021306T4IOR

INDUSTRIAL AUTOMATION AND ROBOTICS LEVEL 6

ENG/OS/IA/CR/10/6

Install and Maintain Distributed Control Systems (DCSs)

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: *Please award marks as appropriate. Give a brief comment on your observation.*	**Marks Available**	**Marks Obtained**	**Comments**
Task 1: Installation of the system			
1. Wore personal protective gear • Overall/dust coat • Safety boots *(Award 1 mark each)*	**2**		
2. Correctly installed • Power supply module • P.L.C modules • Variable Frequency Drive (V.F.D) • Managed switch • Motor • Pushbuttons • Inductive sensor *(Award 1 mark each)* *Note: there are two pushbuttons and two P.L.C modules*	**9**		
3. Used the provided tools correctly • Screw drivers • Stripper			

• Side cutter • Multimeter *(Award 1 mark each)*	**4**		
4. Installed the system neatly • Used zip ties to secure wires • Correctly terminated wires *(Award 1 mark each)*	**2**		
Sub Total 1	**17**		
Task 2: Development of P.L.C Program			
5. Opened relevant programming software and started a new project/file *(Award 1 mark)*	**1**		
6. Developed the program as per the algorithm provided • Start pushbutton starts the system • Motor runs at the default speed for 1 minute • After 1 minute, the speed of the motor increases • Motor runs at new speed for 1 minute • After 1 minute, the motor returns to default speed • Sequence repeats until stop push button is pressed *Award 1 mark for each translation*	**6**		
7. Simulated the program using PLC sim • Ensured correct logic of the program • Debugged any errors	**4**		

Award 2 marks each			

8. Properly documented the code
 	
    • Provided comments for every program block
 	
      (Award 2 marks)
	2		

Sub Total 2	**13**		
Task 3: Test, Maintain and Commission the System			

9. Powered the system as per the standard operating procedures (SOPs)
 	
    • Ensured all components were correctly installed
 	
    • Powered the system as per the (SOPs)
      (Award 1 mark each)
	2		

10. Downloaded developed program to the P.L.C modules
 	
    • Connected programming cable correctly
 	
    • Established connection between P.C and PLCs
 	
    • Put PLCs in the correct mode
 	
    • Successfully downloaded program to PLC
      Award 1 mark each
	4		

11. Operated the system in the sequence
 	
    • Start pushbutton starts the system
 	
    • Motor runs at the default speed for 1 minute
 	
    • After 1 minute, the speed of the motor increases
	7		

• Motor runs at new speed for 1 minute • After 1 minute, the motor returns to default speed • Sequence repeats until stop push button is pressed *(Award 1 mark each for item in the sequence, and 1 mark for the correct sequence)*			
12. Tested for functionality of redundant controller • Redundant PLC seamlessly took over the operation when the primary controller was switched off *(Award 4 marks)*	**4**		
Sub Total 3	**17**		
Task 4: Perform Housekeeping			
13. Disconnected the components as per the standard operating procedures *(Award 2 marks)*	**2**		
14. Correctly stored the components *(Award 2 marks)*	**2**		
15. Cleaned up work area after the practical *(Award 2 marks)*	**2**		
Sun Total 4	**6**		
GRAND TOTAL	**53**		
% = $\frac{x}{53}$ X 100	**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** _____   _____