071305T4ELC

ELECTRONICS ENGINEERING LEVEL 5

ENG/OS/ET/CR/03/5/A

Install Electrical Machine Control System

March/April 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: *Please award marks as appropriate. Give a brief comment on your observation.*	**Marks Available**	**Marks Obtained**	**Comments**
1. Wore PPE's *i.* Apron*(Award 1 or 0)* ii. Helmet*(Award 1or 0)* iii. Safety boots *(Award 1 or 0)*	 1 1 1		
2. Prepared and cleared installation surface. *(Award 1 or 0)*	1		
3. Good housekeeping i. Cleaned the surface before starting installation *(Award 1or 0)* ii. Arranged tools for easy accessibility *(Award 1or 0)* iii. Disposed wastes*(Award 1or 0)*	 1 1 1		
Sub total	**7**		
TASK 1: Wiring Diagram			
4. Drew a wiring diagram i. Correct symbols for the switches *(Award 1 or 0 for each switch)* ii. Termination of the switches to PLC *(Award 1 or 0 for use of each switch as an input)* iii. Termination of Motor and the indicator lights to the PLC output	 2 2 3		

	(Award 1 or 0 for each)	2		
iv.	Power to the PLC *(Award 2 or 0)*			
v.	Labeling the inputs and output components – two switches, the indicators and motor *(Award 1or 0 for each)*	5		
vi.	Neatness of the diagram *(Award 2 or 0)*	2		
	Sub total	**16**		
	TASK 2: Installation			
5.	Performed wiring of the PLC controlled machine system			
i.	Terminated input and output components.			
	• Connected the start and stop buttons the digital input terminals of the PLC (Award 2 or 0 for each)	4		
	• Connected the indicator lights and the motor to the PLC digital outputs. *(Award 2 or 0 for each)*	6		
ii.	All components were properly mounted and grounded – PLC, indicator lights, motor *(Award 2 or 0 for each)*	6		
iii.	Connected power supply to PLC while observing polarity *(Award 2 or 0)*	2		
iv.	Used correct color code for	2		

wires.*(Award 2or 0)*			
Sub total	**20**		
TASK 3: Ladder Diagram			
6. Implemented the ladder logic diagram using a PLC software and upload to the PLC. i. Configured the PLC software *(Award 5 or 0)* ii. Coded the ladder logic program using PLC software. *(Award 1 or 0 for each PLC tag that is named and addressed, total 10 tags)* iii. Uploaded the program into PLC. *(Award 5 or 0)*	**5** 10 5		
Sub total	**20**		
TASK 4: Testing Functionality			
7. Tested the functionality of the wired system i. Input signals are detected by PLC *(Award 5 or 0 for each)* ii. Indicator lights operated according to defined logic *(Award 5 or 0 if the green indicator goes ON when motor is energized and 5 or 0 for red indicator when motor is de-energized)* iii. Motor starts and stops without	10 10		

delay or interruptions (Award 2 or 0 start, and 2 or 0 for stop)	4		
Sub-Total	**24**		
GRAND TOTAL	**87**		
$\boldsymbol{Percentage = \frac{x}{87} \times 100}$			

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:

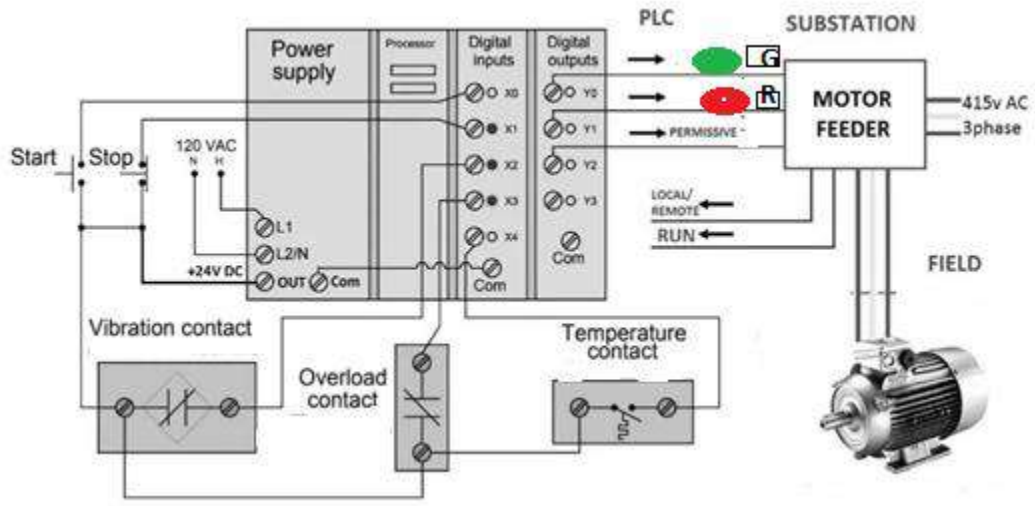
Feedback to the Candidate:

Candidate Signature **Date:**

_____ _____

Assessor's Signature **Date**

_____ _____



Circuit diagram

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