Qualifying Exam for the Electrical Engineering PhD program, Stanford University, January 2007

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Questions:

1)   What is this? (Showing the student a co-axial cable.)

2)   How is it constructed?

3)   How is information transferred along the cable?

4)   What is the speed of information transfer?

5)   How can you model the information transfer on a co-axial cable using lumped-circuit elements?

6)   What is the bandwidth of the ideal loss-less transmission line?

7)   What effects will degrade the signal quality as it propagates on real transmission lines?

8)   How is signal propagation on an optical fiber different from signal propagation on a co-axial cable?

9)   What effects degrade signals that propagate on optical fibers?

10)   How can you mitigate dispersion on single-mode optical fibers?