Test 3 Reflection

By

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MET 440 – Heat Transfer

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This test demonstrates all of the course objectives in the syllabus, these objectives comprise of the foundational objectives in the first test and steady heat generation from the second test. This test, just like the second test, required the need for COMSOL but rather than a steady heat generation this test demonstrates the nature of heat transfer at a transient point of view. For the COMSOL portion of this chapter, the transient data collection is observed and recorded. Like the second test, the first question is solved using excel and manually by hand and the second question is solved using COMSOL.

My attempt on the test mirrors the solutions in terms of following the same design template for this class's test. I had all the sections in correct order, and the steps that I took for this test resembles the test as well. I went through finding the diameter of the cylinder wrong, but got a close answer to the solutions that it did not affect my COMSOL and final answers severely. I was missing the section on changing h and setting up a transient chart on the results.

My attempt of the test based on the rubric would be that the template meets most requirements, I was just missing the transient h chart for the COMSOL report. I felt that my strengths were that I remembered to apply old techniques from the previous two test into this one as I considered everything but forgot new requirements. I think that I presented the geometry well and applied all characteristics acquired from the information section of the test well. A weakness was that I was having a hard time with iterating on Excel and also the algebra in getting the diameter of the substance by itself.

I had issues that were resolve by reminders and instructions by my instructor due to having trouble getting the diameter of the substance, I have a pattern of rushing the process of things and missing key concepts in turn of it. Just like my second test attempt, I would review the zoom recordings extensively before the test, but this time before the test is given out. I feel like I

have a better understanding of COMSOL during this test than last test which I would like to continue in growing. In contrast to the last test, I think that it is better that I reviewed the material for this class rather than past classes. I can apply this knowledge to the Fundamentals of Engineering Exam which has a heat transfer section that is extended from thermodynamics. The practice and conditioning opportunities given from this class helps me think that I am succeeding professionally.

WRITING RUBRIC

1. Purpose 0.5/10.0
2. Drawings 1.0/10.0
3. Sources 0.5/10.0
4. Design considerations 1.0/10.0
5. Data and variables 0.5/10.0
6. Procedure 2.5/10.0
7. Calculations 2.0/10.0
8. Summary 0.5/10.0
9. Materials 0.5/10.0
10. Analysis 1.0/10.0

TOTAL 10.0/10.0

PROBLEM 1)

1. Correct (T-Tinf)/(Ti-Tinf) equation 1/10
2. Compute alpha 1/10
3. Iteration process 1/10
    a. Assume "D" 1/10
    b. Biot to read table 1/10
    c. Get C1 and Ze1 1/10
    d. Theta0 1/10
4. Temperature at surface 0/10
5. Temperature at r=r0/2 0/10
6. Final result correctness 0/10

TOTAL 7/10

PROBLEM 2)

1. Right geometry 1/6
2. Right material properties 1/6
3. Right BC 1/6
4. Right initial conditions 1/6
5. Change "h" until matching Theta0 0/6
6. Final result correctness 0/6

TOTAL 4/6

FINAL GRADE:

10.0/10.0 + (80/2)*(7/10+4/6) = 55