

PRINCIPLES OF TECHNOLOGY
Chapter 1 Prime Movers
Test Review
1.3-1.4

Name: McElwee

Period: KEY

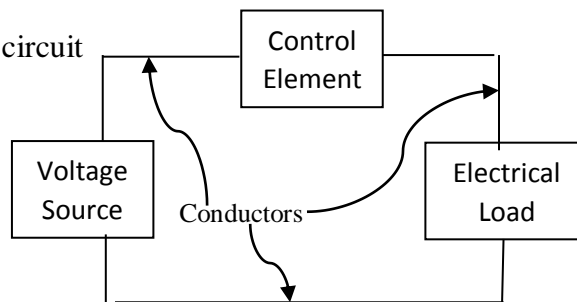
Voltage source – a source of potential difference

Conductor- a material through which charge can flow easily.

Control element –switch in a system that turns the current on or off.

Electrical load – is usually an appliance.

Diagram a general electrical circuit



Alternating current- charge flows back and forth, changing direction many times per second.

Direct current – electric charge flows in one direction only.

Battery- most common type of DC voltage source

How does a dry-cell battery work? Wet cells have a dry acid paste (i.e. remote control batteries)

How does a wet-cell battery work? Wet cell batteries are made of a liquid acid (i.e. car battery)

How is a battery recharged? Current is sent through the battery in the reverse direction. This reverses the direction of the chemical reaction and makes the materials able to produce voltage again.

Electrode – terminals of a battery

cathode – negative electrode

anode- positive electrode

How are batteries hooked in series (so they work)? The batteries are hooked together - + - +

What will happen if they are connected the wrong way? The voltage will be subtracted and not added together

Frequency – is the cycling rate

Hertz – unit of frequency (cycles per seconds)

Describe an atom – composed of protons (positively charged), neutrons (no charge) and electrons (negatively charged).

Voltmeter- is an instrument used for measuring electrical potential difference between two points in an electric circuit.

Describe the 3 ways of producing a voltage difference

- *Electrochemistry* - Combining chemicals with certain metals causes a chemical reaction that transfers electrons.
- *Static electricity* - When an object with a normally neutral charge loses electrons, due to friction, and comes in contact with another object having a normal charge, an electric charge is exerted between the two objects.
- *Magnetic induction* - Rotating coils of wire through a stationary magnetic field or by rotating a magnetic field through a stationary coil of wire produces a potential.
- *Thermoelectricity* - Heating two joined dissimilar materials will cause a transfer of electrons between the materials setting up a current flow.

Heat energy- energy that flows from one object to another because of a temperature difference.

"Thermal systems are designed to transfer heat which is dependent on temperature difference."

delta-T - symbolizes the temperature change

Heat - energy that flows from one object to another because of a temperature difference.

Temperature is the hotness of an object or substance.

"Temperature depends on the average kinetic energy of the particles."

Why does heat flow from hot to cold? Because of conduction – thermal energy flows from hotter to colder as the particles collide. Hotter substances have more particles moving faster and they collide with the slower moving particles in the colder substances.

Thermometer – device used to measure the temperature of a liquid or substance.

Fahrenheit – English unit for Temperature

Celsius – most common unit for measuring temperature.

Equation for Fahrenheit to Celsius

$$C = \frac{5}{9} (F - 32)$$

Equation for Celsius to Fahrenheit

$$F = \frac{9}{5} C + 32$$

Convert 42 deg. F to Celsius

5.6 C

Convert 41 deg. C to Fahrenheit

105.8 F

ALSO REVIEW HOMEWORK PROBLEMS AND THE FOLLOWING EXAMPLES:

1.11

1.13

1.14

1.15

1.16

1.17