SNC 1DI

Electricity Practice Exam

1. State the three parts of the Law of Electric Charge

① like charges repel each other

② unlike charges attract each other

③ charged objects attract neutral objects

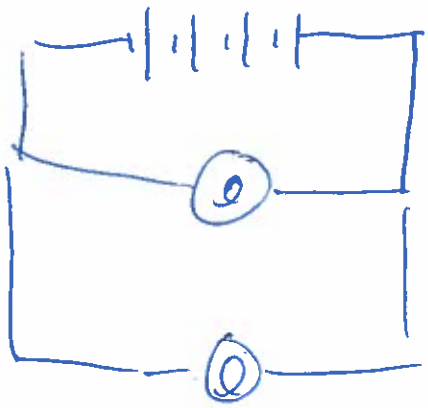
2. Explain the three ways to charge an object.

① friction - rub two objects together
- one loses e^- and one gains e^-

② contact - electrons transfer from a charged object to a neutral object
- neutral object gains the same charge as the object that touched it

③ induction - e^- move within a neutral object due to a charged object coming close
- grounding provides a path
- removing ground causes neutral object to have opposite charge

3. Draw a circuit diagram that has four 1.5 volt cells connected in series. There are two light bulbs, each connected in parallel. State the voltage at the battery and at each light.

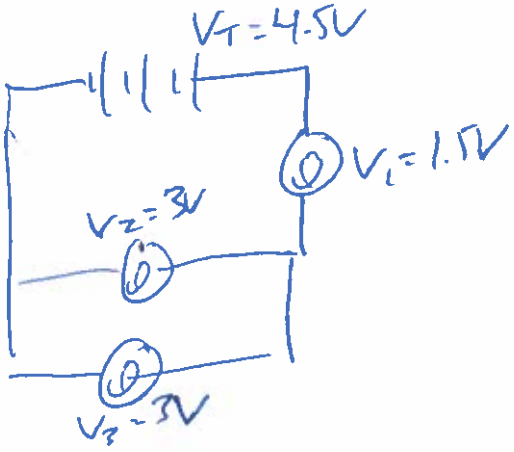


$V_T = 6V$

$V_1 = 6V$

$V_2 = 6V$

4. Draw a circuit diagram that has a 3 cell battery in series with 1 light bulb in series and two light bulbs in parallel. What is the voltage at the battery and each light bulb? $V_1 = 1.5V$



5. The current in a circuit is 2.4 A. What is the resistance if the voltage is 120 V?

$I = 2.4A$
$V = 120V$
$R = ?$

$V = IR$
$120 = 2.4R$
$R = 50\Omega$

∴ the resistance is 50Ω.

6. Calculate the efficiency of an electric motor that produces 25000 J of useful energy while using an input energy of 32500 J.

$E_{out} = 25000J$
$E_{in} = 32500J$
$Eff. = ?$

$$Eff. = \frac{E_{out}}{E_{in}} \times 100$$

$$= \frac{25000}{32500} \times 100$$

$$= 76.9\%$$

∴ the efficiency is 77%