Jacob Schwartz Fluid Mechanics (MET 330) 3/26/2020

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.

- This test not only touched on areas from the last test such as Bernoulli's principle, but focused especially on pressure and force on a stagnant fluid, buoyancy, stability, pressure drops, cavitation, water hammer and forces in a system. This test not only challenged me on the new knowledge, but made me think back and use prior knowledge in the course, bringing everything together.

2) How your test compares against the available solution. State the mistakes you made and what you will do next time to avoid making the 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?

After comparing my test to the solution on Blackboard, I found that for the most part I had very similar steps to those taken on the solution, and the answers were also not off by a crazy amount to me. Other than changing the variables in a couple equations to variables that made sense in my head, the equations were also the same and used in the same order. I would say that had I had the same numbers solved for, the answers would be the same. However, for question 2 and 4, there are some more noticeable mistakes or missing parts.For question 2, I did not make the free body diagram, as well as I did not solve for the reaction forces and did not neglect velocity and take the difference in pressure. Had I done this, I am sure my answers would have been similar. As for question 4, I did not convert the variables to find C, which threw off that value, and affected the pressure that was solved for, which also caused the pressure max to be wrong. Overall, I should have added some details into my work such as charts, made sure I was using the correct equations, converted correctly, and collected variables correctly from the book. These are the changes I would make if I were taking the test again.

# 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?

- I think I should get full credit for the writing rubric portion of the test, as I believe I completed these to the best of my ability just as I did my last test, which I got full credit for.
- As for the actual calculations, I feel like while the final numbers were not correct for most, they were definitely close, and if using the exact same numbers, they would be. I believe for all but one problem I used the proper equations and steps to complete the problems correctly, which means a lot to me knowing I was on the right page. I would say I'd get around 18/25 of the points.
- I have discussed the strengths and weaknesses of the test above, but I believe a total grade of about 75-80 with these points added, would be respectable.

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### 4) Discuss the following:

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

- It took me a while to go through the test and see what each question was asking for and how I would be able to solve for what was being asked. I then went to the book and read up on the topics related to the question and got on the right track. This kinda helped me from overthinking a bit, but of course there was still some overthinking.

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

I started the pretest fairly early, but after that I was a tad bit slow to really start the test.
But, I finally took the test one question at a time, and purely did my best with what I knew. Had I started earlier, it may have kept my brain fresher as I could have taken small breaks.

#### c. What new concepts have you learned?

 I learned how to solve for forces in a system, pressure drop, water hammer and cavitation, buoyancy, stability, flow rate, and drag forces in systems. Although the answers may not be right on the dot, I did take the proper steps to be able to solve it.

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

- Well I think I may be using it in my internship this summer working for an engineering company that deals with fluid mechanics a lot. I may have to measure flow rate, or find the forces so that we can design something to support the pipes. This class has truly shown me how everything I've learned is used on the job site.

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

- Well specifically on the job site as stated above, but I feel like anywhere dealing with engineering, I will be using some of the basics.

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

- Absolutely, I will be able to go to my employer later this year and explain to him how I have learned about all these topics, and show that I know the basics of the job.

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

- On the job site, but also in other classes as well. I know that my thermal course has related to my thermal applications class now, so perhaps this will happen later on with the rest of my studies.

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## 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 up until now, but this summer I think I especially will be able to. This will be my first engineering related job/internship this summer.

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

 I feel I improved in understanding what was being asked and how to solve for it, as well as seeing and understanding that the answers I solved for at least made sense in my head as I was completing the test, other than a few questions.

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

- Well, if I stay with this company, it will especially intersect with my daily works in the field. But I'm sure it will have its connections to other fields of engineering.

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

- I would say I spent about 15-16 hours working on this test, as I wanted to make sure I was grasping the concepts correctly, and trying to put my best work forward. My time was organized as I would work on it for a couple days for about 6-7 hours straight so that my mind was focused on the problems. When I get concentrated into something, I try to keep going until the problem is done. I would probably start sooner, or at least the grasping of concepts so that I may no be as stressed about the test.