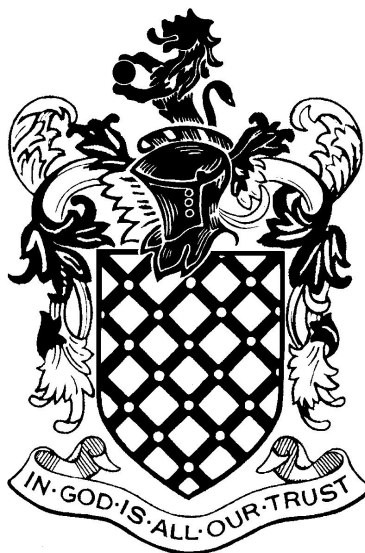


Name.....

School:.....

# ALDENHAM SCHOOL



**13+ Entrance Exam**

**CHEMISTRY Sample 2011**

**ANSWER ALL QUESTIONS**

**TIME ALLOWED – 20 MINUTES**

**25 Marks**

1. State whether the following are Physical or Chemical changes.
- a) Coal burning on a fire: .....
  - b) Wax melting : .....
  - c) Boiling an egg : .....
  - d) Green copper carbonate being heated and forming black copper oxide:  
 .....

[4]

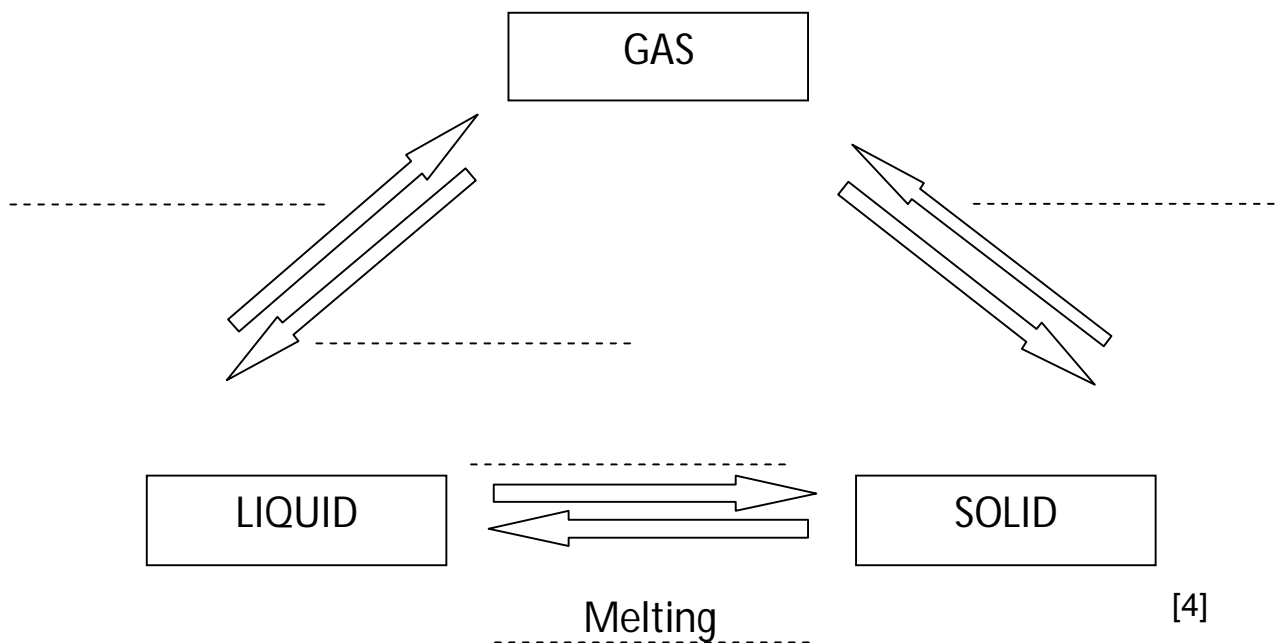
2. Fill in the names of the changes of state that are missing from the diagram below.  
 Choose from the following list of words, the first one has been done for you.

**Freezing**

**Condensation**

**Evaporation**

**Sublimation**



[4]

3. The drawing shows a gold mask from a tomb in Egypt. The gold is still shiny after thousands of years.



(a) What is pure gold? Tick the correct box.

a compound	<input type="checkbox"/>	a mixture	<input type="checkbox"/>
an element	<input type="checkbox"/>	a solution	<input type="checkbox"/>

[1]

(b) The list shows some of the properties of gold.

**A. It conducts electricity.**

**B. It melts at 1064°C.**

**C. It is yellow.**

**D. It is easily scratched.**

**E. It stays shiny.**

**F. It conducts heat.**

- (i) Which **one** of these properties shows that gold does **not** react with oxygen in the air?

.....

[1]

- (ii) Which **two** of the properties above are properties of **all** metals?

1. ....

2. ....

[2]

- (c) Old iron objects from tombs in Britain are often covered with rust.  
Iron reacts with oxygen when it rusts.  
What else is needed for iron to go rusty? Choose **one** substance from the list below.

**lead      nitrogen      carbon dioxide      water**

.....

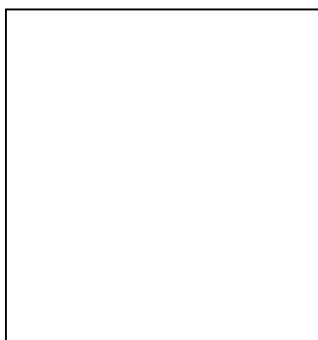
**[1]**

- (d) A box contains a collection of metal objects from a tomb.  
What piece of equipment would you use to separate the iron objects from the other metal objects?

