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FROM THE EXAMINATIONS DEPARTMENT



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Final Report May 2010 Part 1 FRCOphth Examination

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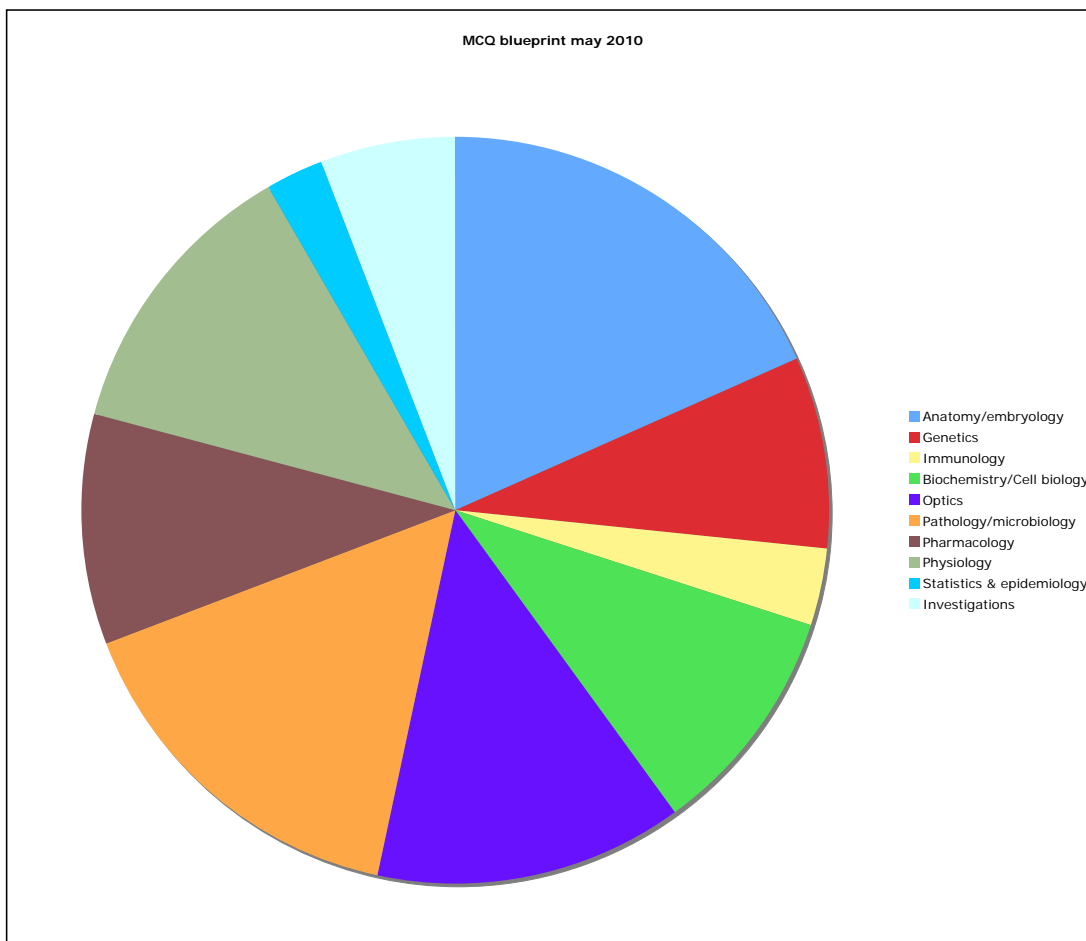
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The twelfth Part 1 FRCOphth examination took place on 10 May 2010. 79 candidates sat the examination, of whom 31 (39%) fulfilled the criteria required to pass the examination overall.

MCQ examination

Content

Topic	Oct 2009	Jan 2010	May 2010	%
Anatomy/embryology	18	19	22	18
Genetics	9	9	10	9
Immunology	9	14	4	3
Biochemistry/Cell biology	10	6	12	10
Optics	14	16	16	13
Pathology/microbiology	20	22	19	16
Pharmacology	13	12	12	11
Physiology	16	12	15	12
Statistics & epidemiology	7	5	3	3
Investigations	4	5	7	6
	120	120	120	100



MCQ paper statistics

Mean score:	60.7 (50.6%)
Median score:	60 (50%)
Standard deviation:	12.5 (10.4%)
Candidates:	79
KR20: (measurement of reliability)	0.848
Standard error of measurement (SEM):	4.89
Range of marks:	35-91 (29.2-75.8%)
Pass mark derived from Standard Setting:	72/120 (60%)
Adjusted pass mark (-1SEM)	67/120 (56%)
Adjusted pass mark (-2SEM)	62/120 (52%)
Pass rate at -1SEM:	28/79 (35%) candidates passed at this cut-off

Distribution of results

Range of scores	Distribution	Number
1-30		0
31-40	////	6
41-50	////////	12
51-60	////////////////	22
61-70	////////////////	21
71-80	////////	13
81-90	////	4
91-100	/	1
101-120		0
Total		79

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
Total	8	54	58	120

Results from the examination show the following distribution of questions.

