western	7	43
West Scotland	14	43
West Midlands	45	42
East of England	20	40
Wessex	34	35
N Ireland	12	33
Peninsula	11	27
Total	317	51