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PSYCHOMETRIC
SOLUTIONS
GROUP

Examination Report

Refraction Certificate Examination

Birmingham - December 2025

Kiran Sanghara, Sian Williams & Lucy Foard

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1 Introduction

A total of 114 candidates sat the Refraction Certificate exam in Birmingham, held between the 8th to 11th December 2025. The examination consists of 10 objective structured clinical examination (OSCE) stations, covering a range of skills required to assess visual acuity, refractive error, and the prescription of spectacles.

1.1 Examination blueprint

The Refraction Certificate (RCert) is designed to assess the following learning outcomes from the Royal College of Ophthalmologists curriculum for ophthalmic specialist training (OST):

CA2 Assess vision

PM14 To use spectacle lenses and prisms when indicated

PS2 Perform a refractive assessment and provide an optical prescription

C1 Establish a good rapport with patients and relatives

C11 Keep clinical records

BCS6 Optics and Medical physics

1.2 Examination structure

The examination consists of 10 OSCE stations. Each station contributes 15 marks to the overall total. The stations used for the examination were:

- SR1 - SR4: Simulated retinoscopy
- NR1 - NR2: Non-cycloplegic retinoscopy
- SC: Subjective refraction: Cylinder
- LN: Lens neutralisation
- SS: Subjective refraction: Sphere
- BB: Binocular balancing / Further refinement

2 Summary

The Hofstee method of standard setting was used to generate the pass mark for this examination, with a final rounded pass mark of 106/150 (70.7%) being applied. On average, candidates scored highest in the Simulated retinoscopy 1 and Simulated retinoscopy 3 stations. On average, candidates scored lowest in the Subjective refraction: Cylinder and Binocular balancing / Further refinement stations. The overall exam pass rate was 77.2%, with 88/114 of the candidates being successful.

The reliability of the exam was $\alpha=0.712$, with all ten stations contributing positively. All ten station scores correlated well with overall total exam scores. The Lens neutralisation (LN) and the Subjective refraction: Sphere (SS) stations showed the strongest discriminative power.

3 Standard setting

The pass mark for the Refraction Certificate exam is generated using the Hofstee method.

3.1 Hofstee method

After the examination, examiners were asked to review the parameters for the standard setting based upon their judgment of the difficulty of the stations. The following values were used to set the pass mark:

- The maximum credible pass mark for the examination = 75%
- The minimum credible pass mark for the examination = 60%
- The maximum credible pass rate for the examination = 100%
- The minimum credible pass rate for the examination = 0%

The cumulative fail rate as a function of the pass mark and the co-ordinates derived from the four values above were plotted on a graph. The point where a line joining the two coordinates intersects the cumulative function curve is used to identify the pass mark. This pass mark is rounded down to the nearest achievable mark.

4 Results

Table 1: Results summary

Statistic	Value	Percentage
Number of candidates	114	
Maximum possible mark	150	
Mean candidate mark	112.5	75.0%
Median candidate mark	116.0	77.3%
Standard deviation	19.02	12.7%
Highest candidate mark	142	94.7%
Lowest candidate mark	50	33.3%
Reliability	0.712	
Standard error of measurement	10.21	6.8%
Hofstee pass mark (final, rounded)	106 / 150	70.7%
Pass rate	88 / 114	77.2%

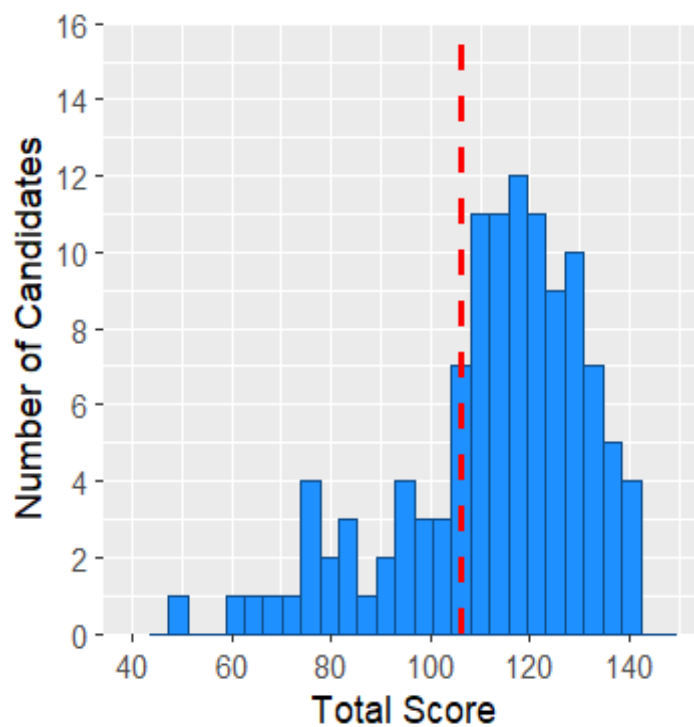


Figure 1: Distribution of marks

Figure 1 shows the distribution of total marks across the whole cohort. The dotted red vertical line denotes the point on the score distribution where the pass mark lies.

