N5 Chemistry
Unit 2: Nature's Chemistry
Homework 2.3

1. What type of chemical reaction occurs when bromine solution reacts with an alkene?

   A Neutralisation
   B Precipitation
   C Addition
   D Hydration

   Answer _____

2. Which of the following is **not** an isomer of pent-1-ene?

   A but-1-ene
   B pent-2-ene
   C cyclopentane
   D 2-methylbut-1-ene

   Answer _____

3. Which of the following compounds has molecules with the same shape as ammonia (NH_3)?

   A Carbon dioxide
   B Hydrogen oxide
   C Sulfur dioxide
   D Phosphorus hydride

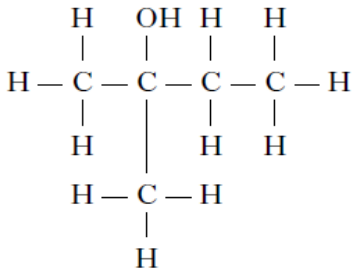
   Answer _____

4. Which of the following would quickly decolourise bromine solution?

   A C_2H_4
   B C_3H_8
   C C_4H_{10}
   D C_5H_{12}

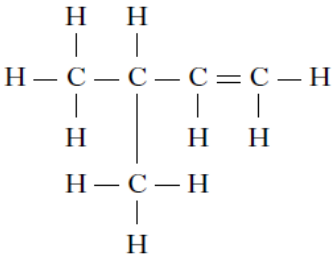
   Answer _____

5.



The above molecule could be produced by adding water to which of the following?

A



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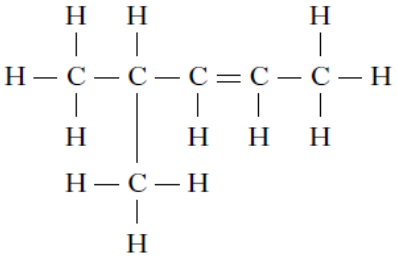

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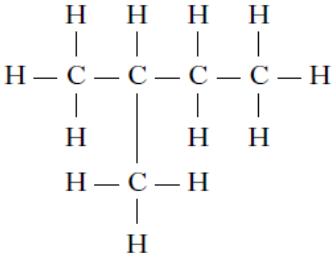

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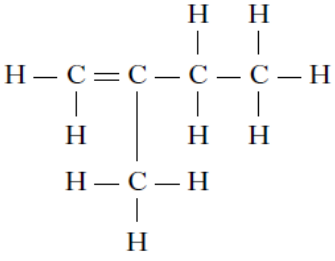
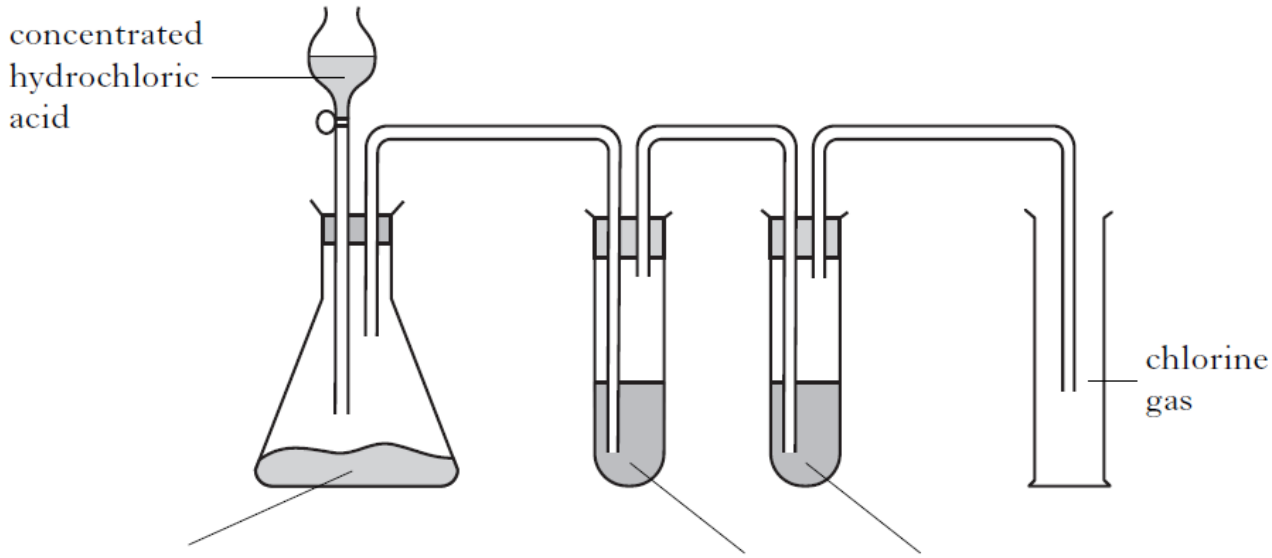


