Examination like tasks workshop 2 (Lecture 3 and 4)

A/

Approximate the electric field from a CRT (The old bulky type of computer screen) at a distance of 400mm from the screen. Use the approximation that the screen I circular with diameter 17" (!!!). The potential at the screen is 12000 V.

B/

Calculate the E-field from a circular charge with radius R (A torus with very small cross section radius ρ <<R) along the symmetry axis.
Also calculate it from first finding the potential an then taking the gradient

C/

Find ways (preferably several) of approximating the order of magnitude of the energy in one lightning in a thunderstorm.
How much does the result from the different methods differ? Discuss.

D/

Calculate the energy in cylindrical capacitor at given voltage from CU^2 and from integrating E^2.

E/

Calculate the capacitance per meter of a double leader, i e two conductors with radius a, separated 3a from each other (cc distance). The isolator has an ε_r of 2,7