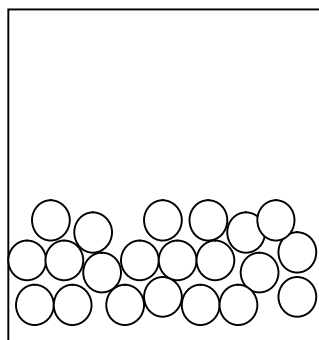
.....

**[1]**

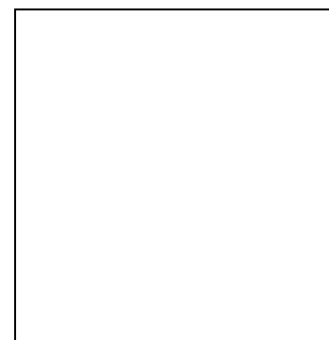
4. Complete the particle diagrams of the arrangement of particles in a solid and a gas. **[2]**



Solid

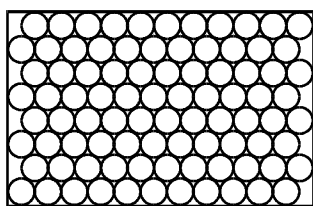


Liquid

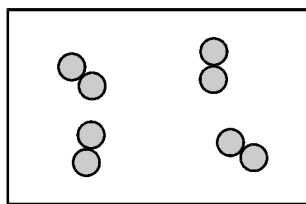


Gas

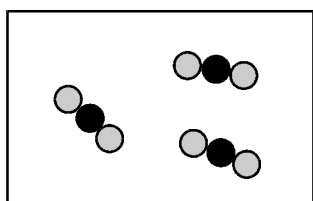
5. The diagrams represent the arrangement of atoms or molecules in four different substances, A, B, C and D.



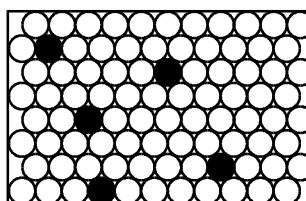
A



B



C



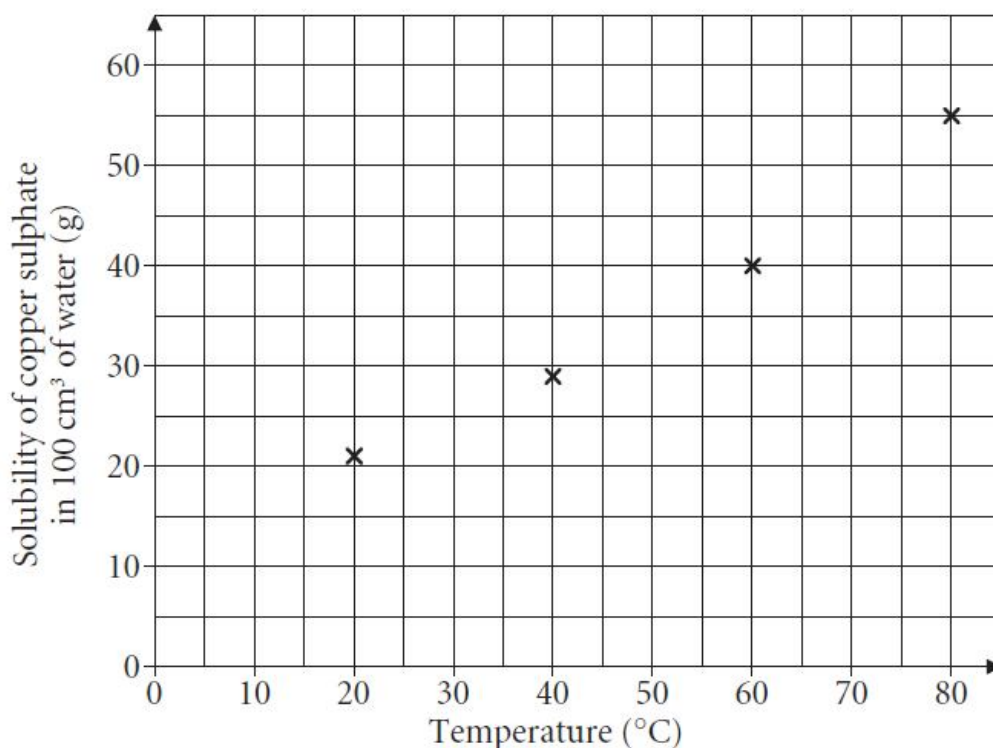
D

*not to scale*

Each of the circles, ○, ● and ● represents an atom of a different element.

- (a) (i) Which substance is a compound? ..... [1]
- (ii) Which substance is a mixture? ..... [1]
- (iii) Which **two** substances are elements?  
 ..... and ..... [1]
- (iv) Which **two** substances could be good thermal conductors?  
 ..... and ..... [1]
- (v) Which substance could be carbon dioxide? ..... [1]

6. A student carried out an experiment to investigate the solubility of copper sulphate at different temperatures. Use the graph to answer the following questions.



a) Draw a line of best fit. [1]

b) What is the solubility of copper sulphate in 100 cm<sup>3</sup> of water at 70 °C?  
 .....g per 100cm<sup>3</sup> water [1]

c) What is the solubility of copper sulphate in 50cm<sup>3</sup> of water at 35oC?  
 .....g per 50cm<sup>3</sup> water [1]

d) How much copper sulphate will dissolve in 100cm<sup>3</sup> of water at 30 °C?  
 .....g [1]

**END OF PAPER**