ELECTROTECHNOLOGY
ELTK1100
ASSIGNMENT #8

1. A coil consists of 300 turns and has a current of 200 mA flowing. What is the mmf?

2. If the reluctance of a magnetic path is 225 * 10^5 A·t/Wb, what value of magnetomotive force would be required for a flux of 120 μWb?

3. A solenoid of 2000 turns is energized by a current of 2A. The reluctance of the magnetic circuit is 2000000 A·t/Wb. What is the magnetic flux for the circuit?

4. To develop a flux of 0.033 Wb, how much current must flow through a coil with 300 turns in a magnetic circuit of 2.7 * 10^4 A·t/Wb?

5. How much magnetomotive force does a current of 5A in a 60 turn coil provide?

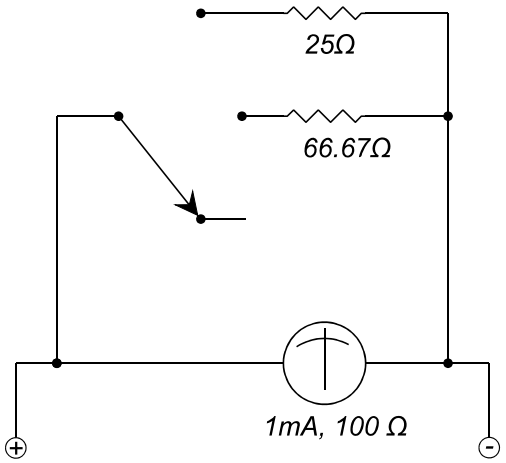
6. How does reluctance and resistance compare?

7. Given a 20μA, 2500Ω movement, draw the circuit and calculate the resistance required to convert the movement into:
(a) A multirange ammeter measuring 10mA, 25mA and 50mA.
(b) A multirange voltmeter measuring 10V, 25V and 50V.

8. Given a 500μA, 2000Ω movement and a 1.5V battery, draw the circuit and calculate the resistance required to convert the movement into an ohmmeter.

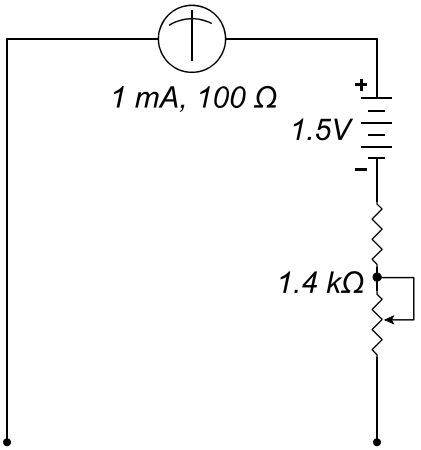
Calibrate the scale for the half-scale and quarter-scale positions.

9. What type of meter (voltmeter/ammeter/ohmmeter) is shown in the following circuit? What are the ranges for the meter?



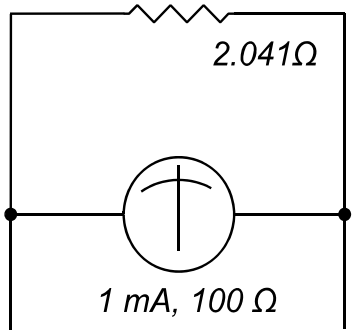
10. What type of meter (voltmeter, ammeter, ohmmeter) is shown in the circuit on the right?

What is the reading if the meter indicates Quarter Scale Deflection?



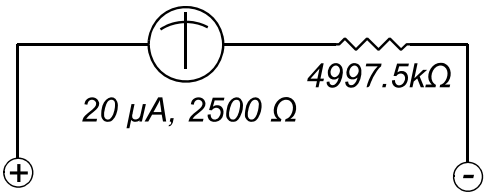
11. What type of meter (voltmeter, ammeter, ohmmeter) is shown in the circuit on the right? What is the range for the meter?

What is the reading if the meter indicates Half Scale Deflection?



12. What type of meter (voltmeter, ammeter, ohmmeter) is shown in the circuit on the right? What is the range for the meter?

What is the reading if the meter indicates 3/4 Scale Deflection?



13. **(a)** A 1mA, 100Ω meter movement is used to construct a 10V voltmeter. Determine the % error when the meter is used to measure the voltage drop across R_2 in the following circuit.

(b) Repeat part **(a)** for a 0.2mA, 500Ω meter movement.

(c) Which meter movement makes the better voltmeter? Why?