Level 6 Certificate in Contact Lens Practice



Unit 2 – Visual Optics

Principal Examine J Underwood MSc SMC(Tech) FEAOC	BSc (Hons)) FBDO (H	ons) CL (H	Hons) SLD			nter 2023 n: 2 hours
Candidate Numl	per:	Dat	e:			Seating	g Location:
Answer four que	stions only	•					
Please tick belov	v the num	bers of th	ne questi	ons atter	npted:		
1 🗌	2	3		4		5 [
Number of Supplementary Sheets used (if any), including graph paper.							
For office use on	ly						
Question number	, 1	2	3	4	5	То	tal
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Borderline (57%-62%)	I result and confirm that the marks have been checked in terms I I I						
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Examiner's Signature				Modera Signatu			

This booklet is the property of the ABDO and **must not be removed** by the candidate from the examination room.

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Question 1

a)	A soft toric contact lens is ordered empirically as R: +6.25DS/-2.25DC x 160. When the lens returns from the laboratory and is inserted into the eye it is seen to stabilize in a position 15° nasally (anti-clockwise).	
	State the axis of this stabilized lens in the eye.	(10 marks)
b)	Due to an error in ordering the vision through the lens is extremely poor. A look back at the record card shows a spectacle refraction of +6.25DS/-2.25DC x 60 worn at a vertex distance of 15mm.	
	Find , by calculation or construction methods, the over-refraction that will be needed if the trial frame sits at 12mm.	
	Express your answer in positive sphere-cyl form.	(90 marks)
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	Find , by calculation or construction methods, the over-refraction that will be needed if the trial frame sits at 12mm.	
	Express your answer in positive sphere-cyl form.	(90 marks)

Unit 2 – Visual Optics Winter 2023

Ques	stion 2		
a)		igmatism and discuss its causes with rigid and soft lenses.	(25 marks)
	A patient trials a sp parameters:	oherical RGP contact lens with the following	
	BOZR	8.15mm	
	BVP	-4.25DS	
	Centre thickness	0.13mm	
	Refractive index	1.48	
	7.75mm along 90 d	ratometry readings of 8.20mm along 180/ and a spectacle refraction for distance vision C x 180, worn at a vertex distance of 15mm.	
	■ Calculate:		
b)	The front surface ro	adius of the contact lens.	(15 marks)
c)	_	natism, if the lens shows a central clearance	
	of 0.10mm and the	e refractive index of the tears is 1.336.	(60 marks)
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 b) Perive, with the aid of a diagram, the keratometer formula for determining the value of r. c) Discuss the purpose and types of doubling. d) Explain why a refractive index of 1.3375 is generally used for the calibration of the dioptric scale. e) Find the corneal radius in mm, if the distance between the mires and their corneal image is 14cm, the mires are set 20cm apart and the power of the doubling prism is 4Δ. a) Describe the optics of the keratometer. 	(20 marks)
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Too shoota inclode 4 statements of fact.	(20 marks)
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c)	Discuss the purpose and types of doubling.	(25 marks)

d)	Explain why a refractive index of 1.3375 is generally used for the calibration of the dioptric scale.	(10 marks)
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Que	stion 4	
a)	Define the terms spectacle magnification and relative spectacle magnification and explain when each of these values would be used.	(20 marks)
b)	A patient has the following prescription for distance vision, each lens being assumed thin:	
	R: +5.25DS VA 6/6	
	L: +1.50DS VA 6/6	
	Vertex distance 12mm	
	Compare the difference in retinal image size for each eye by completing the following table and assuming the constants of the standard reduced eye.	(75 marks)
c)	Based on the results found in part (b), state the most appropriate form of correction for axial ametropia and for refractive ametropia.	(5 marks)
a)	Define the terms spectacle magnification and relative spectacle magnification and explain when each of these values would be used.	(20 marks)

b) A patient has the following prescription for distance vision, each lens being assumed thin:

R: +5.25DS VA 6/6 L: +1.50DS VA 6/6

Vertex distance 12mm

Compare the **difference** in retinal image size for each eye by completing the following table and assuming the constants of the standard reduced eye.

(75 marks)

	RE	LE	Percentage difference in image sizes (R/L)
A. Spectacles			
Refractive ametropia			
Axial ametropia			
B. Contact lenses			
Refractive ametropia			
Axial ametropia			
			I

Based on the results found in part (b), state the most appropriate form of correction for axial ametropia and for refractive ametropia.	(5 mar

Que	stion 5	
a)	Discuss the principle and optics of retinoscopy.	
	Include 5 statements of fact.	(20 marks)
b)	Describe how with and against movements are produced in retinoscopy.	
	Include diagrams in your answer.	
c)	(The diagrams are worth 16 marks) Show and discuss how it is possible to obtain a with movement in low myopia.	(40 marks)
	Include a diagram in your answer.	
d)	(The diagram is worth 6 marks) Discuss reversal with respect to the speed of the reflex and the effect of the working distance.	(20 marks)
	Include 5 statements of fact in your answer.	(20 marks)
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	retinoscopy.				
	Include diagrams in your answer.				
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		-			

c)	Show and discuss how it is possible to obtain a with movement in low myopia.			
	Include a diagram in your answer.			
	(The diagram is worth 6 marks)	(20 marks)		
d)	Discuss reversal with respect to the speed of the reflex and the effect of the working distance.			
	Include 5 statements of fact in your answer.	(20 marks)		

End of questions for this paper

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Important Instructions to Candidates

Please read carefully and follow these instructions when told to do so by the Examiner/Invigilator.

- 1. You will be given 5 minutes at the beginning of the examination to read through the questions.
- 2. Please enter your candidate number and date in the boxes on the front cover of this booklet.
- 3. Please **DO NOT write your name** on the booklet. Candidates must remain anonymous for marking purposes.
- 4. Candidates must answer questions legibly, using blue/black ink or ball-point pen. Pencil may be used for graphs and diagrams only.
- 5. Candidates please note, the examination paper has been designed for you to answer the stated number of questions within the allotted time.
- 6. Candidates must read each question carefully and make sure that you know what you have to do before starting your answer.
- 7. Candidates must write the answer to each question in the space provided. Additional paper may be used if necessary but you must show your Candidate Number and question number(s) clearly at the top of each page.
- 8. Please do not write in the margins.
- 9. Any extra pages used should be securely fastened together using a treasury tag. This includes any diagrams, additional graph paper or any continuation paper.
- 10. Candidates are advised to carefully cross out any work not intended to be marked by the Examiner.
- 11. Please do not tear out any part of this booklet. All work must be handed in.

Important Information for Candidates

- 1. Answer **four** questions only.
- 2. Answer all parts for each question.
- 3. Candidates MUST work to at least 4 decimal places in ALL calculation questions and they will be penalised if this is not done.
- 4. Where relevant, the marks awarded for each part of a question are given in brackets, e.g. (10 marks).
- 5. These symbols indicate that a diagram/calculation is required or a diagram needs annotating.
- 6. This entire document consists of 20 pages. Any blank pages are indicated.

When told to do so by the Invigilator, you may turn the paper over and begin.