GES IA2 Chemistry Half Termly 2 Topic Sheet for January – March 2020

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| TOPIC: Unit 5 Transition metals and organic chemistry |

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| Theme: To explore transition metal chemistry & arene and organic nitrogen compounds | Level: Year 13 |
| Objectives: To further develop an understanding of the scientific concepts in Organic and Inorganic Chemistry and their practical applications in industry. | |

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| Focussing Questions | Key Words | |
| * 1. **How can you use colour to calculate the stoichiometry of a reaction?**  1. What are the colour changes associated with different oxidation states of metals? 2. How can titration and oxidation state indicators be used to calculate moles of substances 3. How do you determine the electrode potential of ions? 4. Calculate electrode potentials of cells 5. How can electrode potentials be utilised in industrial productions of cleaner fuels such as hydrogen cells and breathalysers    1. **Why do transition metals have multiple colours and variable oxidation states?** 6. Recall electron configuration of transition metals and ionisation energy trends 7. Define complex ions and draw their structures 8. Relate oxidation numbers to variable oxidation numbers in compounds 9. How can the solubility be predicted from the enthalpy and entropy of solution? 10. Explain the relationship between Period 4 transition metals to their electrode potentials 11. Describe some modern uses of transitional metal chemistry in treatments such as cancer & supramolecules | Titration  Half equations  Stoichiometry  Back-titrating  Half cells  Electrochemical cells  Electromotive force  Electrode potentials  Entropy  Energetic stability  Kinetic stability  Hydrogen fuel cells  Greener fuels  Biomass  Oxidation state  Variable  Ionisation energies  Configuration  Entropy  Phytoremediation  Complex ions  Polydentate  Dative covalent  Ligands  Polyatomic ions  Proportionate  Disproportionate  Catalysts  Photons | **Explaining words**  To calculate…..  In order to…..  The equations states….  These are examples of….  There is a relationship between…….  A correlation exists between….  This is caused by….  However….  …because…  This explains….. |

**Resources: departmental textbooks and worksheets/exam board resources, chromebooks**