

# The Royal College of Ophthalmologists

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FROM THE EXAMINATIONS DEPARTMENT



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## Public Report on the Part 2 FRCOphth Written Examination September 2011

### Contents:

Contents:

#### MCQ paper

Content	page 3
Statistics	page 3
Distribution of scores	page 4
Standard setting	page 5
Comparison to previous papers	page 5

#### EMQ paper

Content	page 6
Statistics	page 6
Distribution of scores	page 7
Standard setting	page 7
Comparison to previous papers	page 8

Overall results page 9

Breakdown of results page 11

Comparison to previous Part 2 written examinations page 12

## **Public report on the Part 2 FRCOphth examination**

The written papers of the seventh sitting of the Part 2 FRCOphth examination were held in London on Monday 5 September 2011.

### ***The candidates***

77 candidates presented themselves for the examination.

### ***The written papers***

The written papers consisted of a 2-hour, 90 question single best answer from 4 MCQ paper and a 45 stem, 90-question EMQ paper lasting 3 hours. Candidates must pass the written papers to be allowed to sit the clinical part of the examination. To pass, candidates must gain a total score from both papers that equals or exceeds the combined marks from the Ebel standard setting process. They must also gain at least the pass mark minus 1 SEM in each paper.

As part of the quality management of the College's assessment process, the written papers are reviewed by the Senior Examiner after marking, but before the results are known. One question was withdrawn from the MCQ paper after this review.

The Part 2 FRCOphth Examination Sub-Committee reviewed all of the questions with negative 33% item discrimination and low facility.

## The MCQ paper.

**Table 1 Content (Blueprint)**

		Sept 2010	Feb 2011	Sept 2011
Basic science	Anatomy & embryology	2	4	3
	Microbiology	3	3	3
	Optics	7	2	2
	Genetics	1	2	6
	Pathology	6	5	5
	Physiology	3	0	2
	Clinical ophthalmology	Cataract*	2	3
Neurology & pupils		5	4	5
Glaucoma		3	3	1
Strabismus		3	3	2
Paediatrics		2	2	5
Vitreo-retinal		2	4	1
Medical retina & uveitis		5	4	3
Oculoplastics and orbit		2	3	3
Cornea & external eye		4	4	4
Oncology		1	2	3
Management & therapeutics		9	8	6
Investigations	13	17	18	
Miscellaneous	Statistics and research	8	7	7
	Medicolegal	2	1	1
	Health economics	1	1	1
	Ethics	1	2	1
	General medicine	1	1	1
	Guidelines	3	4	4
<b>Total</b>		<b>89</b>	<b>89</b>	<b>89</b>

\* One cataract question was removed from the Sept 2011 paper

### MCQ paper statistics:

Mean score:	58/89
Median score:	57/89
Standard deviation:	6.7
Candidates:	77
KR20: (measurement of reliability)	0.7
Standard error of measurement (SEM):	3.8
Range of marks:	40-73
Pass mark derived from Standard Setting:	52
Pass mark – 1 SEM	48
Pass rate:	62/77

**Table 2**                      **Distribution of marks:**

<i>Score</i>	<i>Distribution</i>	<i>Total</i>
36-40	/	1
41-45		0
46-50	//// //	13
51-55	//// //	14
56-60	//// //	20
61-65	//// //	19
66-70	//// //	7
71-75	///	3
<i>Total</i>		<i>77</i>

**Analysis of questions**

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

**Table 3**

	Difficult (<26 correct)	Moderate (25-74) Correct)	Easy (>75 correct)	Total
Negative discrimination	1	2	1	4
Poor discrimination (0-0.19)	3	19	32	54
Good discrimination (0.2-0.5)	2	22	7	31
Excellent discrimination (>0.5)	0	0	0	0
Total	6	43	40	89

## Standard setting for MCQ paper (Ebel method)

**Table 4: Classification of the questions:**

	Difficult	Moderate	Easy	
Essential	0	11	23	34
Important	1	17	17	35
Supplementary	4	9	7	20
Total	5	37	47	89

**Table 5: Percentage correct by borderline candidates**

	Difficult	Moderate	Easy
Essential	0.6	0.7	0.8
Important	0.5	0.55	0.6
Supplementary	0.25	0.3	0.3

