

Examination Report



May 2016 Part 1 FRCOphth Examination

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Summary

The 30th Part 1 FRCOphth examination took place on 9 May 2016. 122 candidates sat the examination, of whom 61 (50%) fulfilled the criteria required to pass the examination overall. The pass rate is higher than January 2016 (34%) and has returned to a more usual pass rate in recent sittings at around 50%.

The pass rate for candidates in OST has improved to 63% compared to a 43% pass rate for non-trainees. Three candidates were in OST3 (the examination must be passed in order to enter OST year 3) of whom two passed the examination. Six Foundation trainees sat the examination and three were successful.

Both examinations were reliable (0.9) and were highly correlated (0.85).

One question was removed from the MCQ paper after marking at which point an error was identified. The pass rate for the MCQ paper was 58%, which is higher than the previous two examinations.

Once again candidates performed poorly in the optics questions in the CRQ paper (Sturm's conoid, optical aberrations, prismatic effect of lenses and concave mirror). The pass rate for the CRQ was 41%. This was an improvement on the last two papers but remains poor.

MCQ examination

Content (Table 1)

Topic	Oct 2013	Jan 2014	May 2014	Oct 2014	Jan 2015	May 2015	Oct 2015	Jan 2016	May 2016
Anatomy/embryology	24	24	24	24	24	24	24	24	24
Optics	24	24	23	24	24	24	24	23	24
Pathology	23	23	23	23	23	23	23	23	22
Pharmacology & genetics	18	18	18	18	18	18	18	18	18
Physiology	23	23	23	23	23	23	23	23	23
Miscellaneous & investigations	8	8	8	8	8	8	8	8	8
Total	120	120	119	120	120	120	120	119*	119*

MCQ paper statistics

Mean score	70.3	59.1%
Median score	73	61%
Standard deviation	16.4	13.8%
Candidates	123	
KR20: (measurement of reliability)	0.9	
Standard error of measurement (SEM):	4.85	4%
Range of marks	26 – 102	22% - 86%
Pass mark derived from Standard Setting	71/119	60%
Pass mark – 1 SEM	66/119	55%
Pass rate	71/123	58%

Distribution of results (Table 2)

Range of scores	Distribution	Number
1-30	//	2
31-40	//// /	6
41-50	//// ////	9
51-60	//// //// ////	15
61-70	//// //// //// // /	20
71-80	//// //// //// //// //// //// //// //	37
81-90	//// //// //// //// //	23
91-100	//// ////	9
101-120	//	2
Total		123

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		Total	%
	< 0		0- 0.249		>0.250			
	Number	%	Number	%	Number	%		
Difficult Facility<25%	1	1	2	2	0	0	3	3
Moderate Facility 25- 75%	5	4	23	19	62	52	90	76
Easy Facility >75%	0	0	9	8	17	14	26	22
Total	6	5	34	29	79	66	119	

Standard setting

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

(Table 4)

	Difficult	Moderate	Easy	Total
Essential	3	31	32	66
Important	3	24	17	44
Supplementary	2	5	2	9
Total	8	60	51	119

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	1.65	20.15	24	45.8
Important	1.35	12	9.35	22.7
Supplementary	0.5	1.25	0.5	2.25
TOTAL	3.5	33.4	33.85	70.75

The MCQ pass mark = 71/119 (60%)

Comparison of pass marks and rates for last 8 MCQ papers (table 7)

	Oct 13	Jan 14	May 14	Oct 14	Jan 15	May 15	Oct 15	Jan 16	May 16
Candidates	151	77	119	232	89	114	188	107	123
Mean score	72	73	67	72	69	72	68	69	70
Reliability (KR 20)	0.9	0.9	0.9	0.9	0.86	0.89	0.85	0.9	0.9
SEM	4	4.7	4.8	4.8	4.9	4.7	4.9	4.9	4.9
Standard setting	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel
Pass mark	70 (58%)	68 (57%)	69 (58%)	69 (58%)	69 (58%)	68 (57%)	71 (60%)	71 (59%)	71 (60%)
33% discrimination									
Negative	3	10	4	5	9	3	3	3	6
Poor (0-0.249)	48	59	43	40	56	47	59	55	34
Good (>0.250)	69	51	72	75	55	70	58	62	79
Facility									
Difficult (<25%)	2	12	6	3	9	5	6	6	3
Moderate	92	70	82	94	91	90	90	91	90
Easy (>75%)	26	38	31	23	20	25	24	23	26
Questions	120	120	119	120	120	120	120	119	119
Pass number (rate)	88 (58%)	55 (71%)	54 (45%)	144 (62%)	53 (60%)	73 (64%)	79 (42%)	47 (44%)	71 (58%)

The CRQ paper

(Table 8)

Question	Subject	Topic	Sub-sections	Data provided
1	Anatomy	Blood supply to orbit	5	Diagram of orbit
2	Pathology	Lid infection	7	Culture plate
3	Pathology	Ocular tumour	4	Photomicrograph and globe section
4	Optics*	Sturm's conoid	3	None
5	Optics	Optical aberrations	7	None
6	Optics	Prismatic effect of lenses	4	Data
7	Optics*	Concave mirror	3	None
8	Investigations	Fluorescein angiogram	5	Angiogram images
9	Investigations	OCT	7	OCT image
10	Investigations	Neuroimaging	7	MRI scan
11	Investigations	Visual fields	8	24-2 field
12	Statistics	Test results	4	Sensitivity and specificity table

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

Statistics

Mean score	61/120	51%
Median score	65/120	54%
Standard deviation	18.4	15.3%
Candidates	123	
Reliability: Cronbach alpha	0.9	
Standard error of measurement (SEM):	4.5	3.8%
Range of marks	11 - 93	9% - 78%
Pass mark derived from Standard Setting	67/120	56%
Pass mark – 1 SEM	62/120	52%
Pass rate	50/123	41%

Distribution of scores (Table 9)

Range of marks	Distribution	Number
0-30	//// //	10
31-40	//// //	10
41-50	//// // /	11
51-60	//// // // // // //	23
61-70	//// // // // // // // // // // // // // // //	27
71-80	//// // // // // // // // // // // // // // //	27
81-90	//// // // //	12
91-100	///	3
101-120		0
Total		123

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	BCM
1	Anatomy	5.4	5.5	0	10	2.41	6.5
2	Pathology	4.8	5	0	9	1.98	5.5
3	Pathology	6.4	6.5	1	10	2.08	5.5
4	Optics*	3.8	4	0	9.5	2.57	4.5
5	Optics	4.9	5.5	0	8.5	2.41	5.5
6	Optics	3.9	4	0	10	2.69	5.5
7	Optics*	4.3	5.5	0	8	2.39	5.5
8	Investigations	5.9	6	0	10	2.13	5
9	Investigations	5.1	5	0.5	8	1.54	5.5
10	Investigations	4.7	5	0	8	1.83	6
11	Investigations	6.0	6	1	10	1.98	5.5
12	Statistics	5.5	6	0	9.5	2.68	6

Candidates performed badly in or were particularly ill prepared for questions 2 (pathology), 4, 5, 6 and 7 (optics), and 10 (investigations). Three candidates achieved particularly low marks (11, 12 & 18)

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) 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	65	25	33	6	76	23	24	7
2	Pathology	70	28	25	6	46	32	45	5
3	Pathology	30	26	67	6	28	20	75	5
4	Optics	66	34	23	5	51	36	36	4
5	Optics	51	30	42	6	49	33	41	5
6	Optics	64	28	31	5	85	21	17	6
7	Optics	57	56	10	6	42	16	65	5
8	Investigations	40	36	47	5	25	33	65	5
9	Investigations	47	28	48	6	38	77	8	5
10	Investigations	69	46	8	6	51	49	23	6
11	Investigations	30	44	49	6	29	38	56	5
12	Statistics	66	20	37	7	43	12	68	5
Total		655	401	420	70	563	390	523	63

Comparison to previous years (Table 12)

	Oct 13	Jan 14	May 14	Oct 14	Jan 15	May 15	Oct 15	Jan 16	May 16
Mean score	52%	47%	53%	50%	58%	51%	48%	48%	51%
Median score	54%	47%	55%	52%	62%	52%	50%	50%	54%
Reliability	0.93	0.9	0.93	0.94	0.92	0.93	0.94	0.94	0.94
SEM	4.6	4.2	4.9	4.3	4.6	4.6	4.3	3	4.5
Pass mark	60%	57%	56%	57%	61%	54%	59%	54%	56%
Pass rate	36%	25%	48%	38%	56%	49%	28%	32%	41%
Correlation with MCQ	0.84	0.79	0.78	0.76	0.77	0.75	0.81	0.80	0.85

The correlation between the two parts of the examination is acceptable at 0.85

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 138/239 (58%). The minimum mark required in each paper (to meet standard 2 above) was 66/119 in the MCQ paper and 62/120 in the CRQ paper.

Sixty-one candidates (50%) gained a total mark that met standards 1 and 2 above. Two candidates achieved 138/239 or greater (143, 143) but failed to achieve 62/120 in the CRQ paper (56, 58)

61/123 (50%) candidates passed the examination.

Distribution of scores (Table 13)

Range of marks	Distribution	Number
<60	////	4
61-70	/////	6
71-80	//	2
81-90	/////	6
91-100	/////	5
101-110	////	4
111-120	///// /////	14
121-130	/////	9
131-140	///// // /	16
141-150	///// /////	19
151-160	///// /////	18
161-170	///// //	12
171-180	/	1
181-190	/////	6
191-200	/	1
Total		

Mean 131/240 (55%)

Median 138/240 (58%)

Range 41 –194 (17%-81%)

Comparison to previous years: (Table 14)

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
Jan 2016	107	36	34	59	54
May 2016	123	61	50	60	56

Cumulative totals

Sitting	Candidates	Number passed	Pass rate (%)
January	718	287	40
May	834	384	46
October	1177	536	46
All examinations	2729	1207	44

Breakdown of results by training number (%) (Table 15)

	Failed	Passed	Total
In OST	15	26 (63%)	41
Not in OST	47	35 (43%)	82
Total	62	61 (50%)	123

These differences are statistically significant. (0.04 Fishers exact test)

Breakdown of results by deanery (Table 16)

Deanery	Failed	Passed	Total
East Midlands	1	1	2
East of England	1	2	3
East of Scotland	0	1	1
KSS	1	1	2
London	2	4	6
Mersey	0	1	1
N Ireland	1	1	2
North of Scotland	2	1	3
North Western	0	3	3
Northern	1	0	1
Oxford	0	0	0
Peninsula	1	2	3
Severn	0	0	0
South East of Scotland	0	0	0
Wales	2	1	3
Wessex	1	1	2
West Midlands	0	1	1
West of Scotland	0	2	2
Yorkshire	0	2	2
Total	13	24	37

Breakdown of results by stage of training (Table 17)

Stage	Failed	Passed	Total
Foundation	3	3 (50%)	6
ST1	9	15 (63%)	24
ST2	5	9 (64%)	14
ST3	1	2 (66%)	3
ST4	0	0	0
ST5	0	0	0
Total in OST	15	26 (63%)	41

Breakdown of results by number of attempts (Table 18)

Attempts	Failed	Passed	Total
1 (First)	31	34	65
2	13	15	28
3	8	7	15
4	6	4	10
5	1	1	2
>5 (6, 7,16)	3	0	3
Any resit	31	27	58
Total	62	61	123

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	8	100
Yorkshire	45	71
Severn	12	67
KSS	30	63
North Western	29	62
South East of Scotland	18	61
Oxford	15	60
London	106	55
East Midlands	35	54
Northern	27	52
West of Scotland	45	51
West Midlands	65	48
East of England	40	47
Wales	36	47
Wessex	42	45
North of Scotland	14	43
Peninsula	25	43
Mersey	39	42
N Ireland	24	37
Total	655	55