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MODULE II

ELECTRICAL INSTALLATION TECHNOLOGY LEVEL 4, 5 & 6

ENG/OS/EI/CR/03/4/MA

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Wind Electrical Machine

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July-August 2026

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

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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 at critical points 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.

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CANDIDATE & ASSESSOR DETAILS

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

SESSION 1 (2 HOURS)

Assessment Date:	
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Assessment Venue:	
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PRACTICAL CHECKLIST

No.	Items of Evaluation	Max Marks	Awarded
1.	Wore Personal Protective Equipment: - Dustcoat/Overall (<i>Award 1 or 0</i>) - Safety boots (<i>Award 1 or 0</i>) - Safety gloves (<i>Award 1 or 0</i>) - Face mask (<i>Award 1 or 0</i>)	1 1 1 1	
Task 1: Dismantle the motor			
2.	Ensured machine was electrically isolated before starting (<i>Award 2 or 0</i>)	2	
3.	Applied good housekeeping practice: - Ensured clean working area before beginning working. (<i>Award 1 or 0</i>) - Tidy working area arrangement (<i>Award 1 or 0</i>)	1 1	

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	Proper Waste disposal (<i>Award 1 or 0</i>)	1	
Task 2: Record the following			
4.	Recorded Winding Data: - Number of coils (<i>Award 2 or 0</i>) - Number of turns per coil (<i>Award 2 or 0</i>) - Wire gauge size (<i>Award 2 or 0</i>) - Coil pitch (<i>Award 2 or 0</i>) - Coil span (<i>Award 2 or 0</i>)	2 2 2 2 2	
Task 3: Disassembled Machine Parts:			
5.	Disassembled Machine Parts: - Removed end shields/covers without damage (<i>Award 2 or 0</i>) - Extracted rotor without damaging stator or windings (<i>Award 2 or 0</i>) - Disassembled bearings using appropriate tools (<i>Award 2 or 0</i>) - Organized and labelled parts for reassembly (<i>Award 1 x any 5</i>)	2 2 2 5	
	TOTAL	30	
REMARKS:			

ORAL ASSESSMENT (25 MARKS)

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

Q#	Question	Expected Key Points	Max Marks	Awarded
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1	Why is it critical to record winding data before disassembly?	✓ To ensure the new winding matches the original design for correct speed, torque, and performance. (Award 1 or 0)	1	
2	State three safety hazards when disassembling a motor.	✓ Electrical shock (if not isolated), cuts from sharp metal edges, crush injury ✓ from dropping heavy parts. (Award 3 or 0)	3	
3	Why is disassembly necessary before rewinding a machine	✓ Inspection of internal parts ✓ Access to the winding (Award 2 or 0)	2	
5	What is the purpose of recording machine data before disassembly	✓ Prevent loss of critical information ✓ Ensure accurate reassembly (Award 2 or 0)	2	
6	Name two fastening tools used when disassembling electrical machines.	✓ Spanners ✓ Socket and ratchet set ✓ Pliers (Award 2 or 0)	2	

Videos should be taken as the candidate performs item 5.

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SESSION 2 (3 HOURS): INSTALL MACHINE WINDING

Assessment Date:	
Assessment Venue:	

PRACTICAL CHECKLIST

No.	Items of Evaluation	Max Marks	Awarded
1.	Wore Personal Protective Equipment - Dustcoat/Overall (<i>Award 1 or 0</i>) - Safety boots (<i>Award 1 or 0</i>) - Safety gloves (<i>Award 1 or 0</i>) - Face mask (<i>Award 1 or 0</i>)	1 1 1 1	
Task 1: Clean slots and all rotating machine parts			
2.	Cleaned Rotating Machine Parts - Cleaned stator slots of old insulation/debris (<i>Award 2 or 0</i>) - Cleaned Rotor (<i>Award 3 or 0</i>)	2 3	
Task 2: Wound new coils to correct specifications:			
3.	Wound new coils to correct specifications: - Turns (<i>Award 4 or 0</i>) - Size (<i>Award 3 or 0</i>) - Shape (<i>Award 2 or 0</i>)	4 3 2	
Task 3: Cut insulating papers to size			
4.	Applied correct slot insulation/liners (<i>Award 2 or 0</i>)	2	
Task 4: Arrange wedges, binding cords, and varnish			
5.	Laid Coils in Stator Slots - Coils inserted correctly without damaging insulation (<i>Award 4 or 0</i>) - Correct coil grouping and placement as per recorded	4 3	