**Table 6: Weighted score**

	<i>Difficult</i>	<i>Moderate</i>	<i>Easy</i>	
<i>Essential</i>	0	7.7	18.4	26.10
<i>Important</i>	0.5	9.35	10.2	20.05
<i>Supplementary</i>	1	2.7	2.1	6.10
<i>Total</i>	1.5	19.75	30.7	51.95

### **MCQ pass mark: 52/89**

One question was removed from the paper after marking

## Comparison of pass marks and pass rates for last 5 MCQ papers

**Table 7**

	Feb 2009	Sept 2009	Feb 2010	Sept 2010	Feb 2011	Sept 2011
Candidates	15	16	21	26	46	77
Mean score	63%	60%	61%	63%	65%	65%
Reliability (KR 20)	0.8	0.8	0.8	0.8	0.7	0.7
SEM	4.1	4.0	3.9	3.9	4.0	3.8
Standard setting						
Pass mark	64%	64%	66%	65%	65%	58%
Modified pass mark	60%	60%	61%	NA	NA	NA
33% discrimination						
Negative	8	12	8	12	15	4
Poor	23	31	26	35	37	54
Good	46	31	42	35	34	31
Excellent	13	16	14	8	3	0
Facility						
Difficult (<25%)	10	13	14	6	5	6
Moderate	38	42	43	46	51	43
Easy (>75%)	42	35	33	38	33	40
Pass rate	60%	50%	52%	50%	54%	81%

## The EMQ paper

Content (Blueprint)

The subjects that were assessed in the EMQ paper are summarised below:

**Table 8**

		Sept 2010	Feb 2011	Sept 2011
Clinical ophthalmology	Uveitis	2	6	2
	Paediatrics	4	4	4
	Vitreoretinal	2	6	6
	Medical retina	8	8	4
	Strabismus	4	4	4
	Oculoplastics and orbit	4	4	4
	Cornea/external eye*	6	7	8
	Trauma	2	4	4
	Cataract/lens	4	4	2
	Glaucoma	4	4	4
Neurology and medicine	Neurology	12	10	12
	Medicine	4	2	2
Basic sciences	Pathology/genetics	6	4	6
	Optics/refraction	2	2	2
	Anatomy/physiology	2	0	0
Pharmacology and therapeutics	Pharmacology	12	11	14
Investigations		12	4	8
Miscellany	Research & statistics	0	4	4
Total		90	88	90

### EMQ paper statistics:

Mean score:	53/90
Median score:	52/90
Standard deviation:	7.2
Candidates:	77
KR20: (measurement of reliability)	0.7
Standard error of measurement (SEM):	3.9
Range of marks:	35-68
Pass mark derived from Standard Setting:	53/90
Pass mark – 1 SEM	49/90
Pass rate:	38/77 (49%)

**Distribution of marks:**

**Table 9**

Score	Distribution	Number
31-35	/	1
36-40	///	3
41-45	//// //	7
46-50	//// //// ////	15
51-55	//// //// // / //// ////	25
56-60	//// //// ////	14
61-65	//// //	8
66-70	///	4
71-75		0
		77

**Analysis of questions**

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

**Table 10**

	Difficult (<26 correct)	Moderate (25-74) Correct)	Easy (>75 correct)	Total
Negative discrimination	0	5	1	6
Poor discrimination (0-0.19)	11	19	23	53
Good discrimination (0.2-0.5)				
Excellent discrimination (>0.5)	1	23	7	31
Total	12	47	31	90

**Standard setting for EMQ paper (Ebel method)**

**Table 11: Classification of the questions:**

	Difficult	Moderate	Easy	
Essential	3	13	22	38
Important	8	16	12	36
Supplementary	5	4	7	16
Total	16	33	41	90

**Table 12: Percentage correct by borderline candidates**

	Difficult	Moderate	Easy
Essential	0.6	0.7	0.8
Important	0.5	0.55	0.6
Supplementary	0.25	0.3	0.3

**Table 13: Weighted score**

	<i>Difficult</i>	<i>Moderate</i>	<i>Easy</i>	
<i>Essential</i>	1.8	9.1	17.6	28.5
<i>Important</i>	4	8.8	7.2	20
<i>Supplementary</i>	1.25	1.2	2.1	4.55
<i>Total</i>	7.05	19.1	26.9	53.05

