Examination Feedback for EEE6215 Nanoscale Electronic Devices
Spring Semester 2014-15

Feedback for EEE6215: 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:

Candidates did well in the exam, though many did better in the coursework components. There was a good number of high marks but also a tail of students with more modest scores in and around the pass-fail boundary

Question 1:

Most students were able to draw a good set of diagrams. Most were also able to derive an expression for the cut-off frequency but several did not adequately discuss the different parameters or how modern CMOS achieves high speed operation. Most were able to derive the mobility, but there were a few errors. The different is solely due to the channel in the MOSFET being at the surface and having a mobility influenced by surface stages and oxide defects

Question 2:

This was not such a popular question, although those who did it did it well. Most were able to explain the advantages brought by the HBT concept. The final part of question (d) puzzled many students, though it is in fact very straightforward.

Question 3:

Drawings of the output characteristics were generally fine. There were a few errors/ misunderstandings on the derivation of the cut off frequency. Part (c). was generally done very well. The drawings and understanding needed for part d. were a little weak.

Question 4:

This was not such a popular question and many students seem to have been put off because there is an equation here that is not covered in the notes. There were some errors in the dependencies on scaling factors, but this was mostly fine. Those who attempted b. did well. There was some weak descriptions in some of the answers to part c.

Question 5:

Question 5 was not so popular; perhaps the drift velocity calculations and mention of RTDs put many off, but these are important concepts and the question overall was reasonably straightforward. The question had only a few attempts, but those marks were reasonable.

Question 6:

The descriptive part of the question (part a) was done very well. Most did the memory device calculation also very well, but quite a few students struggled with the final part on the IMPATT device