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Test 2 Reflection

ePortfolio Assignment 2

Self-grading:

1.	Purpose	0.5/10.0	
2.	Drawings	.5/10.0	
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	1.0/10.0	
8.	Summary	0.5/10.0	
9.	Materials	0.5/10.0	
10.	Analysis	1.0/10.0	
	TOTAL	**8.5/10.0**	
1.	Open channel depth (y)		
	a. Correct equation	1/2	2/2
	b. Area and Hydraulic radius	1/2	
2.	Pipe-elbow forces		
	a. Free body diagram and correct forces	1/3	2/3
	b. Force in x	1/3	
	c. Force in y (weight)	0/3	
3.	Largest wood log		
	a. Size	1/2	2/2
	b. Stable?	1/2	
4.	Flow-nozzle flowmeter pressure drop		
	a. Right equation and A1/A2	1/2	2/2
	b. C value	1/2	
5.	Water hammer pressure increase		
	a. Wave velocity (units?)	1/2	1.5/2
	b. Pressure increase	.5/2	
6.	Drag force on a stuck log		
	a. Correct area	.5/3	2/3
	b. Correct velocity	1/3	
	c. How Cd was obtained?	.5/3	
7.	Force on the flange		
	a. Magnitude	1/2	1/2
	b. Location	0/2	
8.	Final actual values of the results	.5/1	1/2

FINAL GRADE:

8.5+ (80/10)*(2/2 + 2/3 + 2/2 + 2/2 + 1.5/2 + 2/3 + 1/2 + .5/1) = 57.16/90= 63.5 percent

Reflection

The course objectives demonstrated in this exam include:

1. Compute pressure and the forces (magnitude, location, and direction) associate with it in a stagnant fluid;
2. Discuss what buoyancy is and determine object stability while floating or submerged in a fluid;
3. Explain the fluid dynamics in pipes and fittings;
4. Identify and solve for different very specific industrial problems, such as, open channel flow, cavitation, water hammer, drag, lift, forces in pipes, and learn about different instruments to measure fluid flow quantities (such as, pressure, fluid velocity, flow velocity, etc.);

The test demonstrated these objectives and more by relating the topics in the form of problem one, touching on one objective per part (a-b). Moving through the test required the knowledge of each respectively.

Compared to the solution provided, my test is mostly the same, with a couple errors. For example, in problem 1 part b, I neglected to include gravity (weight) as a force acting on the system. Due to this minor mistake, my forces in the y-direction were affected and therefore are wrong. I will avoid doing this in the future by remembering that gravity acts as a force, and thus resultant force is affected by it. Another mistake I made was in problem 1 part d. Here I manipulated the nozzle equation incorrectly which negatively impacted my solution. I also made a mistake on part f, where I assumed the wrong CD for the drag force equation. I chose the "plate" instead of the "square cylinder", which slightly skewed my drag force, I made this mistake as I was unsure which to use between the two, I knew the log was not a plate, but the orientation of the "square cylinder" led me to believe it was not the right value to use. In the future, I will easily avoid this mistake by using the correct value of 1.60 (in similar cases).
If I were to give myself advice prior to taking the test, I would advise to slow down and check my work better than I did. As I didn't have as much time to as I would have liked, I would urge myself to spend more time checking my work, instead of rushing to get it done on time.

Judging by the grade rubric provided, I would determine my grade earned to be a 64%. I believe this grade is fair for what I submitted. While it is far from what I would like, I think the many small mistakes add up, and my grade should reflect just that. The strengths of my test are everything aside from my calculations. For the most part, the only mistakes I made were either mathematical or bad assumptions.

I encountered many issues while taking this test. Most of which I was able to troubleshoot by re-reading chapters of the book, checking hw solutions, and following along with notes provided. However, a few major issues included conceptual misunderstandings related to the problem.

The steps I took to complete this test were:

1. Read each step of problem 1 and determine which concept was being used in each
2. Attempt to solve each problem in order
3. Rework problems until solution were obtained
4. Complete “written” parts of the test
5. Rewrite calculations in organized manner
6. Check solutions for errors

If I could change anything about these steps, I would spend more time trying to understand EXACTLY what the parts were asking for, so I wouldn’t make as many mistakes.
A few concepts I learned during this test were how to iterate using excel, manipulating the equations to find what I needed, and how to find wave velocity. I know that engineers in the field will use all the course objectives listed as well as these concepts learned. Such would occur in the industry for many applications involving the use of pressurized tanks or pump systems. Thus, I know I will use everything I learned on this test when I become a practicing engineer, most notably when designing pump systems in the HVAC industry. I feel most successful in the areas using Bernoulli’s, as I have improved in manipulating and applying it to any problem. I see these concepts applying to my career directly since I hope to pursue a career in the HVAC industry. In terms of time spent on the test, I spent roughly twenty hours in total. In hindsight, I would say I should have spent about thirty, with the last ten being focused of review and correction. If I could go back, I wouldn’t be able to change the time allotted as I spent as much time as I could given the situations going on in my life during the test.