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Dr. Ayala

MET 330

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Test 2 Reflection

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.

The test takes into account of several course objectives like identifying and solving for different specific industrial problems, such as open-channel flow, cavitation, water hammer, drag, lift, and forces in pipes. This objective was taken into account basically for the whole system based on what the client wanted. Finding the support for the pipe, seeing if cavitation or water hammer would take place, and if a trapezoidal open channel would take on 400 gpm.

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 answers for the test compared to the solutions were not correct at most. Like for part a, find the diameter of the buoy, I did not do a moments equation correctly at all. The solution's calculations were much more in depth. I will need to read into the chapter more to better understand what I couldve done more. For part b, It looks like I drew my forces for the pipe correctly. But for the calculations, I did not get it right. I got stuck especially when solving for Ry. I need to remember that at the exit of the pipe, the pressure is 0. I need to study my moments again. For part c, It looks like I got C correct. However, I used the wrong equation for pressure. For part d, I used a similar process, except for how I found y, which involved iteration. My answer was close. For part e, I did use the right equations up until ΔP. I did not find the max pressure, I forgot about it. My thought for where cavitation could occur was not correct, where I had said it would happen at the valve, but it would not occur due to the pressure being above saturation pressure of gasoline. For part f, I see that I had used the wrong Cd for the square cylinder. I had written it down but then crossed it out thinking it was 2 based off Reynold's number which I created. So that threw the rest of my calculations off. Even the weight of the object is not correct.

If I were able to take this test again, I would tell my self to slow down. I did have some obligations over the weekend. However, I do need to read into

the chapters and take better notes.I do need to place myself in seclusion periodically and really focus.

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 my grade should be about 50. My weaknesses are that my focus could dwindle. When I'm stuck in an area, I could get anxious. My strength is that I don't give up.

4) Discuss the following:

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

I did not have any technical difficulties. There was one point the textbook stopped working. It started working not too long after.

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

I went ahead and did the pre-test which saved me some time. What I do need to change is my surroundings. I get distracted easily.

c. What new concepts have you learned?

I've learned more on open-channels, cavitation, and water hammer.

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

Engineers use these concepts working on dams.

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

Any engineering company. Specifically the format of writing reports.

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

Yes, even if a concept is not used, its good to know it.

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

I'm not sure if I will to be honest other than reports. It depends where I may work.

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 yet done so.

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

I improved the most in having each sub-section of the writing portion done. Even though a couple of those sections did not have everything written down due to calculation troubles.

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

This course is teaching me how to do reports and how to transmit data on to spreadsheets. I currently work on the electrical field, so I'm quite familiar with piping, but pvc.

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

I've probably spent close to 20 hours. I would read into the chapters as I'm learning the material and ask questions. I would do this so I could use the right equations for the right scenario and better understanding.

WRITING RUBRIC

1.	Purpose	0.5/10.0 out of 0.5/10.0
2.	Drawings	1.0/10.0 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	0.5/10.0 out of 0.5/10.0
6.	Procedure	1.3/10.0 out of 2.0/10.0
7.	Calculations	1.0/10.0 out of 2.0/10.0
8.	Summary	0.2/10.0 out of 0.5/10.0
9.	Materials	0.5/10.0 out of 0.5/10.0
10.	Analysis	.2/10.0 out of 1.0/10.0
TOTAL		**6.2/10.0** out of 10.0/10.0

1. Design of buoy to open gate
    a. Hydrostatic force on the gate
        i. Magnitude and location .5/4 out of 1/4
    b. Solve for buoy force with moment conservation 0 out of 1/4
    c. Using buoyancy, get sphere diameter. 0/4 out of 1/4
    d. Buoy stability 0 out of 1/4
2. Pipe-elbow forces
    a. Free body diagram and correct forces 1/4 out of 1/4
    b. Handling of the pressures .5/4 out of 1/4
    c. Force in x .5/4 out of 1/4
    d. Force in y (weight) .2/4 out of 1/4
3. Flow-nozzle flowmeter pressure drop
    a. Right equation and A1/A2 0 out of 1/2
    b. C value .5/2 out of 1/2
4. Open-channel design
    a. Correct equation 1/2 out of 1/2
    b. Area and hydraulic radius 1/2 out of 1/2
5. Water hammer & cavitation
    a. Water hammer
        i. Wave velocity (units?) & pressure increase 0/4 out of ¼
        ii. Operating pressure & Max pressure .5/4 out of ¼
        iii. Pipe thickness 1/4 out of 1/4
    b. Cavitation
        i. Lowest pressure 1/4 out of 1/4
6. Drag force on object at the bottom
    a. Right eq: Fdrag>Ffriction 1/4 out of 1/4
    b. Correct area 0/4 out of 1/4
    c. Correct velocity 0/4 out of 1/4
    d. How Cd was obtained? .5/4 out of 1/4

FINAL GRADE:

6.2 + (80/6)*(.5/4 + 3.5/4 + .5/2 + 2/2 + 2.5/4 + 1.5/4) = 49.5

10.0 + (80/6)*(4/4 + 4/4 + 2/2 + 2/2 + 4/4 + 4/4) = 90