Examination Feedback for EEE345 – Engineering Electromagnetics
Spring Semester 2015-16

Feedback for EEE345 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 exam performance was poor. A quarter of the students handed in more or less empty answer sheets on at least one question (mainly Q3). Q2 got the highest score overall (the only one with a reasonable average), with 3 students handing in almost perfect solutions. Q3 was perceived to be more difficult and gave much lower scores. The difference between them was that answering Q2 required mainly reproduction of learned things while Q3 asked for some transfer abilities the student clearly did not have.

Question 1:

Q1a asked for Maxwell's equations and the physical meaning of the parameters. This is standard bookwork and was mostly dealt with confidently. Q1b asked for the definition of the Poynting vector, which most students could give, and a specific example of calculating it, which most students could not though this required only VERY basic transfer. Q1c asked for a mathematical calculation which most students could perform, and a physical interpretation of the result, which again most failed to give.

Question 2:

Q2a asked for a derivation of the ***k***-vector of a damped signal on a transmission line from a given formula – many students wasted time to derive the equation that was provided as starting point!
Q2b was a numerical evaluation of signal damping, very similar to last year's. Most students got the right start but then some stumbled when separating a complex signal into real and imaginary part!
Q2c was basic bookwork and answered correctly by most students.

Question 3:

Q3a asked for a derivation and interpretation of the magnitudes of ***D***, *E* and ***P*** in terms of free/total/bound charge densities. This calculation. Although not standard bookwork, was actually performed in the lecture, using a slightly different starting point.Q3b asked for a qualitative analysis of the fields in a p-i-n diode and a comparison to the simple p-n diode discussed extensively in the lecture. Many students repeated the quantitative derivation for the p-n diode (which was not asked for) but then failed to address the question.

Question 4:

Q4a asked for a derivation of Snell's law, which I had explicitly mentioned (but not fully given) in the lecture. Q4b asked for the derivation of a surface bound wave which would have been easy had the students actually followed the instruction and just combined the two equations given. None did.
Q4c involved total internal reflection (which was discussed in detail in the lecture) but students failed to grasp the geometry and tried to get the light into the fiber sideways through the cladding! Only 3 students tackled this optics question, so the results may not be very representative.

Question_5:

Question_6:

Question_7:

Question_8: