

10. KITCHEN PHYSICS (12 points) — *Eero Uustalu, Jaan Kalda.*

Tools: aluminum foil laminated brown paper bag*; a kitchen sponge with abrasive green side (for removing the varnish from the aluminum surface of the aluminum laminated bag to achieve good electrical contact), two sheets of aluminum foil*, two sheets of cushioning foam*, a square-shaped piece of wooden laminated plate, a sheet of kitchen plastic wrap*, permanent marker, scissors, micrometer, ruler, multimeter with crocodile clips. You can ask for a replacement if items marked with a star become damaged. The resistivity of aluminum $\rho = 2.7 \times 10^{-8} \Omega \cdot \text{m}$; permittivity of vacuum $\epsilon_0 = 8.854 \times 10^{-12} \text{ F m}^{-1}$.

- i)** (6 points) Find the thickness of the aluminium foil coating of the brown paper bag.
- ii)** (6 points) Find the relative permittivity of the plastic wrap.