

Spec Ref	Topic	TAP episode	comments
3.2.2 C	charge, current and potential difference	102,	
	electric current as rate of flow of charge	102	
	the ohm, the volt	105	
	power dissipation $P=IV = I^2 R=V^2/R$	106	
	kW h and current cost.	116	
	ohmic & non-ohmic, filament lamp & ntc thermistor	109, 109-1	
	explanation of resistance	108	
	changes with temperature for metals and ntc thermistors.	110	
	resistances in series and parallel	114	
	Kirchoff's Laws	117	
	potential divider and uses	118	
	electromotive force and internal resistance	120, 121	
	energy loss in transmission and how this is reduced		
	electrical resistivity	112	
	superconductivity.	110	
energy distribution , role of ac transformers	416	A2 level work	
D	pros & cons of solar, wind-wave, tides, HEP, pumped storage and wind turbine conversions.	606-1	
	intensity of power from the Sun $I = P/A$		
	inverse square law for a point source	315	
	energy conversion using solar cells.		
	role of sun in power from wind and tides.		
	PE / KE conversions :barrages, HEP & pumped storage systems		
	$power\ available\ from\ wind = 1/2 \pi r^2 \rho v^3$		
E	rechargeable cells, efficiency		
	efficiency of conversion in generators, lamps and motors	214,606	definition only
	efficiency for a filament lamp and energy-efficient lamp.		
	energy lost by natural and forced convection:		
	Newton's law of cooling, half-cooling time		
	thermal energy transfer by conduction and radiation.		
	temperature gradient, conductivity, cross-sectional area.		
	U-values, rate of energy transfer = $UA\Delta\theta$		