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072203T4SPV

SOLAR PV INSTALLATION LEVEL 3

ENG/OS/SPV/CR/02/3

Design a Solar PV installation system

July/August 2025

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

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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: *award marks as appropriate. Give a brief comment on your observation.*	**Marks Available**	**Marks Obtained**	**Comments**
OBSERVATION CHECKLIST			
TASK 1: SAFETY AWARENESS			
1. Stated three safety measures and three PPE'S *(Award 1mark or o for each correctly stated item)*	5		
TASK 2: PERFORMED LOAD ESTIMATION			
2. Daily load estimation (i) DC load lamp $Voltage = 12\,V$ $Amps = 2A$ $Power = VI = 12 \times 2 = 24\,Watts$ $Daily\ hours\ of\ usage = 6$ $Average\ daily\ use = \frac{24\,Wattsx6\,hoursx5\,days}{7\,days} = 102.9\,Watts - Hours$ (ii) AC load (socket equipment) $Equipment\ rating = 50\,Watts$ $Average\ daily\ use = \frac{50\,Watts \times 6\,hours \times 5\,days}{7\,days} = 214.3\,Watt - Hours$ *(Award 5 marks for correct working DC load and 3 marks for AC loads)*	5 3		
3. Weekly load estimation (i) DC load lamp	3		

easyict.com

$Weekly\ load = 102.9 \times 7 = 720.3\ Watt - Hours$ (ii) AC load (socket equipment) $Weekly\ load = 214.3 \times 7 = 1500.1\ Watt - Hours$ *(Award 3 marks each)*	3		
Sub-Total 1	**19**		
TASK 3: DREW A LAYOUT DIAGRAM FOR THE SYSTEM			
4. All system components captured (i) Solar module (ii) Charge controller (iii) Battery (iv) Inverter (v) Lamp (vi) Switch (vii) Socket outlet (viii) CCU *(Award 1 mark or 0)*	 1 1 1 1 1 1 1 1		
5. Drew the correct system configuration (i) Solar module to charge controller (ii) Charge controller to battery (iii) Battery to inverter (iv) Inverter to CCU *(Award 1 mark or 0 for each correct configuration)*	 1 1 1 1		
Sub-Total 2	**12**		
TASK 4: DEVELOPED A WIRING DIAGRAM FROM THE LAYOUT DIAGRAM			
6. Drew a wiring diagram with correct connections between components	4		

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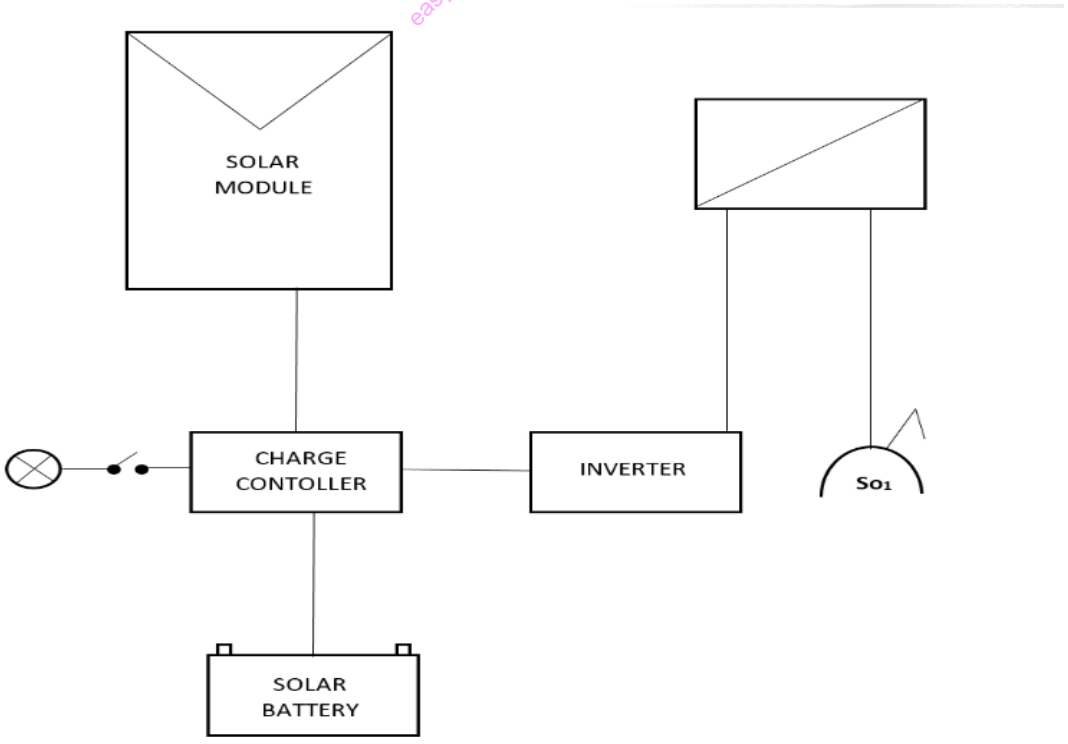
(i) Solar components (*Award 1 or 0 for each)* (ii) DC lighting circuit (Award *1 or 0 for each)* (iii) CCU components (*Award 1 or 0 for each)* (iv) AC socket outlet (*Award 1 or 0 for each)*	2 2 1		
Sub-Total 3	**9**		
TASK 5: PREPARED THE BILL OF QUANTITIES			
7. Estimated accessories quantities *(Award any ½×10)* 8. Estimated Cost of materials *(Award any ½×10)*	5 5		
Sub-Total 4	**10**		
GRAND TOTAL	**50**		
$\frac{X}{50} \times 100$			
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%)*			

