

**N5 Chemistry**  
**Unit 1: Chemical Changes & Structure**  
**Homework 1.11**

1. The pH of a solution can be measured using

- A Benedict's solution
- B Universal indicator
- C iodine solution
- D limewater.

Answer \_\_\_\_\_

2. As water is added to an acid, the acid becomes

- A less acidic and its pH goes up
- B less acidic and its pH goes down
- C more acidic and its pH goes up
- D more acidic and its pH goes down.

Answer \_\_\_\_\_

3. Sulfur was burned in oxygen. Water was added to the gas jar and the pH measured. The pH value was found to be

- A 3                      B 7
- C 9                      D 13.

Answer \_\_\_\_\_

4. A potassium ion has one **more** electron than

- A an argon atom
- B a calcium atom
- C a chlorine atom
- D a sulfide ion.

Answer \_\_\_\_\_

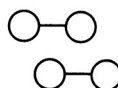
5. A particle with a two positive charge and an electron arrangement 2, 8, is

- A calcium atom
- B magnesium atom
- C calcium ion
- D magnesium ion.

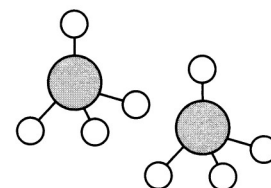
Answer \_\_\_\_\_

6. The structures of substances can be represented by models. Which model shows an element made up of molecules?

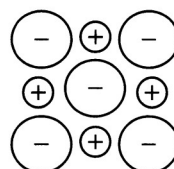
A



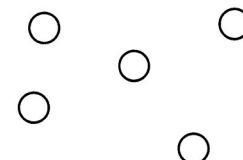
B



C



D



Answer \_\_\_\_\_

7. Solid ionic compounds do not conduct electricity because

- A the ions are not free to move
- B the electrons are not able to move
- C solid substances never conduct electricity
- D there are no charged particles in ionic compounds.

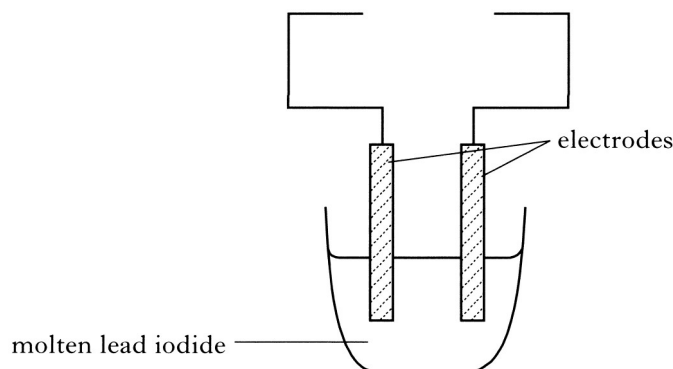
Answer \_\_\_\_\_

8. What is the most likely pH value that would be obtained when zinc oxide is added to water? (You may wish to refer to the data booklet.)

- A 5
- B 7
- C 9
- D 11

Answer \_\_\_\_\_

9. a) A technician set up the following experiment to electrolyse molten lead iodide.



- i) In the diagram, the technician has left out a piece of apparatus needed to electrolyse the molten lead iodide.  
Name the piece of apparatus which has been left out of the circuit.

\_\_\_\_\_ 1

- ii) During electrolysis, the lead iodide is broken down into its elements.  
Write a **word** equation for this reaction.

\_\_\_\_\_ 1

- b) Why do ionic compounds, like lead iodide, not conduct electricity as a solid?

\_\_\_\_\_ 1

- c) Name the non-metal element which can be used as the electrodes.

\_\_\_\_\_ 1

10. The table below gives information about substances P, Q, R and S.

Substance	Melting Point /°C	Boiling Point /°C	Solubility in Water	Conduction when Solid
P	1410	2360	insoluble	no
Q	1540	3000	insoluble	yes
R	708	1412	soluble	no
S	72	360	insoluble	no

- a) P and Q, are elements. State which of the elements is a metal and which is a non-metal.

P \_\_\_\_\_ Q \_\_\_\_\_ 1

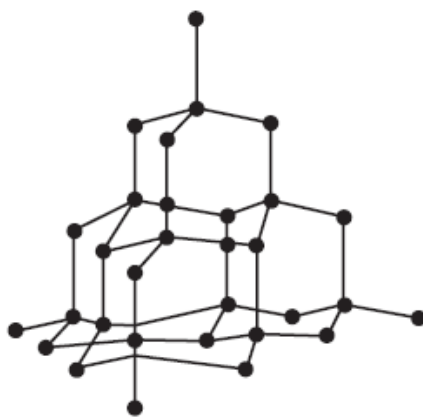
- b) Which of the substances, P, Q, R or S, will exist as molecules?

\_\_\_\_\_ 1

- c) Which of the covalent substances will have a covalent network structure?

\_\_\_\_\_ 1

11. The element carbon can exist in the form of diamond. The structure of diamond is shown below.



a) Name the type of **bonding** and **structure** present in diamond.

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1

b) Carbon forms many compounds with other elements such as hydrogen.

i) Draw a diagram to show how the outer electrons are arranged in a molecule of methane,  $\text{CH}_4$ .

1

ii) Draw a diagram to show the **shape** of a molecule of methane,  $\text{CH}_4$ .

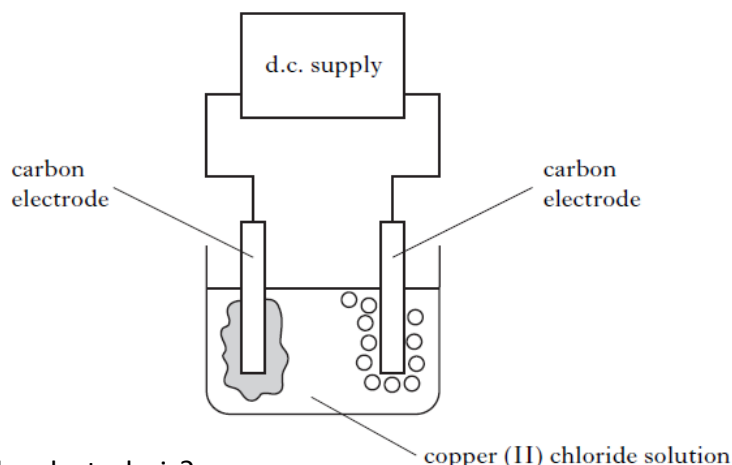
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c) Name another form of carbon which can exist.

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1

12. A student electrolysed a solution of copper(II) chloride.



a) What is meant by electrolysis?

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1

b) Why is it necessary to use a d.c. supply in electrolysis?

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1

c) i) Complete the table by adding the charge for each electrode.

Observation at _____ electrode	Observation at _____ electrode
bubbles of gas	brown solid formed

1

ii) How could the gas be identified?

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1

13. The grid contains some statements which can be applied to different solutions.

A	It has a pH less than 7.
B	It conducts electricity.
C	It contains less $\text{OH}^-(\text{aq})$ ions than pure water.
D	It does not neutralise dilute hydrochloric acid.
E	When diluted the concentration of $\text{OH}^-(\text{aq})$ ions decreases.

Identify the **two** statements which are correct for an alkaline solution.

Answer \_\_\_\_\_ & \_\_\_\_\_

2

Total Marks 25