Table 2: Station summary

Station	Category	Mean	Median	Standard deviation	Minimum	Maximum
1	SR1	12.6	14.0	3.37	2	15
2	SR2	11.3	13.0	4.02	0	15
3	SR3	12.4	14.0	3.36	3	15
4	SR4	11.7	14.0	4.30	0	15
5	NR1	11.4	13.0	3.66	1	15
6	NR2	10.8	12.0	4.05	0	15
7	SC	10.0	10.5	3.25	1	15
8	LN	11.6	13.0	3.84	0	15
9	SS	10.9	12.0	2.70	3	15
10	BB	9.8	10.5	3.40	1	15

The stations with the highest mean scores are highlighted in green (SR1 and SR3). The stations highlighted in red have the lowest mean scores (BB followed by SC). The SR4 station saw the greatest variation in candidate performance, and the SS station saw the least variation in candidate performance.

The relative weights for each skill in refraction (based upon the number of stations) are shown in Table 3.

Table 3: Weights for each skill

Clinical Skill	Number of stations	Contribution to total marks	Median mark
Retinoscopy	6	60%	13.0
Subjective	3	30%	11.0
Other	1	10%	13.0

Table 4: Correlation between stations

	SR1	SR2	SR3	SR4	NR1	NR2	SC	LN	SS
SR2	0.32								
SR3	0.25	0.20							
SR4	0.22	0.21	0.29						
NR1	0.18	0.14	0.06	0.17					
NR2	0.27	0.24	0.15	0.14	0.57				
SC	0.01	0.10	0.26	0.12	0.05	0.04			
LN	0.08	0.30	0.21	0.20	0.19	0.10	0.42		
SS	0.14	0.19	0.11	0.23	0.13	0.12	0.29	0.36	
BB	0.13	0.21	0.18	0.28	0.09	0.09	0.27	0.27	0.45

Within Table 4, cells are highlighted green if the correlation is ≥ 0.50 and orange if the correlation is between 0 and 0.20 (inclusive). Negative correlations are highlighted in light red.

The median correlation between all stations was 0.19. There were no instances of a negative correlation between stations, 25/45 instances of a weak correlation (orange), and 1/45 instance of a strong relationship between stations (green). The strongest *positive* correlation was seen between the NR1 and NR2 stations.

Table 5: Correlation between each station score and total score

Station	SR1	SR2	SR3	SR4	NR1	NR2	SC	LN	SS	BB
Correlation with total score	0.34	0.40	0.36	0.38	0.34	0.36	0.31	0.43	0.42	0.39

Table 5 shows the corrected station-total correlations. This is the correlation between the station score and the overall total score without the score of that specific station included. All of the ten correlations were positive and all ten were also of an acceptable strength (correlation ≥ 0.20). Data suggests that the Lens neutralisation (LN) and the Subjective refraction: Sphere (SS) stations had the strongest relationship with total scores and were therefore the most discriminating.

5 Breakdown of results

Table 6: Breakdown of results by attempt

Demographics	Passed	Total	Pass rate
Attempt			
1	61	79	77.2%
2	23	30	76.7%
3	4	5	80.0%

