

# Examination Report



## January 2016 Part 1 FRCOphth Examination

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## Summary

The 29th Part 1 FRCOphth examination took place on 11 January 2016. 107 candidates sat the examination, of whom only 36 (34%) fulfilled the criteria required to pass the examination overall. The pass rate is slightly higher than October 2015 (30%) but still well below what appeared to be a stable pass rate in recent sittings at around 50%.

31 candidates were in OST of whom only 15 passed the MCQ, 12 passed the CRQ and 12 passed overall, which represents a pass rate in OST of only 38%. The majority of these candidates were in ST1 (8/19 passed) with 11 in ST2 (4/11 passed). Four candidates said they were in ST3 when they applied, they should already have passed this examination. None of these candidates passed.

11 candidates were in foundation year 2 training. Of these seven passed the MCQ, four passed the CRQ and four passed overall; as pass rate of 36%.

The highest number of candidates came from outside of the UK training system and were in neither OST nor foundation training. Of these 62 candidates, 25 passed the MCQ, 18 passed the CRQ and 20 passed overall. This is a pass rate for non-trainees of 32%.

Both parts of the examination had a high reliability (at least 0.9) and had an acceptable correlation (0.80).

The pass rate in the MCQ paper was slightly higher than the last sitting at 44% with a slightly lower pass mark (59%). The pass rate in January examinations is usually lower than October and May sittings, but this January paper is lowest to date. The quality of the MCQ paper was slightly better than the last sitting with 52% of the questions good discriminators.

The pass rate in the CRQ paper was again poor at only 32%. Candidate performance was very poor in 2 optics questions (Porro prisms and spectacle lenses) and a question on logMAR visual acuity. Some concern was expressed about the question on the Human Tissue Act, but this question was answered reasonably well (median mark 5.0)

## MCQ examination

### Content (Table 1)

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

### MCQ paper statistics

Mean score	69	57%
Median score	69	57.5%
Standard deviation	14.0	11.6%
Candidates	107	
KR20: (measurement of reliability)	0.9	
Standard error of measurement (SEM):	4.9	
Range of marks	36 - 106	30% - 89%
Pass mark derived from Standard Setting	71/119	59%
Pass mark – 1 SEM	66/119	55%
Pass rate	47/107	44%

### Distribution of results (Table 2)

Range of scores	Distribution	Number
1-30		0
31-40	////	4
41-50	///// ///	8
51-60	///// ///// /////	15
61-70	///// ///// ///// ///// ///// ///// ///// //	33
71-80	///// ///// ///// ///// ///// /	26
81-90	///// ///// ///// /	16
91-100	////	4
101-120	/	1
Total		107

## 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%	2	1.7	4	3.3	0	0.0	6	5.0
Moderate Facility 25- 75%	1	0.8	36	30.0	54	45.0	91	75.8
Easy Facility >75%	0	0.0	15	12.5	8	6.7	23	19.2
<b>Total</b>	<b>3</b>	<b>2.5</b>	<b>55</b>	<b>45.8</b>	<b>62</b>	<b>51.7</b>	<b>120</b>	<b>100.0</b>

## Standard setting

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

**(Table 4)**

	Difficult	Moderate	Easy	Total
Essential	2	41	21	64
Important	7	25	19	51
Supplementary	0	2	2	4
<b>Total</b>	<b>9</b>	<b>68</b>	<b>42</b>	<b>119</b>

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	1.1	26.65	15.75	43.5
Important	3.15	12.5	10.45	26.1
Supplementary	0	0.5	0.5	1
<b>TOTAL</b>	<b>4.25</b>	<b>39.65</b>	<b>26.7</b>	<b>70.6</b>

**The MCQ pass mark = 71/119 (59%)**

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

	May 13	Oct 13	Jan 14	May 14	Oct 14	Jan 15	May 15	Oct 15	Jan 16
Candidates	102	151	77	119	232	89	114	188	107
Mean score	69	72	73	67	72	69	72	68	69
Reliability (KR 20)	0.88	0.9	0.9	0.9	0.9	0.86	0.89	0.85	0.9
SEM	4.9	4	4.7	4.8	4.8	4.9	4.7	4.9	4.9
Standard setting	Ebel	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%)	71 (59%)
33% discrimination									
Negative	5	3	10	4	5	9	3	3	3
Poor (0-0.249)	48	48	59	43	40	56	47	59	55
Good (>0.250)	67	69	51	72	75	55	70	58	62
Facility									
Difficult (<25%)	5	2	12	6	3	9	5	6	6
Moderate	85	92	70	82	94	91	90	90	91
Easy (>75%)	30	26	38	31	23	20	25	24	23
Questions	120	120	120	119	120	120	120	120	119
Pass number (rate)	51 (50%)	88 (58%)	55 (71%)	54 (45%)	144 (62%)	53 (60%)	73 (64%)	79 (42%)	47 (44%)

