

Examination Report



October 2015 Part 1 FRCOphth Examination

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Summary

The 28th Part 1 FRCOphth examination took place on 5 October 2015. One hundred and eighty-eight candidates sat the examination, of whom only 57 (30%) fulfilled the criteria required to pass the examination overall. The pass rate is lowest since January 2014. The pass rate in recent sittings had stabilised at around 50%.

Both parts of the examination had a high reliability (0.85 and 0.94) and had an acceptable correlation (0.81).

The pass rate in the MCQ paper was the lowest for some time at 42% with a slightly higher pass mark (60%). The quality of the MCQ paper was slightly lower than the last sitting, but still high with 48% of the questions good discriminators.

The pass rate in the CRQ paper was the lowest since January 2014 at only 28%.

The data available on individual candidates was insufficient to produce a breakdown of results based upon protected characteristics. There was no apparent difference in performance based training/non-training, but data was not available for all candidates.

Recommendations

As it is important for us to ensure that our assessment system does not inappropriately discriminate between candidates it is essential that data collection is as complete as possible. Candidates must be encouraged or required to provide information for this, but be reassured on how it is used.

More information on the standard expected for College examinations should be made available to prospective candidates and their supervisors so that they are better prepared for the examination.

MCQ examination

Content (Table 1)

Topic	Jan 2013	May 2013	Oct 2013	Jan 2014	May 2014	Oct 2014	Jan 2015	May 2015
Anatomy/embryology	25	24	24	24	24	24	24	24
Optics	25	24	24	24	23	24	24	24
Pathology	24	23	23	23	23	23	23	23
Pharmacology & genetics	20	18	18	18	18	18	18	18
Physiology	20	23	23	23	23	23	23	23
Miscellaneous & investigations	5	8	8	8	8	8	8	8
Total	119	120	120	120	119	120	120	120

MCQ paper statistics

Mean score	68	57%
Median score	68	57%
Standard deviation	12.7	10.5%
Candidates	188	
KR20: (measurement of reliability)	0.85	
Standard error of measurement (SEM):	4.9	
Range of marks	37- 98	31% - 82%
Pass mark derived from Standard Setting	71	60%
Pass mark – 1 SEM	66	55%
Pass rate	79/188	42%

Distribution of results (Table 2)

Range of scores	Distribution	Number
1-30		0
31-40	/	1
41-50	//// //	19
51-60	//// //	33
61-70	//// //	56
71-80	//// //	47
81-90	//// //	23
91-100	//// //	9
101-120		0
Total		188

Quality of questions

The Speedwell data allows us to identify easy, moderate and difficult questions, and those, which are good, poor or perverse (negative) discriminators. Ideally all questions should be moderate and good.

(Table 3)

	Negative		Poor		Good			
	< 0		0- 0.249		>0.250			
	Number	%	Number	%	Number	%	Total	%
Difficult Facility<25%	1	0.8	5	4.2	0	0.0	6	5.0
Moderate Facility 25- 75%	2	1.7	41	34.2	47	39.2	90	75.0
Easy Facility >75%	0	0.0	13	10.8	11	9.2	24	20.0
Total	3	2.5	59	49.2	58	48.3	120	100.0

Standard setting

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

(Table 4)

	Difficult	Moderate	Easy	Total
Essential	5	28	32	65
Important	4	31	14	49
Supplementary	0	5	1	6
Total	9	64	47	120

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

(Table 5)

	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 6)

	Difficult	Moderate	Easy	Total
Essential	2.75	18.2	24	44.95
Important	1.8	15.5	7.7	25
Supplementary	0	1.25	0.25	1.5
TOTAL	4.55	34.95	31.95	71.45

The MCQ pass mark = 71/120 (60%)

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

	May 13	Oct 13	Jan 14	May 14	Oct 14	Jan 15	May 15	Oct 15
Candidates	102	151	77	119	232	89	114	188
Mean score	69	72	73	67	72	69	72	68
Reliability (KR 20)	0.88	0.9	0.9	0.9	0.9	0.86	0.89	0.85
SEM	4.9	4	4.7	4.8	4.8	4.9	4.7	4.9
Standard setting	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel
Pass mark	69 (58%)	70 (58%)	68 (57%)	69 (58%)	69 (58%)	69 (58%)	68 (57%)	71 (60%)
33% discrimination								
Negative	5	3	10	4	5	9	3	3
Poor (0-0.249)	48	48	59	43	40	56	47	59
Good (>0.250)	67	69	51	72	75	55	70	58
Facility								
Difficult (<25%)	5	2	12	6	3	9	5	6
Moderate	85	92	70	82	94	91	90	90
Easy (>75%)	30	26	38	31	23	20	25	24
Questions	120	120	120	119	120	120	120	120
Pass number (rate)	51 (50%)	88 (58%)	55 (71%)	54 (45%)	144 (62%)	53 (60%)	73 (64%)	79 (42%)

