Test 1 Reflection

This test demonstrates how engineers define fluids' nature and properties, including viscosity and pressure within the object. This test also identifies and solves different types of industrial problems, such as the flow and velocity of a fluid when it is flowing in small and large pipes and U-tubes.

When I solved the first part of this test, I made some significant mistakes as I calculated the pipe's losses, entrance, and minor losses. In the first step, I plugged in the velocity flow and the energy loss equation when I calculated the pipe's losses. I did not use Darcy-Weisbach's turbulent equation for energy loss before solving the pipe's losses. For solving the minor losses, I did not solve for the friction factor for the minor losses of the pipe when gasoline was flowing through the pipe, and I plugged the same friction factor for the pipe losses. For determining the diameter of a U-tube manometer, I used the manometer equation of a fluid moving on the U-tube, calculated the height of the tube, and then used the G.3 table to find the correct. I was unaware that the question was about selecting the tube diameter and height based on actual life engineering problems perspective. When solving for the tank's diameter when it does not change by 1% after 5 minutes, I was unsure how to solve the problem, so I used the chapter 5 equation of continuity principle in the textbook because it is related to time. I did not know there was a transpired equation where volume equals flow rate times time for the tank to transpire.

For the second part of the test, I solve for the velocity, flow rate, and height of the value gate with a ¼ pipe size. What I should have done in this problem is use excel instead of hands-on mathematics when finding the drop percentage and losses.

When I can do the test again, I will make sure to study the notes and equations we used before taking the test. I need clarification on some of the questions during the test. In that case, I will contact Dr.Alaya and use the pre-test submission assignment to ensure I am doing the procedure for the problem correctly. I also need to use excel when the question says to use excel as it applies even if the calculation may be wrong.

From the self-grading, the grade that I should get on this test is around 46.7. The reason for this grade is that I could get all the requirements for the writing rubric of this test; however, I did not get the correct answers for each four parts of this test. Also, when I self-grade my test, I notice that I’m missing some of the parts that are supposed to be solved for each part of the test. The strengths when I took the test is that I was able to solve each using Bernoulli's equation based on how the problem was given and compute them to the equation in determining the solution to each part. The major weakness in taking this test is determining which equation and tables were used in order to solve the problem that was asked in each part of the test. I was having trouble on how the calculation is right or wrong based on the missing parts needed to solve the problem.

During the test, I was having issues with how to solve the entire problem for both parts, which required multiple different questions to solve it. When I tried solving, I solved each part of the question individually and then solved the entire problem of each part. The first step in solving the problem for each part was listings given before calculating the problem. Once I found out how to solve it, I calculated the missing item needed for the problem that led to the solution. I should read and understand the instructions carefully before doing the problem.

In this test, I learned the concept of transpened flow, where the flow velocity of the gasoline flowing from the volume of the tank changes in time. The changes occur when the gasoline starts flowing through the pipe to the gate valve and then to the truck while the tank level changes. This engineering concept helps determine the amount of liquid within the tank to be poured into other storage objects.

This problem will arise when maintaining the channel flow of fluid transporting through a pipe and then into the valve that prevents fluid flow through the pipe. This test helps me understand that the nature of the flow rate system differs depending on the gate value and size of the pipe required for the transportation of fluids. I use this type of problem when filling a large plastic container with clear sanitizer from a 55-meter hole connecting to a storage room as part of my job. This filing aims to determine how much liquid sanitizer is needed to clean floors, plates, and tables.

I did well in this test using unit conversion for the suitable units to solve the problem. This test course concept helps my career as a mechanical engineer in designing a large tank that is highly compatible with carrying massive liquid within the reserve for more significant usage. I spent approximately four days on this test and organized it in my free time instead of other classwork. What I should have done differently in this test is start this test as early as possible for flexibility, even when I struggle to solve the problem.