

021306T4ICI

INDUSTRIAL CONTROLS INSTALLATIONS LEVEL 6

ENG/OS/IC/CR/1/6

Manage Electrical Motor Control Systems

July/August 2025



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

PRACTICAL ASSESSMENT GUIDE

easyvet.com

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>(Award appropriate marks for each item evaluated)</i>	Marks allocated	Marks obtained	Comments
OBSERVATION CHECKLIST			
1. Wore Personal Protective Equipment <ul style="list-style-type: none"> Dustcoat/Overall (<i>Award 1 or 0</i>) Safety boots (<i>Award 1 or 0</i>) 	1 1		
2. Applied good housekeeping practices <ul style="list-style-type: none"> Tidy working area arrangement (<i>Award 1 or 0</i>) Proper Waste disposal (<i>Award 1 or 0</i>) 	1 1		
3. Identified and correctly used tools and equipment <ul style="list-style-type: none"> Pliers (<i>Award 1 or 0</i>) Multimeter (<i>Award 1 or 0</i>) contactor (<i>Award 1 or 0</i>) Programmable Logic Controller (<i>Award 1 or 0</i>) 	1 1 1 1		
4. Labelled the installation for identification <ul style="list-style-type: none"> Forward start push button Reverse start push button OFF/stop push button Forward contactor Reverse contactor <i>(Award 1 each or 0)</i>	1 1 1 1 1		
5. Cable choice <ul style="list-style-type: none"> Observed colour code (<i>Award 1 or 0</i>) segregated the cable (<i>Award 1 or 0</i>) 	1 1 1		

<ul style="list-style-type: none"> utilized cable without wastage (<i>Award 1 or 0</i>) 			
Sub total	16		
PRODUCT CHECKLIST			
TASK 1 Power wiring diagram and PLC wiring diagram			
6. Drew power wiring diagram as per layout diagram			
<ul style="list-style-type: none"> Circuit (<i>Award 1 or 0</i>) 	1		
<ul style="list-style-type: none"> At the contactors (<i>Award 1 or 0 each correct connection 1 mark</i>) 	1		
<ul style="list-style-type: none"> Thermal Overload (<i>Award 1 or 0</i>) 	1		
<ul style="list-style-type: none"> Motor terminals (<i>Award 1 or 0</i>) 	1		
<ul style="list-style-type: none"> PLC connection (<i>Award 1 or 0 for input and output use</i>) 	1		
7. drew PLC wiring diagram as per the specifications and operations			
<ul style="list-style-type: none"> Forward start push button (<i>Award 1 or 0</i>) 	1		
<ul style="list-style-type: none"> Reverse start push button (<i>Award 1 or 0</i>) 	1		
<ul style="list-style-type: none"> OFF/stop push button (<i>Award 1 or 0</i>) 	1		
<ul style="list-style-type: none"> Forward contactor (<i>Award 1 or 0</i>) 	1		
<ul style="list-style-type: none"> Reverse contactor (<i>Award 1 or 0</i>) 	1		
<ul style="list-style-type: none"> BLUE/ORANGE/RED indicator (<i>Award 1 or 0</i>) 	1		
Sub-Total	11		
TASK 2 Circuit Installation			
8. Fixed components on a flat board			
<ul style="list-style-type: none"> Spacing (<i>Award 2 or 0</i>) 	2		
<ul style="list-style-type: none"> Firmness on the board (<i>Award 2 or 0</i>) 	2		

