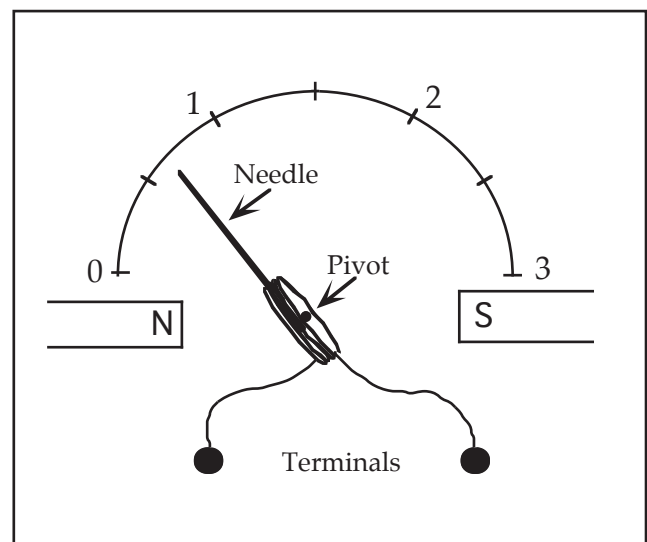


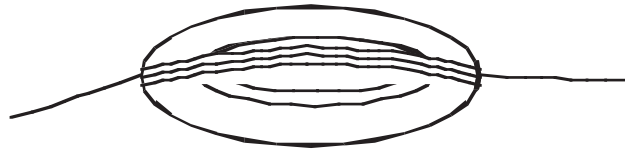
Homework Questions – Section 11

1. What materials around the classroom are attracted to a magnet? Classify them. Write a general statement that describes which materials will and will not be attracted to a magnet.
2. How could the motor you built at the end of Section 11 be converted to a generator? Describe carefully what would have to be changed and what the result would be.
3. Study the simplified diagram of an ammeter. A needle and a coil are attached to a rod which is free to pivot or rotate. They are also attached to a spring which returns the needle to its original position – zero – when no current flows. Wire leads from the circuit to be measured are attached to the terminals of the ammeter. (a) Does this type of ammeter detect current by means of the motor effect or generator effect? How do you know?



AMMETER

4. Consider the following activity, and then try it. Wrap three turns of wire around a compass parallel to the compass needle and tape them in place. Connect this device to a circuit and use it to detect the rate of charge flow in a circuit. How is it (a) like the ammeter described in question 3? (b) different from the ammeter?



COMPASS WRAPPED WITH WIRE

5. Why does an ammeter use a coil of wire with many turns? Why not save wire, and use just one turn?
6. A community receives its electric energy from generators which are composed of gigantic turbines with gigantic coils of wire rotating in a strong magnetic field. The rotation may be caused by the water coming from a dam in a hydroelectric plant, or by steam (heated by fossil fuels or nuclear reactors).
- (a) If many households in the community turned on lights and appliances at the same time, would the result be a greater or smaller resistance in the community's electric network?
- (b) How would this affect the 'Motor Effect' in the generators?
- (c) What must the utility company do to counter this effect?
7. We have shown that a Genecon used as a motor always creates a generator effect and that a Genecon used as a generator always creates a motor effect. Compose a sentence starting with the phrase "In both cases..." without using either of the words "generator" or "motor" that will describe what happens initially in both of these devices. Then compose a sentence starting with "In both cases..." that will describe the secondary effect in both devices.