

STUDY GUIDE #3

In this part of the course we will study the following topics:

- Current, resistance and resistivity
- Electromotive force, energy and power in simple electrical circuits
- Analysis of multiloop DC circuits using Kirchoff's Rules
- Force on a charge or current element in a magnetic field

Objective 10: Current, current density, resistance and resistivity

Suggested Study Procedure:

Read Ch.25-1. Note the difference between the drift velocity of a charge carrier (which is small) and its actual velocity (which is large). Read Ch.25-2 and 3, but you can skip the part about the temperature dependence of resistivity. Study Examples 25.1 and 2.

Suggested Problems:

Exercises 25-3,5,17,23; Problems 55,59.

Objective 11: Simple DC circuits

Suggested Study Procedure:

Read Ch.25-4 and 5 and study the worked examples in these sections. Read Ch 26-1 and study the worked examples.

Suggested Problems:

Exercises 25-27,28,33; Problems 26-68,79

Objective 11 (continued): Kirchoff's Rules and multiloop DC circuits

Suggested Study Procedure:

Read Ch.26-2 and study all the worked examples in this section. Also study Example 26.14, which discusses an interesting practical example of circuit analysis in the home.

Ch.26-5 on Power Distribution Systems is not on this course but highly recommended to those of you who would like to understand how electricity works in the home.

Suggested Problems:

Exercises 26-24,27; Problems 63,67,73.

Objective 12: Magnetic Forces

Suggested Study Procedure:

Read Ch.1-10 and study all three worked examples, concerned with different aspects of the scalar and vector product. Read Ch.27-1,2 for the force of a magnetic field on a charged particle. Read Ch.27-6 for the force of a magnetic field on a current carrying wire; the only result you need to know is Eqn.(27.19), which is illustrated in worked example 27.7.

Suggested Problems:

Exercises 27-1,9,39,41; Problems 55,68.