Topic 13 – Electrochemistry (Paper 1 only)

* I can use EƟ values to calculate the EMF of a cell and to predict the direction of simple redox reactions
* I can write an apply the conventional representation of a cell
* I understand that cells are used to measure electrode potentials by reference to the standard hydrogen electrode
* I understand the importance of the conditions when measuring the electrode potential, E (Nernst equation not required) and that standard electrode potential, EƟ, refers to conditions of 298 K, 100 kPa and 1.00 mol dm−3 solution of ions.
* I can use the IUPAC convention for writing half-equations for electrode reactions
* I understand that standard electrode potentials can be listed as an electrochemical series
* I can carry out an experiment to measure the emf of a cell (Required Practical 8)
* I understand that electrochemical cells can be used as a commercial source of electrical energy, and that cells can be non-rechargeable (irreversible), rechargeable or fuel cells
* I can recall the simplified electrode reactions in a lithium cell (positive electrode Li+ + CoO2 + e– → Li+[CoO2]–, negative electrode Li → Li+ + e–, and the electrode reactions in an alkaline hydrogen–oxygen fuel cell
* I understand that fuel cells are used to generate an electric current and do not need to be electrically recharged
* I can appreciate the benefits and risks to society associated with using these cells
* I can explain how the electrode reactions can be used to generate an electric current