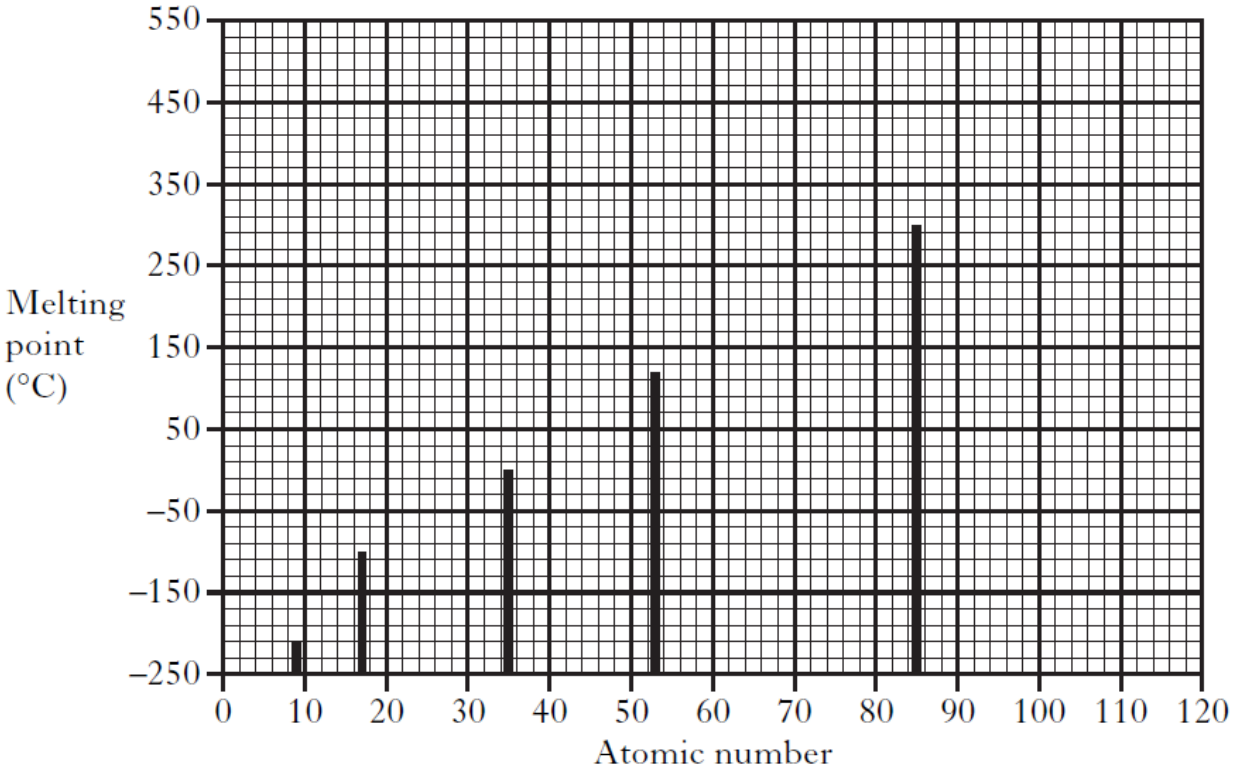
6. The diagram shows the apparatus used to prepare chlorine gas. Concentrated hydrochloric acid is reacted with potassium permanganate. The gas produced is bubbled through water to remove any unreacted hydrochloric acid and is then dried by bubbling through concentrated sulfuric acid.

a) Complete the diagram for the preparation of chlorine gas by adding the labels for concentrated sulfuric acid, potassium permanganate and water.



1

b) Chlorine is a member of the Group 7 elements. The graph shows the melting points of these elements.



6. (continued)

b) i) State the relationship between the atomic number and the melting point of the Group 7 elements.

_____

_____ 1

ii) The next member of this group would have atomic number 117. Using the graph, predict the melting point of this element.

Melting point _____ °C 1

c) Draw a diagram to show how the electrons are shared in a chlorine molecule, Cl_2.

1

7. A student is given the task of identifying the type of bonding and the type of elements present in an unknown compound.

Using your knowledge of chemistry, describe tests that the student could perform to identify both the bonding and elements present in the unknown compound. The test descriptions should include examples of possible results and what the results would indicate.

_____

_____

_____

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_____ 3

8. Draw the full structural formula for each of the following.

a) methylcyclobutane

1

b) 2-methylhex-3-ene

1

c) Propan-2-ol

1

d) 2,2-dimethylheptane

1

9. The table contains information about some substances.

Substance	Melting point/°C	Boiling point/°C	Conducts as a solid	Conducts as a liquid
A	–7	59	no	no
B	1492	2897	yes	yes
C	1407	2357	no	no
D	606	1305	no	yes
E	–39	357	yes	yes
F	–78	–33	no	no

a) Identify the substance which is a gas at 0°C. Answer _____ 1

b) Identify the two substances which exist as molecules. Answer _____ & _____ 1

c) Ideintfy the substance which is a covalent network. Answer _____ 1

d) Identify the metal which is a liquid at 25°C. Answer _____ 1

Total Marks 20