

Page 6.

1. Answer question 3 on page 9 of the Head start to chemistry book. Check your answers in the back of the book, then Explain why each answer is correct.

Page 7.

1. What is the formula of the following ions?

dichromate:

manganate (VII)

2. What do ions that end in 'ate' have in common?
3. What do ions that end in 'ide' have in common?
4. What do ions that end in 'ium' have ion common?

Page 8

1. What are the roman numerals for 4 5 6 7 ?

Page 9.

1. The bond between nitrogen atoms are stronger that the bonds between carbon atoms in diamond. Why, despite this difference is diamond's melting point far higher than nitrogens melting point (pages 14 and 15 provide extra help)

Page 10.

1. Explain the reasons for each pair in question 1 on page 10 of the head start book.

Page 11.

1. A student predicts that the formula of vanadium (III) hydroxide is VOH_3 . This is incorrect. What must be added to make their formula correct?

Page 12.

1. Explain, with the use of a diagram, why ionic compounds are usually brittle.

Page 13.

1. The dot and cross diagram of the carbonate ion, CO_3^{2-} usually contains 3 different symbols for electrons. Why are three different symbols used when there are only two types of element present?

Page 14.

1. How many lone pairs of electrons are present in each of the following compounds?



Page 15.

1. For each of the first 20 elements, hydrogen to calcium, give the names of those that have a giant covalent structure.

Page 16.

1. Metals are malleable , what does this mean? Use a diagram of metallic bonding to help explain why metals are malleable.

Page 17.

1. Find the formula and the bonding present in each of the oxides of the period 2 elements

Page 19.

1. Show, with an example for each, what is meant by empirical formula ,

displayed formula,

structural formula,

molecular formula.

Page 20.

1. Outline briefly the use of calcium carbonate and magnesium carbonate as antacids.
2. Outline the role of barium sulfate in x-ray imaging.

Page 21

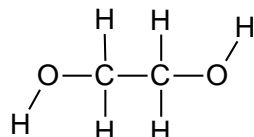
1. State a general rule for the reaction between any group 7 element and any group 7 ion.

Page 22.

1. What state symbol is given to water when it is part of an aqueous solution?

Page 23.

1. Show the structural formula for the displayed formula shown below



Page 24.

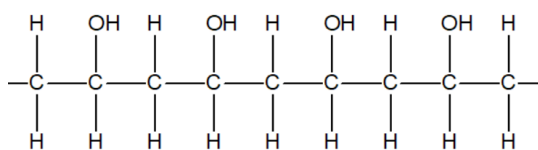
1. State the number of bonds that carbon atoms must form
and
the number of bonds that hydrogen atoms must form in hydrocarbon compounds.

Page 25.

1. Predict the formula for an alkene containing 50 carbons.

Page 26.

1. Draw the monomer that would form the polymer shown below...



Page 27.

1. Draw the displayed formula of a secondary alcohol that contains 5 carbon atoms.

Page 30.

1. What do 'redox' and 'OilRig' mean in terms of chemical reactions?

Page 31

1. Describe briefly with the use of a diagram how you would measure each of the two rates of reactions at 60 seconds for the graph shown on page 31 .

Page 32

1. What is meant by the word enthalpy?

Page 33.

1. What do catalysts do to the activation energy of a reaction?

Page 34.

1. A closed system is needed for an equilibrium to form. What is meant by a closed system?

Page 35

1. State Le Chatelier's principle

Page 36

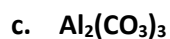
1. Explain why the temperature and pressure used in the production of ethanol from ethene and steam are a compromise.

Page 37

1. Calculate the relative formula mass (A_r) of the following substances. Give all answers to 1.d.p.
 - a. HNO_3
 - b. KMnO_4
 - c. $\text{C}_2\text{H}_5\text{OH}$
 - d. $\text{Fe}_2(\text{SO}_4)_3$

1. Find the empirical formula of an oxide of copper that contains 6.05g of Copper and 0.714g of oxygen. Follow the method shown in the example on p38.

1. Find the percentage composition of carbon in each of the following compounds...



2. Calculate the molecular formula of a hydrocarbon with the relative formula mass of 140, containing 14.3% hydrogen by mass. Use the example on p39 to guide your work.
3. Is your answer to Q2 above an alkane, or an alkene. How can you tell?

Page 40.

1. Calculate the atom economy of producing titanium in the reaction below...

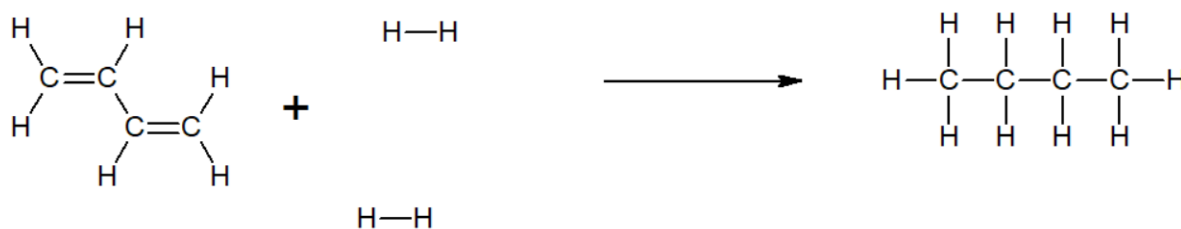


Page 41.

1. ΔH is the symbol used to show the change in energy of the chemicals in a reaction. What type of reaction has a negative ΔH ?

Page 42

1. Calculate the energy change of the reaction below. Use the bond energy data and the method shown on page 42.



Page 43

1. In an investigation into the effect of pressure on the equilibrium yield of ammonia,
 - a. State the independent variable...

 - b. State the dependent variable...

 - c. State some control variables required to make the investigation fair...

Page 44

1. What is meant by an anomalous result? How should they be handled when calculating a mean?

Page 45

1. Two students are using the same mass balance to weigh some calcium metal.
Student 1 weighs out 10g of Calcium.
Student 2 weighs out 30g of calcium.
Which student will record the lowest % error in their result?

Well done! Now keep these answers safe and remember to bring them to your first chemistry lesson of the new year. See you soon.