Block plan

Student Group

First Name	Surname	Matrikel Nr.

Table of Contents

1. Switching operations in direct current networks (approx. 3 blocks, based on previous lectures on DC transients)
    1. Charging/discharging an RC element
    2. Switching coils
    3. Magnetically coupled coils

2. Alternating current networks (approx. 5 blocks, based on previous lectures on Intro to AC and AC circuits)
    1. Representation of sinusoidal quantities
    2. Example: RC element
    3. Capacitor with alternating voltage
    4. Coil with alternating voltage
    5. Complex calculation of networks with R, L, C (“recipe” for procedure)
    6. Graphical solution of networks with R, L, C (RC element, RL element)
    7. Power (effective value, power factor, active/apparent/reactive power, loss factor, loss angle)
    8. Components R, L, C with alternating current
    9. Reactive power compensation
    10. Oscillating circuits

3. Semiconductor components (approx. 4 blocks, based on previous lectures on Diodes and Transistors)
    1. Fundamentals (conductors, semiconductors, insulators, doping, band model, intrinsic conductivity)
    2. Diodes (real characteristic curve, operating point, equivalent circuit)
    3. Zener diode
    4. LED
    5. Protective circuit with diodes
    6. Rectifier circuits (single-phase rectifier, center tap circuit, bridge rectifier, smoothing capacitor)
    7. Bipolar transistor (structure, designations, characteristic curve, characteristic values)
    8. Transistor as a switch (circuit, switching times and behavior)
    9. MOSFET (structure, comparison with bipolar transistor)
    10. Optional: Transistor as an amplifier