

MODULE II
ELECTRICAL INSTALLATION TECHNOLOGY LEVEL 4
ELECTRICAL ENGINEERING LEVEL 5, LEVEL 6
ENG/OS/EI/CR/02/4/MA
PERFORM BELL AND ALARM INSTALLATION
January-March 2026



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

PRACTICAL ASSESSMENT

INSTRUCTIONS TO THE ASSESSOR:

1. This assessment is to take place in the prescribed order as arranged in the tool.
2. Capture clear **photographs** and/or **videos** of each candidate's work as they perform the tasks and label all media files with: Candidate Registration Number, Unit Code, Practical Session Number, and Date.
3. Record candidate scores and assessor remarks in the observation checklists for each session.
4. Store all completed checklists, media files, and candidate drawings in a secure digital/physical folder per candidate.
5. All measurements are in millimeters (mm)

CANDIDATE & ASSESSOR DETAILS

Candidate Name:	CDACC Reg. No.:
Assessor Name:	Assessor ID Number:

PRACTICAL BRIEF

In this practical, you will be required to demonstrate competence in installing bell and alarm systems based on the provided drawing. The assessment will involve hands-on sessions and an oral assessment.

SESSION 1 (2 HOURS): INTERPRET DRAWINGS AND INSTALL BELL AND ALARM WIRING SYSTEMS

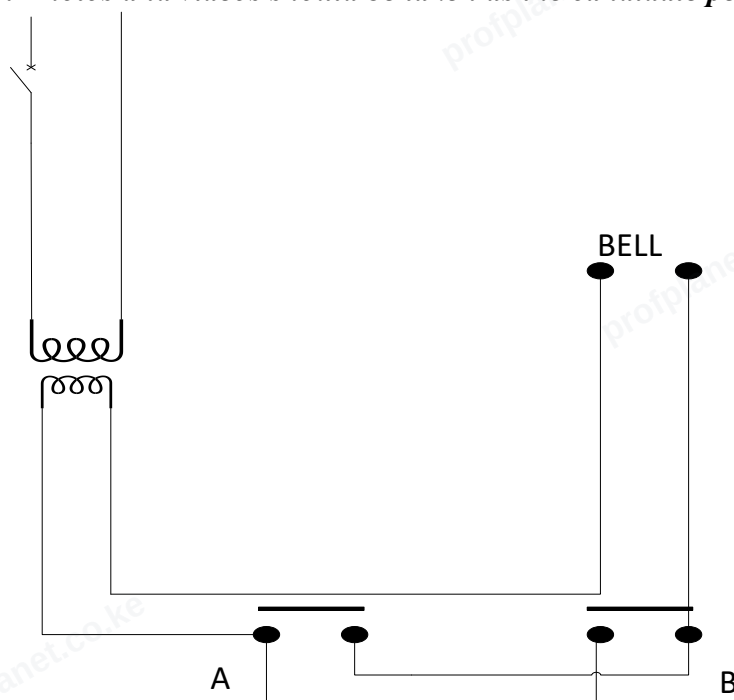
Assessment Date:	
Assessment Venue:	

PRACTICAL CHECKLIST

No.	Items of Evaluation	Max Marks	Awarded
1.	Wore PPEs as per OSHA and EHS standards • Helmet (<i>Award 1 mark or zero</i>) • Safety boot (<i>Award 1 mark or zero</i>) • Apron/overall (<i>Award 1 mark or zero</i>)	1 1 1	
2.	Drew the wiring diagram • Push buttons A and B controls 12V bell (<i>Award 4 marks or zero</i>)	4	
3.	Installed bell circuit layout • Dimensions $\pm 2\text{mm}$ (<i>Award 2 marks or zero</i>) • Fixed components i. Firmness (<i>Award 1 mark for each component or zero, total 3 marks</i>) ii. Level (<i>Award 1 mark for any three or zero, total 3 marks</i>)	2 3 3	

	- Fixed cables i. Horizontal runs (2) (<i>Award 1 mark each or zero</i>) ii. Vertical runs (2) (<i>Award 1 mark each or zero</i>)	2 2	
4.	Correct circuit connection and cable terminations (firm, folded & twisted) at; i. Consumer unit (<i>Award 1 mark or zero</i>) ii. Push buttons A and B control bell 2 (<i>Award 2 marks or zero for each correct connection, total 6marks</i>) iii. Transformer connection (<i>Award 2 marks or zero</i>)	1 6 2	
5.	- Earthing on transformer (<i>Award 1 mark or zero</i>) - Colour coding of cables (<i>Award 2 marks or zero</i>)	1 2	
	TOTAL	31	
REMARKS:			

