**COSTAATT**

**CHEM111 – Concepts in Chemistry I**

**Lesson 7 – Worksheet**

1. Balance the following equations, and then classify the reactions as synthesis, decomposition, single displacement, ionic precipitation or neutralisation reactions:

(a) H2CO3(g) → H2O(l) + CO2(g)

(b) Fe(s) + Cl2(g) → FeCl3(s)

(c) Zn(s) + HCl(aq) → ZnCl2(aq) + H2(g)

(d) NaOH(aq) + H2SO4(aq) → Na2SO4(aq) + H2O(l)

(e) AgNO3(aq) + MgBr2(aq)→ AgBr(s) + Mg(NO3)2(aq)

2. (a) When a zinc strip is placed in lead nitrate solution, crystals grow. Explain why.

(b) What happens when a lead strip is placed in silver nitrate solution?

(c) Write word and balanced symbol equations for the reaction in part (a).

(d) Write the ionic equation for the reaction in part (a).

(e) Why is the reactivity series of metals useful to us?

3. Define oxidation and reduction in terms of a transfer of electrons.

4. State whether the following half reactions show oxidation or reduction:

(a) Fe2+ + 2e-Fe

(b) Fe  Fe2+ + 2e-

(c) H2 2H+ + 2e-

(d) Cu2+ + 2e- Cu

5. Determine the oxidation number of:

(a)Cu in CuO

(b) Mn in MnO2

(c) S in H2SO4

(d) N in NH3

(e) N in N2O

6. If a mixture of zinc powder and cobalt(II) chloride is heated, the following reaction occurs:

Zn(s) + CoO(s)ZnO(s) + Co(s)

(a) Which metal is higher in the reactivity series?

(b) The zinc can be described as a reducing agent. Using this example, describe what is meant by the term *reducing agent*.

(c)Which substance in this reaction has been oxidised?