**EMQ pass mark: 53/90**

**Comparison of pass marks and pass rates for last 5 EMQ papers**

**Table 14**

	Feb 2009	Sept 2009	Feb 2010	Sept 2010	Feb 2011	Sept 2011
Candidates	15	16	21	26	46	77
Mean score	52%	61%	59%	64%	61%	59%
Reliability (KR 20)	0.9	0.8	0.9	0.8	0.7	0.7
SEM	4.0	3.9	4.0	3.9	3.9	3.9
Standard setting						
Pass mark	63%	67%	66%	64%	65%	59%
Modified pass mark	54%	62%	61%	NA*	NA	NA
33% discrimination						
Negative	4	8	6	7	9	6
Poor	15	27	34	35	32	53
Good	49	35	32	41	43	31
Excellent	22	20	18	7	4	0
Facility						
Difficult (<25%)	22	19	10	7	10	12
Moderate	42	43	49	45	47	47
Easy (>75%)	28	28	31	38	31	31
Pass rate	47%	31%	48%	54%	43%	49%



## Overall results from the written papers

To pass the Part 2 FRCOphth written 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 105/179. The minimum mark required in each paper (to meet standard 2 above) was 48 in the MCQ paper and 49 in the EMQ paper.

55 candidates gained a total mark that met standard 1 above. Three candidates failed to achieve standard 2 in the EMQ paper and hence failed the written part of the examination overall.

**52 candidates (68%) passed the written examination and were invited to sit the oral examination.**

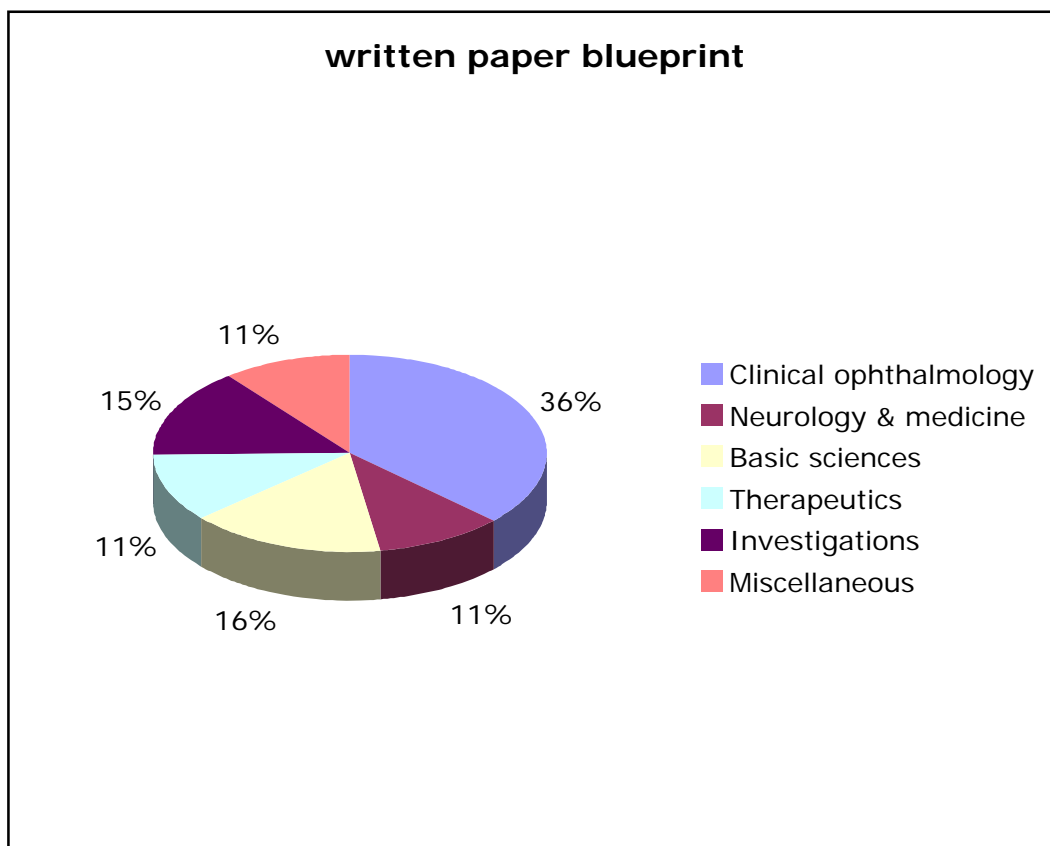
**Table 15 Distribution of marks:**

	Distribution	Mark
61-70		0
71-80	/	1
81-90	///	3
91-100	//// //	10
101-110	//// // // // // // //	27
111-120	//// // // // // // //	20
121-130	//// // //	13
131-140	///	3
141-150		0
Total		77