## The CRQ paper

**(Table 8)**

Question	Subject	Topic	Sub-sections	Data provided
1	Anatomy	Globe	3	Diagram of posterior surface of globe
2	Pathology	Keratitis	8	Photomicrograph of cornea
3	Pathology	Skin nodule	4	2 photomicrographs of lesion
4	Optics*	Porro prism	5	
5	Optics	Spectacle lenses	4	
6	Optics*	Galilean telescope	4	
7	Optics	Spectacle prescription	4	Prescription
8	Investigations	LogMAR visual acuity	6	LogMAR acuity chart
9	Investigations	Tonometry	8	Applanation tonometer
10	Investigations	Hess chart	4	Hess chart
11	Investigations	Corneal topography	6	Topography image
12	Regulations	Human Tissue Act	6	

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

### Statistics

Mean score	57	47.5%
Median score	60	50%
Standard deviation	15.5	12.9%
Candidates	107	
Reliability: Cronbach alpha	0.94	
Standard error of measurement (SEM):	3	2.5%
Range of marks	14 - 89	12% - 74%
Pass mark derived from Standard Setting	65/120	54%
Pass mark – 1 SEM	62/120	52%
Pass rate	34/107	32%

### Distribution of scores (Table 9)

Range of marks	Distribution	Number
0-30	//// //	8
31-40	//// //	7
41-50	//// //// //// //// ////	24
51-60	//// //// //// //// //	17
61-70	//// //// //// //// // // // // // // //	31
71-80	//// //// //// //// //	16
81-90	////	4
91-100		0
101-120		0
Total		107

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	6.5	6.5	1.5	10	2.1	6.5
2	Pathology	6.8	7.5	1	10	2.1	6.5
3	Pathology	5.8	6.5	1	10	2.1	5.5
4	Optics*	3.1	3.0	0	8.5	2.5	5.25
5	Optics	3.4	3.0	0	8	1.9	4.5
6	Optics*	4.7	4.5	0	10	2.6	6
7	Optics	5.5	6.0	0	9.5	2.2	5.5
8	Investigations	2.4	2.0	0	6.5	1.4	5.5
9	Investigations	5.7	6.0	0.5	9.5	1.6	5.5
10	Investigations	4.0	4.0	0	8	2.1	5.5
11	Investigations	4.2	4.5	0	8	1.7	5.5
12	Regulations	4.7	5.0	0	9	2.0	5.5

Candidates performed badly in or were particularly ill prepared for questions 4 and 5 (optics), and 8 (investigations). Two candidates achieved particularly low marks (14, 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	36	27	44	6	20	25	62	5
2	Pathology	27	9	71	6	31	26	50	7
3	Pathology	35	17	55	5	34	18	55	6
4	Optics	61	26	20	4.5	74	15	18	6
5	Optics	77	9	21	5	56	34	17	4
6	Optics	64	16	27	6	60	18	29	6
7	Optics	31	29	47	5	30	41	36	6
8	Investigations	103	3	1	5	85	17	5	6
9	Investigations	30	32	45	6	30	40	37	5
10	Investigations	48	29	30	5	66	20	21	6
11	Investigations	65	38	4	6	63	20	24	5
12	Regulations	67	22	18	6	56	29	22	5
Total									

**Comparison to previous years (Table 12)**

	May 13	Oct 13	Jan 14	May 14	Oct 14	Jan 15	May 15	Oct 15	Jan 16
Mean score	57%	52%	47%	53%	50%	58%	51%	48%	48%
Median score	60%	54%	47%	55%	52%	62%	52%	50%	50%
Reliability	0.93	0.93	0.9	0.93	0.94	0.92	0.93	0.94	0.94
SEM	5	4.6	4.2	4.9	4.3	4.6	4.6	4.3	3
Pass mark	58%	60%	57%	56%	57%	61%	54%	59%	54%
Pass rate	54%	36%	25%	48%	38%	56%	49%	28%	32%
Correlation with MCQ	0.72	0.84	0.79	0.78	0.76	0.77	0.75	0.81	0.80

The correlation between the two parts of the examination is acceptable at 0.80



## 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 137/239 (57%). 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.