	Difficult	Moderate	Easy	Total
Total	20	86	14	120

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	0.5 x 0	0.55 x 8	0.75 x 32
Important	0.45 x 2	0.5 x 34	0.7 x 23
Supplementary	0.3 x 6	0.45 x 12	0.65 x 3

Weighted marks

	Difficult	Moderate	Easy	Total
Essential	0	4.4	24	28
Important	0.9	17	16.1	34
Supplementary	1.8	5.4	1.95	9
Total	3	27	42	72

The final unadjusted pass mark = 72/120 (60%)

The pass mark was the lowest of the last five examinations, but by only a small amount. There has been a welcome rise in the reliability compared to January 2010, and appears to be stable at around 0.85. Approximately 50% of questions have good or excellent 33% discrimination statistics.

One error was identified during the examination. A stem was duplicated in one question. The candidates were informed and no candidate was put at a disadvantage as a result.

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

	Oct 2008	Jan 09	July 09	Oct 09	Jan 10	May 10
Candidates	88	79	49	101	50	79
Mean score	69 (58%)	67 (56%)	71 (59%)	67 (56%)	63 (52.6%)	61 (50.6%)
Reliability (KR 20)	0.881	0.871	0.851	0.861	0.794	0.848
SEM	4.82	4.91	4.67	4.87	4.94	4.89
Standard setting	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel
Pass mark	74 (62%)	73 (61%)	76 (63%)	75 (62%)	76 (63%)	72 (60%)
Modified pass mark	70 (58%)	68 (57%)	71 (59%)	70 (58%)	71 (59%)	67 (56%)
33% discrimination						
Negative	11	12	10	10	15	12
Poor	45	38	49	51	58	52
Good	28	41	44	40	31	38
Excellent	35	29	17	19	16	18
Facility						
Difficult (<25%)	8	6	8	8	20	15
Moderate	88	90	69	85	86	84
Easy (>75%)	23	24	43	27	14	21
Pass rate	45 (51%)	34 (43%)	21 (43%)	25 (25%)	15 (30%)	28 (35%)

The CRQ paper

The examination in May 2010 covered the following areas:

Question	Subject	Topic	Sub-sections	Data provided/comment
1	Embryology	Ocular embryonic development	5	Drawing of the development of the eye at 5 week stage
2	Investigations	Thyroid function tests	3	Table of results
3	Pathology	Sarcoidosis	4	None
4	Anatomy	Cavernous sinus	2	Drawing of cavernous sinus to label
5	Optics	Prismatic correction in spectacle prescription	3	None
6	Optics	Spherical aberration	4	Draw ray diagram
7	Optics	Compound microscope	4	Draw ray diagram
8	Investigations	Biometry	5	Biometry results
9	Investigations	ERG	5	ERG waveform to label
10	Investigations	Ultrasound	6	A and B scan
11	Investigations	Visual fields	5	Visual field result
12	Investigations	CT scan	3	CT scan to label

Statistics

Mean score:	63/120 (52.6%)
Median score:	63/120 (52.5%)
Standard deviation:	(13.2%)
Range of scores:	(13-78%)
Reliability: Cronbach alpha	0.843
Standard error of measurement:	6.5
Pass mark derived from Standard Setting:	68.5/120 (57%)
Adjusted pass mark (-1SEM):	62/120 (52%)
Adjusted pass mark (-2SEM):	56/120 (47%)
Pass rate at -1SEM:	45/79 (56%) candidates passed at this cut off

Distribution of scores

Range of marks	Distribution	Number
< 20	/	1
21-30		0
31-40	////	4
41-50	///// ///// ///// ////	19
51-60	///// ///	8
61-70	///// ///// ///// ///	18
71-80	///// ///// /////	15
81-90	///// ///// //	12
91-100	//	2
101-110		0
Total		79

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
1	Embryology	5.7	7	7	2.8	0	10
2	Investigations	6.5	7	7	1.4	2	9
3	Pathology	5.9	6	5	1.7	2	10
4	Anatomy	7.1	8	8	2.4	1	10
5	Optics	1.3	1	0	1.6	0	5
6	Optics	5.4	6	9	3.1	0	10
7	Optics	4.6	4	3	3	0	10
8	Investigations	5.4	5	5	2.2	0	9
9	Investigations	4.3	5	5	2.3	0	9
10	Investigations	5.3	5	5	1.8	0	9
11	Investigations	5.7	6	7	2.1	0	10
12	Investigations	5.9	6	7	1.9	2	10

