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MET 330

Fluid Mechanics

Test 1 Reflection

Upon reviewing the solution for test 1 and comparing it with my own work, I have identified a few areas of improvement along with areas of mistakes. I believe a majority of my mistakes stemmed from being unfamiliar with fluid mechanics as a discipline but still learning the concepts and theory behind it all. My inexperience did not allow me to "see the whole picture". An issue I encountered during the test was the inability to identify some very key components and references due to height. I miss identified the total distance delta from my z1 and z2 essentially creating a longer distance of 26ft instead of the 20ft as in the solution. My major mistake in the test was due to not identifying the alcohol within the manometer. I completely did not even notice it and looked completely over it. One way to troubleshoot that mistake for the future would be to actually print out the test and color code the heights and sections and system components. I believe that would have assisted me with viewing all references more and would have kept me from being overwhelmed by such a simple problem. The steps taken to complete the test I thought were good but now I see my steps can be enhanced upon. If I were to change anything I would definitely have printed out the test instead of looking at it on the computer. I think then being able to color code and circle reference would have assisted me with identifying all the key components more effectively.

The test also provided me the opportunity to test new concepts and practice my problem-solving skills. Overall, the concept of having so much energy loss throughout a system was something that never really occurred to me. As in class and in homework, we are to solve minor isolated problems for practice, there was not many opportunities to solve such a larger scale system with all components of the course material combined. Seeing that within the piping system there was so much to account for, was almost pleasing as I knew I was going to be tested on identifying areas of concern. I believe one of the major strengths I had, was being able to identify the variables needed to full fill the initial Bernoulli's equation for the energy losses in conjunction with utilizing the book for reference. I still miss the entire alcohol in the manometer portion but I know, I just completely did not pay close enough attention in that portion of the design. I was able to identify the correct equation for this portion of the test, but poorly executed the calculations. Another area where I believe I missed a concept was in not utilizing the gamma h equation to calculate the flow at a stop. I did not even think about continuing with using the solution method as I was so dependent on Bernoulli's. I know that I was looking for a point of equilibrium thus using the Bernoulli's instead of the solution method. I can see where engineering would use the same concepts of identifying energy loss in many types of avenues, especially in my current career at Newport News Shipbuilding, where nuclear piping systems are frequently designed for use. Though I'm not sure I would use my skills in conducting calculations in my current field of work as a Modeling and Simulation Engineer, I do believe the concept of identifying system components is something that would be frequently used and learned for future projects. Being able to identify key features for various systems is a skillset to be developed but one that would carry onto all aspects of my career as I deal with various customers for various projects. The use of the information tested upon I do not believe I would use very frequently hands on, but I can see where potentially dealing with nuclear piping systems for various

tradesmen, I would have a better understanding of specific concerns pointed out when designs are reviewed.

The overall material and concepts of test one does carry over into my lab portion of fluid mechanics, so there is room to actually practice what is currently being overviewed. I believe one area I was most successful in would be my organization. I did reference the book throughout the test and was able to quickly identify what my references were and how they were applied. I think that being able to use reference materials and identify key points is something everyone should get accustomed to as it is something that is frequently done within daily work practices. Currently I see the course content tying into my career as nuclear piping systems is something that is frequently being tested and reviewed through my company for enhancements and safety reasons.

As for conducting the test, I spent about one day reviewing the test material provided and identifying what was being asked to complete. I spent about two days conducting the equations/reviewing the text book for fluid properties. On day four I reviewed my test for errors before submitting. If I were to do anything differently, it would be to print out the test prompt and thoroughly identify all major key features and reference points. I believe throughout the test the ability to use Bernoulli's equation and identify energy loss was something I did very well on. My major mistakes dealt with not correctly identifying heights and completely missing the alcohol within the manometer section. What I believe was the easiest portion of the test as I reviewed the solution. I believe the test was well organized and easy to follow for reference for future situations for myself if ever needed. I would just need to make my corrections, so that I have a good reference when the time comes for future problems.

WRITING RUBRIC

1.	Purpose	**0.5**/10.0
2.	Drawings	**1.0**/10.0
3.	Sources	**1.0**/10.0
4.	Design considerations	**.7**/10.0
5.	Data and variables	**0.5**/10.0
6.	Procedure	**1.0**/10.0
7.	Calculations	**1**/10.0
8.	Summary	**3**/10.0
9.	Materials	**0.5**/10.0
10.	Analysis	**.5**/10.0
	TOTAL	**8/10.0**

TEST TOTAL 57 out of 90

1st part)

1.	Bernoulli's at liquid surfaces and solve for air pressure	6 out of 7	
2.	Compute velocity with Q=VA	6 out of 7	
3.	Compute energy losses (pipe and minor)	6 out of 7	
4.	"gamma*h" equation and solve for "h" in manometer	3 out of 7	TOTAL 33
5.	Compute pressure at 2nd elbow	7 out of 7	
6.	Create spreadsheet with all calculations	6 out of 7	
7.	Correct results?	6 out of 7	

2nd part)

1.	"gamma*h" equation and solve for air pressure	1 out of 3	
2.	"gamma*h" equation and solve for "h" in manometer	1 out of 3	TOTAL 3
3.	Correct results?	1 out of 3	

3rd part)

1.	Use spreadsheet from "1st part" to get P1 for diff Q Make sure energy losses change when changing Q	3.5 out of 4	
2.	Plot P1 vs Q	3.5 out of 4	TOTAL 13
3.	Read Q for P1=75 psig	3.5 out of 4	
4.	Correct results?	3.5 out of 4	