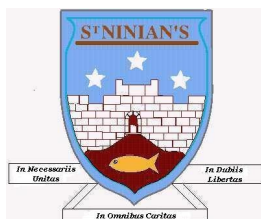


St Ninian's High School



Chemistry Department

National 5 Chemistry

Unit 2 - Nature's Chemistry

Homework Booklet



Name _____

Teacher _____

Homework	Mark	%	Parental Signature
1			
2			
3			
4			
5			
6			
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N5 Chemistry
Unit 2: Nature's Chemistry
Homework 2.1

1. Which of the following sodium chloride solutions would contain most dissolved solute?

- A 100cm³ of 4 mol l⁻¹
- B 200 cm³ of 3 mol l⁻¹
- C 300 cm³ of 1 mol l⁻¹
- D 400 cm³ of 0.5 mol l⁻¹

Answer _____

2. Which of the following substances is not a hydrocarbon?

- A C₂H₆
- B C₅H₁₀
- C C₂H₅OH
- D CH₄

Answer _____

3. 0.25 mol of potassium hydroxide was dissolved in water and the solution made up to 500 cm³.
What was the concentration, in mol l⁻¹, of the solution which was formed?

- A 0.0005
- B 0.125
- C 0.5
- D 2.0

Answer _____

4. Which of the following could be the molecular formula for an alkane?

- A C₄H₁₂
- B C₄H₁₀
- C C₄H₈
- D C₄H₆

Answer _____

5. Which of the following solutions, when added to copper chloride solution, produces a precipitate?
(You may wish to use your data booklet.)

- A Calcium bromide solution
- B Lithium hydroxide solution
- C Magnesium nitrate solution
- D Sodium chloride solution

Answer _____

6. Which of the following compounds is a base?

- A Magnesium carbonate
- B Magnesium nitrate
- C Magnesium chloride
- D Magnesium sulphate

Answer _____

7. 100 cm³ of a solution contains 0.2 moles of solute. The concentration of the solution, in mol l⁻¹

- A 0.002
- B 0.5
- C 2
- D 5.

Answer _____

8. 2, 8, 8 is the electron arrangement for an atom of an element belonging to the

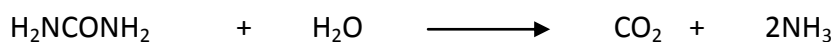
- A halogens
- B noble gases
- C alkali metals
- D transition metals.

Answer _____

8

9. a) Sodium carbonate reacts with dilute hydrochloric acid.
- i) Write the formula for sodium carbonate.
 _____ 1
- ii) Name the salt formed in this reaction.
 _____ 1
- iii) What type of reaction occurs when sodium carbonate reacts with dilute hydrochloric acid?
 _____ 1
- b) Sodium carbonate solution will react with copper(II) chloride solution to form a solid.
- i) What type of chemical reaction occurs when sodium carbonate reacts with copper(II) chloride?
 _____ 1
- ii) Write the ionic formula for copper(II) chloride.
 _____ 1

10. Urea reacts with water, breaking down to form carbon dioxide and ammonia, NH₃.



Calculate the mass of ammonia produced, in grams, when 90 g of urea breaks down.

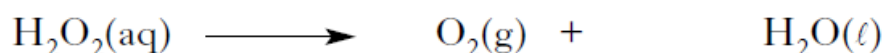
Show your working clearly.

_____ grams

3

11. Hydrogen peroxide is a useful bleaching agent and is contained in many hair dyes. Over time, the hair dye becomes less effective as the hydrogen peroxide decomposes forming water and oxygen.

The equation for the decomposition of hydrogen peroxide is:

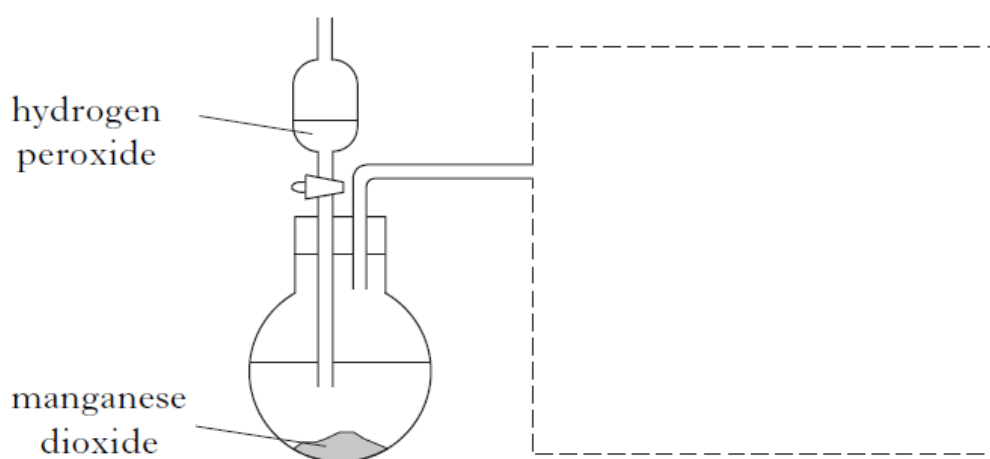


- (a) Balance this equation.

1

- (b) The above reaction is often used to make oxygen in the laboratory. To speed up the reaction, the catalyst manganese dioxide is added.

Complete the diagram to show how the oxygen can be collected.



1

- (c) State the test for oxygen gas.

1

- (d) When 34 g of hydrogen peroxide decomposes, 12 litres of oxygen is produced.

Calculate the volume of oxygen produced when 1.7 g of hydrogen peroxide decomposes.

_____ litres

2

12. (a) The table gives information about some members of the alkane family.

Name	Molecular formula	Boiling point/°C
nonane	C ₉ H ₂₀	151
decane	C ₁₀ H ₂₂	174
undecane	C ₁₁ H ₂₄	196
dodecane	C ₁₂ H ₂₆	

Predict the boiling point of dodecane.

_____ °C

1

- (b) What term is used to describe any family of compounds, like the alkanes, which have the same general formula and similar chemical properties?

1

- (c) The equation for the burning of nonane is:



Calculate the mass of water produced when 6.4 grams of nonane is burned.

Show your working clearly.

_____ grams

3

Total Marks 26