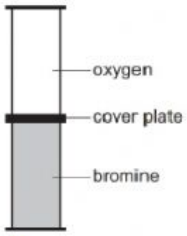
O/N 05/P1/Q3

The coverplate is removed from the gas jars shown in the diagram. After several days, the colour of the gas is the same in both jars.



Which statement explains this change?

A Oxygen and bromine gases have equal densities.

B Oxygen and bromine molecules are in random motion.

C Oxygen and bromine molecules diffuse at the same rate.

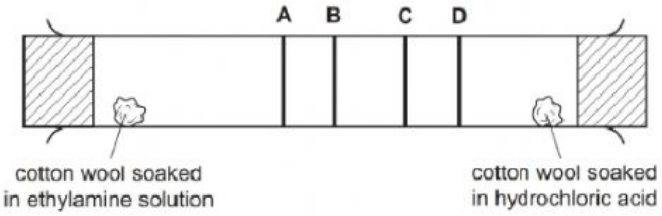
D Equal volumes of oxygen and bromine contain equal numbers of molecules.

5. M/J 14/P11/Q3

Ethylamine gas, $C_2H_5NH_2$, and hydrogen chloride gas, HCl, react together to form a white solid, ethylamine hydrochloride. At which position in the tube would a ring of solid white ethylamine hydrochloride form?

Mass of ethylamine particle = 45g

Mass of HCl = 37g



. In which of the process does particles lose energy?

A. Condensation

B. Boiling

C. Melting

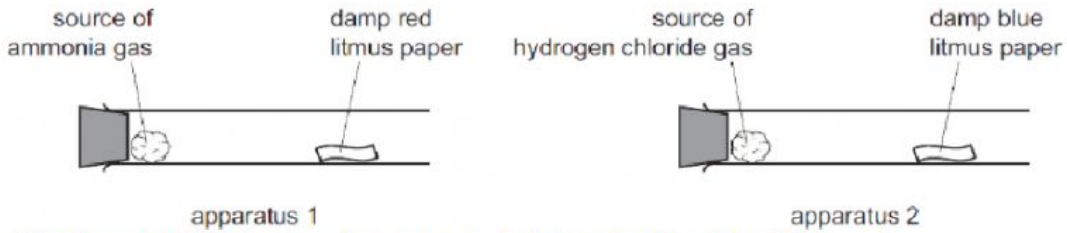
D. Evaporation

From the data given below, which of the following statement is **not** correct?

Substance	melting point/°C	boiling point/°C
P	5	78
Q	780	1413
R	-5	102
S	-186	-85

A. P is a liquid at room temperature (25°C)
B. R is a liquid at room temperature.
C. Q is a liquid at room temperature.
D. S is a gas at room temperature.

11. A student investigated the diffusion of ammonia gas, NH3, and hydrogen chloride gas, HCl. Two sets of apparatus were set up as shown at room temperature and pressure.

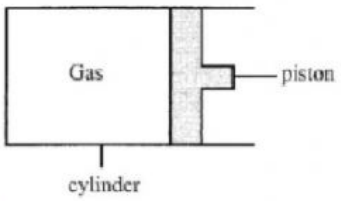


apparatus 1 apparatus 2

The damp red litmus paper in apparatus 1 changed colour after 30 seconds.
How long does it take for the damp blue litmus paper to change colour in apparatus 2?

A. 64 seconds
B. 30 seconds
C. 21 seconds
D. The blue litmus paper would not change colour.

9. The diagram below shows a gas cylinder with its piston held in place. Which of the following explains why the pressure of the gas increases when the cylinder is heated?



A. The air molecules expand.
B. The number of gas molecules increases.
C. The gas molecules move at the same speed, but collide more frequently with the walls of the cylinder.
D. The gas molecules move at higher speeds and collide more frequently with the walls of the cylinder.

