## EE 5223 Assignment \#5 - Due Tues Feb 21st, 9am

The magnetization curves for a 1200:5 10C 800 multi-ratio CT are given in your lecture notes. A total burden of 6.0/60E ohms (including the CT winding resistance) is attached to secondary terminals X $3-\mathrm{X} 4$ (ratio is set to $500: 5$ ). During a fault, 7000A flows in the CT primary.
a) Sketch out the CT circuit, showing the magnetizing inductance, winding resistance, turns ratio, and burden. Label the turns ratio and the value of the winding resistance.
b) $U$ sing an iterative technique, determine the magnitude of the current $\mathrm{I}_{\mathrm{E}}$ in the exciting branch and the current $\mathrm{I}_{2}$ in the burden. To simplify your calculations, assume that all currents in the CT secondary have the same phase angle.
c) Calculate the CT Ratio Correction F actor (RCF) for this case. Compare to that given by the manufacturer, and explain any differences you might find.
d) A ssume that the reactance of the magnetizing branch can be obtained from the ratio $\mathrm{E}_{\mathrm{SE}} / \mathrm{I}_{\mathrm{E}}$ (use the values of $\mathrm{E}_{\mathrm{SE}}$ and $I_{E}$ from part b). U sing the current divider, calculate the phasor value of the current flowing through the burden. How close is magnitude and angle of the burden current to the estimate in part b? D oes the method of part b provide an adequate estimation of the burden current in this case?

