

# Examination Report

Refraction Certificate Examination

Crete – April 2025

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# 1 Introduction

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6 candidates sat the Refraction Certificate exam in Crete, held on the 28<sup>th</sup> of April 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

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The Hofstee method of standard setting was used to generate the pass mark for this examination, with a final rounded pass mark of 97/150 (64.7%) being applied.

The overall exam pass rate was 33.3%, with 2 of the 6 candidates successful.

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## 3 Standard setting

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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 to the nearest achievable mark.

## 4 Results

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*Table 1: Results summary*

Statistic	Value	Percentage
Number of candidates	6	
Maximum possible mark	150	
Mean candidate mark	68.7	45.8%
Median candidate mark	69.5	46.3%
Standard deviation	29.9	19.9%
Highest candidate mark	102	68.0%
Lowest candidate mark	24	16.0%
Hofstee pass mark (final; rounded)	97 / 150	64.7%
Pass rate	2 / 6	33.3%

**Table 2: Station summary**

Station	Category	Mean	Median	Standard deviation	Minimum	Maximum
1	SR1	9.17	9.0	4.54	3	14
2	SR2	8.33	8.0	4.46	2	15
3	SR3	10.33	11.0	4.03	4	14
4	SR4	7.33	7.5	6.12	0	14
5	NR1	5.17	5.5	3.31	0	9
6	NR2	5.00	4.5	5.29	0	14
7	SC	5.83	5.0	5.08	0	14
8	LN	4.67	2.0	5.89	0	12
9	SS	7.83	8.0	3.92	3	12
10	BB	5.00	4.5	3.58	1	10

The stations with the highest mean scores are highlighted in green (SR3 followed by SR1). The stations highlighted in red have the lowest mean scores (LN followed by NR2 and BB). The SR4 station saw the greatest variation in candidate performance, and the NR1 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%	7.0
Subjective	3	30%	5.5
Other	1	10%	2.0

**Table 4: Correlation between stations**

	SR1	SR2	SR3	SR4	NR1	NR2	SC	LN	SS
SR2	0.30								
SR3	0.77	-0.26							
SR4	0.87	0.20	0.82						
NR1	0.86	0.48	0.59	0.72					
NR2	0.68	-0.17	0.67	0.51	0.72				
SC	0.37	-0.19	0.59	0.67	0.43	0.54			
LN	0.08	0.42	-0.35	-0.34	0.36	0.33	-0.37		
SS	0.40	-0.35	0.59	0.51	0.46	0.81	0.89	-0.06	
BB	0.12	-0.29	0.36	0.35	0.32	0.58	0.91	-0.11	0.93

Please note the small cohort sizes when interpreting these statistics

**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	0.79	0.04	0.64	0.71	0.89	0.81	0.61	-0.03	0.71	0.52

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. Nine out of the ten correlations were positive.

## 5 Comparison to previous examinations

Table 6: 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)
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%)
Mar-16		57	77%	81%	83%	70%	0.9	7.7 (4%)
Jan-16		70	70%	60%	60%	81%	0.8	10 (6%)
Jul-15		31	66%	58%	55%	65%	0.65	9.4 (5%)
Jun-15		33	69%	58%	n/a	n/a	0.73	10 (6%)
Apr-15		57	77%	65%	73%	65%	0.4	11 (7%)
Dec-14		63	71%	68%	77%	68%	0.6	12 (7%)
Jul-14		34	74%	62%	55%	65%	0.4	11 (6%)

**Table 7: Performance of candidate by deanery for all examinations to date, where deanery is known**

Deanery	Pass	Total	Pass rate (%)
London	241	320	75.3
East Midlands	55	74	74.3
East of England	67	93	72.0
East of Scotland	16	22	72.7
Kent, Surrey, and Sussex	57	74	77.0
Mersey	55	71	77.5
North of Scotland	18	23	78.3
Northwest	28	38	73.7
Northwestern	29	37	78.4
Northern	48	64	75.0
Northern Ireland	20	30	66.7
Oxford	33	41	80.5
Peninsula (Southwest)	34	68	50.0
Severn	29	43	67.4
Southeast of Scotland	26	30	86.7
South Yorks & Humber	3	6	50.0
Wales	43	75	57.3
Wessex	40	60	66.7
West Midlands	92	130	70.8
West of Scotland	42	58	72.4
Yorkshire	81	118	68.6
Eire	3	9	33.3
Europe and overseas	38	65	58.5
Unknown; N/A	108	179	60.3
<b>Total</b>	1206	1728	69.8