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FROM THE EXAMINATIONS DEPARTMENT

Final Report October 2011 Part 1 FRCOphth Examination

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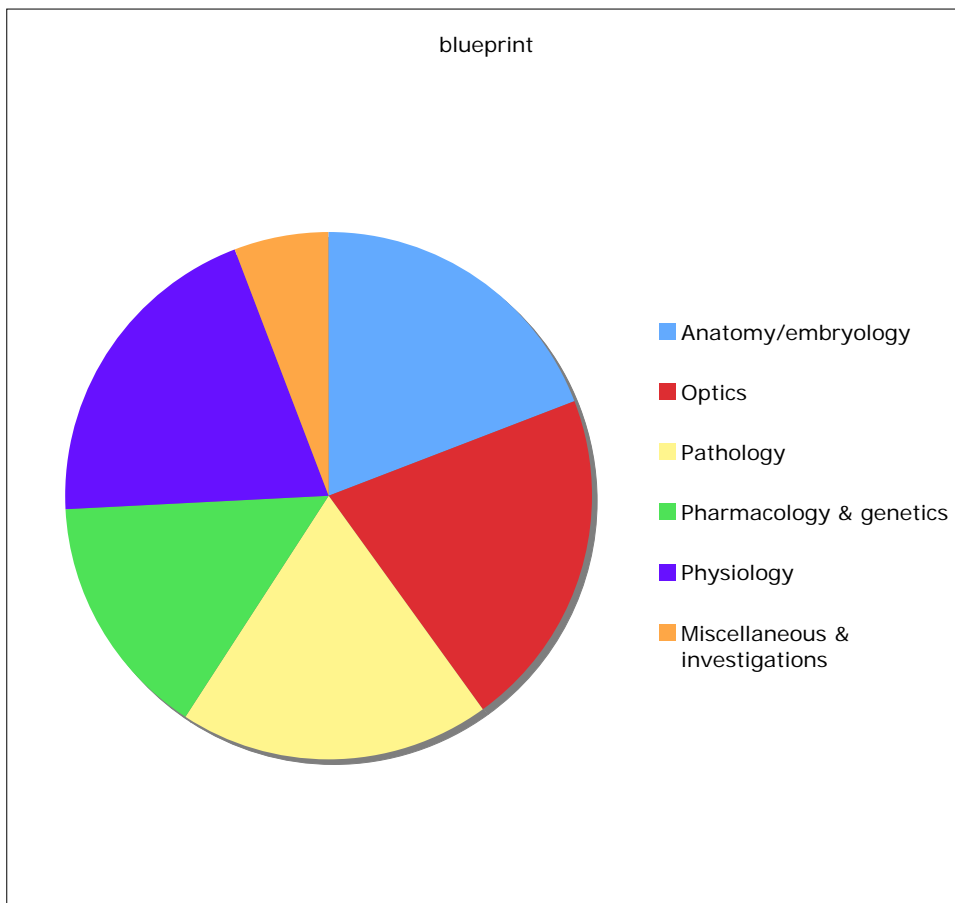
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The sixteenth Part 1 FRCOphth examination took place on 10th October 2011. 121 candidates sat the examination, of whom 63 (52%) fulfilled the criteria required to pass the examination overall.

MCQ examination

Content

Topic	Jan 2010	May 2010	Oct 2010	Jan 2011	May 2011	Oct 2011
Anatomy/embryology	19	22	21	23	25	23
Optics	16	16	16	24	25	25
Pathology	36	23	33	24	26	23
Pharmacology & genetics	21	22	23	18	15	18
Physiology	18	27	18	21	22	24
Miscellaneous & investigations	10	10	7	7	7	7
Total	120	120	118	116	120	120



MCQ paper statistics

Mean score:	67/120 (56%)
Median score:	69/120 (57.5%)
Standard deviation:	13.3 (11%)
Candidates:	121
KR20: (measurement of reliability)	0.87
Standard error of measurement (SEM):	5
Range of marks:	37-98 (31%-82%)
Pass mark derived from Standard Setting:	67/120 (56%)
Pass mark – 1 SEM	62/120 (52%)
Pass rate:	66/121 (55%)

Distribution of scores

Range of scores	Distribution	Number
1-30		0
31-40	//	2
41-50	//// //// ///	13
51-60	//// //// //// //// //// ////	30
61-70	//// //// //// //// //// //// //// /	31
71-80	//// //// //// //// //// //// //	27
81-90	//// //// ///	13
91-100	////	5
101-120		0
Total		121

Standard setting

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

	Difficult	Moderate	Easy	Total
Essential	0	21	25	46
Important	4	24	32	60
Supplementary	2	9	3	14
Total	6	54	60	120

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

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

	Difficult	Moderate	Easy	
Essential	0	13.65	18.75	32.4
Important	1.8	12	17.6	31.4
Supplementary	0.5	2.25	0.75	3.5
TOTAL	2.3	27.9	37.1	67.3

The MCQ pass mark = 67/120 (56%)

Comparison of pass marks and rates for last 7 MCQ papers

	Oct 09	Jan 10	May 10	Oct 10	Jan 11	May 11	Oct 11
Candidates	101	50	79	89	62	95	122
Mean score	67	63	61	67	62	64	67
Reliability (KR 20)	0.861	0.794	0.848	0.818	0.815	0.86	0.87
SEM	4.87	4.94	4.89	4.83	4.9	4.96	4.87
Standard setting	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel
Pass mark	75 (62%)	76 (63%)	72 (60%)	72 (61%)	69 (59%)	65 (54%)	67 (56%)
Modified pass mark	70 (58%)	71 (59%)	67 (56%)	NA*	NA*	NA*	NA*
33% discrimination							
Negative	10	15	12	17	14	9	10
Poor	51	58	52	54	53	56	44
Good	40	31	38	29	38	36	44
Excellent	19	16	18	18	11	16	22
Facility							
Difficult (<25%)	8	20	15	10	8	10	7
Moderate	85	86	84	86	93	92	91
Easy (>75%)	27	14	21	22	15	18	22
Pass rate	25 (25%)	15 (30%)	28 (35%)	29 (33%)	15 (24%)	47 (51%)	66 (55%)

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

The CRQ paper

The examination in October 2011 covered the following areas:

Question	Subject	Topic	Sub-sections	Data provided
1	Anatomy	Globe anatomy	3	Diagram of globe
2*	Immunology	Complement pathway	3	Diagram of complement pathway
3	Pathology	Conjunctivitis	6	Clinical photograph and conjunctival smear
4	Embryology	Anterior segment embryology	4	Diagram of anterior segment
5	Optics	Diagnostic lenses	5	Photograph of 2 lenses
6	Optics	Aphakia	4	None
7	Optics	Diagnostic lens	4	Photograph of lens
8	Investigations	Ultrasound	3	Ultrasound images
9	Investigations	Visual fields	5	Visual field images
10	Investigations	Fluorescein angiography	5	Angiogram images
11	Investigations	Corneal topography	6	Topography image
12	Research	Critical appraisal of abstract	7	Research abstract

*All candidates answered this question particularly badly

Statistics

Mean score:	68/120 (57%)
Median score:	69.5/120 (58%)
Standard deviation:	6.3 (5.3%)
Range of scores:	0-100 (0% -83%)
Reliability: Cronbach alpha	0.86
Standard error of measurement:	6
Pass mark derived from Standard Setting:	67/120 (56%)
Pass mark – 1 SEM	61/120 (51%)
Pass rate	71/121 (59%)

Distribution of scores

Range of marks	Distribution	Number
0-30	////	5
31-40	////	5
41-50	///	3
51-60	//// //// //// ////	19
61-70	//// //// //// // / //// ////	30
71-80	//// //// //// //// //// //// //	32
81-90	//// //// //// ////	20
91-100	//// //	7
101-120		0
Total		121

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:

Q	Subject	Mean	Median	SD	Min	Max	Correlation between 2 markers (Mark)	Correlation between 2 markers (Global judgement)
1	Anatomy	6	6	2.3	0	10	0.9	0.68
2	Pathology	1.5	1.5	1.5	0	6	0.73	0.22
3	Physiology/Cell biology	5	5	2.7	0	10	0.86	0.79
4	Investigations	6	6	2.2	0	10	0.78	0.61
5	Optics	7	7	2.2	0	10	0.9	0.75
6	Optics	5.5	5.5	2.5	0	9.5	0.84	0.62
7	Optics	6	7	2.2	0	9.5	0.82	0.77
8	Investigations	7	7	2.1	0	10	0.73	0.62
9	Miscellaneous	5.5	6	2.2	0	10	0.89	0.79
10	Investigations	7	7.5	2.4	0	10	0.81	0.62
11	Investigations	5	5	2.1	0	10	0.83	0.59
12	Investigations	5.5	5.5	2.2	0	9	0.83	0.70

Candidates performed badly or were ill prepared for question 2. There was good correlation between examiner marks and reasonable correlation between examiner global judgments with the exception of question 2.

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

Excellent discrimination

Poor discrimination

Easy

Difficult

Q	Subject	ID examiner B	F examiner B	ID examiner A	F examiner A
1	Anatomy	0.415	0.78	0.707	0.51
2	Pathology	0.049	0.07	0.098	0.12
3	Physiology/Cell biology	0.683	0.44	0.634	0.54
4	Investigations	0.610	0.60	0.683	0.62
5	Optics	0.512	0.75	0.732	0.64
6	Optics	0.610	0.56	0.512	0.58
7	Optics	0.707	0.60	0.537	0.64
8	Investigations	0.341	0.81	0.366	0.70
9	Miscellaneous	0.659	0.65	0.561	0.65
10	Investigations	0.659	0.63	0.585	0.67
11	Investigations	0.610	0.56	0.659	0.56
12	Investigations	0.439	0.67	0.634	0.52

Question 2 had a very poor 33% item discrimination index and a very low facility. Question 8 had a relatively high facility and hence relatively low 33% item discrimination index. All other questions performed well.

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	Examiners A				Examiners B			
		No. Pass	No. Fail	No. Border	Median Border	No. Pass	No. Fail	No. Border	Median Border
1	Anatomy	38	50	34	5	75	27	20	6
2	Anatomy	5	104	13	4	0	116	6	5
3	Pathology	49	55	18	6	40	72	10	5
4	Genetics	62	22	38	6	62	36	24	6
5	Optics	59	35	28	6	76	23	23	6.5
6	Optics	62	41	19	5	33	54	35	6
7	Optics	75	21	26	5	78	22	22	5
8	Invest	80	25	17	5	94	7	21	6
9	Invest	65	32	25	6	51	44	27	6
10	Invest	65	40	17	8	49	50	23	6
11	Invest	33	60	29	5	35	45	42	6
12	Invest	40	54	28	5	72	23	27	5
Pass mark					66				68.5

Pass mark = 67/120 = 56%

Questions 4, 7, 8, were **easy** or well prepared for with >50% of candidates passing (global judgment by both examiners)

Question 2 was **difficult** or ill prepared for with >50% of candidates failing (global judgment by both examiners)

Comparison to previous years

	Oct 09	Jan 10	May 10	Oct 10	Jan 11	May 11	Oct 11
Mean score	56%	61%	53%	52%	59%	55%	57%
Median score	58%	63%	53%	56%	61%	56%	58%
Reliability	0.88	0.82	0.843	0.856	0.869	0.92	0.86
SEM	6.5	6.6	6.5	6	9*	6	6
Pass mark	56%	58%	57%	54%	58%	58%	56%
Modified pass mark	51%	53%	52%	NA*	NA*	NA*	NA*
Correlation with MCQ	0.75	0.79	0.72	0.8	0.79	0.79	0.73

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

The correlation between the 2 parts of the examination remains at an acceptable level.

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 134/240. The minimum mark required in each paper (to meet standard 2 above) was 62/120 in the MCQ paper and 61/120 in the CRQ paper.

66 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.

63 candidates passed the examination.

Distribution of scores

Range of marks	Distribution	Number
<60	/	1
61-70		0
71-80	////	5
81-90	//	2
91-100	///	3
101-110	//// //	10
111-120	//// // //	15
121-130	//// // // /	16
131-140	/// // //	15
141-150	//// // // // /	21
151-160	//// // //	13
161-170	//// //	7
171-180	//// ///	9
181-190	///	3
191-200	/	1
Total		121

/ Candidate scored

Mean 134.5

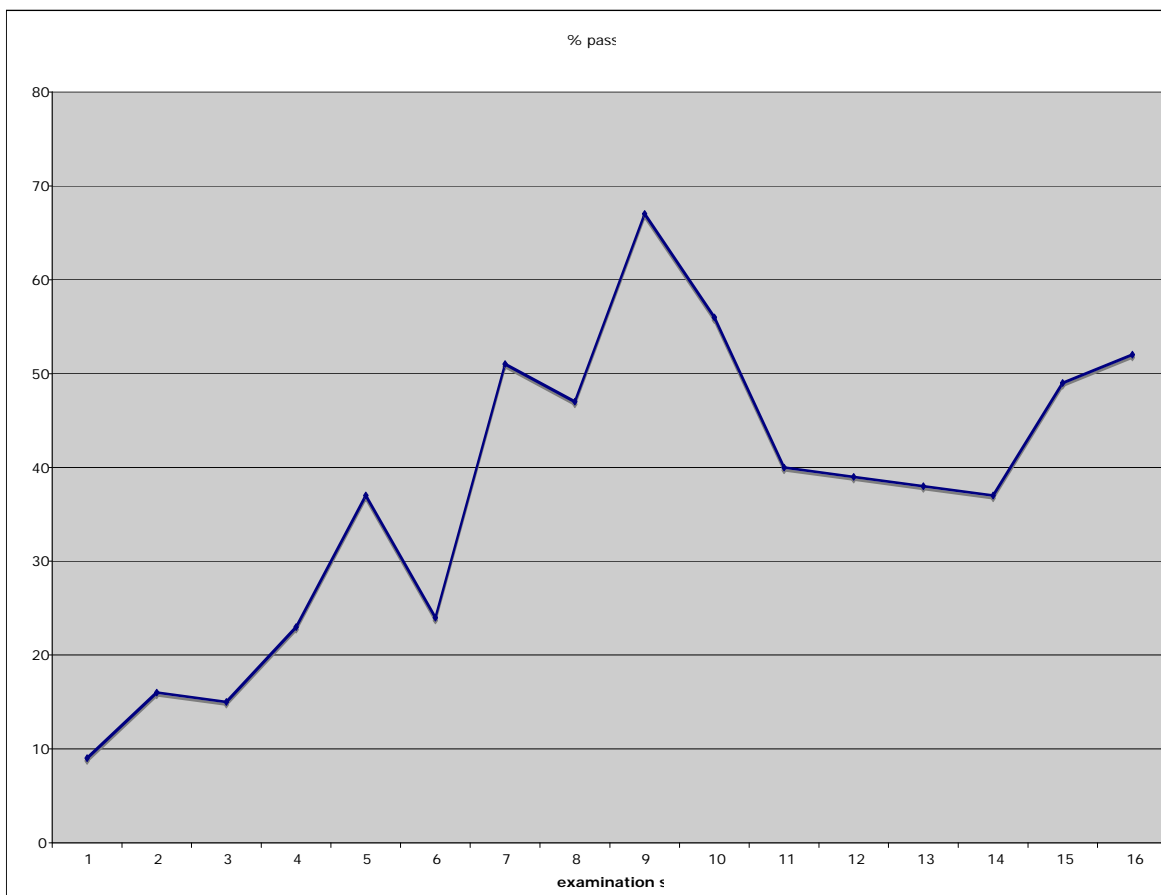
/ Candidate scored

Median 137

Range 40-198

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
Oct 2010	89	34	38	61	54
Jan 2011	62	23	37	59	58
May 2011	95	47	49	54	57
Oct 2011	121	63	52	56	56



Breakdown of results by training

	Failed	Passed	Total
In OST	20	26	46
Not in OST	38	37	75
Total	58	63	121

These differences are not significant ($p=0.60$)

Breakdown of results by deanery

Deanery	Failed	Passed	Total
East Midlands	1	1	2
East Scotland	0	0	0
East of England	1	2	3
London	2	3	5
Mersey	0	1	1
N Scotland	1	0	1
North Western	0	1	1
Northern	1	2	3
N Ireland	0	0	0
Oxford	0	0	0
Peninsula	2	0	2
S Yorks & S Humber	0	1	1
SE Scotland	1	2	3
Severn	0	2	2
West Midlands	4	3	7
West Scotland	2	1	3
Wales	0	1	1
Wessex	4	4	8
Yorkshire	1	2	3
Total	20	26	46

Breakdown of results by stage of training

Stage (includes FTSTA)	Failed	Passed	Total
ST1	8	11	19
ST2	6	13	19
ST3	3	1	4
Unknown	3	1	4
Total in OST	20	26	46

Breakdown of results by gender*

	Failed	Passed	Total
Female	29	29	58
Male	27	33	60
Total	56	62	118

* Gender not declared by 3 candidates

These differences are not significant ($p=0.72$)

Breakdown of results by country of qualification

	Failed	Passed	Total
UK	36	36	72
Outside UK	22	27	49
Total	58	63	121

These differences are not significant ($p=0.72$)

Breakdown of results by declared ethnicity

Ethnicity	Failed	Passed	Total
Asian (Indian, Pakistani, Other)	16	14	30
Black (African, Caribbean)	3	1	4
Chinese	7	13	20
White (British, Irish, Other)	13	21	34
Unknown, other, mixed	19	14	33
Total	58	63	121

Breakdown of results by first language*

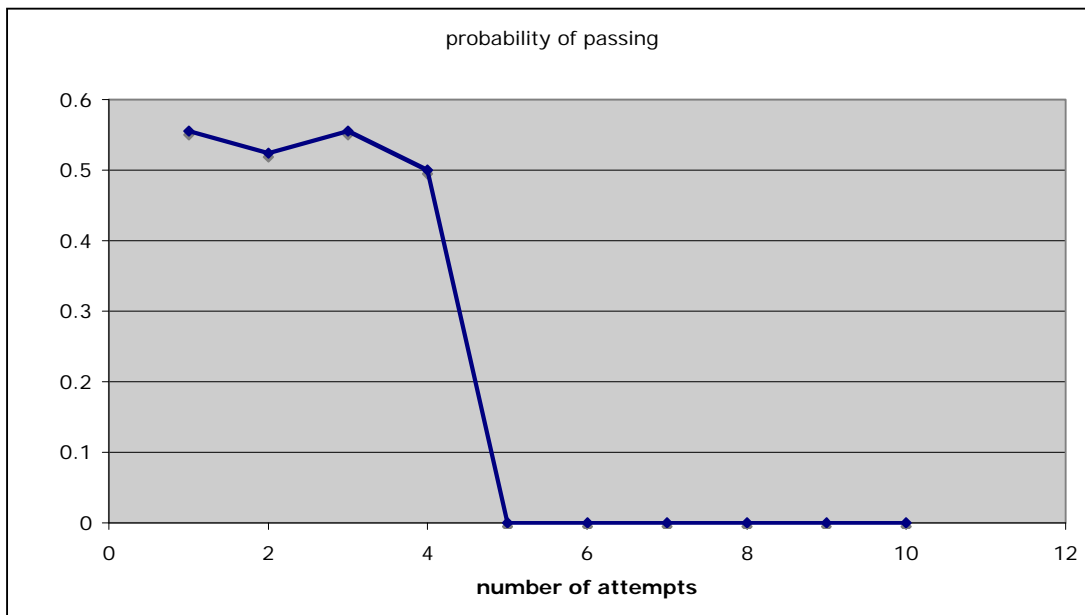
	Failed	Passed	Total
English	27	41	68
Other	19	17	36
Total	46	58	104

* First language not declared by 17 candidates

These differences are not significant ($p=0.29$)

Breakdown of results by number of previous attempts

Attempts	Failed	Passed	Total
1 (First)	36	45	81
2	11	11	22
3	4	5	9
4	2	2	4
5	1	0	1
6	0	0	0
7	1	0	1
8	2	0	2
9	0	0	0
10	1	0	1
Any resit	22	18	40
Total	58	63	121



Summary

The Part 1 FRCOphth examination is a reliable assessment of candidate's knowledge and understanding of basic sciences relevant to ophthalmology. The pass rate has risen to over 50% and is similar for trainees in training programmes to those outside. It is not possible to identify those trainees who sit the examination whilst in Foundation post in the UK.

Michael Nelson BSc Hons FRCOphth MEd
Education Advisor

December 2011