Examination Feedback for EEE224/227 – Communication Electronics
Spring Semester 2013-14

Feedback for EEE224/227 Session: 2013-2014

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:

Question 1:

This question was very well answered.

1a ii I was looking for words to the effect of "a shift in the input signal, gives an identical shift to the output signal but the form of the output remains the same." Most students just rearranged my question to say "a time invariant system is a system which does not vary with time"

1b Generally very few mistakes. Some students tried to carry out a convolution which is not appropriate he in this question.

1c The main mistake that appeared was incorrect steps in the convolution, however, most were able to get most of the steps correct.

Question 2:

2a and 2b were book work questions and were very well answered with very few mistakes. Some mistakes in 2b where students plotted time domain versions of AM instead of frequency domain.

2c was very poorly answered. The majority of mistakes came from inability to successfully mathematically manipulate 0.05Vam^2, many mistakes giving (a+b)^2=a^2+b^2 instead of a^2+b^2+2ab! Other mistakes were not understanding how to use trig identities to convert sin(x)^2 to 0.5(1-cos(2x) etc.
Also, a large number of students gave answers to similar questions from previous exams which were not relevant to this question.

2d was answered by only a few students correctly. Students suggested alternative detection methods, such as envelope, rather than realizing that a low pass filter was what was required.

It should be noted that a similar example was covered in the notes.

Question 3:

3a was book work and answered very well with very few mistakes.

3b was generally answered well. Some mistakes included incorrect conversion of 20dB to linear form, forgetting to use log2 and forgetting that if you double the bandwidth the S/N halves.

3c was answered poorly. Mistakes included forgetting that the spectrum includes a sin(x)/x. Attempts of calculating bandwidth were generally guesses, sometimes using FM theory instead of FSK.

3d was generally guessed although some students justified their answers and were credited for doing so.

Question 4:

Most students were able to calculate the reflection coefficients of transmission lines with different terminations (part a) and sketch the voltage across the load resistor versus time (part b), while there are still many students having problems with part c, where they made mistakes about the source voltage wave and load voltage wave and obtained wrong values of voltage at the load.

Question 5:

Part a: Only a few students were able to give the conditions for a closed loop system to act as a linear oscillator.
Part b: Many students didn't understand what it means by the given condition "v_2 and v_1 are in phase".
Part c: Most students were able to draw the circuit diagram, but only a few of them suggested suitable values of the circuit components.
Part d: Almost all students failed to mention that 'the two Rs and the two Cs have equal values'.
Part e: Most students were able to draw the circuit diagram including a PTC thermistor and explain how it works, but many of them failed to explain why a non-linear element is necessary in the circuit of part c.

Question 6:

Part a: Most students knew how to sum currents at a node. The students lost marks mainly because they failed to correctly write the other two critical equations.
Part b: Most students get full marks.
Part c: Many students made mistakes in calculating the values of C.
Part d: The most common mistake is missing the buffer between the first and second order sections.

Question 7:

Question 8: