

Exam Winter Semester 2022

Student Group

First Name	Surname	Matrikel Nr.

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kyt15w11e3sempb2
with calculation

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resistivity power exam_ee1_ss2023 Resistivity and temperature dependent Resistance (written test, approx. 7 % of a 60-minute written test, SS2023) The resistance of the dielectric material of a film capacitor has to be calculated. The given film capacitor has an internal surface of $A=100 \text{ dm}^2$ $d=0.8 \text{ mm}$ $\rho_{PP}(20 \text{ }^\circ\text{C})=10^{17} \text{ } \Omega \text{ m}$ $\alpha=-0.048 \text{ 1/K}$ $\beta=+0.00057 \text{ 1/K}^2$ $R(20 \text{ }^\circ\text{C}) = \rho \cdot \frac{4}{d^2} \cdot A$

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rj0r6j4apumukrj6 with
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resistivity power exam_ee1_ws2022 Resistance of a Wire by Resistivity (written test, approx. 6 % of a 60-minute written test, WS2022) A heating element made of a Nichrome wire with a round cross-section is used in an electric oven. Nichrome is a common Nickel Chromium alloy for heating elements. $1.10 \cdot 10^{-6} \text{ m}$ 3.57 mm $R = \rho \cdot \frac{l}{A}$ $A = r^2 \cdot \pi$ $R = \rho \cdot \frac{4}{\pi} \cdot \frac{l}{d^2}$

- task
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calculation

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