TEST 1
REFLECTIONS

ROY SHEPARD

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.

During this we utilized many of the topics we learned about. Such as how to take pressure reading with a manometer. What happens when the manometer has no flow. How will the pressure change. Another topic we touch on during test 1 was forces due to static fluids. For problem one we wanted to no how much force it took to open the gate so we could then size a correct buoy. Finally for question 1 we utilized what we learned about buoyancy. We had to take the force number to open the gate and use that number to size the buoy.

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?

Question 1 I was on the right track, my diagrams are correct and some of the solution is correct. I thought I was taking too long on this part so I moved on to question 2 which was more recent in my head based on the HW.

Question 2

I was able to get this question correct. The test has a few more details that I missed but the final answer is correct.

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?

See Below

Problem solution rubric

	Exceeds Standard	Meets Standard	Approaches Standard	Needs Attention
	4	3	2	1
	10 points	7 points	4 points	0 points
1. **Purpose** 5%	The purpose of the section to be answered is clearly identified and stated.	The purpose of the section to be answered is identified, but is stated in a somewhat unclear manner.	The purpose of the section to be answered is partially identified, and is stated in a somewhat unclear manner.	The purpose of the section to be answered is erroneous or irrelevant.
2. **Drawings & Diagrams** 10%	Clear and accurate diagrams are included and make the section easier to understand. Diagrams are labeled neatly and accurately.	Diagrams are included and are labeled neatly and accurately.	Diagrams are included and are labeled.	Needed diagrams are missing OR are missing important labels.
3. **Sources** 5%	Several reputable background sources were used and cited correctly.	A few reputable background sources are used and cited correctly.	A few background sources are used and cited correctly, but some are not reputable sources.	Background sources are cited incorrectly.
4. **Design considerations (assumptions, safety, cost, etc)** 10%	Design is carried out with applicable assumptions and full attention to safety and cost, etc.	Design is generally carried out with assumptions and attention to safety, cost, etc.	Design is carried out with some assumptions and some attention to safety, cost, etc.	Assumptions, safety and cost were ignored in the design.
5. **Data and variables** 5%	All data and variables are clearly described with all relevant details.	All data and variables are clearly described with most relevant details.	Most data and variables are clearly described with most relevant details.	Data and variables are not described OR the majority lack sufficient detail.
6. **Procedure** 25%	Procedure is described in clear steps. The step description is in a complete and easy to understand short paragraph.	Procedure is described in clear steps but the step description is not in a complete short paragraph.	Procedure is described in clear steps. The step description is in a complete short paragraph but it is difficult to understand.	Procedure is not described in clear steps at all.
7. **Calculations** 20%	All calculations are shown and the results are correct and labeled appropriately. The units of all values are shown.	Some calculations are shown and the results are correct and labeled appropriately.	Some calculations are shown and the results labeled appropriately.	No calculations are shown OR results are inaccurate or mislabeled.
8. **Summary** 5%	Summary describes the design, the relevant information and some future implications.	Summary describes the design and some relevant information.	Summary describes the design.	No summary is written.
9. **Materials** 5%	All materials used in the design are clearly and accurately described.	Almost all materials used in the design are clearly and accurately described.	Most of the materials used in the design are clearly and accurately described.	Many materials are described inaccurately OR are not described at all.
10. **Analysis** 10%	The design is discussed and analyzed. Argumentative predictions are made about what might happen in case of change in the operation and how the design could be change.	The design is discussed and analyzed. Argumentative predictions are made about what might happen in case of change in the operation.	The design is discussed and analyzed. No argumentative predictions are made about what might happen in case of change in the operation and how the design could be change.	The design is not discussed and analyzed.

WRITING RUBRIC

Purpose 0.5/10.0 out of 0.5/10.0

Drawings 1.0/10.0 out of 1.0/10.0

Sources 1.0/10.0 out of 1.0/10.0

Design considerations 1.0/10.0 out of 1.0/10.0

Data and variables 0.5/10.0 out of 0.5/10.0

Procedure 2.0/10.0 out of 2.0/10.0

Calculations 2.0/10.0 out of 2.0/10.0

Summary 0.5/10.0 out of 0.5/10.0

Materials 0.5/10.0 out of 0.5/10.0

Analysis 1.0/10.0 out of 1.0/10.0

TOTAL 10.0/10.0 out of 10.0/10.0

PROBLEM 1)

P-v and T-s diagrams 1/9 out of 1/9

State calculations (7 of them – including 5a) 3/9 out of 4/9

For 6 -> Balance HX using 5a

Efficiency and mass flow rate calculation 1/9 out of 2/9

w_out4-5, w_in1-2 (use isent eff or 5a), qin3-4

New HX effectiveness .5/9 out of 1/9

Final results .5/9 out of 1/9

TOTAL 6/9 out of 9/9

PROBLEM 2)

1. **P-v and T-s diagrams 1/9 out of 1/9**
2. **State calculations (8 of them – including 3a and 5a) 4/9 out of 4/9**

Use 500 kJ/kg -> Compressor & Turbine

Cp and Cv are variable

3. **Pressure (P5) 1/9 out of 1/9**
4. **Velocity (V6) Use h5a 1/9 out of 1/9**
5. **Thrust 1/9 out of 1/9**
6. **Final results 1/9 out of 1/9**

TOTAL 9/9 out of 9/9

FINAL GRADE (if everything is correct):

10.0 + (80/2)*(6/9+9/9) = 76.67 + 5 = 81.67

4) Discuss the following:

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

I had a hard time with question 2 that was very different from any of the examples that we worked on. I troubleshot that question by reviewing examples and using the concepts from those examples.

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

I looked through all my notes, homework, videos, similar questions and solutions posted. for each question to see if I could apply anything form those questions. I also read through all the posted material and reviewed the lecture I attended to make sure I wasn't missing something that stood out. I would probably use more assumption if I wasn't able to fill in the blanks with the proper formula or equations. I would take assumptions to help fill in those blanks and see if what I assumed was practical for the real world.

c. What new concepts have you learned?

I learned about basic consideration in the analysis of power cycles, the Carnot cycle, otto cycle, diesel cycle, Brayton cycle, Ideal jet propulsion cycles. And finally regenerations with Brayton cycle

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

As some of the examples mention these can be used in jet engines or cars or even large compressors.

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

For me I work in the aerospace industry. If I ever move to engine design area I am sure I can use this information.

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

Yes, we need to learn this information to have some intelligence of the basics. We as engineers need to know where to go to find the correct information.

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

I am not sure when I will use this information in the future, I currently work as a reliability engineer for an aerospace company. I could use this information if I switch to a design engineer for jet engines.

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 not applied these concepts in a work environment yet. I have not used them on another class yet either. There might be an opportunity for that in the future.

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

I feel I was very successful on question 2. There were a lot of parts to question to solve for to get the correct answer. Based off the solutions I did the first question correct. The 1st question I stopped after spending too much time on it.

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

I work in the aerospace industry so maybe one day I can use this information, If not I can at least have a better basic understanding for jet engines on a aircraft.

k. How much time did you spend on

This test took me the entire time to complete, I Worked each question a little but at a time each night all the way until the end.