PHYSICS FORMULAE NOT GIVEN ON SHEET

Measurements and Their Errors:

- Metric Prefixes: You are expected to know how to convert between metric prefixes into SI unit standards, such as converting mA or Milli-Amps (10^{-3}) into regular Amps.

peta	P	1 x 10 ^{15}	quadrillion
tera	T	1 x 10 ^{12}	trillion
giga	G	1 x 10 ^{9}	billion
mega	M	1 x 10 ^{6}	million
kilo	k	1 x 10 ^{3}	thousand
hecto	h	1 x 10 ^{2}	hundred
deka	da	1 x 10 ^{1}	ten
Factor of One	*******	1 x 10 ^{0}	one
deci	d	1 x 10 $^{-1}$	tenth
centi	c	1 x 10 $^{-2}$	hundredth
milli	m	1 x 10 $^{-3}$	thousandth
micro	u	1 x 10 $^{-6}$	millionth
nano	n	1 x 10 $^{-9}$	billionth
pico	p	1 x 10 $^{-12}$	trillionth
femto	f	1 x 10 $^{-15}$	quadrillionth

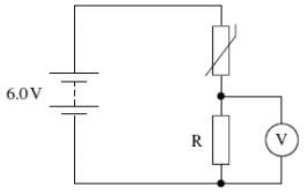
Some examples where knowing this skill matters:

(iii) The slit spacing was 0.56 mm. The distance across 4 fringe spacings was 3.6 mm when the screen was at a distance of 0.80 m from the slits. Calculate the wavelength of the red light.

3.6mm $\Rightarrow$ 3.6 x 10^{-3} metres = w

0.56mm $\Rightarrow$ 0.56 x 10^{-3} metres = s

(b) The diagram below shows a thermistor connected in series with a resistor, R, and battery of emf 6.0 V and negligible internal resistance.



When the temperature is 50 °C the resistance of the thermistor is 1.2 kΩ. The voltmeter connected across *R* reads 1.6V.

1.2kΩ $\Rightarrow$ 1.2 x 10^{3} Ω

- Calculating Averages: You are expected to know how to calculate an average:
  (Sum of Results / Number of measurements taken)

- *Calculating Uncertainties:*
  - Uncertainty = Range / 2 = (Largest value – Lowest value) / 2
  - Percentage uncertainty = (Uncertainty / value of measurement) x 100
  - Fractional uncertainty = (Uncertainty / value of measurement)

Particles Physics:

- Specific Charge: You are not given the formula to calculate the specific charge, you have to remember this!
  Specific Charge = $\frac{Charge}{Mass}$

- Relative Charge and Mass of the particle: You are not given the relative charge and mass of particles!

Particle	*Relative Charge*	*Relative Mass*	*Charge (C)*	*Mass (kg)*
Proton	*+1*	*1*	*+1.6x10^{-19}*	*1.67x10^{-27}*
Neutron	*0*	*1*	*0*	*1.67x10^{-27}*
Electron	*-1*	*0.0005*	*-1.6x10^{-19}*	*9.11x10^{-31}*

- Minimum energy required for pair production and anhillation: You need to remember this
  Pair Production: $Energy_{min} = 2 \times E_{rest}$
  Annihilation: $Energy_{min} = E_{rest}$

- Baryon Numbers for the particles: You need to remember this!

PHYSICS FORMULAE NOT GIVEN ON SHEET

Quantum Phenomena:

- Stopping Potential: Work done required for a photon to lose energy
  $eV_s = E_{K\,(MAX)}$

Waves:

- Diffraction Grating equation: Technically you don't need to know it, but just to be sure – remember it!
  $d\sin\theta = n\lambda$

Mechanics and Materials:

It seems you're given everything, even impulse (Note: This is on the new formula sheet for the new spec, click here for a copy)

Electricity:

- Energy used in a certain amount of time: Really simple to remember, so don't forget it!
  Power x Time = Energy
  …where "Power" is in Watts, "Time" is in seconds & "Energy" is in Joules.

- Potential Divider Voltage Calculations: You don't really need to remember it since you can derive it but well, if you insist?
  $V_{out} = (V_{in} \times R2) / (R_1 + R_2)$

Advice from Umut:

They pretty much give you everything else on the formula sheet, even how to calculate the area of a circle. So there's no reason why you shouldn't get a good grade! Good Luck!