

Examination Report



The ROYAL COLLEGE of
OPHTHALMOLOGISTS

May 2017 Part 1 FRCOphth Examination

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Summary

The 33rd Part 1 FRCOphth examination took place on 08 May 2017. 136 candidates sat the examination, of whom 62 (46%) fulfilled the criteria required to pass the examination overall. The pass rate is higher than January 2017 (38%) and has returned to a more usual pass rate in recent sittings at around 50%.

The pass rate for candidates in OST is 52% compared to a 42% pass rate for non-trainees. Eight Foundation trainees sat the examination and two (25%) were successful. All the remaining candidates were either ST1 or ST2. The pass rates in ST1 were 55% and ST2 were 47%.

Both examinations were reliable (0.92) and were reasonably correlated (0.76).

One question was removed from the MCQ paper after marking because it was felt to be ambiguous. The pass rate for the MCQ paper was 33%, which is lower than that of May 2016 (58%).

In past sittings candidates have performed poorly on the Optics questions. This time showed the lowest scores for the lacrimal tumour (Pathology Q2) and electro-oculogram (Investigation Q8) questions. The pass rate for the CRQ was 67% which is a massive improvement on the last two exams and is actually one of the highest pass rates documented for this paper.

MCQ examination

Content (Table 1)

Topic	Oct 2014	Jan 2015	May 2015	Oct 2015	Jan 2016	May 2016	Oct 2016	Jan 2017	May 2017
Anatomy/embryology	24	24	24	24	24	24	24	24	24
Optics	24	24	24	24	23	24	24	24	24
Pathology	23	23	23	23	23	22	23	22	23
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	7
Total	120	120	120	120	119*	119*	120	119*	119*

MCQ paper statistics

Mean score	69	58%
Median score	69	58%
Standard deviation	11.88	9.99%
Candidates	136	
KR20: (measurement of reliability)	0.8	
Standard error of measurement (SEM):	5	4%
Range of marks	36 – 93	30% - 78%
Pass mark derived from Standard Setting	75/119	63%
Pass mark – 1 SEM	70/119	59%
Pass rate	45/136	33%

Distribution of results (Table 2)

Range of scores	Distribution	Number
1-30		0
31-40	///	3
41-50	//////	7
51-60	////// //	27
61-70	////// //	37
71-80	////// //	35
81-90	////// //	25
91-100	//	2
101-120		0
Total		136

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%	5	4	2	2	1	1	8	7
Moderate Facility 25- 75%	1	1	45	38	43	36	89	75
Easy Facility >75%	0	0	16	13	6	5	22	18
Total	6	5	63	53	50	42	119	100

Standard setting

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

(Table 4)

	Difficult	Moderate	Easy	Total
Essential	0	37	44	81
Important	1	18	12	31
Supplementary	1	3	3	7
Total	2	58	59	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	0	24.05	33	57.05
Important	0.45	9	6.6	16.05
Supplementary	0.25	0.75	0.75	1.75
TOTAL	0.7	33.8	40.35	74.85

The MCQ pass mark = 75/119 (63%)

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

	May 14	Oct 14	Jan 15	May 15	Oct 15	Jan 16	May 16	Oct 16	Jan 17	May 17
Candidates	119	232	89	114	188	107	123	194	101	136
Mean score	67	72	69	72	68	69	70	71	64	69
Reliability (KR 20)	0.9	0.9	0.86	0.89	0.85	0.9	0.9	0.88	0.8	0.8
SEM	4.8	4.8	4.9	4.7	4.9	4.9	4.9	4.8		4.8
Standard setting	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel	Ebel
Pass mark	69 (58%)	69 (58%)	69 (58%)	68 (57%)	71 (60%)	71 (59%)	71 (60%)	72 (60%)	71 (60%)	75 (63%)
33% discrimination										
Negative	4	5	9	3	3	3	6	5		6
Poor (0-0.249)	43	40	56	47	59	55	34	49		63
Good (>0.250)	72	75	55	70	58	62	79	66		50
Facility										
Difficult (<25%)	6	3	9	5	6	6	3	9		8
Moderate	82	94	91	90	90	91	90	88		89
Easy (>75%)	31	23	20	25	24	23	26	23		22
Questions	119	120	120	120	120	119	119	120		119
Pass number (rate)	54 (45%)	144 (62%)	53 (60%)	73 (64%)	79 (42%)	47 (44%)	71 (58%)	72 (37%)		45 (33%)

The CRQ paper

(Table 8)

Question	Subject	Topic	Sub-sections	Data provided
1	Anatomy	Bones of the orbit	4	CT Scan image of orbit
2	Pathology	Lacrimal tumour	6	Photograph of macroscopic biopsy specimen and histopathology slides
3	Pathology	Corneal pathogens	8	Low power image of corneal tissue as seen through a microscope
4	Optics*	Indirect Ophthalmoscope	4	None
5	Optics*	Prismatic effect of lenses	5	Picture of a Prism
6	Optics	Optical aberrations	6	3 ray diagram's
7	Optics*	Concave mirror	4	None
8	Investigations	Electro-oculogram	6	Graph showing amplitudes measured during an Electro-oculogram
9	Investigations	Thyroid eye disease	4	Thyroid Function test results are shown in a table
10	Investigations	Visual Fields	5	Humphrey 24-2 field
11	Investigations	Genetics	10	Family Tree diagrams and a chromosomal array
12	Statistics	Interpreting statistical results in scientific papers	5	AJO extract of an ophthalmology paper

