
Last name, First name

UTA ID No,

E E 6372-001

High Voltage Engineering

Fall 2009

Mid-Term Examination

October 13, 2009

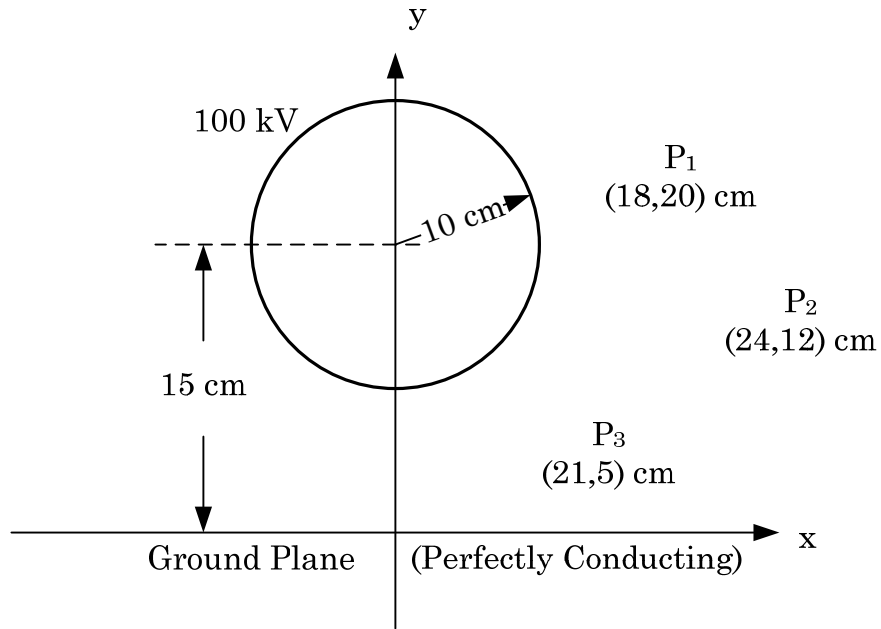
Problem 1

Given: A three-stage Marx-bank voltage generator has the following parameters:
 $C_1' = 200 \text{ nF}$, $R' = 4 \text{ M}\Omega$, $R_2' = 500 \text{ }\Omega$, $C_{\text{test}} = 20 \text{ nF}$, Stage voltage = 100 kV.
Ignore stray capacitance, C' .

Required: Using PSpice (two separate simulations - charging and discharging) find:

- Time to charge to 90%.
- Peak voltage, time to peak voltage, decay time to 50% peak voltage.

Problem 2



Given:

The infinitely long conducting cylinder charged to 100 kV as shown above is suspended above a perfectly conducting ground plane. (The figure is not drawn to scale.)

Required:

Calculate the electric potential at points P₁, P₂ and P₃.
Hint: Use the method of images.

Problem 3

Required: Explain how a sphere gap can be used to measure the peak value of voltages. What are the parameters and factors that influence such voltage measurements?