6 Comparison to previous examinations

Table 7: Comparison to previous years' exams

Date	Centre	Number of Candidates	Pass mark	Pass rate	Pass rate in OST	% of candidates in OST	Reliability (alpha)	SEM (rounded)
Dec-25	Birmingham	114	71%	77.2%	92.3%	46%	0.71	10 (7%)
Nov-25	Cairo	34	69%	67.6%	100%	9%	0.70	10 (7%)
Oct - 25	Rawalpindi	47	69%	68.1%	54.5%	23%	0.83	9 (6%)
Oct - 25	New Delhi	21	65%	42.9%	50%	10%	0.60	11 (8%)
June - 25	Malaysia	28	70%	71%	75%	14%	0.83	9 (6%)
May -25	Birmingham	152	70%	75%	89%	50%	0.78	10 (7%)
Apr -25	Crete	6	65%	33%	n/a	n/a	-	-
Feb-25	Dubai	16	65%	44%	n/a	0%	0.85	10 (7%)
Jan-25	Mumbai	13	64%	46%	n/a	n/a	0.22	11 (8%)
Jan-25	Singapore	16	68%	63%	78%	56%	0.53	10 (7%)
Dec -24	Birmingham	95	70%	78%	100%	2%	0.65	10 (7%)
Nov-24	Cairo	30	69%	73%	n/a	n/a	0.48	10 (7%)
Sept-24	Malaysia	22	69%	68%	n/a	n/a	0.65	11 (7%)
May-24	Birmingham	100	69%	67%	n/a	n/a	0.76	11 (7%)
Feb-24	Rawalpindi	18	71%	72%	n/a	n/a	0.67	10 (7%)
Feb-24	Chennai	21	67%	52%	n/a	n/a	0.72	12 (8%)
Jan-24	Singapore	14	72%	93%	n/a	n/a	0.40	7 (5%)
Dec-23	Birmingham	75	71%	79%	n/a	n/a	0.70	10 (7%)
Nov-23	Cairo	10	69%	80%	n/a	n/a	0.81	9 (6%)
Sept-23	Birmingham	58	67%	55%	n/a	n/a	0.66	11 (8%)
June-23	Kuching	44	69%	75%	n/a	n/a	0.41	11 (7%)
May-23	Birmingham	75	70%	71%	n/a	n/a	0.79	10 (7%)
Jan-23	Singapore	22	71%	82%	100%	5%	0.54	9 (6%)
Dec-22	London	63	69%	62%	86%	22%	0.73	11 (7%)
Jul-22	Glasgow	109	72%	81%	n/a	n/a	0.85	9 (6%)
May-22	Birmingham	83	72%	80%	94%	20%	0.77	9 (6%)
May-22	Delhi	33	66%	39%	n/a	n/a	0.81	11 (7%)
Apr-22	Cairo	36	73%	86%	n/a	n/a	0.76	8 (5%)
Dec-21	Singapore	131	72%	79%	80%	31%	0.78	10 (6%)
May-21		171	71%	57%	58%	42%	0.83	10 (7%)
Jan-21		39	74%	92%	n/a	n/a	0.51	9 (6%)
Dec-20		141	70%	57%	72%	56%	0.81	11 (8%)
Jun-19		40	70%	57%	n/a	n/a	0.73	11 (7%)
Jun-19		52	74%	67%	n/a^	n/a	0.76	9 (6%)
Apr-19		87	72%	59%	68%	51%	0.54	12 (6%)
Dec-18		68	72%	54%	70%	63%	0.7	11 (6%)
Jul-18		64	75%	67%	77%	55%	0.74	11 (6%)
Jun-18		39	75%	74%	n/a	n/a	0.69	10 (5%)
Apr-18		60	75%	68%	73%	75%	0.55	10 (6%)
Dec-17		63	71%	56%	59%	65%	0.72	11 (6%)
Jul-17		62	72%	61%	68%	60%	0.7	12 (6%)
Apr-17		63	73%	67%	69%	62%	0.7	11 (6%)
Jan-17		62	72%	63%	64%	90%	0.6	10 (6%)
Jul-16		64	70%	64%	67%	67%	0.6	12 (7%)
Jun-16		23	70%	57%	n/a	n/a	0.7	11 (6%)

Performance of candidate by deanery for all examinations to date, where deanery is known

Deanery	Pass	Total	Pass rate (%)
London	273	357	76.5
East Midlands	62	84	73.8
East of England	73	99	73.7
East of Scotland	23	29	79.3
Kent, Surrey, and Sussex	69	88	78.4
Mersey	58	75	77.3
North of Scotland	20	25	80.0
Northwest	29	40	72.5
Northwestern	41	50	82.0
Northern	53	72	73.6
Northern Ireland	22	32	68.8
Oxford	38	48	79.2
Peninsula (Southwest)	36	71	50.7
Severn	31	45	68.9
Southeast of Scotland	28	32	87.5
South Yorks & Humber	10	14	71.4
Wales	56	91	61.5
Wessex	44	66	66.7
West Midlands	103	143	72.0
West of Scotland	46	62	74.2
Yorkshire	87	125	69.6
Eire	10	19	52.6
Europe and overseas	49	82	59.8
Unknown; N/A	231	375	61.6
Total	1492	2124	70.2