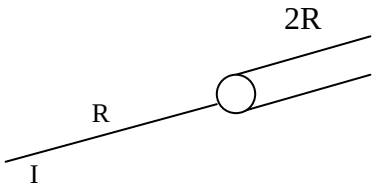
Assignment 3



1)An instantaneous pulse with current I travels down a PCB line, which has an R ohm impedance and which connects to a 2R ohm cable. What is the relation between the pulse with current I_2 that continues down the higher impedance cable and the pulse with current I_1 that reflects backward? Show derivation.

2)The resistivity of the 2R line is twice that of the 1R line. If the 2R line cross sectional radius is twice that of the 1R line cross sectional radius, what does that say about the current transmission loss on the 1R line with respect to that on the 2R line?

3)What is the octal and hexadecimal equivalent of decimal number 1022? Prove without using a calculator!

4)An OR is formed between the two outputs of the SR flip-flop resulting at point Z. What is the Boolean algebraic expression relating Z to inputs S and R. Use Q and NQ as the outputs of the flip-flop.

5) An RC circuit is driven by power supply Vcc. Express the voltage V across the capacitor as a function of time t using R as the resistance and C as the capacitance of the circuit.