The CRQ paper

(Table 8)

Question	Subject	Topic	Sub-sections	Data provided
1	Anatomy	Bony orbit	1	Drawing of orbit to label
2	Pathology	Microbiology	5	Culture plate and histology
3	Pathology	Orbital mass	6	Biopsy histology
4	Optics*	Focimeter	4	
5	Optics	Lenses and Maddox rod	5	Pictures of lenses and Maddox rod
6	Optics	Spectacle lenses	6	
7	Optics*	Purkinje-Sanson images	4	
8	Investigations	OCT	5	OCT images to label
9	Investigations	Biometry	7	IOL master data
10	Investigations	CT scan	4	CT scan to label
11	Investigations	Ultrasound	7	US image to label
12	Optics	Lasers	5	

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

Statistics

Mean score	58	48%
Median score	59.5	50%
Standard deviation	17.3	14.4%
Candidates	188	
Reliability: Cronbach alpha	0.94	
Standard error of measurement (SEM):	4.3	
Range of marks	15 - 94	13% - 78%
Pass mark derived from Standard Setting	71/120	59%
Pass mark – 1 SEM	67/120	56%
Pass rate	53/188	28%

Distribution of scores (Table 9)

Range of marks	Distribution	Number
0-30	//// //	15
31-40	//// //	17
41-50	//// //	27
51-60	//// //	39
61-70	//// //	37
71-80	//// //	39
81-90	//// //	12
91-100	//	2
101-120		0
Total		188

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 maximum possible 10 marks. Candidate performance was variable for each question, with mean, median, minimum and maximum scores (with standard deviations) of:

(Table 10) Results for each question

Q	Subject	Mean	Median	Min	Max	SD
1	Anatomy	6.5	7	1	10	2.2
2	Pathology	3.8	4	0	8	1.7
3	Pathology	5.3	5.5	0	9	1.9
4	Optics	3.1	3	0	9	2.3
5	Optics	6.2	6.5	1	10	2.1
6	Optics	6.6	7	0	10	2.1
7	Optics	6.4	7.5	0	10	3.4
8	Investigations	3.6	3.5	0	8.5	2.0
9	Investigations	5.8	6	0	10	2.2
10	Investigations	3.6	3.5	0	10	1.8
11	Investigations	4.2	4	0	9.5	1.8
12	Optics	2.8	2	0	8.5	2.5
	Total	57.9	59.5			

Candidates performed badly in or were particularly ill prepared for questions 2 (pathology), 4 and 12 (optics), 8 and 10 (investigations). Three candidates achieved particularly low marks (15,15,16)

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

(Table 11) Item discrimination and facility for each question and examiner

Q	Subject	33% ID Examiner A	F examiner A		33% ID examiner B	F examiner B	
1	Anatomy	493	54		507	55	
2	Pathology	478	37		72	95	
3	Pathology	449	35		362	26	
4	Optics	391	27		391	21	
5	Optics	638	49		246	47	
6	Optics	580	57		478	74	
7	Optics	623	58		638	60	
8	Investigations	493	34		333	29	
9	Investigations	580	61		638	47	
10	Investigations	464	49		478	50	
11	Investigations	507	40		551	44	
12	EBM	304	14		667	35	

Question 7 (optics) was better able (by both examiners) to discriminate between the poor and good candidates based upon their performance in the CRQ overall. Question 4 (optics) was relatively poor at discriminating between the poor and good

candidates. The facility of question 2 (pathology) varied significantly between examiners (37% and 95%)

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 12) Standard setting by each examiner

	Topic	Examiners A				Examiners B			
		No. Fail	No. Border	No. Pass	Median Border	No. Fail	No. Border	No. Pass	Median Border
1	Anatomy	80	29	79	7	84	29	75	7
2	Pathology	95	65	28	5	94	64	30	3
3	Pathology	121	43	24	7	115	50	23	7
4	Optics	141	42	5	5	158	21	9	6
5	Optics	78	62	48	7	83	64	41	7
6	Optics	86	38	64	7	64	28	96	6
7	Optics	67	28	93	7	62	24	102	6.5
8	Investigations	113	48	27	5	130	36	22	5
9	Investigations	52	49	87	6	80	45	63	7
10	Investigations	107	54	27	4	102	58	28	4
11	Investigations	120	38	30	5	117	41	30	5
12	EBM	160	12	16	6	124	22	42	5
Total									

(Table 13) Comparison between examiners

Q	Subject	Mean mark examiner A	Mean mark examiner B	Mean absolute difference	t test of difference	Correlation between marks	Correlation between global judgements
1	Anatomy	6.5	6.5	0.17	0.53	0.98	0.95
2	Pathology	3.8	3.8	0.36	0.82	0.93	0.80
3	Pathology	5.7	5.0	0.98	0.00	0.85	0.60
4	Optics	3.0	3.2	0.70	0.01	0.91	0.63
5	Optics	6.2	6.1	0.84	0.71	0.85	0.57
6	Optics	6.6	6.5	0.64	0.10	0.91	0.38
7	Optics	6.4	6.5	0.66	0.57	0.95	0.86
8	Investigations	3.7	3.6	0.64	0.01	0.90	0.77
9	Investigations	5.8	5.9	0.72	0.11	0.90	0.67
10	Investigations	3.6	3.6	0.18	0.44	0.97	0.72
11	Investigations	4.1	4.2	0.97	0.43	0.77	0.48
12	EBM	2.5	3.2	0.96	0.00	0.90	0.59

(Table 14) Examiner concordance

Q	Scripts remarked	Examiner B - A								Pairings (A/B)
		-4	-3	-2	+/- 1 or 0	+2	+3	+4	+5	
1	All			1	184	3				
2				4	182	2				
3			7	35	142	2	2			
4			1	4	160	19	4			
5			4	16	152	14	2			
6			1	13	168	6				
7			4	7	164	10	3			
8			2	9	170	6	1			
9			1	7	164	15	1			
10				1	184	3				
11*			5	19	139	21	4			
12			1	4	139	28	16			
TOTAL			26	120	1948	129	33			
%			1.2	5.3	86.3	5.7	1.5			

Comparison to previous years (Table 15)

	May 13	Oct 13	Jan 14	May 14	Oct 14	Jan 15	May 15	Oct 15
Mean score	57%	52%	47%	53%	50%	58%	51%	48%
Median score	60%	54%	47%	55%	52%	62%	52%	50%
Reliability	0.93	0.93	0.9	0.93	0.94	0.92	0.93	0.94
SEM	5	4.6	4.2	4.9	4.3	4.6	4.6	4.3
Pass mark	58%	60%	57%	56%	57%	61%	54%	59%
Pass rate	54%	36%	25%	48%	38%	56%	49%	28%
Correlation with MCQ	0.72	0.84	0.79	0.78	0.76	0.77	0.75	0.81

The correlation between the two parts of the examination is acceptable at 0.81.

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 142/240 (59%). The minimum mark required in each paper (to meet standard 2 above) was 66/120 in the MCQ paper and 67/120 in the CRQ paper.

Sixty-one candidates (32%) gained a total mark that met standard 1 above. Four candidates achieved greater than 142/240 (144, 145, 149, 150) but failed to achieve 67/120 in the CRQ paper (64, 65, 66, 66).

57/188 (30%) candidates passed the examination.

Distribution of scores (Table 16)

Range of marks	Distribution	Number
<60	//	2
61-70	////	4
71-80	///// /////	9
81-90	///// ///	8
91-100	///// ///// /////	14
101-110	///// ///// //	12
111-120	///// ///// ///// ///// /////	25
121-130	///// ///// ///// ///// ///// ///// //	27
131-140	///// ///// ///// ///// ///// ///// // /	26
141-150	///// ///// ///// ///// ///// //	23
151-160	///// ///// ///// /	16
161-170	///// /////	10
171-180	///// ///	8
181-190		3
191-200		1
Total		188

Mean 126/240 (53%)

Median 128/240 (53%)

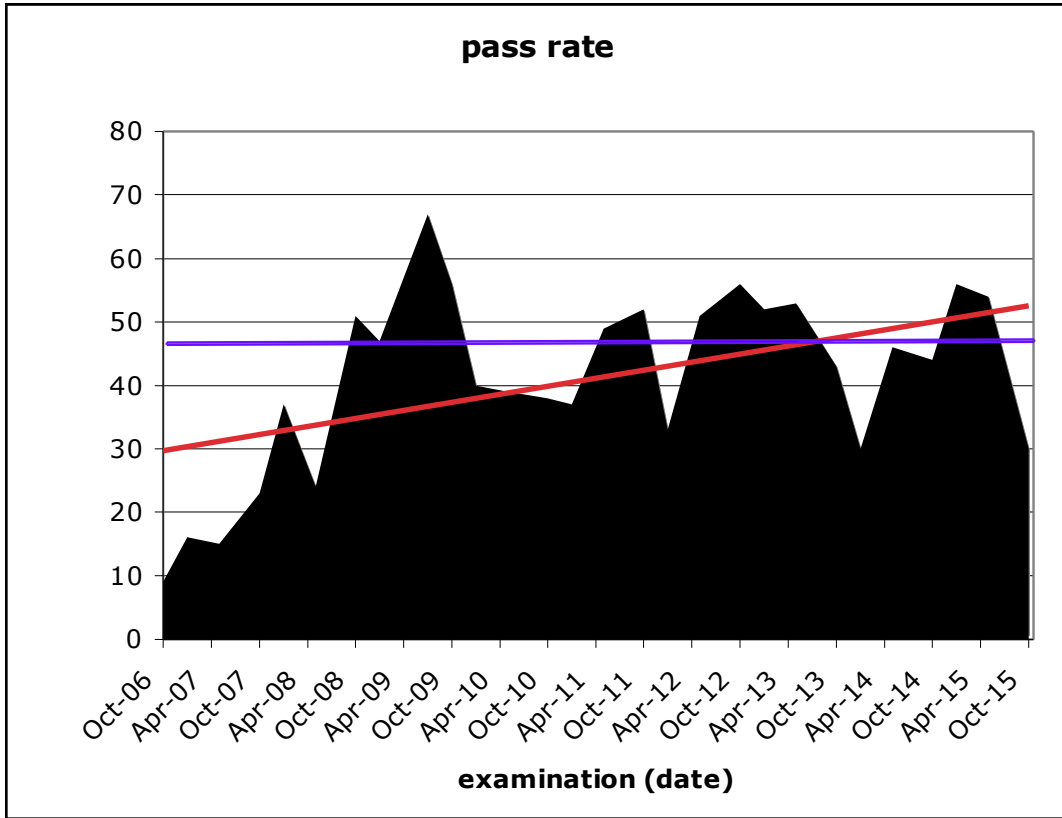
Range 22 –191 (28%-79%)

Comparison to previous years: (Table 17)

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
May 2013	102	54	53	58	58
Oct 2013	151	65	43	58	60
Jan 2014	77	23	30	57	57
May 2014	119	55	46	58	56
Oct 2014	232	102	44	58	57
Jan 2015	89	50	56	58	61
May 2015	114	62	54	57	54
Oct 2015	188	57	30	59	59

Cumulative totals

Sitting	Candidates	Number passed	Pass rate (%)
January	611	251	41
May	711	323	45
October	1177	536	46
All examinations	2499	1110	44



Red line: general trend

lilac line: overall pass rate

Breakdown of results by training number (%) (Table 18)

	Failed	Passed	Total
In OST	18	4 (18%)	22
Not in OST	38	13 (25%)	51
FY2	26	16 (38%)	42
Not declared	49	24 (33%)	73
Total	201	57 (30%)	188

These differences are not statistically significant.

Breakdown of results by deanery (Table 19)

Deanery	Failed	Passed	Total
East Midlands	1	0	1
East of England	3	1	4
East of Scotland	0	0	0
KSS	0	1	1
London	2	1	3
Mersey	0	1	1
N Ireland	0	0	0
North of Scotland	1	0	1
North Western	1	0	1
Northern	1	0	1
Oxford	1	0	1
Peninsula	1	1	2
Severn	0	0	0
South East of Scotland	0	0	0
Wales	1	0	1
Wessex	0	0	0
West Midlands	2	1	3
West of Scotland	0	0	0
Yorkshire	0	0	0
Total	14	6	20

Breakdown of results by stage of training (Table 20)

Stage (includes FTSTA)	Failed	Passed	Total
ST1 (LAT or LAS)	6	2 (25%)	8
ST2	8	2 (20%)	10
ST3	4	0 (0%)	4
Total in OST	18	4	22

Breakdown of results by gender (Table 21)

	Failed	Passed *	Total
Female	42	13	55
Male	36	18	54
Total	78	31	109

*Gender not declared by 79 candidates.

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

	Failed	Passed	Total
UK	21	8	29
Outside UK	48	19	67
Total	69	27	96

* Not declared by 92 candidates

Breakdown of results by declared ethnicity (Table 23)

Ethnicity	Failed	Passed	Total
White	10	6	16
Non-white	52	16	68
Total	62	22	84

Ethnicity not declared by 104 candidates

Breakdown of results by first language (Table 24)

	Failed	Passed	Total
English	38	12	50
Other	13	5	18
Total	51	17	68

First language not declared by 120 candidates

Breakdown of results by number of attempts (Table 25)

Attempts	Failed	Passed	Total
1 (First)	91	50 (35%)	141
2	30	6 (17%)	36
3	8	1 (13%)	9
4	2	0	2
Any resit	40	7 (15%)	47
Total	131	57	188

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	Total candidates	Pass rate %
East of Scotland	7	100
Severn	11	73
Yorkshire	43	70
KSS	27	66
South East of Scotland	17	65
Oxford	14	64
North Western	25	60
East Midlands	29	58
Northern	24	58
London	97	56
North of Scotland	9	56
Wales	31	51
West of Scotland	42	50
West Midlands	61	49
Wessex	39	46
East of England	35	45
Peninsula	21	42
Mersey	37	41
N Ireland	21	38
Total	590	54