Examination Feedback for EEE201 – Signals and systems
Autumn Semester 2011-12

Feedback for EEE201 Session: 2011-2012

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:

I am very disappointed with the overall performance in this module. Most of the questions were similar to past year and tutorial questions. Therefore I was very surprised and sad to find that a large number of students seem unable to do well.

Question 1:

This is a new question. However part (a) is essentially taken from a tutorial question. I was extremely surprised that only very few students are able to answer this part correctly. This could suggest lack of effort on the tutorial questions.
Part (b) is very similar to exercises in the tutorial. Most students did well in this part.
Part (c) is again similar to tutorial exercises except that one of the poles is s=2 indicating an unstable system. Most students were able to work out the poles but failed to recognise that a growing exponential indicates that the system is unstable.

Question 2:

This has been modified from a past year question. I am very disappointed that a number of students failed to answer part (a) correctly (a number of students didn't attempt to answer this part). All it requires is for the students to work out the transfer function of the RC network, H(w). Once this is obtained, W(w) can be easily obtained from Y(w)/H(w). Y(w) is given. This is very worrying, suggesting that i) the students are extremely uncomfortable when presented with, what appears to be, a complicated Y(w) expression although in reality it is a lot more straight forward and ii) they failed to recognise the relationship between the input and output of a simple RC circuit.
A number of students again failed to work out the answer from part (b) which can be obtained independently for part (a). Simply by substituting k = -1, 0 and 1. The expression for Y(w) can be simplified easily. Once this was done, y(t) can be easily obtained using the Laplace Transform table provided.
Part (c) can also be answered independent of parts (a) and (b). From the expression of y(t) given it can be easily noted that there is a d.c term $2/\pi^2$ and the oscillating part given by $e^{j100\pi t}$ and $e^{-j100\pi t}$. Disappointingly only a few students were able to note this and hence most were not able to provide a suitable RC value.

Question 3:

Part (a) is taken from the tutorial while (b) is book work.
To my surprise most students were not able to answer part (a) correctly. Part ai) simply requires the students to note that the maximum frequency is w_2 and hence the Nyquist sampling frequency is $w_s \geq 2w_2$. I was really disappointed that only a few students were able to answer this correctly. Part aii) was taken from the tutorial and here using a graphical technique, it is possible to show that the signal can be recovered when $T_s < 2\pi/(w_2-w_1)$.
Part (bi), most students did okay. Part (bii), surprisingly a number of students were not able to sketch the spectrum expected for low and high sampling frequencies although this is basic bookwork and has been discussed in detail in lecture. Most students did well in part (c).

Question 4:

Part (a) is a new question while (b) and (c) are similar to past year questions.
In part (a) most students did managed to sketch the responses due to x(t), -x(t-1) and x(t-2) but only a small number managed to add the them correctly.
In part (b) a number of students answer correctly.
Part (c) seems to present difficulties to students although this is a repeat question. Most students sketch the graphs correctly but were not able to work out the overlapped area.