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	data (<i>Award 3 or 0</i>)	2	
	Wedges fitted to secure coils (<i>Award 2 or 0</i>)		
6.	Cured Stator Windings		
	Connected coil ends (<i>Award 2 or 0</i>)	2	

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	- Soldered coil ends (<i>Award 2 or 0</i>) - Applied appropriate insulating varnish/treatment (<i>Award 2 or 0</i>) - Connections insulated with sleeves/tape (<i>Award 2 or 0</i>)	2	
		2	
		2	
	TOTAL	37	
REMARKS:			

ORAL ASSESSMENT (10 MARKS)

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

Q#	Question	Expected Key Points	Max Marks	Awarded
1	What personal protective equipment (PPEs) should be used when installing machine windings?	✓ Insulated gloves ✓ Dust mask (accept any other correct answer) (<i>Award 2 or 0</i>)	2	
2	State three precautions to take when removing old windings from the stator.	✓ Avoid damaging the stator coil ✓ Disconnect and isolate power ✓ Record winding data before removal (accept any other correct answer) (<i>Award 3 or 0</i>)	3	
3	Explain the purpose of slot insulation.	✓ To provide electrical isolation between the copper windings and the earthed stator core, preventing a short circuit. (<i>Award 2 or 0</i>)	2	
5	Explain the consequence of over-greasing a bearing.	✓ Excess grease can cause overheating due to churning and may damage the bearing seals. ((<i>Award 2 or 0</i>))	2	

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6	State one reason for lacing windings securely after insertion	✓ Prevent movement of coil ✓ (Award 1 or 0)	1	

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Photos and videos should be taken as the candidate performs items 3, 5 and 6.

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SESSION 3 (3 HOURS): ASSEMBLE MACHINE AND PERFORM TESTING

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PRACTICAL CHECKLIST

No.	Items of Evaluation	Max Marks	Awarded
Task 1: Reassemble the electrical machine			
1.	Assembled Rotating Machine - Rotor and stator correctly aligned (<i>Award 2 or 0</i>) - End shields/covers fitted correctly and evenly (<i>Award 2 or 0</i>) - Air gap is even (<i>Award 2 or 0</i>) - Bolts and nuts fastened to correct torque/ tightness (<i>Award 2 or 0</i>) - Bearings correctly fitted and seated (<i>Award 2 or 0</i>) - Bearings lubricated with appropriate grease (<i>Award 2 or 0</i>)	2 2 2 2 2 2	
Task 2: Perform electrical tests			
2.	Performed Electrical Tests - Continuity Test: Confirmed all windings are continuous (<i>Award 4 or 0</i>) - Polarity Test: Confirmed winding polarity is correct (<i>Award 4 or 0</i>) - Insulation Resistance Test: IR value > 1 MΩ as per IEC (<i>Award 5 or 0</i>) - Voltage/Current Balance Test: Readings are within acceptable balance (<i>Award 4 or 0</i>)	4 4 5 4	

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Task 2: Carrying out final housekeeping			
3.	Carried out Housekeeping		
	Tools cleaned and returned to storage (<i>Award 2 or 0</i>)	2	
	Work area left clean and tidy (<i>Award 2 or 0</i>)	2	
	TOTAL	33	
REMARKS:			

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ORAL ASSESSMENT (25 MARKS)

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

Q#	Question	Expected Key Points	Max Marks	Awarded
1	What does an Insulation Resistance (IR) test check?	✓ It checks the quality of the insulation between the windings and the motor frame (earth) to ensure it is not weak or broken down.	2	
2	State the minimum acceptable IR value for a motor as per IEC standards	✓ 1 Megaohm (1 MΩ)	1	
3	What would a failed polarity test indicate	✓ That the internal connections between coil groups are incorrect,	2	
5	State the purpose of testing windings after rewinding	✓ To ensure there are no faults like short circuits or insulation failure before putting the machine into the service	1	
6	Explain the purpose of the continuity test.	✓ To verify there is a complete path for ✓ current flow and no open circuits within the windings.	2	
7	Explain why cleanliness (housekeeping) is important during and after winding installation?	✓ Improves safety ✓ Increase work efficiency (accept any other correct answer)	1	
8	What would a failed polarity test indicate?	✓ That the internal connections between coil groups are incorrect.	1	

SUMMARY OF ASSESSMENT

SECTION	Total Marks	Marks Awarded
Practical Assessment 1	30	
Practical Assessment 2	37	
Practical Assessment 3	33	
TOTAL	100	
Percentage %		

ORAL ASSESMENT

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Oral assessment 1	10	
Oral assessment 2	10	
Oral assessment 3	10	
TOTAL	30	
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%****THIS IS THE LAST PRINTED PAGE.**