

### **Feedback for EEE403/6035 Session:2009-2010**

**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:**

- (a) Most students managed to solve this part reasonably well.
- (b) Many students managed to calculate the inductance correctly, but the majority failed to use the correct equation for the phase velocity.
- (c) The most common problem was the calculation of the reflection coefficient at the given distance from the load as many students tried to compute the impedance at that point and find the reflection coefficient which is correct but more difficult than calculating the coefficient at the load and then shift it by the required distance as explained in the lectures.
- (d) Has been answered correctly by most students

**Question 2:**

- (a) Although this part is given exactly in the lecture notes, few students made a mistake by explaining how the Smith chart is used generally in lossless transmission lines analysis rather than specifically for lossy lines as required.
- (b) Most students have managed to answer this part correctly.
- (c) Most students have managed to answer this part correctly.

**Question 3:**

- (a) Most of the students knew the right answer for this part, but few of them didn't mention the dependence of the gains on the load and source impedances.
- (b) Many students failed to draw the diagram, or list the correct equations, for networks cascading using the transmission matrix.
- (c) Few students answered this correctly, while the majority either didn't write any answer or used the scattering matrix instead of the transmission matrix.
- (d) Although the solution to this question is given exactly in the lecture notes, many students couldn't answer it correctly because they spent significant time and effort deriving the equations, while they have been asked to do the calculations only using the equations given in the lectures.

**Question 4:**

- (a) Few students answered this correctly, while the majority went wrong by describing how we test for unconditional stability rather than the required conditions to achieve it.
- (b) Nearly all students have answered this part correctly.
- (c) Most of the students have answered this part correctly.
- (d) The most common mistake here was plotting the 3dB gain circle which has a radius of zero, i.e. it should be a dot on the Smith chart, but in most cases it has been drawn as a finite circle.