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FROM THE EXAMINATIONS DEPARTMENT

Final Report January 2013 Part 1 FRCOphth Examination

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Summary

The twentieth Part 1 FRCOphth examination took place on 14 January 2013. 91 candidates sat the examination, of whom 47 (52%) fulfilled the criteria required to pass the examination overall.

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

The pass rate for candidates who sit the examination in January is usually poorer than in the May and October sittings in the January examination. The pass rate for both papers (and hence the examination overall) in this January sitting of the examination was the highest to date.

The correlation between the two papers is acceptable at 0.79.

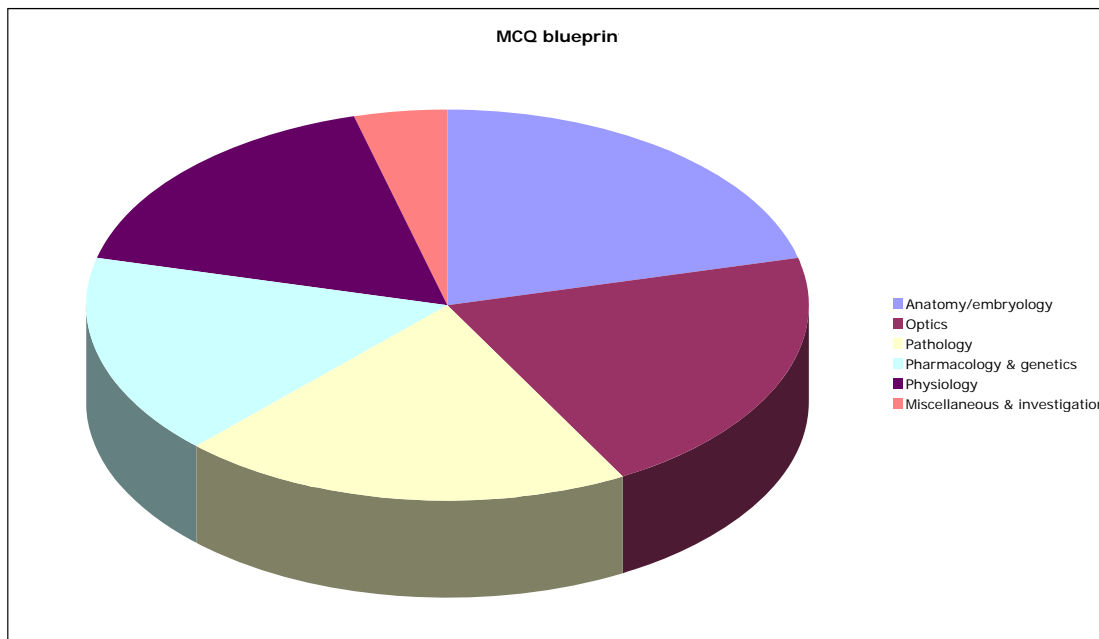
Male candidates were more successful than female candidates, and this difference reached statistical significance.

MCQ examination

Content (Table 1)

Topic	Oct 2010	Jan 2011	May 2011	Oct 2011	Jan 2012	May 2012	Oct 2012	Jan 2013
Anatomy/embryology	21	23	25	23	25	23	24	25
Optics	16	24	25	25	25	24	24	25
Pathology	33	24	26	23	25	23	23	24
Pharmacology & genetics	23	18	15	18	17	18	18	20
Physiology	18	21	22	24	20	23	23	20
Miscellaneous & investigations	7	7	7	7	8	8	8	5
Total	118	116	120	120	120	119	117	119*

*One question was removed after marking.



MCQ paper statistics

Mean score:	67 (57%)
Median score:	68 (57%)
Standard deviation:	13.6 (11.46%)
Candidates:	91
KR20: (measurement of reliability)	0.9
Standard error of measurement (SEM):	5
Range of marks:	26-98 (22-82%)
Pass mark derived from Standard Setting:	67 (56%)
Pass mark – 1 SEM	62 (52%)
Pass rate:	46/91 (51%)

Distribution of scores (Table 2)

Range of scores	Distribution	Number
1-30	/	1
31-40	/	1
41-50	//// //	7
51-60	//// //// //// ////	19
61-70	//// //// //// // ////	25
71-80	//// //// //// ////	20
81-90	//// //// ////	15
91-100	///	3
101-120		0
Total		91

Standard setting

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

(Table 3)

	Difficult	Moderate	Easy	Total
Essential	0	14	32	46
Important	3	32	25	60
Supplementary	2	10	1	13
Total	5	56	58	119

One question was removed from the examination paper after review by the Senior Examiner.

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

(Table 4)

	Difficult	Moderate	Easy	
Essential	0.55	0.65	0.75	
Important	0.45	0.5	0.55	
Supplementary	0.25	0.25	0.25	

(Table 5)

	Difficult	Moderate	Easy	Total
Essential	0	9.1	24	33.1
Important	1.35	16	13.75	31.1
Supplementary	0.5	2.5	0.25	64.2
TOTAL	1.85	27.6	38	67.45

The MCQ pass mark = 67/119 (56%)

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

	Jan 11	May 11	Oct 11	Jan 12	May 12	Oct 12	Jan 13
Candidates	62	95	122	66	104	150	91
Mean score	62	64	67	64	66	70	67
Reliability (KR 20)	0.8	0.9	0.9	0.9	0.9	0.9	0.9
SEM	4.9	4.96	4.87	4.95	4.8	4.9	4.9
Standard setting	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel
Pass mark	69 (59%)	65 (54%)	67 (56%)	66 (57%)	67 (56%)	66 (56%)	67 (56%)
33% discrimination							
Negative	14	9	10	6	5	2	7
Poor (0-0.249)	53	56	44	56	54	51	47
Good (>0.250)	49	52	66	54	60	64	65
Facility							
Difficult (<25%)	8	10	7	5	10	2	8
Moderate	93	92	91	98	85	92	87
Easy (>75%)	15	18	22	13	4	23	24
Questions	116	120	120	116	119	117	119
Pass number (rate)	15 (24%)	47 (51%)	67 (55%)	22 (42%)	51 (49%)	95 (63%)	46 (51%)

The CRQ paper

(Table 7)

Question	Subject	Topic	Sub-sections	Data provided
1	Anatomy	Skull anatomy	2	Diagram to label
2	Pathology	Optic nerve meningioma	4	2 photomicrographs
3	Pathology	Autoimmunity	5	Blood results
4	Optics*	Purkinge images	4	None
5	Optics	Refraction	4	Spectacle prescription
6	Optics*	Maddox rod	4	None
7	Optics*	Convex lenses	4	None
8	Investigations	Hess Chart	2	Hess Chart
9	Investigations	Electrophysiology	9	ERG
10	Investigations	Ultrasound	5	A and B scans
11	Investigations	Visual field	5	Humphrey visual field
12	Statistics	Critical analysis	5	None

* Candidates are expected to draw a diagram as part of the answer

Statistics

Mean score:	59/120 (49.6%)
Median score:	62/120 (51.7%)
Standard deviation:	18.9 (15.8%)
Range of scores:	2-98 (1.7-81.7%)
Reliability: Cronbach alpha	0.9
Standard error of measurement:	5
Pass mark derived from Standard Setting:	63/120 (52.5%)
Pass mark – 1 SEM	58/120 (48%)
Pass rate	44/91 (48%)

Distribution of scores (Table 8)

Range of marks	Distribution	Number
0-30	//// //	7
31-40	//// //	8
41-50	/// ///// /	11
51-60	//// ///// ////	15
61-70	//// / //// ///// //// /	21
71-80	/// ///// //// //	18
81-90	//// //	9
91-100	//	2
101-120		0
Total		91

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	6.5	7	0	10	2.7
2	Pathology	2.1	2	0	8.5	1.6
3	Pathology	5.6	5	0.5	10	2.5
4	Optics	5.0	6	0	10	3.6
5	Optics	5.9	6.5	0	10	2.5
6	Optics	4.4	4.5	0	8.5	2.7
7	Optics	3.8	4	0	8.5	2.8
8	Investigations	5.4	6	0	9.5	2.7
9	Investigations	2.9	3	0	7	1.8
10	Investigations	7.9	8.5	0	10	1.7
11	Investigations	5.3	5	0	10	2.4
12	Statistics	4.5	5	0	8	2.4

Candidates performed badly in or were particularly ill prepared for questions 2 (pathology) and 9 (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	0.533	65	0.400	74
2	Pathology	0.200	16	0.167	31
3	Pathology	0.600	51	0.533	64
4	Optics	0.900	57	0.800	57
5	Optics	0.600	52	0.433	63
6	Optics	0.600	57	0.500	25
7	Optics	0.467	44	0.633	40
8	Investigations	0.667	54	0.700	57
9	Investigations	0.500	29	0.633	34
10	Investigations	0.200	91	0.133	91
11	Investigations	0.367	77	0.600	44
12	Statistics	0.533	56	0.433	53

Question 2 had a very low facility and consequently poor discrimination.
 Question 10 had a very high facility and consequently poor discrimination.
 Question 4 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	29	14	48	5	24	9	58	6
2	Pathology	68	18	5	3	63	14	14	4
3	Pathology	47	13	31	5	34	15	42	6
4	Optics	34	10	47	5	41	19	31	6
5	Optics	30	36	25	5.5	24	20	47	7
6	Optics	38	15	37	6.5	58	22	11	5
7	Optics	38	19	34	5	51	15	25	5
8	Investigations	40	21	30	6	37	14	39	6
9	Investigations	64	11	16	4	58	22	11	4
10	Investigations	4	12	75	6.5	4	6	81	7
11	Investigations	25	18	48	5.5	49	9	33	4
12	Statistics	38	17	36	5	32	23	36	5
Total					62				65

Comparison between examiners (Table 12)

Q	Subject	Mean mark examiner B	Mean mark examiner A	Mean absolute difference	t test of difference	Correlation between marks	Correlation between global judgements
1	Anatomy	6.5	6.4	0.6	0.29	0.93	0.80
2	Pathology	2.1	2.0	0.5	0.08	0.88	0.70
3	Pathology	5.7	5.5	0.8	0.18	0.91	0.83
4	Optics	5.4	4.7	1.1	0.000	0.92	0.82
5	Optics	6.0	5.9	0.8	0.16	0.92	0.76
6	Optics	4.5	4.2	1.0	0.01	0.87	0.65
7	Optics	3.9	3.6	1.2	0.001	0.80	0.65
8	Investigations	5.2	5.6	1.5	0.007	0.81	0.66
9	Investigations	2.8	3.0	0.3	0.04	0.94	0.75
10	Investigations	8.0	7.9	0.8	0.54	0.83	0.69
11	Investigations	5.4	5.1	1.2	0.000	0.82	0.73
12	Statistics	4.6	4.4	0.8	0.02	0.88	0.81

Comparison to previous years (Table 13)

	Jan 11	May 11	Oct 11	Jan 12	May 12	Oct 12	Jan 13
Mean score	59%	55%	57%	47%	58%	52%	50%
Median score	61%	56%	58%	48%	60%	54%	52%
Reliability	0.9	0.9	0.9	0.9	0.9	0.9	0.9
SEM	9*	6	6	5	5	4.5	5
Pass mark	58%	58%	56%	54%	58%	54%	53%
Pass rate	61%	64%	59%	26%	51%	52%	48%
Correlation with MCQ	0.79	0.79	0.73	0.66	0.70	0.78	0.79

The correlation between the two parts of the examination remains at an acceptable level at 0.8.

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 130/239 (54.4%). The minimum mark required in each paper (to meet standard 2 above) was 62/119 in the MCQ paper and 58/120 in the CRQ paper.

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

47 (52%) candidates passed the examination.

Distribution of scores (Table 14)

Range of marks	Distribution	Number
<60	//	2
61-70	/	1
71-80	////	4
81-90	///// /	6
91-100	///// //	7
101-110	///// /	6
111-120	///// ///	8
121-130	///// //	8
131-140	///// ///// ///// /	16
141-150	///// ///// ///	13
151-160	///// /////	10
161-170	/////	5
171-180	///	3
181-190	/	1
191-200	/	1
Total		91

Mean 127/239 (53%) Median 131/239 (55%) Range 28-196 (12-82%)

Comparison to previous years: (Table 15)

Examination	Candidates	Passed examination	% passed	MCQ pass mark %	CRQ pass mark %
Oct 2006	33	3	9	58	62
Jan 2007	24	4	16	60	43
May 2007	32	5	15	50	64
Oct 2007	56	13	23	51	59
Jan 2008	73	27	37	56	55
May 2008	66	16	24	57	48
Oct 2008	88	45	51	58	51
Jan 2009	79	37	47	61	57
July 2009	49	33	67	63	58
Oct 2009	101	56	56	62	56
Jan 2010	50	20	40	63	58
May 2010	79	31	39	60	57
Oct 2010	89	34	38	61	54
Jan 2011	62	23	37	59	58
May 2011	95	47	49	54	57
Oct 2011	122	63	52	56	56
Jan 2012	66	20	33	57	54
May 2012	104	53	51	56	58
Oct 2012	150	84	56	56	54
Jan 2013	91	47	52	57	53

Cumulative pass rates (Table 16)

Month of examination	Candidates	Pass rate (%)
January	445	40
May	425	44
October	639	47
All examinations	1509	44

Breakdown of results by training (Table 17)

	Failed	Passed	Total
In OST	13	14	27
Not in OST	31	33	64
Total	44	47	91

These differences are not statistically significant (p=0.84)

Breakdown of results by deanery (Table 18)

Deanery	Failed	Passed	Total
East Midlands	0	2	2
East Scotland	0	0	0
East of England	0	1	1
London & KSS	3	3	6
Mersey	1	1	2
N Scotland	0	0	0
North Western	0	0	0
Northern	0	0	0
N Ireland	2	1	3
Oxford	0	0	0
Peninsula	0	1	1
SE Scotland	1	0	1
Severn	0	0	0
West Midlands	1	2	3
West Scotland	2	0	2
Wales	1	1	2
Wessex	1	1	2
Yorkshire	1	1	2
Total	13	14	27

Breakdown of results by stage of training (Table 19)

Stage (includes FTSTA)	Failed	Passed	Total
ST1	4	8	12
ST2	8	5	13
ST3	0	1	1
Unknown	1	0	1
Total in OST	13	14	27

Breakdown of results by gender (Table 20)

	Failed (OST)	Passed (OST)	Total (OST)
Female	30 (12)	21 (7)	51 (19)
Male	14 (1)	26 (7)	40 (8)
Total	44 (13)	47 (14)	91 (27)

These differences are statistically significant ($p=0.04$)

Breakdown of results by country of qualification (Table 21)

	Failed	Passed	Total
UK	16	19	35
Outside UK	28	28	56
Total	44	47	91

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

Breakdown of results by declared ethnicity (Table 22)

Ethnicity	Failed	Passed	Total
White	11	6	17
Non-white	28	37	65
Unknown	5	4	9
Total	44	47	91

These differences are not statistically significant (p=0.19)

Breakdown of results by first language (Table 23)

	Failed	Passed	Total
English	23	28	51
Other	17	14	31
Unknown	4	5	9
Total	44	47	91

These differences are not statistically significant (p=0.53)

Breakdown of results by number of previous attempts (Table 24)

Attempts	Failed	Passed	Total
1 (First)	26	28	54
2	10	13	23
3	6	3	9
4	1	0	1
5	1	2	3
6	0	0	0
7	0	0	0
8	0	1	1
Any resit	18	19	37
Total	44	47	91

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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	26	81
N Scotland	7	71
SE Scotland	10	70
London	62	60
Severn	10	60
East Midlands	18	56
Northern	16	50
Oxford	6	50
Wales	18	50
Mersey	13	46
West Midlands	48	44
East of England	21	43
North Western	7	43
West Scotland	16	38
Wessex	36	36
N Ireland	15	33
Peninsula	12	33
Total	344	51