NB: Photos and videos should be taken as the candidate performs item 3



Wiring diagram

SESSION 2 (3 HOURS): INSTALL BELL AND ALARM COMPONENTS

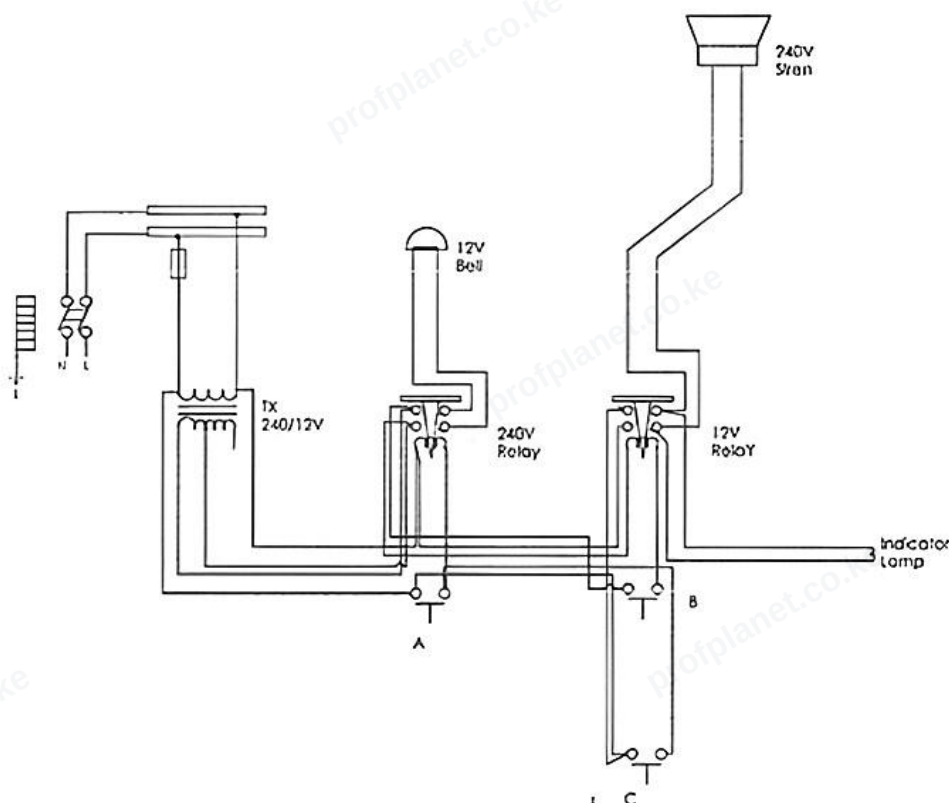
Assessment Date:	
Assessment Venue:	

PRACTICAL CHECKLIST

No.	Items of Evaluation	Max Marks	Awarded
1.	Wore PPEs as per OSHA and EHS standards • Helmet (<i>Award 1 mark or zero</i>) • Safety boot (<i>Award 1 mark or zero</i>) • Apron/overall (<i>Award 1 mark or zero</i>)	1 1 1	
2.	Drew a wiring diagram • Bell push button A and C activates 12V bell through a 240V relay (<i>Award 2 marks or zero</i>) • Bell push button B activates the siren through a 12V relay (<i>Award 2 marks or zero</i>) • 240V Indicator lamp operates when the siren signals (<i>Award 1 mark or zero</i>)	2 2 1	
3.	Installed bell and alarm layout • Dimensions $\pm 2\text{mm}$ (<i>Award 2 marks or zero</i>) • Fixed components i. Firmness (<i>Award 1 mark for each component or zero, total 3 marks</i>) ii. Level (<i>Award 1 mark for any three or zero, total 3 marks</i>) • Fixed cables i. Horizontal runs (3) (<i>Award 1 mark or zero</i>) ii. Vertical runs (4) (<i>Award 1 mark or zero</i>)	2 3 3 3 4	

4.	Correct circuit connection and cable terminations (firm, folded & twisted) at;		
i.	Consumer unit (<i>Award 1 mark or zero</i>)	1	
ii.	Push buttons A and C through 240V relay control 12V bell (<i>Award 1 x 4 marks or zero</i>)	4	
iii.	Push button B through 12V relay control 240V siren (<i>Award 1 x 3 marks or zero</i>)	3	
iv.	Indicator Lamp (<i>Award 2 marks or zero</i>)	2	
5.	- Earthing on transformer (<i>Award 1 mark or zero</i>) - Colour coding of cables (<i>Award 2 marks or zero</i>)	1	
		2	
	TOTAL	36	
REMARKS:			

NB: Photos and videos should be taken as the candidate performs item 3 and 4



Wiring diagram

SESSION 3 (2 HOURS): TEST AND MAINTAIN BELL AND ALARM SYSTEM

Assessment Date:	
Assessment Venue:	

PRACTICAL CHECKLIST

No.	Items of Evaluation	Max Marks	Awarded
1.	Wore PPEs as per OSHA and EHS standards • Helmet (<i>Award 1 mark or zero</i>) • Safety boot (<i>Award 1 mark or zero</i>) • Apron/overall (<i>Award 1 mark or zero</i>)	1 1 1	
2.	Performed visual inspection • Manuals accessibility (<i>Award 1 mark or zero</i>) • Protective covers are intact (<i>Award 1 mark or zero</i>) • Labelling of components (<i>Award 1 mark or zero</i>) • Components are clean and free from dust (<i>Award 1 mark or zero</i>) • Physical damage (<i>Award 1 mark or zero</i>)	1 1 1 1 1	
3.	Interchanged the relays • 12V relay to control 12V bell (<i>Award 3 marks or zero</i>) • 240V relay to control 240V Siren (<i>Award 3 marks or zero</i>)	3 3	
4.	Performed the tests: • Continuity test (<i>Award 2 marks or zero</i>) • Polarity test (<i>Award 2 marks or zero</i>) • Insulation resistance test (<i>Award 2 marks or zero</i>)	2 2 2	

5.	Recorded test results • Continuity test (<i>Award 1 marks or zero</i>)	1	
	• Polarity test (<i>Award 1 marks or zero</i>) • Insulation resistance test (<i>Award 1 marks or zero</i>)	1 1	
6.	Performed system functionality • Bell (<i>Award 4 marks or zero</i>) • Siren (<i>Award 3 marks or zero</i>)	4 3	
7.	Performed housekeeping procedures • General cleanliness (<i>Award 1 marks or zero</i>)	1	
	TOTAL	31	
REMARKS:			

NB: Photos and videos should be taken as the candidate performs items 6

SESSION 3 (1 HOUR): ORAL ASSESSMENT (25 MARKS)

Assessor to award marks for each correct response by the candidate in the table below:

Q#	Question	Expected Response	Max Marks	Awarded
1.	Explain TWO factors to consider when selecting cables for a bell and alarm installation.	• Must handle ambient temperature. • Must be flexible for routing. <i>(Award 2 mark for each correct answer)</i>	4	
2.	Mention TWO safety precautions to observe when fixing bell or alarm components.	• Keep area dry. • Avoid loose clothing. <i>(Award 1 mark for each correct answer)</i>	2	
3.	Name TWO tools required when preparing wires for a bell/alarm system.	• Crimping tool. • Electric drill. <i>(Award 1 mark for each correct answer)</i>	2	
4.	Name THREE protective devices used in bell/alarm circuits.	• Surge arrestor. • Thermal overload. • Disconnect switch. • Circuit breakers <i>(Award 1 mark for each correct answer)</i>	3	
5.	What is the purpose of conducting a continuity test on bell/alarm circuits?	• To confirm that the sounder loop has no breaks. <i>(Award 1 mark or zero)</i>	1	
6.	Why is an insulation resistance test important in bell and alarm installations?	• To detect leakage paths. <i>(Award 1 mark or zero)</i>	1	

7.	What does a polarity check ensure in a bell or alarm point?	Correct terminal connections. <i>(Award 1 mark or zero)</i>	1	
8.	Why an earth continuity test is carried out on alarm system metal casings?	To ensure all exposed metallic parts are safely bonded to earth. <i>(Award 1 mark or zero)</i>	1	
9.	Give TWO routine maintenance activities for bell/alarm systems.	- Inspect wiring. - Test sounders/sirens. <i>(Award 2 marks for each correct answer)</i>	4	
10.	Mention TWO items used during servicing of bell or alarm wiring.	- Insulation tape. - Replacement fasteners/screws. <i>(Award 1 mark for each correct answer)</i>	2	
11.	Why should technicians maintain service records for bells and alarms?	To provide a reference for previous faults and completed repairs. <i>(Award 1 mark or zero)</i>	2	
12.	State TWO risks associated with incorrect polarity in alarm systems.	- Failure of the sounder or strobe to activate. - Possible damage to control panel circuitry <i>(Award 1 mark or zero for each)</i>	2	
	TOTAL		25	

SUMMARY OF ASSESSMENT

SECTION	Total Marks	Marks Awarded
Assessment 1	31	
Assessment 2	36	
Assessment 3	31	
TOTAL	98	
Percentage %	$\frac{x}{\text{---}} \times 100$ 98	

ORAL ASSESMENT

Oral assessment	25	
Percentage %		

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%