Only 36 candidates (34%) gained a total mark that met standard 1 above. Seven candidates achieved 137/239 or greater (137, 138, 139, 139, 142, 148, 149) but failed to achieve 62/120 in the CRQ paper (57, 61, 59, 59, 61, 60, 61)

**36/107 (34%) candidates passed the examination.**

### Distribution of scores (Table 13)

Range of marks	Distribution	Number
<60	//	2
61-70	///	3
71-80	///// /	6
81-90	//	2
91-100	////	4
101-110	///// /////	10
111-120	///// ///// /////	18
121-130	///// /////	10
131-140	///// ///// // // //	18
141-150	///// ///// // //	15
151-160	///// /////	9
161-170	///// //	7
171-180	//	2
181-190	/	1
191-200		0
Total		107

Mean 126/240 (53%)

Median 129/240 (54%)

Range 54 –185 (23%-77%)

**Comparison to previous years: (Table 14)**

Examination	Candidates	Passed examination	% Passed	MCQ pass mark %	CRQ pass mark %
<b>Oct 2006</b>	33	3	9	58	62
Jan 2007	24	4	16	60	43
May 2007	32	5	15	50	64
<b>Oct 2007</b>	56	13	23	51	59
Jan 2008	73	27	37	56	55
May 2008	66	16	24	57	48
<b>Oct 2008</b>	88	45	51	58	51
Jan 2009	79	37	47	61	57
July 2009	49	33	67	63	58
<b>Oct 2009</b>	101	56	56	62	56
Jan 2010	50	20	40	63	58
May 2010	79	31	39	60	57
<b>Oct 2010</b>	89	34	38	61	54
Jan 2011	62	23	37	59	58
May 2011	95	47	49	54	57
<b>Oct 2011</b>	122	63	52	56	56
Jan 2012	66	20	33	57	54
May 2012	104	53	51	56	58
<b>Oct 2012</b>	150	84	56	56	54
Jan 2013	91	47	52	57	53
May 2013	102	54	53	58	58
<b>Oct 2013</b>	151	65	43	58	60
Jan 2014	77	23	30	57	57
May 2014	119	55	46	58	56
<b>Oct 2014</b>	232	102	44	58	57
Jan 2015	89	50	56	58	61
May 2015	114	62	54	57	54
<b>Oct 2015</b>	188	57	30	59	59
Jan 2106	107	36	34	59	54

**Cumulative totals**

Sitting	Candidates	Number passed	Pass rate (%)
January	718	287	40
May	711	323	45
October	1177	536	46
All examinations	2606	1146	44

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

	<b>Failed</b>	<b>Passed</b>	<b>Total</b>
In OST	20	12 (38%)	32
Not in OST	49	24 (33%)	73
<b>Total</b>	<b>69</b>	<b>36</b>	<b>105</b>

2 unknown

These differences are statistically significant.

**Breakdown of results by deanery (Table 16)**

<b>Deanery</b>	<b>Failed</b>	<b>Passed</b>	<b>Total</b>
East Midlands	3	1	4
East of England	1	1	2
East of Scotland	0	0	0
KSS	1	0	1
London	3	0	3
Mersey	1	0	1
N Ireland	3	0	3
North of Scotland	2	0	2
North Western	1	0	1
Northern	2	0	2
Oxford	1	0	1
Peninsula	1	0	1
Severn	1	0	1
South East of Scotland	1	0	1
Wales	2	0	2
Wessex	1	0	1
West Midlands	3	0	3
West of Scotland	1	0	1
Yorkshire	0	0	0
<b>Total</b>	<b>28</b>	<b>2</b>	<b>30</b>

**Breakdown of results by stage of training (Table 17)**

<b>Stage</b>	<b>Failed</b>	<b>Passed</b>	<b>Total</b>
Foundation	7	4	11
ST1	11	8	19
ST2	7	4	11
ST3	2	0	2
ST4	0	0	0
ST5	0	0	0
<b>Total in OST</b>	<b>20</b>	<b>12</b>	<b>32</b>

**Breakdown of results by number of attempts (Table 18)**

Attempts	Failed	Passed	Total
1 (First)	34	20	54
2	23	11	34
3	8	3	11
4	4	2	6
5	1	0	1
6	0	0	0
7	1	0	1
Any resit	37	16	53
Total	71	36	107

## 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
Yorkshire	43	70
Severn	12	67
KSS	28	64
South East of Scotland	18	61
Oxford	15	60
North Western	26	58
East Midlands	33	54
London	100	54
Northern	26	54
West of Scotland	43	49
Wales	33	48
West Midlands	64	47
North of Scotland	11	46
East of England	37	45
Wessex	40	45
Mersey	38	40
Peninsula	22	40
N Ireland	22	36
<b>Total</b>	<b>618</b>	<b>54</b>