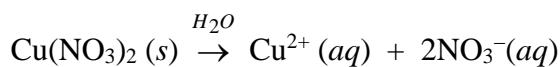




CHEMISTRY
UNITS 3 and 4
PRETEST

ANSWER SHEET

1. (a) The atomic number of
(i) silver **47** (ii) radon **86** (iii) radium **88**
- (b) The chemical symbol of
(i) gold **Au** (ii) silicon **Si** (iii) sodium **Na** (iv) antimony **Sb**
- (c) The element with 13 protons and 13 neutrons is **Aluminium**
2. Circle the physical state of butane
- | | | | |
|-----------------------------|--------------------------------|--|---|
| at room temperature, 25 °C | <input type="checkbox"/> solid | <input type="checkbox"/> liquid | <input checked="" type="checkbox"/> gas |
| at fridge temperature, 4 °C | <input type="checkbox"/> solid | <input type="checkbox"/> liquid | <input checked="" type="checkbox"/> gas |
| at -5 °C | <input type="checkbox"/> solid | <input checked="" type="checkbox"/> liquid | <input type="checkbox"/> gas |
3. Identify the ions present in the following ionic compounds and name the compound.
- | | | |
|--------------------|--------------------|-----------------|
| (a) $MgCl_2$ | (b) Na_3PO_4 | (c) Ag_2S |
| Mg^{2+} Cl^- | Na^+ PO_4^{3-} | Ag^+ S^{2-} |
| Magnesium chloride | Sodium phosphate | Silver sulfide |
4. Work out the chemical formula of the following compounds.
- | | | |
|----------------------|-------------------------|------------------|
| (a) Silver hydroxide | (b) Magnesium carbonate | (c) Zinc nitrate |
| $AgOH$ | $MgCO_3$ | $Zn(NO_3)_2$ |
5. Balance the following chemical equations.
- | | |
|--|---|
| (a) $3Mg(s) + N_{2(g)} \rightarrow Mg_3N_{2(s)}$ | (b) $2Ca(s) + O_{2(g)} \rightarrow 2CaO(s)$ |
| (c) $2H_{2(g)} + O_{2(g)} \rightarrow 2H_2O(l)$ | (d) $2Al(s) + 3I_{2(l)} \rightarrow Al_2I_{6(s)}$ |
6. Use the solubility table (**Table 2**) on the data page to determine which of the following ionic compound are soluble.
- | | |
|---|---|
| (a) lead sulfate is insoluble | (b) silver chloride is insoluble |
| (c) ammonium chloride is soluble | (d) zinc carbonate is insoluble |
7. The compound $Cu(NO_3)_2$ dissolves in water by dissociation of ions
- (a) The ions in the compound. **Cu^{2+} NO_3^-**
- (b) The ionic equation of the dissociation reaction, showing the state of each compound or ion.



8. (a) $M_r(\text{H}_2\text{O}) = 18.0 \text{ g/mol}$ (b) $M_r(\text{NaCl}) = 58.5 \text{ g/mol}$

Pre-test answers continued...

9. The mass of 1.3 mol of $\text{CH}_4 = 1.3 \times 16.0 = 20.8 \text{ grams}$

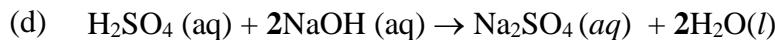
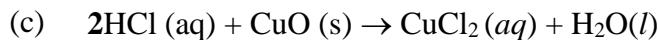
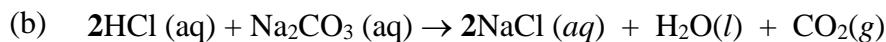
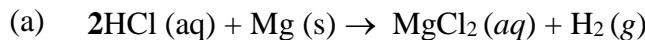
10. The number of mol, to three decimal places

(a) 50 g of lead = $\frac{50}{207.2} \text{ mol} = 0.241 \text{ mol}$ (b) 62 g of NaCl = $\frac{62}{58.5} \text{ mol} = 1.059 \text{ mol}$

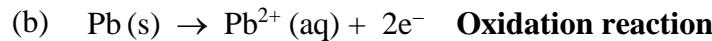
11. (a) The volume of 1.4 mol of chlorine (Cl_2) at STP = $1.4 \times 22.4 \text{ L} = 31.36 \text{ Litres}$

(b) Work out the mass of 2.8 L of neon (Ne) gas at SLC = $\frac{2.8}{24.5} \times 20.18 = 2.306 \text{ grams}$

12. Use the summary of acid reactions shown above to predict the products of the following reactions:



13. Are the following reactions oxidation or reduction reactions?



14. (a) The **oxidant** in this redox reaction is **S(s)**

(d) The **reductant** in this redox reaction **Zn(s)**

15. (a) **Fe(s)** has been oxidised in this reaction

(b) The oxidation reaction is $\text{Fe}(s) \rightarrow \text{Fe}^{2+}(aq) + 2\text{e}^-$

(d) **H⁺(aq)** has been reduced in this reaction

(e) The reduction reaction is $2\text{H}^+(aq) + 2\text{e}^- \rightarrow \text{H}_2(g)$

16. (a) The mol of oxygen was reacted = $\frac{10\text{g}}{32.0} = 0.3125 \text{ mol}$

(b) The mole of hydrogen required = $2 \times 0.3125 = 0.625 \text{ mol}$

(c) The mass of hydrogen reacted = $0.625 \times 2.0 = 1.25 \text{ grams}$



Your pre-test result... What we recommend ...

If your score was less than $\frac{20}{40}$

You will most likely need a lot of time and support for Year 12 Chemistry. Students scoring less than 20 out of 40 tend to find the subject too difficult. We strongly recommend that you contact the Chemistry teachers to discuss your options.

You will most likely need revision support throughout the year to develop the skills expected. This means making extra time available for your studies. We suggest that you consider realistically whether you will be able to make the extra study time available. Please contact the Chemistry teachers to discuss your options.

If your score was between $\frac{30}{40}$ and $\frac{40}{40}$

If your score was between $\frac{20}{40}$ and $\frac{30}{40}$

You should be able to cope with most of the skills expected. However, you will also need to make regular study time a part of your weekly schedule. If you have any concerns, contact the VSV, and speak to the Chemistry teachers.