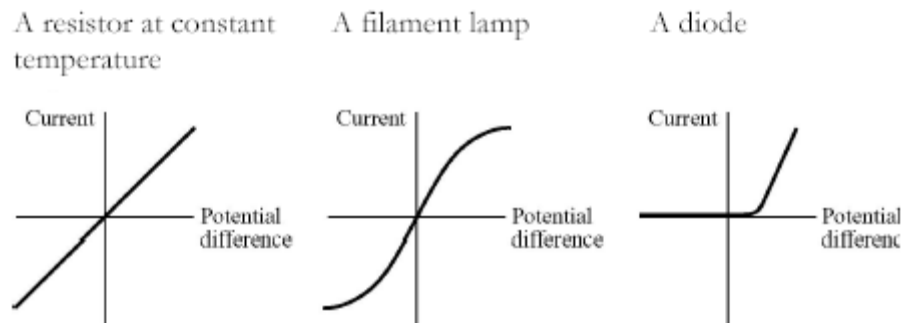


Physics Skills needed for the Module 2 exam - what I should know how to do?

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 and interpret 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



- 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 $\text{speed} = \text{distance} / \text{time}$
- 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 $\text{weight} = \text{mass} \times \text{gravitational field strength}$
- Calculate force, mass or acceleration; when given that $\text{force} = \text{mass} \times \text{acceleration}$
- Calculate work done, distance or force; when given that $\text{work done} = \text{force} \times \text{distance moved}$.
- Calculate KE, mass or speed; when given that $\text{kinetic energy} = \frac{1}{2} \times \text{mass} \times \text{speed}^2$
- Calculate momentum, speed or mass; when given that $\text{momentum} = \text{mass} \times \text{velocity}$

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 \times 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 \times 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 \times charge
- Calculate electrical charge, current and time; when given that charge = current \times time

Units you should know <i>(Note that none of them have a prefix (except for kg) and that the case of the letter matters!!!)</i>	S.I. Prefixes you should know <i>(They go in front of the unit symbol - case of letter matters!)</i>
<ol style="list-style-type: none"> 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) 	<p>T - tera means $\times 10^{12}$ G - giga means $\times 10^9$ M - mega means $\times 10^6$ k - kilo means $\times 10^3$ d - deci means $\times 10^{-2}$ m - milli means $\times 10^{-3}$ μ - micro means $\times 10^{-6}$ n - nano means $\times 10^{-9}$ p - pico means $\times 10^{-12}$ f - femto means $\times 10^{-15}$</p> <p>Note that efficiency is a ratio - NO UNITS!</p>

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

