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| **🏠** | **A LEVEL ESSENTIALS 1** | AS101 © RWGrime (Chemsheets.co.uk) |

1) a) What is the difference between an element and a compound? (2)

b) All substances are made up of three types of particle: atoms, molecules or ions. Explain what atoms, molecules and ions are. (3)

c) Identify each of the following particles as an atom, molecule or ion.

NH3 O2- SO42- F2 O O2 NO3- H2O Cl H+ (10)

2) Write the formula of the following substances. Some are ionic, some are atomic and some are molecular.

a) lithium oxide e) ammonia

b) calcium nitrate f) nitrogen

c) methane g) argon

d) ammonium sulphate h) iron (III) hydroxide (8)

3) Balance the following equations.

a) Fe + H2O → Fe3O4 + H2 (1)

b) PCl3 + H2O → P(OH)3 + HCl (1)

c) ammonia + oxygen → nitrogen + water (2)

d) ethane + oxygen → carbon dioxide + water (2)

4) Complete the following calculations, giving your answers to three significant figures.

a) 32420 + 762891 b) 12000 ÷ 1000 c) 0.06438 + 0.0004378 d) 180 ÷ 90 (4)

5) The following results are accurately measured values from experiments. Complete the sum and give the answer to the most number of significant figures that you think gives an answer that is trustworthy.

a) 1.4567 + 2.3 b) 10.5 - 0.145 c) 3.000 - 0.056 d) 8693.457 + 1.2367 (4)

6) Rearrange the following equations to give the letter shown as the subject.

a) What does c equal if q = mcT ? d) What does n equal if PV = nRT ?

b) What does T equal if G = H - TS e) What does c equal if 2a = 3(b – 2c)

c) What does q equal if E = 3pq f) What does T equal if F = mc + Rk (6)

2r T

C**hallenge for the week**

7) Balance the following equations.

a) KMnO4 + HCl → KCl + MnCl2 + Cl2 + H2O (2)

b) As4O6 + S2Cl2 + Cl2 → AsCl2 + SO2 (2)

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