PLC for A level Chemistry Term 2.			
3.1.11 Electrode potentials and electrochemical cells.	Red	Amber	Green
Write and apply the conventional representation of a cell including half equations	Red	Amber	Green
Define the standard electrode potential conditions	Red	Amber	Green
Use E^{θ} values to predict the direction of simple redox reactions	Red	Amber	Green
Calculate the EMF of a cell	Red	Amber	Green
State the simplified electrode reactions in a lithium cell	Red	Amber	Green
State the electrode reactions in an alkaline hydrogen-oxygen fuel cell	Red	Amber	Green
State the benefits and risks to society associated with using these cells	Red	Amber	Green
3.1.11 Electrode potentials and electrochemical cells	Red	Amber	Green
Deduce the reactions occurring in non-rechargeable and rechargeable cells	Red	Amber	Green
Deduce the EMF of a cell	Red	Amber	Green
Explain how the electrode reactions can be used to generate a current	Red	Amber	Green
3.1.12 Acids and bases	Red	Amber	Green
Definition of acid and base in terms of protons	Red	Amber	Green
Definition of acid-base equilibria in terms of protons	Red	Amber	Green
Definition of the term pH including pH= $-\log_{10}[H^+]$	Red	Amber	Green
Conversion of hydrogen ion concentration into pH and vice versa	Red	Amber	Green
Calculate the pH of a solution of a strong acid from its concentration	Red	Amber	Green
Define Kw in terms of the dissociation of water and Kw = $[H^+][OH^-]$	Red	Amber	Green

Understand the value of Kw varies with temperature	Red	Amber	Green
Use Kw to calculate the pH of a strong base from its concentration	Red	Amber	Green
Understand Ka in terms of dissociation of weak acids and pKa = -$\log_{10}$Ka	Red	Amber	Green
Construct an expression for Ka	Red	Amber	Green
Perform calculations relating the pH of a weak acid to the concentration of the acid and Ka	Red	Amber	Green
Convert Ka into pKa and vice versa	Red	Amber	Green
Perform calculations for titrations of acids and bases	Red	Amber	Green
Sketch and explain typical pH curves for acid-base titrations	Red	Amber	Green
Use pH curves to select an appropriate indicator	Red	Amber	Green
3.1.12 Acids and bases	Red	Amber	Green
Define the term buffer solution	Red	Amber	Green
Explain the difference between an acidic buffer and a base buffer solution	Red	Amber	Green
Explain qualitatively the action of acidic and basic buffers	Red	Amber	Green
Calculate the pH of acidic buffer solutions	Red	Amber	Green

Inorganic Chemistry			
3.2.5 Transition metals	Red	Amber	Green
Explain the transition metal characteristics of elements Ti-Cu in terms of d sub-level shell	Red	Amber	Green
Describe the characteristic properties	Red	Amber	Green
Define the terms: Ligand, complex, coordination number	Red	Amber	Green
Describe H_2O, NH_3 and Cl^- as monodentate ligands; describe the charge and relative size of these ligands	Red	Amber	Green
Describe the exchange of these ligands in terms of coordination number	Red	Amber	Green
Explain that substitution may be incomplete	Red	Amber	Green
Give examples of bidentate and multidentate ligands	Red	Amber	Green
Describe and explain the importance of iron as a multidentate ligand in the haem molecule in blood	Red	Amber	Green
3.2.5 Transition metals			
Explain the chelate effect in terms of the balance between the entropy and enthalpy change in reactions	Red	Amber	Green
Describe the type of complexes formed by transition metal ions with small and large ligands	Red	Amber	Green
Describe types of stereoisomerism shown by octahedral complexes including those associated with monodentate and bidentate ligands	Red	Amber	Green
Use of cis-platin as an anticancer drug and its action	Red	Amber	Green
Type of complex formed by Ag^+ as used in Tollens' reagent	Red	Amber	Green
Description and explanation of the use of colour to identify transition metal ions, in terms of wavelengths of light and d electrons	Red	Amber	Green
Use of the equation: $\Delta E = hv = hc/\lambda$ to give the energy difference in these electrons	Red	Amber	Green
Explanation of how oxidation state, co-ordination number and ligand alter ΔE leading to colour change	Red	Amber	Green
Explanation of how simple colorimeter can be used to determine the concntration of coloured ions in solution	Red	Amber	Green

Understand transition metals have variable oxidation states as exemplified by vanadium species	Red	Amber	Green
Explanation of how pH and ligand influence the redox potential for a transition metal ion changing oxidation state	Red	Amber	Green
Understand reduction of Tollens' reagent is used to distinguish between aldehydes and ketones	Red	Amber	Green
Perform calculations for the redox titrations of Fe^{2+} and $C_2O_4^{2-}$ with MnO_4^-	Red	Amber	Green
Understand transition metals can act as homogeneous and heterogeneous catalysts	Red	Amber	Green
Define heterogeneous catalyst in terms of phase and active site; explain the impact this has on cost	Red	Amber	Green
Describe the use of heterogeneous catalysts in the Contact and Haber processes	Red	Amber	Green
Explain, with the aid of equations, how V_2O_5 acts as a catalyst in the Contact process	Red	Amber	Green
Explain that heterogeneous catalysts can become poisoned and the impact this has on cost	Red	Amber	Green
Define the term homogeneous catalyst in terms of phase and intermediate species	Red	Amber	Green
3.2.5 Transition metals			
Explain the importance of variable oxidation state in catalysis	Red	Amber	Green
Explain, with the aid of equations, how Fe^{2+} ions catalyse the reaction between I^- and $S_2O_8^{2-}$	Red	Amber	Green
Explain, with the aid of equations, how Mn^{2+} ions autocatalyse the reaction between $C_2O_4^{2-}$ and MnO_4^-	Red	Amber	Green
3.2.6 Reactions of ions in aqueous solution	Red	Amber	Green
Describe the production of metal-aqua ions in aqueous solution	Red	Amber	Green
Explain why the acidity of these ions varies in terms of the charge/size of the metal ion	Red	Amber	Green
Understand some metal hydroxides show amphoteric character by dissolving in both acids and bases	Red	Amber	Green
Describe and explain the simple test tube reactions of M^{2+} ions with bases limited to Fe and Cu	Red	Amber	Green
Describe and explain the simple test tube reactions of M^{3+} ions with bases limited to Al and Fe	Red	Amber	Green