

Examples of Single Stub exam Questions (NOTE: These were normally midterm I):

ECE 3300 Midterm I September 27, 2006

3. (30 points) Design a single-stub matching network to match an antenna with an impedance of $10 + j 25$ ohms to a 50 ohm transmission line. Use a PARALLEL stub with an open circuited termination. Design your system so that the stub can later be replaced by an equivalent CAPACITOR.

- (a) Sketch and label a drawing of the system.
- (b) Distance between the antenna and the stub = _____ λ
- (c) Length of the stub = _____ λ
- (d) Should the stub be OPEN or SHORT circuited? (circle one)
- (e) Calculate the equivalent CAPACITOR to replace the stub. The frequency is 1 MHz.

ECE 3300 Midterm I September 28, 2005

3. (30 points) Design a single-stub matching network to match an antenna with an impedance of $100 + j 50$ ohms to a 50 ohm transmission line. Use a SERIES stub. Choose the point that will have the smallest distance between the antenna and stub. Choose either open or short circuit for the termination on the stub, so that the length of the stub will be minimized.

- (a) Sketch and label a drawing of the system.
- (b) Distance between the antenna and the stub = _____ λ
- (c) Length of the stub = _____ λ
- Should the stub be OPEN or SHORT circuited? (circle one)
- (d) Calculate the equivalent CAPACITOR or an INDUCTOR to replace the stub. The frequency is 1 GHz.

$C_{eq} =$ _____ OR $L_{eq} =$ _____