Year 11 Chemistry Assignment
Redox Reactions 2

1. In car exhaust systems, iron metal reacts with oxygen gas to form iron (III) oxide.
   (a) Which species is oxidised, which is reduced? /1
   (b) Write half-equations for the two half-reactions. /2
   (c) Hence write a balanced ionic full equation for the reaction. /1
   (d) Which species is the reducing agent in this reaction? /1
   (e) State what is meant by the term "reduction". /1

2. Use the electrochemical series to predict whether the following species will react or not:
   (a) $Zn + Cu^{2+}$ /1
   (b) $Mg^{2+} + Pb$ /1
   (c) $H^{+} + Ag$ /1
   (d) $Cl_2 + Br^{-}$ /1

3. Draw complete diagrams to show how the following electrochemical cells would be constructed. Show the flow of electrons, the anode and cathode, and underneath each half-cell write the half-equation for it.
   (a) $Zn \mid Zn^{2+} \parallel Pb^{2+} \mid Pb$ /4
   (b) $Fe \mid Fe^{2+} \parallel H^{+} \mid H_2$ /4

4. State 3 different uses for electrochemical cells in society. /3

5. State two reasons why electrochemical cells need a salt bridge. /2

6. Draw a diagram to show how you would construct an electrolytic cell to electrolyse a solution of copper iodide using carbon electrodes. Show the anode and cathode, and the two half reactions. /3

7. State the products if the following substances are electrolysed using inert carbon electrodes:
   (a) $ZnCl_2$ solution /2
   (b) AgBr molten liquid /2
   (c) CaI_2 solution /2

TOTAL MARKS /32