0.1.1. Balancing equations

Balance the equations below.

1. …..C + …..O_2 $\longrightarrow$ …..CO

2. …..Ba + …..H_2O $\longrightarrow$ …..$Ba(OH)_2$ + …..H_2

3. …..C_2H_6 + …..O_2 $\longrightarrow$ …..CO_2 + …..H_2O

4. …..HCl + …..$Mg(OH)_2$ $\longrightarrow$ …..$MgCl_2$ + H_2O

5. …..N_2 + …..O_2 $\longrightarrow$ …..NO

6. …..Fe_2O_3 + …..C $\longrightarrow$ …..Fe + …..CO_2

7. …..CH_3CH_2OH + …..[O] $\longrightarrow$ …..CH_3COOH + …..H_2O

8. …..HNO_3 + …..CuO $\longrightarrow$ …..$Cu(NO_3)_2$ + H_2O

9. …..Al^{3+} + …..e^- $\longrightarrow$ …..Al

10. …..$[Fe(H_2O)_6]^{3+}$ + …..CO_3^{2-} $\longrightarrow$ …..$Fe(OH)_3(H_2O)_3$ + …..CO_2 + …..H_2O
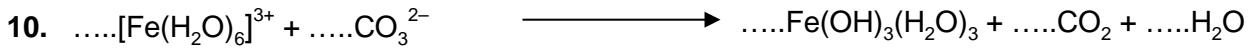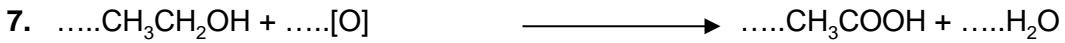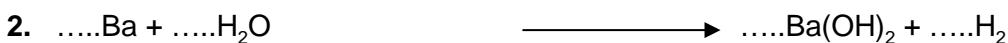
(10 marks)

0.1 Basic chemistry competencies

0.1.1. Balancing equations

Accept multiples or appropriate fractions, 1 mark each.

1. $\underline{2}C + \ldots O_2 \longrightarrow \underline{2}CO$

2. $\ldots \underline{2}Ba + \ldots \underline{2}H_2O \longrightarrow \underline{2}Ba(OH)_2 + \ldots H_2$

3. $\ldots C_2H_6 + \underline{3.5}O_2 \longrightarrow \underline{2}CO_2 + \underline{3}H_2O$

4. $\underline{2}HCl + \ldots Mg(OH)_2 \longrightarrow \ldots MgCl_2 + \underline{2}H_2O$

5. $\ldots N_2 + \ldots O_2 \longrightarrow \underline{2}NO$

6. $\underline{2}Fe_2O_3 + \ldots \underline{3}C \longrightarrow \underline{4}Fe + \underline{3}CO_2$

7. $\ldots CH_3CH_2OH + \underline{2}[O] \longrightarrow \ldots CH_3COOH + \ldots H_2O$

8. $\underline{2}HNO_3 + \ldots CuO \longrightarrow \ldots Cu(NO_3)_2 + H_2O$

9. $\ldots Al^{3+} + \underline{3}e^- \longrightarrow \ldots Al$

10. $\underline{2}Fe(H_2O)_6{}^{3+} + \underline{3}CO_3{}^{2-} \longrightarrow \underline{2}Fe(OH)_3(H_2O)_3 + \underline{3}CO_2 + \underline{3}H_2O$
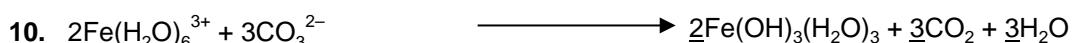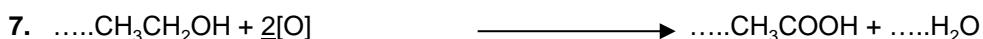
0.1.2. Constructing ionic formulae

1.

a. $Mg^{2+} O^{2-} = MgO$ *(1 mark)*

b. $Na^+ SO_4{}^{2-} = Na_2SO_4$ *(1 mark)*

c. $Ca^{2+} OH^- = Ca(OH)_2$ *(1 mark)*

d. $Al^{3+} O^{2-} = Al_2O_3$ *(1 mark)*

e. $Cu^+ O^{2-} = Cu_2O$ *(1 mark)*