Examination Feedback for EEE345 – Engineering Electromagnetics
Spring Semester 2014-15

Feedback for EEE345 Session: 2014-2015

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:

The exam average was a bit low. This is the first time that a question on optics (Q4) has been included explicitly.

Question 1:

Despite the long derivation needed to score full points for Q1a, this question was answered confidently by most students. Q1b (asking to identify waveforms) posed no problems either. In Q1c students dropped points when their coordinate systems drawn were not right-handed. Many students could define the Poynting vector correctly but then could not describe what its directionality and modulus actually meant.

Question 2:

These questions on transmission lines were different from those in past years. The questions were actually easier but many students did not pay attention to what was given and what was asked and started long derivations that were completely unnecessary and scored no points. In Q2a (iii) the key was to drop the quadratic term with G^*R^* but keep all those linear in G^* or linear in R^* only. If those were omitted as well, all losses would vanish and the students were asked to consider the case of weak losses, not without losses. Without losses, k' would be real and have no imaginary part so Q2b could not be answered. Hardly any student could define what dispersion means in Q2c (i) – most had a vague idea that it is related to distortions but did not know why. In Q2c (ii) many students used their approximation from Q2a rather than equation (4) as provided and demanded, and so made the solution more complicated and less obvious.

Question 3:

 Q3a on plate capacitors was answered correctly by many students, although the derivations were often unsystematic. In Q3b many students did not see that $V(x)$ given was not point symmetric and that choosing the origin as described meant $V(a) \neq V(-a)$. The mathematical part of Q3c was easy but many students again had problems in interpreting what a purely imaginary dielectric constant meant.

Question 4:

Q4 on wave optics was answered only by a very small sub-set of students who either did very poorly on that question, or very well. Q4a and 4c were mostly reproductive bookwork, Q4b demanded some application to derive Snell's Law from the dependence of the phase velocity in a medium on its dielectric constant, which the good cohort did in a single line while the weaker students struggled.