9. Terminated cables (Twisted, Folded, Firm and not nicked) at: <ul style="list-style-type: none"> • Circuit breaker (<i>Award 1 or 0</i>) • Contactors (<i>Award 1 or 0 for each contactor</i>) • Thermal Overload (<i>Award 1 or 0</i>) • PLC (<i>Award 2 or 0</i>) 	1 1 1 2		
10. Carried out correct wiring connection at <ul style="list-style-type: none"> • Contactors- Two Phase interchange (<i>Award 2 or 0</i>) • Thermal overload (<i>Award 2 or 0</i>) • Motor terminal box (<i>Award 2 or 0</i>) • PLC power supply connection as per the manufactures specifications (<i>Award 2 or 0</i>) • PLC input and output connection. (<i>Award 2 or 0</i>) 	1 1 1 2 2		
Sub- total	16		
TASK 3 – PLC Program			
11. Writing the PLC program <ul style="list-style-type: none"> • Configured the PLC (<i>Award 3 or 0</i>) • Used ladder diagram (<i>Award 2 or 0</i>) • Wrote the correct program with the right sequence and interlock (<i>Award 10 or 0</i>) • Loaded the program to the system. (<i>Award 2 or 0</i>) • Debug and run the program (<i>Award 2 or 0</i>) 	3 2 10 2 2		
Sub – Total	19		
TASK 4 – Program Simulation and circuit operation			
12. Functionality of the installed system <ul style="list-style-type: none"> • Start forward push button energizes the forward contactor and motor run in the forward clockwise motion (<i>Award 4 or 0</i>) 	4		

<ul style="list-style-type: none"> • BLUE indicator is ON when the motor is running in the forward clockwise motion (<i>Award 3 or 0</i>) 	3		
<ul style="list-style-type: none"> • Start reverse push button energizes the reverse contactor and motor run in the reverse anticlockwise motion (<i>Award 4 or 0</i>) 	4		
<ul style="list-style-type: none"> • ORANGE indicator is ON when the motor is running in the reverse anticlockwise motion (<i>Award 3 or 0</i>) 	3		
<ul style="list-style-type: none"> • OFF Push button halts all the operation and the RED indicator turns ON (<i>Award 4 or 0</i>) 	4		
Sub – Total	18		
TASK 5 – Troubleshooting faults			
14. Detected and corrected the fault created on the forward contactor (motor not rotating in forward) (<i>Award 2 or 0</i>)	2		
Detected and corrected the fault created on the stop push button (stop push button not working) (<i>Award 2 or 0</i>)	2		
Assessor creates faults on the auxiliary contact of the forward contactor, forward start push button and stop push button.			
Sub - Total	4		
GRAND TOTAL			
$\frac{x}{84} \times 100 =$			

ASSESSMENT OUTCOMES

The candidate was found to be: (Please tick (√) as appropriate)

Competent <input style="width: 30px; height: 15px;" type="checkbox"/>	Not yet competent <input style="width: 30px; height: 15px;" type="checkbox"/>
<i>(The candidate is competent if the candidate scores 50% and above)</i>	
Feedback from candidate:	
Feedback to candidate:	
Candidate's signature:	Date:
Assessor's signature:	Date:

