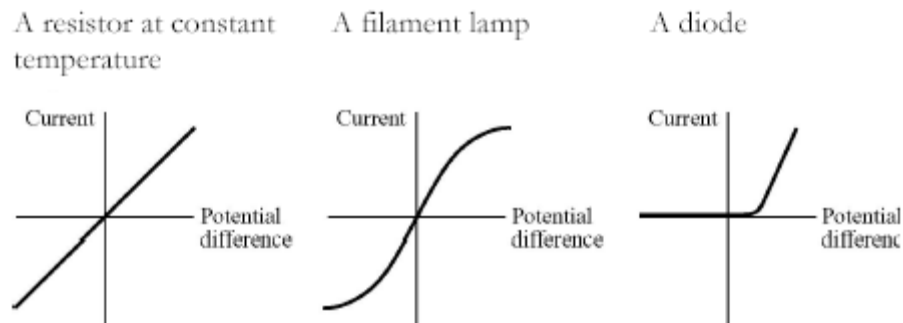**Physics Skills needed for the Module 2 exam - what I should know how to do?**

Graph work
- to construct distance-time graphs for a body moving in a straight line when the body is stationary or moving with a constant speed
- to construct velocity-time graphs for a body moving with a constant velocity or a constant acceleration
- to calculate the speed of a body from the slope of a distance-time graph
- to calculate the acceleration of a body from the slope of a velocity-time graph
- to calculate the distance travelled by a body from the area under a velocity-time graph.
- to draw <u>and interpret</u> velocity-time graphs for bodies that reach terminal velocity (including a consideration of the forces acting on the body) – acceleration when driving force is biggest, deceleration when retarding force is biggest and terminal velocity when they are equal.
- to sketch

A resistor at constant temperature   A filament lamp   A diode

- to compare potential differences of d.c. supplies and the peak potential differences of a.c. supplies from diagrams of oscilloscope traces
- to determine the period and hence the frequency of a supply from diagrams of oscilloscope traces.

Explanations
- to use the ideas of momentum to explain safety features.
- to explain why static electricity is dangerous in some situations and how precautions can be taken to ensure that the electrostatic charge is discharged safely
- to explain how static electricity can be useful, for example in photocopiers and smoke precipitators and the basic operation of these devices – see Cyberphysics.
- to explain how basic electrical circuits work in practical situations.
- recognise errors in the wiring of a three-pin plug
- recognise dangerous practice in the use of mains electricity

Calculation work
- Calculate velocity or speed, distance or time; given that speed=distance/time
- Calculate the change in velocity – difference between velocity at the end of the time period and at the start of it.
- Calculate the acceleration, change in velocity or time; when given that $a=\Delta v/t$
- Calculate weight, mass or gfs; when given weight = mass × gravitational field strength
- Calculate force, mass or acceleration; when given that force = mass × acceleration
- Calculate work done, distance or force; when given that work done = force × distance moved.
- Calculate KE, mass or speed; when given that kinetic energy = ½ × mass × speed^2
- Calculate momentum, speed or mass; when given that momentum = mass × velocity

Physics Skills needed for the Module 2 exam - what I should know how to do?

- Calculate force, time, change in momentum; when given that force x time = change in momentum (or impulse = change in momentum).
- Calculate power, time and energy transformed; when given that power = energy transformed/time taken.
- Calculate power, current and potential difference; when given that power = current x potential difference.
- Calculate the fuse rating using P=IV – calculate the current and then choose the fuse with the slightly higher rating.
- Calculate the energy transformed, potential difference and charge; when given that energy transformed = potential difference × charge
- Calculate electrical charge, current and time; when given that charge = current × time

Units you should know *(Note that <u>none of them have a prefix (except for kg)</u> and that the case of the letter matters!!!)*	S.I. Prefixes you should know **(They go in front of the unit symbol – case of letter matters!)**
1. mass – kilogram (kg) 2. time – second (s) 3. force or weight (which is a force) – newton (N) 4. energy (all types of it!) or work – joule (J) 5. power (all types of it) – watt (W) 6. distance, length, width, wavelength etc. – metre (m) 7. potential difference – volts (V) 8. charge – coulomb (C) 9. current – amps or amperes (A) 10. resistance – ohms (Ω) 11. frequency – hertz (Hz)	T – tera means x 10^{12} G – giga means x 10^{9} M – mega means x 10^{6} k – kilo means x 10^{3} d – deci means x 10^{-2} m – milli means x 10^{-3} μ – micro means x 10^{-6} n – nano means x 10^{-9} p – pico means x 10^{-12} f – femto means x 10^{-15} **Note that efficiency is a ratio – NO UNITS!**

Units you should be able to work out from equations!
- speed or velocity (m/s or ms^{-1})
- acceleration (m/s^{2} or ms^{-2})
- gravitational field strength (N/kg or N kg^{-1})
- momentum (kg m/s or kg m s^{-1})
- impulse (Ns)

Diagrams you should know
- sketch and label a diagram of the wiring of a 3-pin plug.
- how to sketch a labelled diagram to illustrate how a chain reaction may occur.

Symbols you should know

α, β, γ

Alpha.   beta,   gamma