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

Statistics

Mean score	68/120	57%
Median score	70/120	58%
Standard deviation	31.2	26%
Candidates	136	
Reliability: Cronbach alpha	0.92	
Standard error of measurement (SEM):	5	4.2%
Range of marks	19 - 94	16% - 78%
Pass mark derived from Standard Setting	64/120	53%
Pass mark – 1 SEM	59/120	49%
Pass rate	91/136	67%

Distribution of scores (Table 9)

Range of marks	Distribution	Number
0-30	//	2
31-40	//// /	6
41-50	//// // // //	15
51-60	//// // // //	15

61-70	////// // //// // // // // // // // // // // //	32
71-80	////// // // // // // // // // // // // // // // // //	35
81-90	////// // // // // // // // // // // // // //	24
91-100	////// //	7
101-117		0
Total		136

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	7.1	7	2	10	1.24	5
2	Pathology	3.9	4	0	9	1.75	5
3	Pathology	6.9	7	2	10	1.66	6
4	Optics*	4.8	4.5	0	10	2.52	5.5
5	Optics	5.5	5.5	0	10	2.47	5
6	Optics	6.8	7.5	0	10	2.47	5.75
7	Optics*	5.6	7	0	9	2.95	5.5
8	Investigations	3.6	3.5	0	8	2.39	5.5
9	Investigations	5.4	5.5	1.5	10	1.77	5
10	Investigations	6.3	6.5	0	10	2.01	6
11	Investigations	4.9	5	0.5	9	1.74	5
12	Statistics	6.7	7	0	10	2.41	5

Candidates performed badly in or were particularly ill prepared for question 8 (investigations) and question 2 (pathology)

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	4	9	123	5	4	10	122	5
2	Pathology	77	40	19	5	78	35	23	5
3	Pathology	19	30	87	6	25	16	95	6
4	Optics	54	44	38	6	78	19	39	5
5	Optics	41	45	50	5	44	36	56	5
6	Optics	18	37	81	5.5	23	26	87	6
7	Optics	40	22	74	5	35	22	79	6
8	Investigations	79	29	28	5	77	37	22	6
9	Investigations	33	62	41	5	32	53	51	5
10	Investigations	31	27	78	6	32	36	68	6
11	Investigations	53	40	43	5	54	41	41	5
12	Statistics	30	17	89	5	25	27	84	5
Total		479	402	751	63.5	507	358	767	65

Comparison to previous years (Table 12)

	Oct 14	Jan 15	May 15	Oct 15	Jan 16	May 16	Oct 16	Jan 17	May 17
Mean score	50%	58%	51%	48%	48%	51%	50%	49%	57%
Median score	52%	62%	52%	50%	50%	54%	50%	51%	58%
Reliability	0.94	0.92	0.93	0.94	0.94	0.94	0.93	0.92	0.92
SEM	4.3	4.6	4.6	4.3	3	4.5	4	4	5
Pass mark	57%	61%	54%	59%	54%	56%	59%	51%	53%
Pass rate	38%	56%	49%	28%	32%	41%	30%	50%	67%
Correlation with MCQ	0.76	0.77	0.75	0.81	0.80	0.85	0.83	?	0.76

The correlation between the two parts of the examination is acceptable at 0.76

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
Oct 2016	194	70	36	60	59
Jan 2017	101	38	38	60	51
May 2017	136	62	46	63	53

Cumulative totals

Sitting	Candidates	Number passed	Pass rate (%)
January	819	325	40
May	970	446	46
October	1371	606	44
All examinations	3160	1377	44

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

	Failed	Passed	Total
In OST	23	25 (52%)	48
Not in OST	51	37 (42%)	88
Total	74	62 (46%)	136

These differences are statistically significant. (0.08 Fishers exact test)

Breakdown of results by deanery (Table 16)

Deanery	Failed	Passed	Total
East Midlands	2	1	3
East of England	1	2	3
East of Scotland	0	1	1
KSS	1	2	3
London	2	7	9
Mersey	1	0	1
N Ireland	2	2	4
North of Scotland	0	0	0
North Western	1	1	2
Northern	2	1	3
Oxford	0	2	2
Peninsula	1	0	1
Severn	0	1	1
South East of Scotland	1	0	1
Wales	1	1	2
Wessex	0	1	1
West Midlands	2	0	2
West of Scotland	2	2	4
Yorkshire	4	1	5
Total	23	25	48

Breakdown of results by stage of training (Table 17)

Stage	Failed	Passed	Total
Foundation	6	2 (25%)	8
ST1	14	17 (55%)	31
ST2	9	8 (47%)	17
ST3	0	0	0
ST4	0	0	0
Total in training	29	27 (48%)	56

Breakdown of results by number of attempts (Table 18)

Attempts	Failed	Passed	Total
1 (First)	40	33	73
2	13	21	34
3	14	3	17
4	4	2	6
5	2	3	5
>5 (7)	1	0	1
Any resit	34	29	63
Total	74	62	136

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 passed	Total candidates	Pass rate %
East of Scotland	9	9	100
Severn	14	21	67
Yorkshire	47	72	65
Oxford	18	28	64
North Western	31	50	62
KSS	33	54	61
South East of Scotland	20	34	59
London	117	210	56
East Midlands	36	68	53
West of Scotland	51	98	52
Northern	29	56	52
East of England	43	91	47
West Midlands	67	143	47
Wessex	44	96	46
North of Scotland	16	35	46
Wales	37	84	44
Peninsula	25	60	42
Mersey	41	99	41
N Ireland	27	72	38
Total	705	1380	51