SUBJECT GCE CHEMISTRY RJ & EK — Year 13 LP3

This half term: Skills, Knowledge and Understanding to be developed:

- **Skills (students WILL BE ABLE to by the end of the Learning Programme):** Students will be able to: describe the inert pair effect and the reactions of the sodium halides with sulfuric acid.
- **Knowledge (students WILL KNOW by the end of the Learning Programme):** Students will be know: the amphoteric behaviour of aluminium and lead, electron deficient and electron shell expansion, reactions of lead with sodium hydroxide, the disproportionation reactions of Chlorine.
- **Understanding (students WILL DEMONSTRATE THEIR UNDERSTANDING by the end of the Learning Programme):** Students will demonstrate their understanding by answering past paper questions.

Key Terms / Words:
Amphoteric, disproportionation, stability

LP 3– Week 1&2 Learning Outcomes: 1. Amphoteric behaviour of p-block elements as demonstrated by the reactions of Al^{3+}/Al and Pb^{2+}/Pb 2. increasing stability of the inert pair cations on descent of Groups 3, 4 and 5 3. how some Group 3 elements can form compounds with fewer than eight electrons in their valence shells and some elements of Groups 5, 6 and 7 can form compounds with more than eight	Assessment Mock Exam Mark Grade	Success criteria: Describe amphoteric behaviour of Al^{3+}/Al and Pb^{2+}/Pb Describe Inert Pair Effect Describe Valence expansion and electron deficiency.	**Homework LP 5 1/3** **HOMEWORK 1** Revise for APP1
LP 3 – Week 3&4 Learning Outcomes: 4. change in relative stability of oxidation states II and IV down Group 4 as shown by reactions of CO as a reducing agent with oxides and Pb(IV) as an oxidising agent in the reaction of PbO_2 with concentrated hydrochloric acid. 5. nature, physical properties and acid-base properties of CO_2 and PbO 6. change in the types of bonding down Group 4 as shown by the chlorides CCl_4, $SiCl_4$ and $PbCl_2$ and their reactions with water 7. reactions of $Pb^{2+}_{(aq)}$ with aqueous NaOH, Cl^- and I^- 8. reactions of Cl_2 with both cold and warm aqueous NaOH and the various disproportionation reactions involved 9. differences in behaviour of NaCl, NaBr and NaI with concentrated sulfuric acid (formation and subsequent reactions of HX)	Assessment APP Mark Grade	**Success criteria:** Describe the stability of the inert pair down the group. Describe the reactions of Group 4 Chlorides with water. Describe the reactions of Pb2+ Describe the disproportionation reactions of Chlorine Describe the behaviour of the Sodium Halides with concentrated sulfuric acid.	**Homework LP 5 2/3** **HOMEWORK 2** Complete examination questions on learning outcome
LP 3 – Week 5&6 Learning Outcomes: 10. how the d-block elements attain various oxidation states in their compounds 11. the most important oxidation states of Cr, Mn, Fe, Co and Cu and the colours of aqueous solutions of compounds containing Cr^{3+}, $CrO4^{2-}$, $Cr_2O_7^{2-}$, MnO_4^-, Co^{2+}, Fe^{2+},Fe^{3+} and Cu^{2+} 12. bonding in tetrahedral and octahedral complexes 13. origin of colour in transition metal complexes, as exemplified by octahedral 6-coordinate species such as $[Cu(H_2O)_6]^{2+}$ and $[Fe(H_2O)_6]^{3+}$, in terms of the splitting of d-orbitals		**Success criteria:** Describe the various oxidation states of the d-block compounds. Recall the colours of all required d-block compounds Describe the bonding in tetrahedral and octahedral complexes Explain the origin of colour in transition metal complexes.	**Homework LP 5 3/3** **HOMEWORK 3** **Answer past paper questions on p-block**