Test 2 Reflection

By

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MET 440 – Heat Transfer

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This test demonstrates most of the course objectives in the syllabus, these objectives comprise of the foundational objectives that can be observed in the first test, this test introduces heat generation at a steady state which classifies as a one-dimensional heat conduction problem. This test also requires the applied knowledge of COMSOL to gather both the analytical and numerical data graphs to observe if the heat generated is actually steady. The first question applies the objectives that were in the first test and the second question introduces the last of the course objectives which is to use commercial computer programs to numerically solve heat transfer systems.

My attempt on the test and the solutions mirrors each other in terms of following the same design template for tests. I had all the sections in the correct order, and the answers that I had for this test closely resembles the same steps as the solutions. Gathering the coefficients were right but the final equation to find the temperature at an arbitrary location on the element was wrong. This wrong equation messed up the numerical equation needed to input into COMSOL. Which also, consequently, did not provide me the last answer for question two which was to gather the efficiency of the numerical and analytical graph results.

My attempt of the test based on the rubric would be that the template meets all requirement. I felt that my strengths were gather the right information for the coefficients, but getting the final equation was my weakness. I also thin that I presented the model well which is why I got the analytical portion of the graph results right. Another weakness during this test would be the differential equations, which did make me work inefficiently as I was trying to research calculus lessons that would help me solving integration. My coefficients were right, but my final equation is wrong which caused me to lose points.

I had issues that were resolved by reiterations and clarifications by my instructor due to having trouble reading what the deliverables must be, but this was due to rushing while reading the test. I would definitely review the zoom videos that are archived extensively before the test to better grasp the COMSOL application as if I did not, then I would not be able to solve the second portion of the test. I need to implement more previous knowledge in this class especially the knowledge acquired in this class. I can apply this knowledge to the Fundamentals of Engineering Exam that has a section specifically in heat transfer as well as thermodynamics. The practice and conditioning given by this class helps me think that I am succeeding in the professional field. Contrary to the first test, I thought that this test was less difficult because there was less to consider for.

WRITING RUBRIC (looking at the whole test, not to a particular problem)

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. Right Diff Equation	1/10 out of 1/10
2. Right Bound Cond	1/10 out of 1/10
3. Introduce g and k before integrat	1/10 out of 1/10
4. Integrate Diff Eq	1/10 out of 1/10
5. Get C1 and C2 with BC	0/10 out of 1/10
6. T equation	0/10 out of 1/10
7. Q equation	0/10 out of 1/10
8. Units of C1, C2, and Q	1/10 out of 1/10
9. What if go=0?	1/10 out of 1/10
10. Final result correctness	0/10 out of 1/10
TOTAL	**6/10 out of 10/10**

PROBLEM 2)

1. Right geometry	1/6 out of 1/6

2. Right material properties 1/6 out of 1/6
3. Right BC and g 0/6 out of 1/6
4. Comparison plot for T 1/6 out of 1/6
5. Heat transfer comparison 0/6 out of 1/6
6. Final result correctness 0/6 out of 1/6

TOTAL **3/6 out of 6/6**

FINAL GRADE:

10.0/10.0 + (80/2)*(6/10+3/6) = 45