

Criteria	Full Credit	Partial Credit	No Credit
1. Nameplate data recorded	3 points	2 points	0 points
Step 3 data recorded	3 points	2 points	0 points
Step 4 data recorded	3 points	2 points	0 points
5. Measure complete I-V curve: data	5 points	3 points	0 points
6. Measure I-V curve with shaded cells: data	5 points	3 points	0 points
7. Record energy consumed, battery voltage, elapsed time	3 points	2 points	0 points
8. Direct energy transfer to battery: data	3 points	2 points	0 points
10. Estimate solar irradiance for step 4, calculate panel efficiency	3 points	2 points	0 points
11a. Plot I-V curves from step 5	5 points	3 points	0 points
11b. Plot I-V curves from step 6	5 points	3 points	0 points
12a. Find model parameters I_0 , I_{D0} , R_p , R_s	8 points	4 points	0 points
12b. Plot model I-V curve and overlay data points	5 points	3 points	0 points
12c. Compare data and model V_{oc} , I_{sc} , V_{mp} , I_{mp} . (paragraph discussion)	5 points	3 points	0 points
13. Plot model I-V and P-V curves at 250, 500, 750, 1000 W/m^2	8 points	4 points	0 points
14a. Plot model I-V characteristic for shaded (step 6) case. Overlay data points.	8 points	4 points	0 points
14b. Compare model and data for shaded case (paragraph). Which backplane diodes conduct?	5 points	3 points	0 points
14c. Plot P-V characteristic for shaded case and find V_{mp} , I_{mp}	5 points	3 points	0 points
15a. Estimate total Amp-hrs supplied by battery	3 points	2 points	0 points
15b. Estimate battery SOC	3 points	2 points	0 points

at step 7			
15c. Compare with battery characteristics (paragraph)	3 points	2 points	0 points
16a. On step 5 I-V curve, find DET op pt for step 8. Calculate power.	3 points	2 points	0 points
16b. Compute how MPPT would increase battery charging power and current	3 points	2 points	0 points
16c. Suggest new approach that would allow MPPT under shaded	3 points	2 points	0 points



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