1)The course objective on the syllabus "Develop a clear understanding the basic operation of combined gas turbines vapor cycles, cogeneration and binary vapor cycles" was the objective that the test demonstrated. In the sourses of the test I put the cogeneration lecture because I used those slides to help me complete the test.

2) For question 1 the first mistake that I came across was determining the z mass fraction for question 1. Where I messed up was when I computed first law to find z I did not divide enthalpies of states 10 and 14 to states 2 and 3. However, my answer was close. Hence, my water-cooling temperature was off by a little bit. However, my answer was relatively close to the correct answer. Off by 0.4 degrees Celsius.

For the question 2 I did not create any diagrams or procedures and calculations. I figured sense we have never done something like that before that it was even possibly/necessary. Because of this, the y value for the mass fraction I thought was zero, however, it was not zero. Hence, Hence, my water-cooling temperature was off by a little bit. However, when computing I used the correct formula and used the correct enthalpies and mass flow rate to find delta t subscript w. Also, the efficiency was also off.

3)

After completing the rubric I have a 72.9. Where I know I could have improved was providing the procedures and diagrams for question 2. Where I felt my strengths were however was actually solving the problems. Although some of my mass fractions were off the formulas that were needed to solve the equations a majority were spot on.

WRITING RUBRIC:

1. Purpose 0.5/10.0 out of 0.5/10.0
2. Drawings 0.5/10.0 out of 1.0/10.0
3. Sources 1.0/10.0 out of 1.0/10.0
4. Design considerations 1.0/10.0 out of 1.0/10.0
5. Data and variables 0.25/10.0 out of 0.5/10.0
6. Procedure 1.25/10.0 out of 2.0/10.0
7. Calculations 1.5/10.0 out of 2.0/10.0

8. Summary 0.5/10.0 out of 0.5/10.0
9. Materials 0/10.0 out of 0.5/10.0
10. Analysis 1.0/10.0 out of 1.0/10.0

TOTAL **7.5/10.0 out of 10.0/10.0**

PROBLEM 1)

1. P-v and T-s diagrams 1/10 out of 1/10
2. Realize that some states are not needed 1/10 out of 1/10
3. State calculations (at least 11 of them) 2/10 out of 2/10
4. Calculate “y” and get y=0 1/10 out of 1/10
5. Calculate “z” .9/10 out of 1/10
6. Calculate deltaT water .9/10 out of 1/10
7. Thermal efficiency (Wnet & Qin) 1.75/10 out of 2/10
8. Final results .85/10 out of 1/10

TOTAL **9.4/10 out of 10/10**

PROBLEM 2)

1. P-v and T-s diagrams .5/9 out of 1/9
2. Realize that some states are not needed 1/9 out of 1/9
3. State calculations (at least 8 of them) .75/9 out of 2/9
4. Calculate “y” .75/9 out of 1/9
5. Calculate deltaT water .75/9 out of 1/9
6. Thermal efficiency (Wnet & Qin) 1.75/9 out of 2/9
7. Final results .75/9 out of 1/9

TOTAL **6.25/9 out of 9/9**

FINAL GRADE (if everything is correct):

(max 10 points) + (80/2)*(PROBLEM 1 + PROBLEM 2) = 7.5 + (80/2)*(9.4/10+6.25/9) = 72.9

4)

a. Troubles that I encountered during the test was determining the mass fraction of y. I had already used first law to find y and got zero. However, it never occurred to me how we can assume that it is zero. Another issue that I ran into was completing the p-v and t-s diagrams and the calculations for question 2. That put my grade through the ringer. However, it was something that I did not know was needed to complete question 2 of the exam.

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

b. What I did that seemed to work was I spaced out the test in increments which helped me not overthink an easy conception and I was able to complete on what I thought was effective and efficient. I would not change anything.

c. Having three mass fraction (w,y,z) was new that was on the test. However, once reading the questions the three were not used because we had shut down. Then, in the second question y shut down next

d. I think in the exam is a crucial way for engineers to determine the entirety of the power plant if it would run or not. Both question one and two were good examples on real world applications. How things can go wrong, and stuff breaks down.

e. Hopefully, I will use this knowledge at a job one day.

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

f. What I have learned is super detailed in your work. I think how the test is organized where we must give constructive detail is beneficial. When we are on a jobsite and must submit our work to somebody that does not understand a system the way you do. The best thing is

to dumb it down where the customer, client, or boss can easily understand what the objective is and how it's completed.

g. I believe as soon as I get out of university, I will use these applications because it is the way for people to understand my work.

h. Yes, what I have done that started in this class was keeping the work organized and clear where most people could read and understand my concept.

i. I feel the areas where I am most improved is going through the procedure and calculations is where I have most improved this exam.

j. At this point I am unsure if using the cogeneration and Rankine cycles is something I will use in my career. However, it might change after going to the field trip to that power plant.

k. I would say I spent about 4 hours on the test, and I was organized. To reduce overload, I just completed the test in parts.