WJEC PH5

Spec Ref	Topic	TAP episode	comments
5.1	parallel plate capacitor $C = \varepsilon_0 A/d$, $C = Q/V$	126	
	energy stored, $U = \frac{1}{2}QV$	128	
	$E = V/d$,	409	
	capacitors in series and in parallel,	127	
	capacitor discharge $Q = Q_0 e^{-t/RC}$	129	
5.2	magnetic field B, $F = BIl \sin\theta$	412	
	$F = Bqv \sin\theta$, Hall voltage, Hall probe	413	
	$B = \frac{\mu_0 I}{2\pi a}$, $B = \mu_0 nI$, magnetic field patterns	411	
	definition of the ampere,	412	Text states 'not usually required'
	ion beams in electric and magnetic fields,	413-2	
	linear accelerators, cyclotrons and synchrotrons.	413, 518	413 - Passing comment only
5.3	$\Phi = AB\cos\theta$ and flux linkage = $N\Phi$	414	
	Faraday and Lenz' laws, e.m.f. induced in a rotating coil	414	
	alternating voltages and currents, rms values	123	Elementary level
	CRO to measure a.c. and d.c. & frequencies.	123	
5.4	nuclear decay α, β and γ radiation,	510,511	
	nuclear transformations	512	
	background radiation, half-life	509, 514	
	activity A and the becquerel, decay constant,	509-1, 515	
	$\lambda = \frac{\log_e 2}{T_{\frac{1}{2}}}$	515	
	$N = N_0 e^{-\lambda t}$	516	
	use of radioisotopes, hazards of ionising	509, 510	509 - Some uses
5.5	$E = mc^2$, binding energy	524, 525	
	conservation of mass/energy to particle interactions	533	
	neutron emission & chain reactions	527	
	induced fission, moderator, control rods and coolants	527, 528	
	environmental problems of waste products	527	V brief only