12. Substance X has mass of 24g with volume of $2cm^3$. Which is the density of the substance?

A. 10 g/cm^3
B. 24 g/cm^3
C. 12 g/cm^3
D. 0.16 g/cm^3

13. Diffusion is affected by these factors. Which one of this is **not** the factor affecting diffusion?

A. Volume
B. Mass of particles
C. Temperature
D. Size of particles

18. Density of an iron block is 14 g/cm^3. It has a volume 7 cm^3. What is its mass?

A. 98 g
B. 2 g
C. 0.5 g
D. 12 g

Chapter 5 – P2

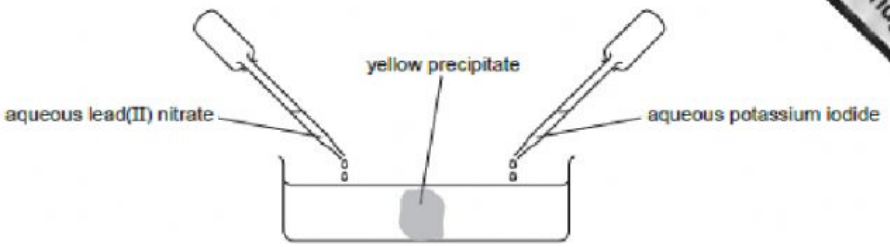
. The diagram shows a cup of tea.

Which row describes the water particles above the cup compared with the water particles in the cup?

	Moving Faster	Moving further
A.	√	×
B.	×	√
C.	√	√
D.	×	×

z

1 Aqueous lead(II) nitrate and aqueous potassium iodide are added to a dish containing pure water as shown.



A yellow precipitate forms after a few minutes.

Which process occurs before the precipitate forms?

A diffusion

B distillation

C fermentation

D filtration

Chapter 5 – P2

Which statement explains why ammonia gas, NH_3, diffuses at a faster rate than hydrogen chloride gas, HCl?

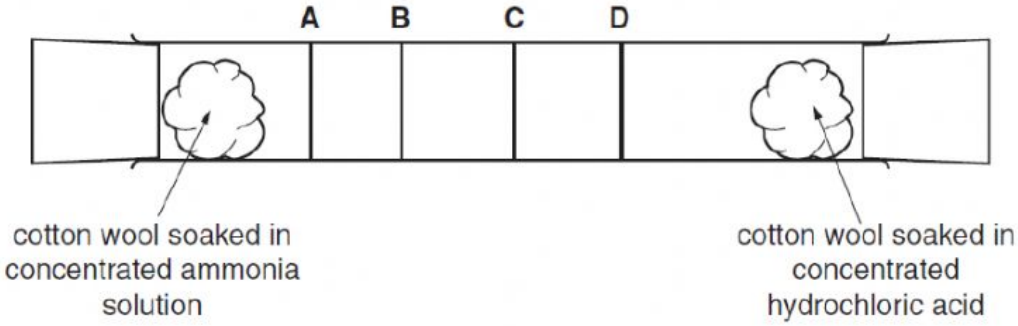
A Ammonia expands to occupy all of the space available.

B Ammonia has a smaller relative molecular mass than hydrogen chloride.

C Ammonia is an alkali and hydrogen chloride is an acid.

D Ammonia molecules diffuse in all directions at the same time.

The diagram shows the diffusion of hydrogen chloride and ammonia in a glass tube.
The gases are given off by the solutions at each end of the tube.
When hydrogen chloride and ammonia mix they produce a white solid, ammonium chloride.
Which line shows where the white solid is formed?



15. Four solid objects **A, B, C** and **D** are made from the same plastic material of density 0.95g/cm^3. Object **A** has a mass of 0.5 g, object **B** has a mass of 1g, object **C** has a mass of 10g and object **D** has a mass of 1000g. If all the four objects are placed in water, which one of the following statements is true? (Density of water = 1.0 g/cm^3)

A. All objects sink
B. All objects float
C. objects A and B float
D. Only object A float.

19. When a bottle of perfume is opened, the smell spreads throughout the room. This is due to the process called ..... .

A. evaporation
B. condensation
C. diffusion
D. suspension

17. When a substance is heated, its particles ..... .

A. gain energy and move slowly
B. lose energy and move slowly
C. gain energy and move faster
D. lose energy and stops moving

18. A gas kept in the container ..... .

A. spreads out along the bottom of the container
B. spreads out all through the container
C. will not spread out at all
D. spreads out only at the top of the container

In which changes do the particles move further apart?

$$\text{gas} \underset{Y}{\overset{W}{\rightleftharpoons}} \text{liquid} \underset{Z}{\overset{X}{\rightleftharpoons}} \text{solid}$$

A W and X **B** W and Z **C** X and Y **D** Y and Z

In which process do particles move closer together but remain in motion?

