# HIGHER CHEMISTRY

## PAPER 1

### Friday 27th May (am)

| C1: ATOMIC STRUCTURE and the PERIODIC TABLE | specification | Rev Guide page |
|---|---|---|
| Atoms, elements and compounds | 5111 | 96, 97, 98 |
| Mixtures | 5112 | 100, 101 |
| The development of the model of the atom | 5113 | 103 |
| Relative electrical charges of subatomic particles | 5114 | 96, 97 |
| Size and mass of atoms | 5115 | 96, 97 |
| Relative atomic mass | 5116 | 96, 97 |
| Electronic Structure | 5117 | 104 |
| The periodic table | 5121 | 105 |
| Development of the periodic table | 5122 | 106 |
| Metals and non-metals | 5123 | 107 |
| Group 0 | 5124 | 110 |
| Group 1 | 5125 | 108 |
| Group 7 | 5126 | 109 |

| C2: Bonding, Structure and Properties of Matter | specification | Rev Guide page |
|---|---|---|
| Chemical bonds | 5211 | 112 |
| Ionic bonding | 5212 | 113 |
| Ionic compounds | 5213 | 114 |
| Covalent bonding | 5214 | 115 |
| Metallic bonding | 5215 | 119 |
| The three states of matter | 5221 | 120 |
| State symbols | 5222 | 121 |
| Properties of ionic compounds | 5223 | 114 |
| Properties of small molecules | 5224 | 116 |
| Polymers | 5225 | 117 |
| Giant covalent structures | 5226 | 117 |
| Properties of metals and alloys | 5227 | 119 |
| Metals as conductors | 5228 | 119 |
| Diamond | 5231 | 118 |
| Graphite | 5232 | 118 |
| Graphene and Fullerenes | 5233 | 118 |

| C3: Quantitative Chemistry | specification | Rev Guide page |
|---|---|---|
| Conservation of mass and balanced chemical equations | 5311 | 125 |
| Relative formula mass | 5312 | 123 |
| Mass changes when a reactant or a product is a gas | 5313 | 125 |
| Chemical measurements | 5314 | 123 |
| Moles | 5321 | 124 |
| Amounts of substances in equations | 5322 | 124 |
| Using moles to balance equations | 5323 | 126 |
| Limiting reactants | 5324 | 127 |
| Concentrations in solutions | 5325 | 128 |

| C4 : Chemical Changes | specification | Rev Guide page |
|---|---|---|
| Metal oxides | 5411 | |
| The reactivity series | 5412 | 132 |
| Extraction of metals and reduction | 5413 | 133 |
| Oxidation and reduction in terms of electrons | 5414 | 134 |
| Reactions of acids with metals | 5421 | 131 |
| Neutralisation of acids and salt production | 5422 | 129 |
| Soluble salts | 5423 | 131 |
| **RP Making salts** | 5423 | 131 |
| The pH scale and neutralisation | 5424 | 129 |
| Strong and weak acids | 5425 | 130 |
| The process of elecrtrolysis | 5431 | 135 |
| Electrolysis of molten ionic compounds | 5432 | 135 |
| Using electrolysis to extract metals | 5433 | 135 |
| Electrolysis of aqueous solutions | 5434 | 136 |
| **RP Electrolysis** | 5434 | 136 |
| Representation of reactions at electrodes as half equations | 5435 | 136 |

| C5 : Energy Changes | specification | Rev Guide page |
|---|---|---|
| Energy transfer during exothemic and endothermic reactions | 5511 | 138 |
| **RP Temperature change** | 5511 | 139 |
| Reaction profiles | 5512 | 139 |
| The energy change in reactions | 5513 | 140 |

## PAPER 2

### Monday 20th June (am)

| C6 : THE RATE AND EXTENT OF CHEMICAL CHANGE | specification | Rev Guide page |
|---|---|---|
| Calculating rates of reaction | 5611 | 142, 144, 146 |
| Factors which affect the rates of chemical change | 5612 | 143 |
| **RP : Rates of Reaction** | 5612 | 144, 145 |
| Collision theory and activation energy | 5613 | 142 |
| Catalysts | 5614 | 143 |
| Reversible Reactions | 5621 | 147 |
| Energy changes and reversible reactions | 5622 | 147 |
| Equilibrium | 5623 | 147 |
| The effectof changing conditions on equilibrium | 5624 | 148 |
| The effect of changing concentration | 5625 | 148 |
| The effect of temperature changes on equilibrium | 5626 | 148 |
| The effect of pressure changes on equilibrium | 5627 | 148 |

| C7 : Organic Chemistry | specification | Rev Guide page |
|---|---|---|
| Crude oil, hydrocarbons and alkanes | 5711 | 150 |
| Fractional distillation and petrochemicals | 5712 | 151 |
| Properties of hydrocarbons | 5713 | 150 |
| Cracking and alkenes | 5714 | 152 |

| c8 : CHEMICAL ANALYSIS | specification | Rev Guide page |
|---|---|---|
| Pure substances | 5811 | 153 |
| Formulations | 5812 | 153 |
| Chromatography | 5813 | 154 |
| **RP : CHROMATOGRAPHY** | 5813 | 154 |
| Test for hydrogen | 5821 | 155 |
| Test for oxygen | 5822 | 155 |
| Test for carbon dioxide | 5823 | 155 |
| Test for chlorine | 5824 | 155 |

| C9 : CHEMISTRY OF THE ATMOSPHERE | specification | Rev Guide page |
|---|---|---|
| The proportions of different gases in the atmosphere | 5911 | 157 |
| The Earth's early atmosphere | 5912 | 157 |
| How oxygen increased | 5913 | 157 |
| How carbon dioxide decreased | 5914 | 157 |
| Green house gases | 5921 | 158, 159 |
| Human activities which contribute to an increase in greenhouse gases | 5922 | 158, 159 |
| Global climate change | 5923 | 158, 159 |
| The carbon footprint and its reduction | 5924 | 158, 159 |
| Atmospheric pollutants from fuels | 5931 | 160 |
| Properties and effects of atmospheric pollutants | 5932 | 160 |

| C10 : USING THE EARTH'S RESOURCES | specification | Rev Guide page |
|---|---|---|
| Using the Earth's resources and sustainable development | 51011 | 161, 162 |
| Potable water | 51012 | 164 |
| Waste water treatment | 51013 | 165 |
| Alternative methods of extracting metals | 51014 | 162 |
| Life cycle assessment | 51021 | 163 |
| Ways of reducing the use of resources | 51022 | 162 |