Examination Feedback for EEE349 – Power Engineering Electromagnetics
Spring Semester 2015-16

Feedback for EEE349 Session: 2015-2016

Feedback: Please write simple statements about how well students addressed the exam paper in general and each individual question in particular including common problems/mistakes and areas of concern in the boxes provided below. Increase row height if necessary.

General Comments:

Overall, and across EEE349 and section B of EEE350 (identical questions) students did reasonably well on this paper. The comments below refer to all candidates who did these 4 questions and not simply those that did EEE350.

Question 1:

This question was answered well by the vast majority of students. Common mistakes were missing units on calculated quantities and some confusion around vector and scalar quantities in part (a). The derivations in part (b) and (c) were generally well done with the odd bit of carelessness creeping in. The final calculation part was done correctly by a reasonably high proportion of candidates, but again units were missing frequently in the answers.

Question 2:

The standard vector operations in part (a) were done well by the majority of students. Part (c) proved a little more problematic with several students messing up the derivation in part (i) in terms of the power of r (usually by not substituting in for R_c). The final part was generally well done and most students spotted the need to use the capacitance to get the charge on the conductor as a pre-cursor to establishing an expression for the electric field from which the appropriate radius could be derived.

Question 3:

Very few students chose to do this question. Those that did, chose wisely as the average mark for this question was high in comparison to the other questions. It is largely a derivation type question rather than a problem solving type question and students who had prepared well for the time-varying field section of the notes were able to produce the derivations accurately. The numerical section at the end was straightforward and posed few, if any, difficulties.

Question 4:

Parts (a) and (b) – which involve the curl functions were answered well by most students. Again missing units was a common oversight in many attempts. Part (c), which deals with a small section of a more extensive derivation from the notes, seemed to cause a lot of problems. Some candidates seem to have simply seen the diagram and automatically gone into reproducing the full derivation of the solution for the magnetic vector potential. This was not what the question was seeking, rather it was after the boundary conditions on the interface (remember the old adage 'read the question'). Many of those that answered the question asked on boundary conditions, were often rather imprecise in their answers, e.g. it is the normal component of flux density (denoted by subscript 'n' or 'y') which is continuous across the interface and not simply 'B'.

Similarly, it is the tangential ('t' or 'x') that differs by an amount determined by the magnitude of the current sheet density. Section (e) on Ampere's Law was answered well by many student, although section (f) on practical solutions elicited some odd response, e.g. reduce current. The solutions of putting in a magnetic shield was identified by many students, although sometimes rather vaguely, e.g. metal screen, rather than being 'magnetic'.