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Reflection Test 2 MET330

After the Test 2 for the Fluid mechanics (MET 330) course, I was able to see several of the learning objectives for this course. One of them that was present in both part A and B of the test was objective number 4, by applying the conservation of energy equation (Bernoulli's Equation); another objective present in the test was objective number 6, by analyzing and explaining the concepts of fluid mechanics in pipes and their energy losses, present in both part A and B; and lastly objective number 7, presented in part C, when calculating the flow, area and wetted perimeter of the open channel flow.

After comparing my results to the solutions posted on canvas I made a couple of mistakes throughout the test, those being; when calculating the value of h_L for part A instead of making it to the discharge and the sucker length I used the entire system's height to calculate the value of energy losses, e which also affected the value of my h_A which even though the formula was stated correctly, the value of h_L was not so that affected the total value of h_A . Same thing happened with the value of power, the equation was stated correctly but the wrong number for h_A affected the correct value of pump power, all other values were correct. To find the values of P_3 and P_4 I just used the previous numbers of P_1 and P_2 and didn't make relation with P_1 and P_2 as they were outside of the system and a whole different number, that was a mistake and a part of the solution I missed. For part B of the test, the value of my ΔP loss was incorrect due to the mistake I made in part A and finding the correct pressures, even though the procedure was correct the numbers were not due to a mistake made previously; Finding the correct way to calculate h_L nozzle was also one of the mistakes, which affected later on the value of my pump power after the addition of the nozzle, again that affecting the numbers even when calculating the power in the correct way; The procedure for the calculations of % difference were correct, but again the wrong numbers previously affected the correct final number. And finally for part C, the only mistake made was when calculating the % Q pumped, I used the wrong formula, and yes for % difference, which I ended up subtracting the Q pump from the Q open channel and that made the number not correct. Overall it was a good exam and looking back what I would've done differently is to double check and analyze the number I am using better, since a little mistake in part A made a huge impact in the rest of my part A and B as well.

Based on the rubric my grade should be:

WRITING RUBRIC

1. Purpose	0.5/10.0
2. Drawings	1.0/10.0
1. Sources	1.0/10.0
2. Design considerations	1.0/10.0
3. Data and variables	0.5/10.0
4. Procedure	1.7/10.0
5. Calculations	1.5/10.0
6. Summary	0.4/10.0
7. Materials	0.5/10.0
8. Analysis	0.9/10.0
TOTAL	9.0/10.0

PART 1)

1. Select pipe diameter	1/8
2. Use Bernoulli's to get h_a (ref & points in pict.)	0.8/8
3. Pipe energy losses	0.7/8
4. Pump power with efficiency	0.9/8
5. Calculate inlet and outlet pressures	0.6/8
6. Proper excel spreadsheet	0.7/8
7. Plot pump power vs. pipe diameter and inlet & outlet pump pressures vs. pipe diameter	0.9/8
8. Correct results?	0.8/8

PART 2)

1. Solve for dP with right equation and A_1/A_2	1/6
2. C value	1/6
3. Additional pump power	0.8/6
4. Proper excel spreadsheet	0.8/6

5. plot pressure drop across the nozzle vs. nozzle diameter to pipe diameter ratio. 0.6/6
6. Correct results? 0.8/6

PART 3)

1. Correct equation 1/7
2. Area calculation 1/7
3. Hydraulic radius calculation 1/7
4. % of pumped water flow 0.6/7
5. Proper excel spreadsheet 0.8/7
6. plot % of pumped water flow vs. water elev 0.6/7
7. Correct results? 0.8/7

FINAL GRADE:

$$9.0 + (80/3) * (6.4/8 + 5/6 + 5.8/7) = 74.651$$

After the exam and seeing my thought process during my procedure the point i struggled the most was the analysis and being able to read the problem and apply what we learned, overthink everything. The main thing i would've done differently was to spread the steps throughout more day so my brain would have more time to breath in between steps. The main thing I got from this exam was to calculate the follow and pressure difference through a system. The main thing I think engineers would use this concept is water distribution to send water through tubes and what power is required in the system, those might be used in the near future in my internship at the water and wastewater company of Baltimore city, seeing and understanding more of the entire process. Even though this is important right now for my internship, the area I want to work in I don't envision myself using these concepts a lot, maybe to a cooling process or a distribution of a fluid in a production cycle, but I can be wrong and knowing this can help me a lot in the future. I haven't had the opportunity to use any of the concepts but I am sure this class is preparing me for it in case I need it. Even Though i still struggle a lot with the analysis, I think that skill is improving slowly throughout not only this class but also the thermo from last semester. As mentioned before, I would've started the exam earlier, and not on the second to last day, my organization was based on spending the entirety of those two days just to get the exam done when I should've divided them into more days and with breaks in between, to give my brain a break between each section.

