Worksheet 6: Optimizing the power output of solar cells

Task 1

Set up the circuit and draw a circuit diagram using the correct circuit symbols.

Experimental set-up



connecting cable

Circuit symbols		Circuit diagram
voltmeter		
ammeter	-A-	
solar cell	+	
potentiometer	→R	

Task 2

- 1. Change the resistance by turning the potentiometer so that 0.5 V is displayed, and enter the value of the current you measure into the data table.
- 2. Then reduce the voltage in steps of 0.1 Volt by turning the potentiometer and measure the associated current and enter the value into the data table.
- 3. Calculate the resistance and the power and enter them into the data table.

Data table

Measure	ement	1	2	3	4	5	6
Voltage	(V)	0.5	0.4	0.3	0.2	0.1	0
Current	(mA)						
Resistance	(Ω)						
Power	(W)						

Task 3

Plot the values into the current-voltage diagram.

Current-voltage diagram



Task 4

Determine the measuring point at which the maximum power was drawn.

MPP (Maximum Power Point)

At ______ volt and ______ ampere the power drawn was at a maximum.

Task 5

Write a method for the experiment. Make use of the sentence patterns to write meaningful sentences. Elements from the sentence patterns can be used more than once.

		the digital multimeter	
	1	the other digital multimeter	
	set	the potentiometer	
	connect	the ammeter and the	
	direct	potentiometer in series	
we	measure	the voltmeter	
	reduce	the light of the lamp	
	write	voltage and current	
		the voltage in steps of 0.1 V	
		the observations	

to	the voltage measurement range
with	the current measurement range
	5
onto	the solar cell
of	both directions
into	turning the potentiometer
by	the book
,	

1. First we set the digital multimeter to the voltage measurement range.

2.	Then	
3.	Thereafter,	
4.	Then	
5.	Next	
6.	Now	
7.	At the same time,	
8.	Then	
9.	At the end,	