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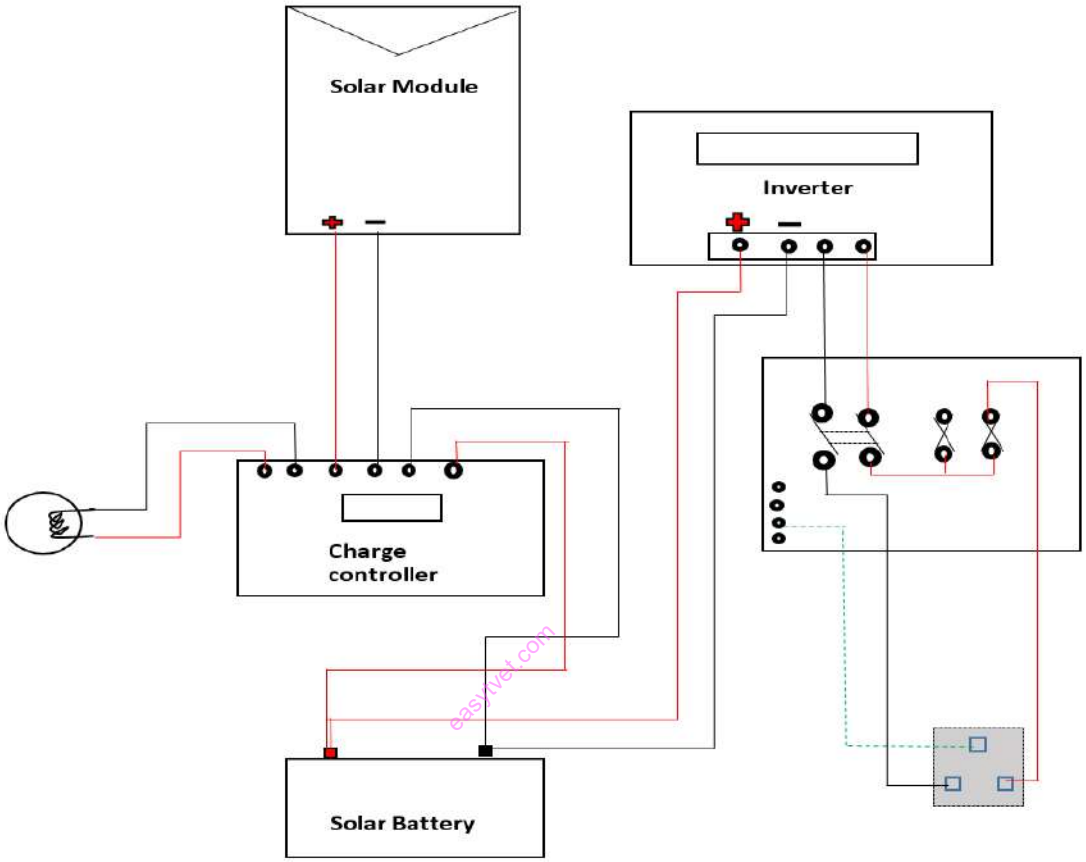
Feedback from the Candidate:
Feedback to the Candidate:
Candidate Signature _____ **Date:** _____
Assessor's Signature _____ **Date** _____

Layout diagram for TASK 2

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Wiring diagram for TASK 3



Estimate of materials TASK 5

S/N.	Item	Description	Quantity	Cost
1.	Solar module	Monocrystaline/polycrystaline	1piece	
2.	Solar battery	Lead Acid	1piece	
3.	Charge controller	Single-stage controller	1piece	
4.	Inveter	Static inverter	1piece	
5.	Mounting structures	Wood/metal for modules and battery	2 mountings	
6.	Cicuit breaker	Singe pole C32	1 piece	

7.	Main switch	Double pole C63	1 piece	
8.	Consumer control unit	(with circuit breakers)	1 piece	
9.	PVC Conduit (heavy gauge)	20 mm^2	4 m	
10.	Switch box	PVC	1 piece	
11.	Bulb holder	Straight	1piece	
12.	Solar cables (DC)	4.0mm^2 (red, black)	4m each	
13.	Cable (Red,Black)	1.5 mm^2 (single)	3m each	
14.	Cable (Red,Black,Yellow/Green)	2.5 mm^2 (single)	2 m each	
15.	Wood screws (assorted)	Assorted	30 pieces	
16.	Socket outlet	Single	1piece	
17.	Switches	1- way one gang	1 piece	

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NOTE TO ASSESSOR: Candidate can choose their own cost values for the materials as well as the quantities.