

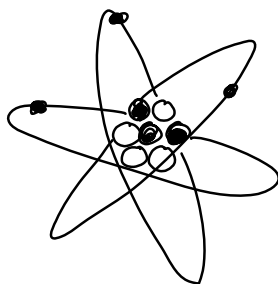
## Revision of S1 Physics Material

### 1.1 Energy

- Copy and complete the following sentence;  
'ACTION energies make things happen ..... whereas POTENTIAL or ..... energies make things happen .....
- List the 5 action energies and the 4 potential.
- State the main type(s) of energies associated with the following situations/objects.
  - a battery
  - a book high on a shelf
  - a stretched trampoline
  - an apple
  - the Sun
  - a skydiver falling out their plane
- Write down the Principle of Conservation Of Energy.
- All types of energy are measured in units of what?
- Write down the energy changes associated with
  - a leaf falling from a tree
  - a battery operated torch
  - you eating a bowl of cereal before running up the stairs
  - a stretched drum skin being released and allowed to vibrate.
- If an S1 class watches the tv in physics and 200J of light energy are given out along with 140J of sound energy, how much electrical energy did the tv use up in this time?

### 1.2 Static Electricity

- Copy this simple diagram of an atom and add the following labels in the correct places  
ELECTRON          NEUTRON          NUCLEUS          PROTON



- Which particle is (i) negative (ii) positive (iii) has a negligible mass?
- For an ATOM to be electrically neutral it needs to have equal numbers of which 2 particles?
- Name the only type of particle that can move.
- Describe how to charge a neutral polythene ruler negatively. What particles are added or taken away?
- What would happen if two charged polythene rods were suspended from the ceiling, close together? Why does this happen? What would you need to do to cause the opposite effect to happen?
- Give an example of static electricity occurring in nature.

### 1.3 Current Electricity

1. Copy and complete the following sentences:

'Electric current is a flow of charged particles called ..... They always flow from ..... to ..... and a ..... circuit is needed for current to flow. The size of current flowing is measured in units of ..... using an ..... which is always connected in ..... with the components.'


2. Draw the circuit symbols for the following components

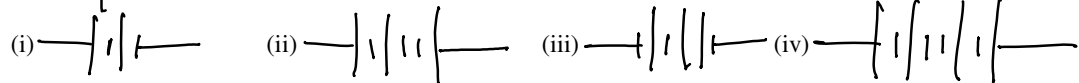
- (a) a resistor
- (b) a battery
- (c) a lamp
- (d) a switch
- (e) a voltmeter

3. Copy and complete the following sentences:

'Voltage is a measure of the ..... given to the charges in a circuit. It is measured in units of ..... using a ..... which is connected in ..... With the component'.

4. Draw the circuit diagram for 2 batteries connected a bulb, which is then connected to an ammeter before being connected to the other side of the batteries. Add a voltmeter to your circuit, which would measure the voltage across the bulb.

5. If  represents 2V, what voltages do the following combinations give you?



6. Explain the difference between a conductor and an insulator, giving two examples of each.
7. Draw a circuit, which could test for conductors and insulators, explaining how it would tell you which was which.
8. In a series circuit, what happens to the current from the battery and brightness of each bulb as you add more bulbs? What happens if the bulbs are connected in parallel?

### 1.4 FORCES

1. Copy and complete the following sentences:

'Forces are either ..... or ..... They are measured in units of ..... using a ..... Examples of forces we encounter in every day life include ..... , ..... and .....

2. Describe 2 ways of INCREASING and DECREASING the force of friction.
3. Calculate the weight of the following objects on Earth  
 (a) a 2kg box of sweets (b) a 300g shoe
4. On Mars where  $g = 3.8 \text{ N/kg}$ , Arnie the Astronaut has a mass of 75 kg. What is his weight on Mars and on Earth? What NEVER changes about Arnie?
5. Work is done when what is transferred? It is measured in units of Newtons/Joules/metres?
6. How much work is done when a husky dog pulls a sledge with a force of 30N for 500m?
7. A rugby player of mass 90 kg is doing 'heaves' in the gym, where he tries to pull himself up using a bar. What is the minimum force he could use to pull up and how much work does he do per 'heave' if he rises 40cm? (Hint - 40 cm = 0.4m!)