University of Debrecen, Department of Electrical Engineering

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Basic Exam, Electronics part,

1. **Semiconductor diodes**, (physical operation, Voltage – Current characteristics, models of diodes, layer capacitances)
   Types and applications of semiconductor diodes
2. **Simple circuits containing diodes** (rectifiers, voltage stabilisers, limiters)
   Analyses of the circuits using different diode models
3. **BJT** (physical operation, models of a BJT, main parameters, transfer characteristics, layer capacitances and their effects)
4. **Single stage BJT amplifier** (biasing, the principle of amplification, basic single stage amplifier configuration: CE,CB,CC. Modelling the CE amplifier)
5. **MOSFET** (physical operation, models of a MOSFET, main parameters, transfer characteristics, layer capacitances and their effects)
6. **Operating transistors as a switch**
   (BJTs and MOSFETs)
7. **Common emitter single stage amplifier configuration**
   (DC biasing, AC modell, AC transfer parameter, in and out resistances)
8. **Ideal operational amplifiers. Inverting and noninverting configurations. Real operational amplifiers paraméters**

Types of examples:

1. Analysing simple networks containing diodes
2. DC analysis of BJT circuits
3. AC analysis of BJT circuits
4. Basic operational amplifier circuit