TEST 3 REFLECTION

PART 1

Test 3 covered important learning objectives related to fluid mechanics, specifically applying the principles of conservation of energy and mass to fluid flow systems, and computing friction losses in pipes for various configurations like series, parallel, and network. By understanding and applying the principles of conservation of energy and mass, engineers can accurately predict fluid behavior in various systems, and optimize the design and operation of such systems. Bernoulli's equation, which is a fundamental principle in fluid mechanics, allows for the computation of energy changes in a fluid as it flows through a system. Understanding the equation and how to apply it is essential for accurate predictions and solutions in fluid mechanics. Moreover, computing friction losses in pipes for different configurations is crucial for optimizing the performance and efficiency of fluid flow systems. By understanding how friction losses affect the system, engineers can determine the best pipe diameter, pipe material, and other design considerations to reduce energy loss and improve performance. In summary, the learning objectives covered in Test 3 are essential for any engineer working with fluid mechanics. By mastering these concepts, engineers can apply them to real-world situations and optimize fluid flow systems for maximum efficiency and performance.

PART 2

It is important to approach any fluid flow system problem systematically and accurately to ensure that the correct calculations and procedures are used. In applying Bernoulli's equation, one should first select appropriate reference points and use the equation to relate the potential, kinetic, and pressure energies at those points. It is crucial to use the correct equation and not rely on internet sources that may not be reliable. In computing friction losses in pipes for various configurations, it is important to use the textbook equations and charts, as these are generally more accurate than information found online. Using the energy loss equation, one can determine the head loss in a pipe and substitute that value into the Bernoulli equation. To determine the flow rate of a fluid in a pipe, one can use an excel sheet to guess the initial flow rate and compute the right-hand side of the friction factor equation. Iteration can be used to refine the estimate until the friction factor converges to the accepted value. This process can be time-consuming, but it ensures that the calculated values are as accurate as possible.

PART 3

Based on the rubric provided by the professor, the grade I give myself for this test is approximately 0 out of 6. This means that I did not perform well on the test and need to improve in order to succeed in the class. However, I did have some strengths during the test such as being able to set up the problems correctly. This shows that I have a good understanding of the concepts and am able to apply them to real-world scenarios. However, my weakness was in the calculation part of the problems. This could be due to a lack of practice or understanding of the equations and formulas needed to solve the problems accurately. In order to improve, I will need to focus on practicing the calculations and reviewing the relevant equations and formulas until I have a better grasp of them. I may also need to seek help from my

professor or a tutor to address any areas where I am struggling. With persistence and dedication, I am confident that I can improve my performance on future tests and succeed in the class.

PART 4

A. During the test, it's common to encounter issues that can affect the completion of the task. In this case, understanding how the flow rate differs in a parallel circuit was a challenge for the student. However, they were able to overcome it by making a comparison and gaining a better understanding. Additionally, facing issues with the excel portion of the test is understandable, and the student handled it by starting over with the equation.

B. The steps taken by the student to complete the test show a good approach to problem-solving. They wrote the whole process, organized the given data, and labeled everything appropriately. This shows an organized and methodical way of working through the problem, and it helped them keep track of their progress. By simplifying Bernoulli's equation, the student created two equations for each branch and applied the appropriate head loss. They then set those two equations each other and did iteration to get the flow rate. Finally, they created an equation for the 3rd branch and compared it to the top branch equation to make sure they matched, and did iteration until the correct flow rate was calculated.

C. The ability to determine a pipe size and the resulting flow rate in a parallel pipe system is an important skill for an engineer. It enables them to design a pipe system that is efficient and meets the necessary requirements.

D. The concept of the test is useful for engineers in the field of fluid dynamics. It allows them to determine the best possible solution for a pipe system, making it an essential aspect of the job.

E. Jobs that deal with pipe systems, such as plumbing, HVAC, and water treatment, require the use of the knowledge and concepts learned in this test.

F. The student believes that what they learned for this test will be useful for their professional career. It shows a positive attitude towards learning and developing new skills.

G. If the student were to get a job that dealt with pipe systems, they would use the information they learned from this test all the time. It indicates a readiness to apply their knowledge to real-world scenarios.

H. The student has not had the opportunity to apply what they have learned from this test to their career yet. It's normal for students to encounter this situation, especially if they're still in the early stages of their career.

I. The student feels that they are most successful in setting the problem and equation up, which is a critical aspect of problem-solving. However, they also identify that they need improvement in excel. This shows an ability to identify areas for improvement and a willingness to work on them.

J. The student's experience in this class has made them consider the possibility of doing something with fluids instead of sticking with structural design. It shows a willingness to explore different areas of engineering and broaden their horizons.

K. The amount of time the student spent on the test is understandable, given the complexity of the problems. It's also commendable that they worked with the time frame they had and did the best they could.