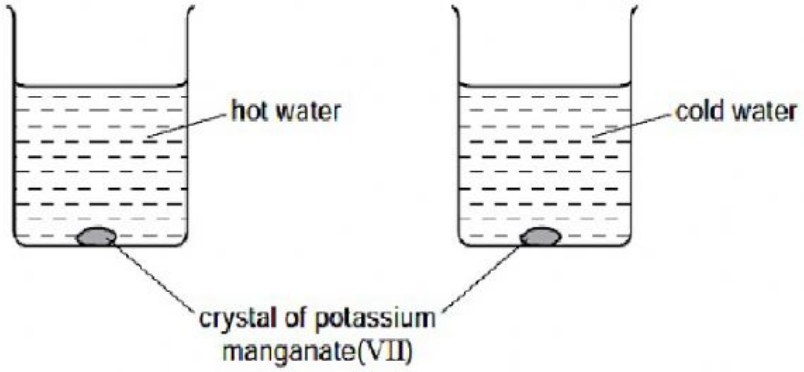
A condensation

B diffusion

C evaporation

D freezing

A crystal of purple potassium manganate(VII) was added to each of the beakers shown in the diagram.



One beaker contained hot water and the other beaker contained cold water.

In both beakers the purple colour of the potassium manganate(VII) spreads out.

Which result and explanation are correct?

	result	explanation
A	colour spreads faster in cold water	particles move faster at a higher temperature
B	colour spreads faster in cold water	particles move slower at a higher temperature
C	colour spreads faster in hot water	particles move faster at a higher temperature
D	colour spreads faster in hot water	particles move slower at a higher temperature

Chapter 5 – P2

Which statement is an example of diffusion?

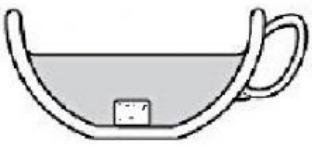
A A kitchen towel soaks up some spilt milk.

B Ice cream melts in a warm room.

C Pollen from flowers is blown by the wind.

D The smell of cooking spreads through a house.

The diagram shows a sugar lump in a cup of tea.



Which two processes must happen to spread the sugar evenly in the tea?

	first process	second process
A	diffusion	dissolving
B	dissolving	diffusion
C	dissolving	melting
D	melting	diffusion

A few drops of perfume were spilt on the floor. A few minutes later the perfume could be smelt a few metres away.

Which two processes had taken place?

A distillation and condensation

B distillation and diffusion

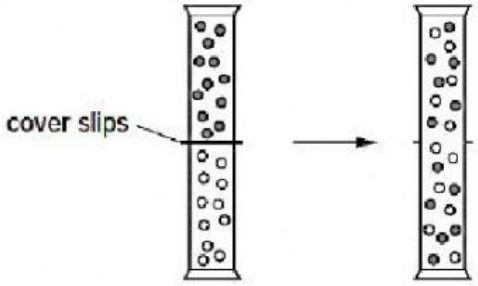
C evaporation and condensation

D evaporation and diffusion

Chapter 5 – P2

Two gas jars each contain a different gas. The gas jars are connected and the cover slips are removed.

The diagram shows what happens to the particles of the gases.



Which process has occurred?

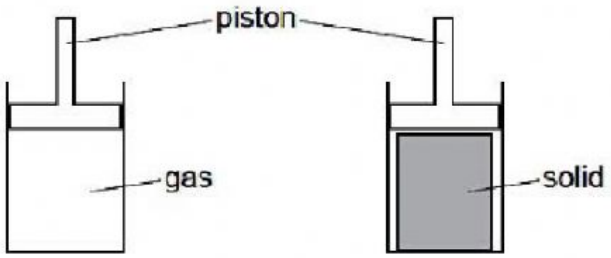
A chemical reaction

B condensation

C diffusion

D evaporation

An attempt was made to compress a gas and a solid using the apparatus shown.



Which substance would be compressed and what is the reason for this?

	substance	reason
A	gas	the gas particles are close together
B	gas	the gas particles are far apart
C	solid	the solid particles are close together
D	solid	the solid particles are far apart