# Year 12 Chemistry Revision Tables Using and Controlling Reactions

### Topic 3.1: Measuring Energy Changes

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| ***Expectation***  From SACE Subject Outline | ***Test Q*** | ***Proficiency***  (beginning/sometimes/proficient) | ***Comments/questions*** | ***Assignment question(s)*** |
| Identify combustion and respiration as reactions that release energy and photosynthesis as a reaction that absorbs energy. | **1** |  |  | Assignment 1 Q1 |
| Deduce whether a reaction is exothermic or endothermic from information provided. | **2(a)** |  |  | Assignment 1 Q3 |
| Calculate the heat released or absorbed for a reaction from experimental data, given the specific heat capacity of water (4.18Jg-1K-1). | **-** |  |  | Assignment 1 Q4(a), Q6(b)(ii)  Assignment 2 Q6, Q7 |
| Determine enthalpy changes from experimental data for reactions, including:  · the combustion of alcohols  · the neutralisation of acids with bases  · solution processes. | **2(b)(i)** |  |  | Assignment 1 Q4(b), Q6(b)(iii) |
| Identify a reaction as exothermic or endothermic, given a thermochemical equation or the value of its enthalpy change. | **-** |  |  | Assignment 1 Q3 |
| Write thermochemical equations that correspond to given molar enthalpies of combustion, neutralisation, and solution. | **2(b)(ii)**  **3(a)(v)** |  |  | Assignment 1 Q2, Q6(a)  Assignment 2 Q4 |
| Calculate the theoretical temperature change of a specified mass of water or solution heated or cooled by a reaction, given molar enthalpies and quantities of reactants. | **-** |  |  |  |

### Topic 3.2: Fuels

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| ***Expectation*** | ***Test Q*** | ***Proficiency*** | ***Comments/questions*** | ***Assignment question(s)*** |
| Describe the advantages and disadvantages of the use of carbon-based fuels as sources of heat energy, compared with their use as feedstock. | **3(a)(i)-(ii)** |  |  | Assignment 2 Q1 |
| Write balanced equations for the complete combustion of fuels in which the only products are carbon dioxide and water. | **-** |  |  | Assignment 2 Q3 |
| Describe the undesirable consequences of incomplete combustion. | **3(b)** |  |  | Assignment 2 Q2 |
| Calculate the quantities of heat evolved per mole, per gram, and per litre (for liquids) for the complete combustion of fuels. | **3(a)(iv)** |  |  | Assignment 4 Q1, Q2 |

### Topic 3.3: Electrochemistry

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| ***Expectation*** | ***Test Q*** | ***Proficiency*** | ***Comments/questions*** | ***Assignment question(s)*** |
| Identify a cell as galvanic or electrolytic, given sufficient information. | **4(f)** |  |  | Assignment 3 Q1 |
| Write half-equations for half-reactions, including those in acidic solution, given information about the reactants and the products. | **4(b)** |  |  | Assignment 3 Q2(a), Q3(c) |
| Identify the anode and cathode in a galvanic cell or an electrolytic cell, given information about the reactants and the products. | **4(a)** |  |  | Assignment 3 Q2(a), 3(b)(c) |
| Identify the:  · charge on the electrodes  · direction of electron flow  · movement of ions in the salt bridge or electrolyte  given a sketch for a galvanic cell and information about electrode reactions. | **4(c-e)** |  |  | Assignment 3 Q2(b), 3(a), 4(a) |
| State the advantages and disadvantages of fuel cells compared with other galvanic cells. | **4(h)** |  |  | Assignment 3 Q5 |
| Describe the complementary nature of the charging and discharging of rechargeable galvanic cells. | **-** |  |  | Assignment 3 Q6 |
| Describe, with the aid of equations, the electrolytic production of active metals. | **-** |  |  | Assignment 3 Q7 |