Question 5 was very poorly answered (prisms in spectacles)

Comparison to previous years

	Oct 2008	Jan 2009	July 2009	Oct 2009	Jan 2010	May 2010
Mean score	60%	59%	58%	56%	61%	53%
Median score	64%	62%	61%	58%	63%	53%
Standard deviation	16%	11.5%	13%	16%	16%	13%
Reliability	0.85	0.78	0.89	0.88	0.82	0.843
SEM	6.7	6	5.3	6.5	6.6	6.5
Pass mark	57%	57%	58%	56%	58%	57%
Modified pass mark	51%	52%	54%	51%	53%	52%
Correlation with MCQ	0.74	0.76	0.80	0.75	0.79	0.72

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 mark	Examiner
1	Embryology	40	27	12	6	A
2	Investigations	42	15	22	6	B
3	Pathology	29	33	17	6	B
4	Anatomy	50	20	9	6	B
5	Optics	0	74	5	5	C
6	Optics	37	33	9	6	A
7	Optics	20	49	10	6.5	D
8	Investigations	22	43	14	6	D
9	Investigations	21	39	19	5	D
10	Investigations	37	23	19	5	C
11	Investigations	38	33	8	6	C
12	Investigations	48	23	8	5	A
					68.5	

Unadjusted Pass mark = 69/120 (58%)

Four questions were 'easy' or well prepared for with >50% (40/79) of candidates passing (Q1, 2,4,12).

Three questions were 'difficult' or ill prepared for with >50% (40/79) of candidates failing. (Q5, 7, 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 (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 129/240 or 54%. The minimum mark required in each paper (to meet standard 2 above) was 62/120 (52%) in the MCQ paper and 56/120 (47%) in the CRQ paper.

36 (46%) 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.

31 (39%) candidates passed the examination.

Distribution of scores

Range of marks	Distribution	Number
<60	/	1
61-70		0
71-80		0
81-90	//// //	9
91-100	//// //	9
101-110	//// //	7
111-120	//// //	8
121-130	//// //	9
131-140	//// //// ////	13
141-150	//// //	7
151-160	//// //	9
161-170	////	4
171-180	/	1
181-190	/	1
191-200		0
Total		

Mean 140 Median 128
Mode 128 Range 55-184

Comparison to previous years:

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

Breakdown of results by training

	Failed	Passed	Total
In OST	20 (61%)	13 (39%)	33 (42%)
Not in OST	28 (61%)	18 (39%)	46 (68%)
Total	48 (61%)	31 (39%)	79

Breakdown of results by gender

	Failed	Passed	Total
Female	26 (63%)	15 (37%)	41 (52%)
Male	22 (58%)	16 (42%)	38 (48%)
Total	48 (61%)	31 (39%)	79

These differences are not statistically significant ($p = 0.79$)

Breakdown of results by country of qualification

	Failed	Passed	Total
UK	27 (69%)	12 (31%)	39 (53%)
Outside UK (inc Republic of Ireland)	18 (51%)	17 (49%)	35 (47%)
Total	45 (61%)	29 (39%)	74

These differences are not statistically significant ($p = 0.18$)

Breakdown of results by number of previous attempts

Attempts	Failed	Passed	Total
1 (First)	27 (55%)	22 (45%)	49 (62%)
2	11 (73%)	4 (27%)	15
3	4 (57%)	3 (43%)	7
4	3 (75%)	1 (25%)	4
5	2 (67%)	1 (33%)	3
6	1 (100%)	0 (0%)	1
Any resit	21 (70%)	9 (30%)	30 (38%)

Summary

Since its introduction the Part 1 FRCOphth examination pass rate has steadily increased to a plateau of just under 50%. The syllabus is broad and the successful candidates must know and understand the important basic sciences of relevance to ophthalmology.

33 (42%) of the candidates were in training posts in the UK. Of these 13 (39%) were successful. Of the 46 (68%) candidates not in UK training, the pass rate was 39%. The pass rates for the two groups of candidates are now identical.

The pass mark for the MCQ and CRQ papers is stable.

The correlation between the MCQ and CRQ has fallen to 0.72 from previously high values of 0.8. This is a welcome change and reflects the change in the blueprint for each paper with the CRQ concentrating on optics and investigations. Ideally the correlation should be around 0.6.

The range of marks achieved by the candidates was very wide from 23% to 77%. This has a negative effect on the examination reliability and suggests that some candidates are inadequately prepared for the examination.

Candidates are more likely to pass the examination at the first sitting ($p = 0.45$). Although numbers are small, the probability of passing decreases with the number of attempts. Candidates may not be receiving enough feedback on their performance to guide future revision.

There is no evidence that performance in this examination is influenced by place of training, gender or country of qualification.

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June 2010