ELECTRICITY CHECKLIST (TOPIC 3)

SPECIFICATION			
31. understand that electric current is the rate of flow of charged particles and be able to use the equation **I = QΔ/Δt**			
32. understand how to use the equation **V = W/Q**			
33. understand that resistance is defined by **R = V/I** and that Ohm's law is a special case when I ∝ V for constant temperature			
34 . understand how the distribution of current in a circuit is a consequence of charge conservation			
35. understand how the distribution of potential differences in a circuit is a consequence of energy conservation			
36. be able to derive the equations for combining resistances in series and parallel using the principles of charge and energy conservation, and be able to use these equations			
37. be able to use the equations **P = VI**, **W = VIt** and be able to derive and use related equations, e.g**. P = I^2R** and **P = V^2/R**			
38. understand how to sketch, recognise and interpret current-potential difference graphs for components, including ohmic conductors, filament bulbs, thermistors and diodes.			
39. be able to use the equation **R = ρl / A**			
40. CORE PRACTICAL 2: Determine the electrical resistivity of a material.			

41. be able to use **I = nqvA** to explain the large range of resistivities of different materials			
42. understand how the potential along a uniform current-carrying wire varies with the distance along it			
43. understand the principles of a potential divider circuit and understand how to calculate potential differences and resistances in such a circuit			
44. be able to analyse potential divider circuits where one resistance is variable including thermistors and light dependent resistors (LDRs)			
45. know the definition of electromotive force (e.m.f.) and understand what is meant by internal resistance and know how to distinguish between e.m.f. and terminal potential difference			
46. CORE PRACTICAL 3: Determine the e.m.f. and internal resistance of an electrical cell.			
47. understand how changes of resistance with temperature may be modelled in terms of lattice vibrations and number of conduction electrons and understand how to apply this model to metallic conductors and negative temperature coefficient thermistors			
48. understand how changes of resistance with illumination may be modelled in terms of the number of conduction electrons and understand how to apply this model to LDRs.			