

091405T4SLT

SCIENCE LABORATORY TECHNOLOGY LEVEL 5

SLT/OS/SL/CR/02/5/A

APPLY PHYSICS TECHNIQUES

Nov/Dec 2024



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

PRACTICE

OBSERVATION CHECKLIST

Candidate's Name & Registration Code			
Assessors Name & Registration Code			
Venue of Assessment			
Date of Assessment			
Items to be Evaluated: <i>Please award marks as appropriate. Give a brief comment on your observation.</i>	Marks Available	Marks Obtained	Comments
TASK 1: Determine the refractive index of a rectangular glass block using graphical method.			
Wore PPEs			
• Buttoned Lab coat	$\frac{1}{2}$		
• Closed shoes	$\frac{1}{2}$		

(Award 1 mark or zero for the PPE donned as per workplace procedures)			
TASK 1: Determine the refractive index of a rectangular glass prism			
1. Fixed the plain paper on the soft board using the four thumb pins. (Award one mark)	1		
2. Placed the glass block on the plain paper (that is fixed on the soft board) Let the glass block rest on the paper from the broader face. (Award 1 mark for placing the block on the plane paper and 1 mark if placed with broader face)	2		
3. Traced the glass block using a pencil. (Award 2 marks for accurate rectangular tracing)	2		
4. Removed the glass block. (Award 1 mark)	1		
5. Marked point X on one of the longer side of the traced glass block. Point X should be 2 cm from edge A. (Award 1 mark for marking point and 2 marks if the point is correctly placed)	3		
6. Constructed a normal line at X, to emerge through line DC. Let this normal meet line DC at point M. (Award 3 marks for correct and accurate normal)	3		
7. Marked point N along the emergent normal, 5 cm from M. (Award 2 marks for correct and accurate	2		

marking of N)							
8. Constructed line NP to meet the normal at N at 90° . Line NP is 10 cm. (Award 2 marks for correct NP)							
9. Used a protractor, to construct an incident ray RX at an angle of incidence $i = 10^\circ$. Fix two pins P_1 and P_2 along RX. (Award 1 mark for RX, 1 mark for angle I, 1 mark for fixing the pins)							
10. Replaced the glass block to the traced figure. Viewed the path of the incident ray RX through the glass block from face DC. Using other two pins P_3 and P_4 , fixed them to see to align themselves with images of P_1 and (Award 1 mark each for tracing the four points with the optical pins. Award 1 for bending to view).							
11. Measured the distance of the emergent ray from point N along line NP Recorded the corresponding values of d, Sin i and Sin ² i in the table below. Repeated the procedure for other values of I							
Angl e of incid ence i°	10	20	30	40	50	60	

Distance d (cm)								9		
Sin i										
Sin ² i										
<i>(Award 1/2marks for each correct response in the table)</i> <i>(1/2×18)=9marks</i>										
12. Plotted the graph of Sin² i (vertical axis) against d. Award 1 Mark each for correctly labeled X axis. <i>Award 1 mark for each correct plotted points(1×6)</i> <i>Award 1 mark if at least three points join together.</i> Calculated the gradient of the graph.								2		
								6		
								1		
								2		
13. Used the graph to determine sin² i the value of when sin² i= 0° Measured and record the breadth (b) of the glass block Determined the value of η given that $n = \frac{b}{\sin^2 i}$								1		
								1		
								1		
14. Disassembled the apparatus								2		

GRAND TOTAL	54		
ASSESSMENT OUTCOME			
The candidate was found to be: Competent ☐ Not yet Competent ☐ <i>(Please tick as appropriate)</i> <i>(The candidate is competent if the candidate obtains at least 50%)</i>			
Feedback from the Candidate:			
Feedback to the Candidate:			
Candidate Signature		Date:	
_____		_____	
Assessor's Signature		Date	
_____		_____	