**Correlation between MCQ and EMQ papers = 0.58**

**Table 16 Combined blueprint from both papers**

		Feb 2011	Sept 2011
Theme	Topic		
Clinical ophthalmology	Retina and uveitis	18	9
	Paediatrics and strabismus	13	15
	Vitreoretinal	10	7
	Oculoplastics and orbit	7	7
	Cornea/external eye	11	12
	Trauma	4	4
	Cataract/lens	7	4
	Glaucoma	7	5
	Oncology	2	3
	Neurology & medicine	Neurology	14
Medicine		3	2
Basic sciences	Pathology/genetics	14	20
	Optics/refraction	4	4
	Anatomy/physiology	4	5
Therapeutics	Therapeutics	19	20
Investigations	Ophthalmic & Neuro-imaging	21	26
Miscellaneous	Statistics, research, epidemiology	11	11
	Economics, ethics, law, guides	8	8
<b>Total</b>		<b>177</b>	<b>179</b>



## Breakdown of Written Results

**Table 17 Breakdown of written results by training**

	Failed	Passed	Total
In OST	16	40	56
Not in OST	9	12	21
Total	25	52	77

These differences are not statistically significant ( $p= 0.36$  Chi square test)

**Table 18 Breakdown of written results by stage of training**

	Failed	Passed	Total
ST3	0	0	0
ST4	2	0	2
ST5	3	8	11
ST6	5	22	27
ST7	5	15	20
Unknown	1	5	6
	16	50	66

**Table 19 Breakdown of results by deanery**

	Failed	Passed	Total
East Midlands (North)	0	4	4
East Midlands (South)	0	1	1
East of England	1	0	1
London	1	14	15
Mersey	0	1	1
N Scotland	0	1	1
North Western	4	1	5
Oxford	0	1	1
South Yorks & South Humber	1	2	3
SE Scotland	0	1	1
Severn	1	2	3
Wales	0	3	3
Wessex	1	1	2
West Midlands	6	5	11
Yorkshire	1	3	4
	16	40	56

**Table 20 Breakdown of written results by gender**

	Failed	Passed	Total
Female	6	12	18
Male	19	40	59
Total	25	52	77

These differences are not statistically significant ( $p=0.92$  Chi square test)

**Table 21 Breakdown of written results by country of qualification**

	Failed	Passed	Total
UK	11	33	44
Outside UK (Inc Republic of Ireland)	14	19	33
<b>Total</b>	<b>25</b>	<b>52</b>	<b>77</b>

These differences are not statistically significant ( $p=0.11$  Chi square test)

**Table 22 Breakdown of written results by stated ethnicity**

	Failed	Passed	Total
Asian	15	21	36
Chinese	0	7	7
Mixed/Other	4	3	7
White British	2	13	15
White other	3	7	10
Unknown	1	1	2
<b>Total</b>	<b>25</b>	<b>52</b>	<b>77</b>

**Table 23 Breakdown of written results by first language**

	Failed	Passed	Total
English	17	42	59
Other	8	10	18
<b>Total</b>	<b>25</b>	<b>52</b>	<b>77</b>

These differences are not statistically significant ( $p=0.21$  Chi square test)

### Comparison with the written papers from previous examinations

**Table 24**

Examination	Pass mark	Pass rate
September 2008	63%	86%
February 2009	59%	53%
September 2009	61%	38%
February 2010	65%	48%
September 2010	65%	58%
February 2011	65%	46%
September 2011	59%	68%

### Comments

The pass mark for the written papers is lower than the previous 4 examinations. Whilst this is part due to variations in the classification of the questions the main reason is a change in the minimally competent candidate standard used to identify the pass mark. The impact was greatest in the MCQ paper, where the pass rate was 81% compared to an average of 52%. Candidate performance has remained stable with a mean score of around 60% in both papers. Consequently many more candidates have been allowed to sit the oral part of the examination.

The reliability of the written papers remains disappointingly below 0.8.

The quality of the questions remains stable with a similar range of discriminatory questions.

It is of some concern that only 75% of candidates who are in ST7 passed the written papers.

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