

TEST 1 REFLECTION

WRITING RUBRIC (APPLIES TO THE WHOLE TEST, NOT TO PARTICULAR PARTS)

1. Purpose	0.4/0.5
2. Drawings	0.5/1.0
3. Sources	1.0/1.0
4. Design considerations	0.8/1.0
5. Data and variables	0.5/0.5
6. Procedure	2.0/2.0
7. Calculations	1.5/2.0
8. Summary	0.4/0.5
9. Materials	0.3/0.5
10. Analysis	0.3/1.0
TOTAL	7.7/10.0

PART 1)

1. Magnitude of the hydrostatic force on the gate	1/1
2. Location of the hydrostatic force on the gate	1/1
3. Solve for buoy force from moment conservation	1/1
4. Using buoyancy eq to get sphere diameter	1/1
5. Are the stability arguments correct?	1/1
6. Proper Excel spreadsheet	0.5/1
7. Buoy size vs. gate angle plot & smallest buoy	0/1
8. Correct results?	1/1
TOTAL	6.5/8.0

PART 2)

1. Use geometrical relation	1/1
2. Use $\gamma \cdot h$ procedure	1/1
3. Proper manipulation of eqs and solving for "h"	1/1
4. Pressure difference when no flow	0/1
5. Proper Excel spreadsheet	1/1
6. Mercury deflection vs. Pressure difference plot	0.5/1
7. Correct results?	0.75/1
TOTAL	5.25/7.0

FINAL GRADE:

$$7.7 + (62.5/2) \cdot (6.5/8 + 5.25/7) = 57/90$$

Here's a brief reflection on Test 1, completed on Sept. 25, 2024, for MET 330. The test reflects the course objectives we've learned so far in the semester, especially in determining the pressure at different levels of elevation in a capillary tube, forces on fluid, and stability. Compared to the

solutions provided on Canvas, my answers are quite similar except in one case in the second part of the problem. The problem requires determining the pressure difference between two taps when there is no flow. In my calculation, I assumed it to be zero since there is no flow of water to displace the mercury in the tube. Instead, I should have considered the height difference between the two taps and multiplied by the specific weight of the water. If I were to take the test again, I would start earlier and not procrastinate till the last minute. Doing so will provide me more time to reach out to the instructor for help or clarification.

Based on the above rubric, my test score should be 57 out of 90. There were areas of my calculations where they were not exactly how it was solved by the instructor, but the answers were similar, considering proper rounding off and unit conversion. Some of my weaknesses are time management and not reaching out sooner. However, as soon as I was able to get some guidance from the instructor, the calculations became easier to solve.

During the test, I had a little difficulty figuring out the geometry, and after receiving some assistance from the instructor, it was like a “light bulb moment” for me. It became clearer. Then, I applied all the steps taught during the class to solve for the required variables.

Currently, I work as a Quality Assurance Representative on a C130 aircraft for the USN, and none of these materials and concepts apply to the job scope. However, I hope to apply them shortly when I retire from the Navy to join the civilian workforce. The concepts covered in this test are predominantly used in the shipbuilding industry, oil and gas industry, design of hydraulic and pneumatics systems, etc.

In conclusion, I feel confident going into the next test upon identifying areas of improvement, such as time management and reaching out for assistance. Dedicating more time to practicing more questions would be implemented in my schedule moving forward.