

071305T4ELC

ELECTRONICS ENGINEERING LEVEL 5

ENG/OS/ET/CR/04/5

Apply Electrical Instrumentation

July/August 2025



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

PRACTICAL ASSESSMENT

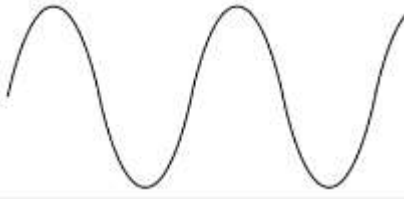
INSTRUCTIONS TO ASSESSOR

1. Assess the candidate as the practical progresses observing the critical areas
2. You are required to mark the practical as the candidate perform the tasks
3. You are required to take video clips at critical points
4. Ensure the candidate has a name tag and registration code at the back and front

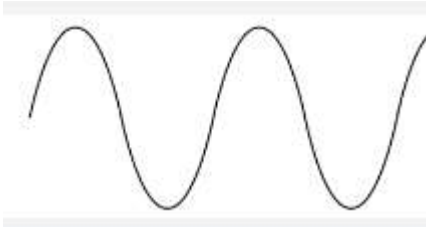
OBSERVATION CHECKLIST

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
1. Wore PPE			
i. Safety boots	1		
ii. Dustcoat/overall	1		
<i>(Award 2 or 0)</i>			
2. Applied housekeeping practice			
i. Properly handled tools <i>(Award 2 or 0)</i>	2		
ii. Ensured clean working area before beginning working.	2		
<i>(Award 2 or 0)</i>	2		
iii. Properly disposed wastes <i>(Award 2 or 0)</i>			
Sub total	8		
TASK 1 - Mount the Circuit on a breadboard			
3. Mounted the circuit on the breadboard.			
i. Identified the components and their values <i>(Award 1 mark for each of the capacitor and resistor)</i>	6		
ii. Mounted the components on the breadboard considering polarity and pin configuration	10		

(10 components x 1 mark) iii. Utilized the breadboard (Award 2 marks or 0 for at least 75% utilization of the bread board) iv. Economic use of materials (Award 2 marks or 0)	2 2		
Sub total	20		
TASK 2 – Circuit connection and Waveform display			
4. Carried out general inspection of the oscilloscope before use: (Award 2 or 0) i) Connected the probe and the grounding clip to the corresponding connection. (Award 3 or 0) ii) Used the oscilloscope to display the waveform at circuit output. (Award 3 or 0) iii) Powered the circuit connected to the CRO. (Award 2 or 0) iv) Used the correct input voltage (Award 3 marks or 0 for 12V) v) Drew the displayed sinewave by the CRO	2 3 3 2 3 5		

 <i>(Award 3 marks for correct sine wave display on CRO and 2 marks for axis labelling)</i> 5. Determined the frequency from the displayed waveform: - Set the time base - Counted number of divisions for one cycle - Calculated time period, $T = \text{Number of divisions} \times \text{Time/Div}$ - Calculated frequency, $f = 1/T$ Hz 6. Circuit functionality was achieved <i>(Award 2 marks or 0)</i>	2 2 2 2 2		
Sub total	28		
TASK 3 – Mounting and soldering the circuit on a copper stripboard			
7. Mounted the circuit on the copper stripboard: - Identified the components and values. <i>(Award 1 mark for each of the capacitors and resistors)</i> - Mounted the component on the copper stripboard considering polarity and pin configuration. <i>(Award 10 x 1 mark for all</i>	6 10		

components mounted on stripboard i.e the Op Amp 741 IC timer and three capacitors and six resistors)	2		
iii. Utilized the stripboard. (Award 2 marks or 0 for at least 75% utilization of the stripboard)	10		
iv. Performed soldering of the components. (Award 10 x 1 mark for all components soldered)	3		
v. Neatness. (Award 3 marks or 0 for wires installed flat on the surface)			
Sub total	31		
TASK 4 – Testing the circuit			
8. Carried out testing of the circuit			
i. Performed physical inspection of the circuit. (Award 2 or 0)	2		
ii. Performed the following test:			
a. continuity (Award 3 or 0)	3		
b. polarity (Award 3 or 0)	3		
iii. Compiled test report (Award 5 or 0)	5		
Sub-total	13		
TASK 5: Circuit connection and Waveform display			

9. Carried out a general inspection of the oscilloscope before use: <i>(Award 2 or 0)</i>	2		
i. Connected the probe and the grounding clip to the corresponding connection. <i>(Award 3 or 0)</i>	3		
ii. Used the oscilloscope to display the waveform at circuit output. <i>a. (Award 3 or 0)</i>	3		
iii. Powered the circuit connected to the CRO. <i>(Award 2 or 0)</i>	2		
iv. Used the correct input voltage <i>a. (Award 3 marks or 0 for 12V)</i>	3		
v. Drew the displayed sinewave by the CRO	5		
 <i>(Award 3 marks for correct sine wave display on CRO and 2 marks for axis labelling)</i>			
10. Determined the frequency from the displayed waveform:			
i. Set the time base	2		
ii. Counted number of divisions	2		

for one cycle			
iii. Calculated time period, T= Number of divisions x Time/Div	2		
iv. Calculated frequency, f=1/T Hz	2		
11. Circuit functionality was achieved (Award 2 marks or 0)	2		
Sub total	28		
GRAND TOTAL	128		
$Percentage = \frac{x}{128} \times 100 \%$			
ASSESSMENT OUTCOME			
The candidate was found to be: Competent ☐ Not yet Competent ☐ (Please tick as appropriate) (The candidate is competent if the candidate obtains at least 50%)			
Feedback from the Candidate:			
Feedback to the Candidate:			
Candidate Signature		Date:	
_____		_____	
Assessor's Signature		Date	
_____		_____	