PLC wiring connection

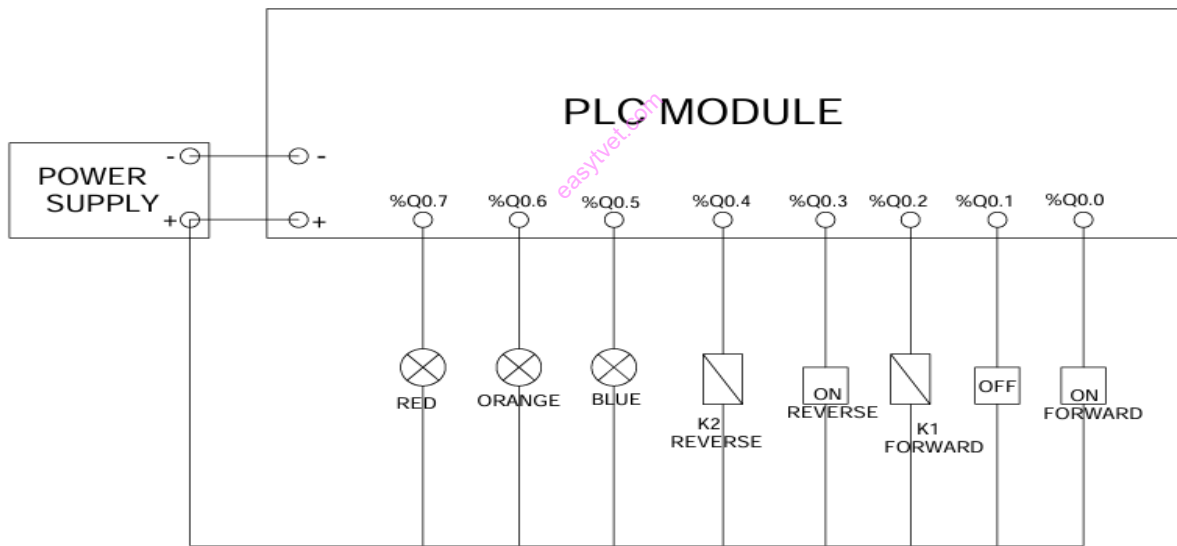
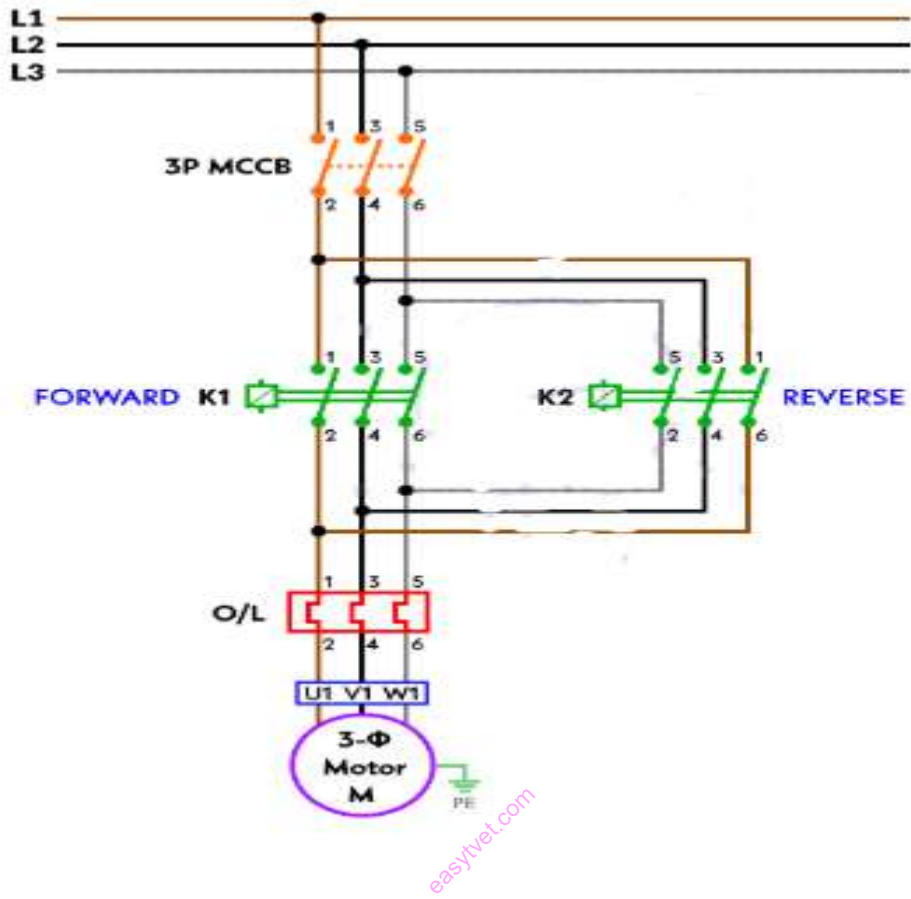
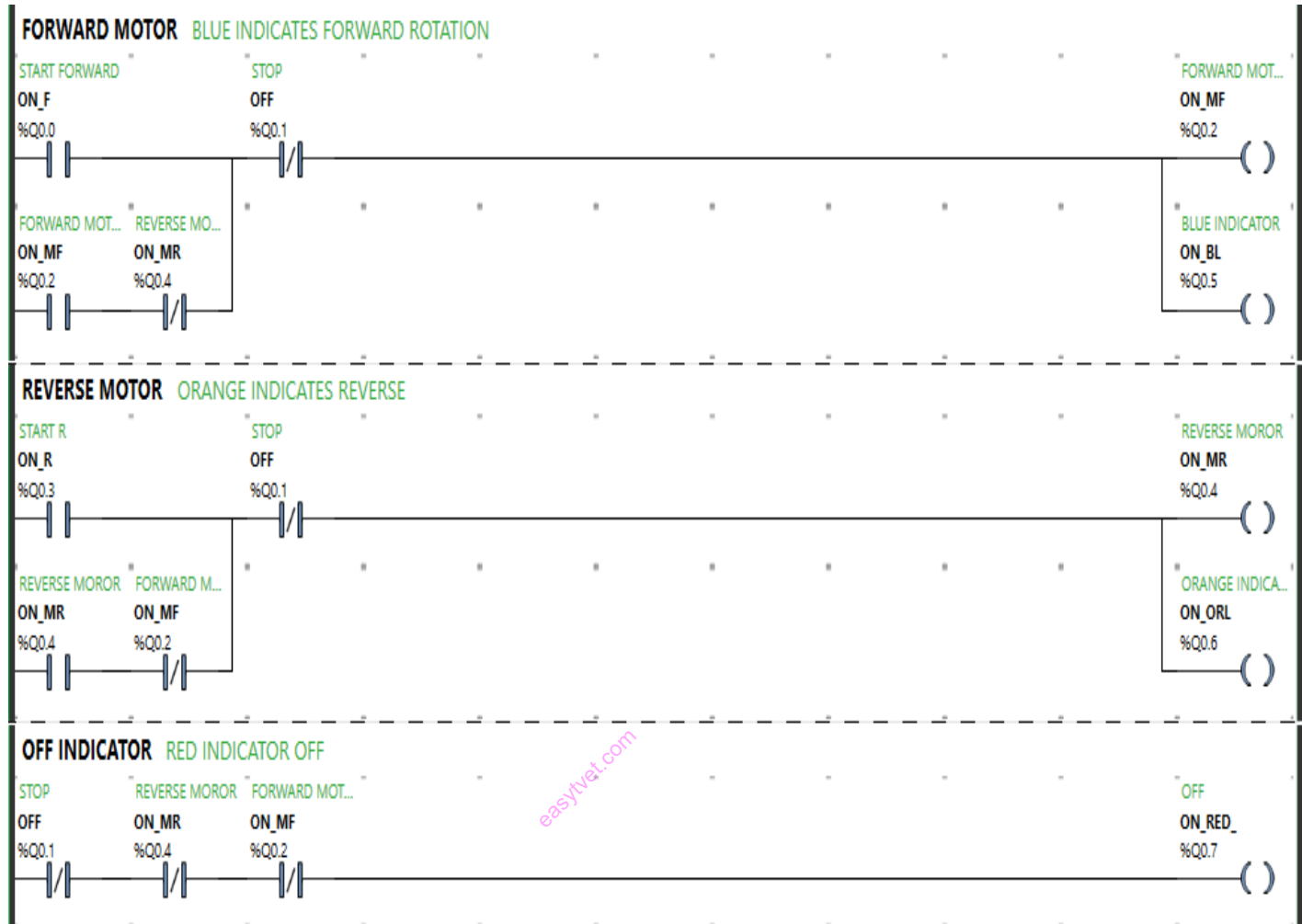


Figure 1

Power wiring diagram



PLC ladder diagram



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