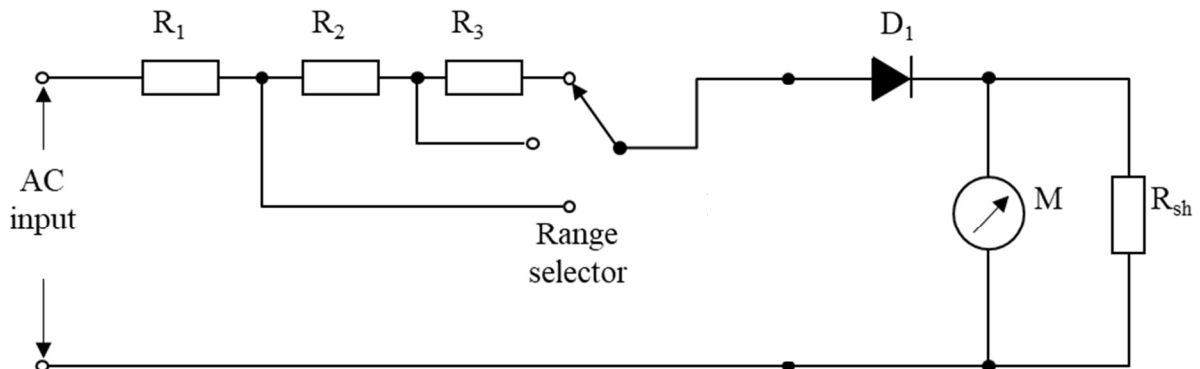


Lab-9 Design of multi range voltmeter

Introduction



Typical AC voltmeter section of a commercial multimeter

- ☐ General rectifier-type AC voltmeters often use the arrangement shown in Figure. Two diodes are used in this circuit, forming a half wave rectifier with the movement so connected that it receives only half of the rectified current.
- ☐ The commercial multimeter often uses the same scale markings for both its DC and AC voltage ranges.

Task:

Using $R_{sh} = 4.7 \text{ ohm}$ or 22 ohm or 50 Ohm as available: with maximum 2 W rating.

- Design AC voltmeter with multi range for full scale 10Volt, 20 Volt and 30 Volt using R_1 , R_2 and R_3 respectively.
- Using the available voltmeter at the Lab, calculate the correction factor to calibrate the designed voltmeter to compensate the systematic error in the readings as :
 1. AC range of the digital meter
 2. Dc range of the digital meter.
- Prove the design of the voltmeter by a model in MATLAB – Simulink
- Build the proposed voltmeter in the LAB and prove the design and the calculated calibration correction factor as 3 different voltage value (7V 12V and 24V)