Examination Feedback for EEE6223 – Antennas, Propagation and Satellite Systems
Spring Semester 2015-16

Feedback for EEE6223 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:

Students made a very poor attempt to answer the exam paper and showed little sign of reading the questions set.
The poor overall performance may reflect the poor attendance to lectures.

Question 1:

Reasonable average mark, about right for student cohort.
(a) Most correctly identified ways to generate these field polarizations with differential phasing between Cartesian field components.
(b) The axial ratio formula was given, so this was a test of how to use it and interpret the results. Ex and Ey with the same phase and same/different amplitudes was sometimes wrongly interpreted as circular polarization, and the pi phase shift confused some.
(c) Very few realised that (iii) and (iv) referred to left and right hand CP, so one +3dB signal improvement and the other no signal.

Question 2:

Low average mark and least popular question.
(a) Some did not remember the bookwork here.
(b) The important point to remember here is that $\Psi = 0$ at the main beam.
(c) Main lobe direction is independent of frequency if $\gamma = 0$.
(d) No one mentioned the element pattern affecting the main lobe at angles away from $\theta = 90^{o}$.
(e) Only a few got this.

Question 3:

Most popular question but average a little low.
(a) Generally well answered bookwork
(b) Surprisingly badly answered. Many thought that reactance could be directly added to resistance to get an impedance value, and some ignored the radiation resistance.
(c) Again surprising how many could not calculate a capacitance from a reactance value to achieve resonance.
(d) Quite a few got the correct input impedance, but the justification was poorly answered.
(e) Some correctly gave better impedance matching, but few if any mentioned that parasitic elements drive down the dipole input impedance.

Question 4:

Best answered question.
(a) Most identified force due to electric field, and a few got the other forces.
(b) Well answered bookwork.
(c) Well answered.
(d) Needed to extend analysis in (b) to obtain requested parameters (or remember the formulae).
(e) Caused confusion with ionospheric entry angles. This was a plasma question not directly related to ionospheric propagation.

Question 5:

The most popular question in Section B with a very low average. 2 candidates achieved full marks.
(a) Most correctly names two types of multiple access systems used for satellite links (TDMA and FMDA). Only a few successfully names the coding system CDMA as the most likely and listed its features. A few candidates named specific coding systems which are not covered in the course and are not found in satellite systems.
(b) Very few candidates answered this simple question. A considerable number of candidates chose to describe very unpractical ways of increasing channel capacity.
(c) Having worked through a similar exam in the lectures it was surprising how poorly this question was answered. Several gave up or got lost after a few basic steps in the calculation. A few attempted to answer something else entirely.

Question 6:

A very low average for an easy question.
(a) This was reasonably attempted
(b) A surprising number of students chose to describe satellite orbits instead and generic satellite challenges rather than those for an existing telephone satellite system. Some chose to describe GPS instead.
(c) Very few sensible attempts to answer this question.
(d) A mixed response. Some did very well, other chose to describe satellite comms systems in general. A few managed to explain how antenna efficiency and noise performance are optimized.

Question 7:

Question 8: