

TEST 2 Reflection

WRITING RUBRIC (Applied to the whole test, not to particular problems)

1. Purpose	0.5/10.0
2. Drawings	1.0/10.0
3. Sources	1.0/10.0
4. Design considerations	1.0/10.0
5. Data and variables	0.5/10.0
6. Procedure	2.0/10.0
7. Calculations	2.0/10.0
8. Summary	0.5/10.0
9. Materials	0.5/10.0
10. Analysis	1.0/10.0
TOTAL	10.0/10.0

PROBLEM 1)

1. Actual cycle diagram	1/14
2. P-v and T-s diagrams	2/14
3. State calculations (10 of them)	2/14
4. Double interpolation for state 6	0/14
I understood that a method would be needed for finding h_6 due to being in between tables, however I chose to use an online calculator. This resulted in a slightly different number than the key.	
5. Calculate y_1	1/14
6. Turbine work	1/14
7. Mass flow rate	1/14
8. Heat rate at space heating	1/14
9. Heat released in condenser	1/14
10. Utilization factor (need pumps & Q_{in})	2/14
11. Final results	1/14
TOTAL	13/14

FINAL GRADE:

$$10.0 + (80) \cdot (13/14) = 84.3$$

1) How and why the test demonstrates your work toward one, or more, of the course learning objectives. Be specific on the course objectives you decide to mention.

- Develop an intuitive understanding of how to apply the first and the second law of thermodynamics to different thermal systems.
- Apply Rankine Cycle with superheating, re-heating, and regeneration to steam power plants.

Above are the learning objectives that were demonstrated by the test. The tests relied on the student's ability to identify correct uses for the first law of thermodynamics Specifically when dealing with mass flow rates and determining work and heat terms.

2) How your test compares against the available solution. State the mistakes you made and what you will do next time to avoid making same mistakes. Please point out exactly where you made the mistake, say why you made the mistake, and how you should have done it. If you were taking this test again, what advice would you give yourself to ensure that you had a successful test?

My test was very similar to the available solution, with only minor differences and final numbers that I contribute to rounding differences. Also note the enthalpy for state 6 was found using an online calculator rather than double interpolation.

3) What your grade should be. Base it on the writing rubric provided in the test and the correctness of your solution. What are the strengths and weaknesses of your test?

According to the rubric and the wickets that were looked for, I believe my grade should be an 84 on the test. With the addition of the 10 points for the homework I believe my overall grade should be 94 before extra credit. The strength of this test was determining the states after the cycle was drawn. A weakness I had was difficult he determining whether they feed water heater was open or closed.

4) Discuss the following:

a. What issues did you encounter in completing the test? How did you troubleshoot them?

An issue I found during the test was I incorrectly assumed that the feed water heater was closed. I continued with the problem however noted any area that would be different due to this assumption rather than an open feed water heater. Once determining the feed water heater was open, I was able to go back and adjust my test to the correct assumption.

b. What steps did you take to complete the whole test? Would you change something?

After determining the system, I began working through the states of what was guaranteed based on saturation and super heated assumptions. After this I drew the diagrams and determined the remaining states. I would change the order in which I found the answers, I assumed that the order in which they were asked would be the most direct route to finding them however that was not the case.

c. What new concepts have you learned?

I learned the concept of double interpolation. I have not had this issue come up in previous coursework.

d. Where you think engineers use those concepts (provide specific examples)?

Engineers will frequently be required to create drawings of systems based on a client written description of them. Furthermore, utilizing double interpolation will allow for a deeper use of whatever tables are at hand.

e. Where do you think you will be using everything you learned?

I will use these concepts during work at BWXT or other similar careers.

f. Do you think what you learn is important for your professional career?

I believe these concepts will be important for me to have a good understanding of many disciplines of engineering. Is important for engineers to be somewhat self-sufficient and complete in their knowledge for the benefit of their clients.

g. How, when, where and why you might use this information or skill in the future?

I could use this information if I took the thermal systems PE exam. Also, this information will build confidence in the future for similar problems in industry.

h. Have you been able to apply concepts you have learned in the course to what you do at work or in other courses?

I have been able to apply concepts learned in this class to my PE test studying. I can also think back to my time working around the components of concern and the test, and have a better understanding of how they worked.

i. What areas did you feel you were most successful, or improved the most?

After completing the test I felt like I was most successful in taking small chunks of the problem and completing them. No large mathematical leaps were needed this problem.

j. How do you see this course's content intersecting with your field or career?

If I become more directly involved in nuclear power operation or design, I will use thermodynamics, fluid mechanics, and heat transfer heavily.

k. How much time did you spend on the test? How was the time organized? What would you do differently? Why?

I spent roughly 3 hours pursuing the closed feed water heater configuration, then spent another three or four hours correcting and getting to the states. After the states were achieved the variables asked for took another hour and a half. I then spent two hours rewriting the test legibly. I would not change the way I complete this test, as doing a draft helps me quickly determine roadblocks and iterate the test.