

Title :

Student Name: _____

Title Page (5 Pts.):

- 5: Title and rubric present
- 3: Only title present
- 0: Neither title and rubric

Total:

Objective (5 Pts.):

- 5: Concise statement (quantify objective)
- 3: No numerical value in statement
- 0: Does not exist or copy/pasted from template

Total:

Background (5 Pts.):

- 5: 1 paragraph, ~3-4 sentences, related to solar power and its applications
- 3: 1 paragraph, ~1-2 sentences
- 1: No relevant information
- 0: Does not exist or copy/pasted from template

Total:

Discussion & Results (30 Pts./35 Pts.):

Assumptions (5 Pts.):

- 5: Stated in one place, reasonable, explained/justified; includes the working fluid being used.
- 4: Stated in one place, reasonable, not explained
- 3: Stated in one place, unreasonable or incomplete
- 2: Scattered or very incomplete
- 0: No assumptions stated
- ** -1: Not written using paragraph form

Total:

Description of Schematic (5 Pts.):

- 5: All components named, relevant appendix cited
- 4: All components named, no citation of appendix
- 3: Incomplete description
- 2: Only appendix cited, no description
- 0: Does not exist or copy/pasted from template

Total:

Description of Important Equations (5 Pts.):

- 5: Important concepts and relevant equations explained, appendix cited
- 4: Some description, appendix cited
- 3: No description but cited appendix or vice versa
- 0: Does not exist or copy/pasted from template

Total:

Design Process/Methods (5 Pts.):

- 5: Thorough description of problem and method of solving (5+ sentences)
- 4: Good description
- 3: Poor or unclear descriptions
- 2: Some descriptions but no rationale provided
- 1: Inaccurate description of problem and methods
- 0: Does not exist or copy/pasted from template

Total:

Results:

Part 2a (10 Pts.):

- 10: Final calculated η_{cycle} and relevant discussion
- 8: Correct steps, incorrect η_{cycle} or little discussion
- 6: Some minor mistakes in process
- 4: Major mistakes/incomplete
- 2: Very incomplete
- 0: Does not exist or copy/pasted from template

Total:

Part 2b (5 Pts.):

- 5: Correct calculations and all steps, clearly defined "best" power plant design
- 4: Mostly correct calculations, complete
- 3: Mostly correct calculations, incomplete
- 2: Very incomplete
- 1: Scattered
- 0: Does not exist or copy/pasted from template

Total:

Part 3 (5 Pts.):

- 5: Relevant and thorough discussion of solar variability on power plant output, methods listed to mitigate solar variability (2 paragraphs min.)
- 4: Mostly relevant discussion
- 3: Somewhat relevant discussion, key points missing
- 2: Very incomplete
- 1: Scattered
- 0: Does not exist or copy/pasted from template

Total:

Conclusion (5 Pts.):

- 5: Brief restatement of results from each part
- 3: Poor or incomplete restatement
- 0: Does not exist or copy/pasted from template

Total:

Appendix: Schematic (10 Pts.):

- +3: Schematic included
- +2: Not drawn in pencil
- +2: Neatness
- +3: Labeled completely

Total:

Appendix: Sample Calcs./Basic Equations (10 Pts.):

- +5: Calculations section included (one sample calc. for each step)
- +5: Complete (partial points may be awarded)

Total:

Appendix: Plot(s) (10 Pts./5 Pts.):

- +2: P-v diagrams (can be drawn by hand)
- +2: T-s diagram (can be drawn by hand)
- +1: Heliostat efficiency
- +1: Effective solar efficiency
- +1: Q_{in}
- +1: W_{net}
- +1: Cost
- +1: $W_{\text{net}}/\text{Cost}$

Note: Only the first two plots are relevant to students who chose part 2a, in which case they will be worth 2.5 points each, and the remaining 5 points have been allocated to the

Total:

Appendix: References (5 Pts.):

- 5: Three or more valid references
- 4: Two valid references
- 3: One valid reference
- 0: No references

Total:

Formatting (5 Pts.):

- +1: Visually appealing (typed, neat handwriting, etc.)
- +1: Well-organized
- +1: Appendices labeled appropriately
- +1: Sections labeled appropriately
- +1: Name

Total:

Total:
90