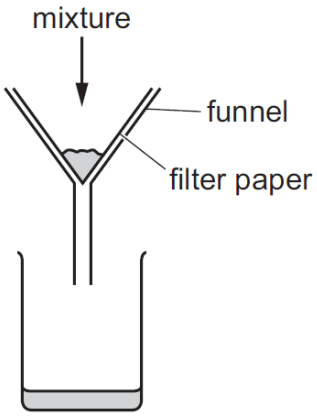
Experimental Techniques – 2021 IGCSE 0620

1. June/2021/Paper_11&21/No.2

A mixture is separated using the apparatus shown.



What is the mixture?

A aqueous copper(II) sulfate and aqueous sodium chloride

B aqueous copper(II) sulfate and copper

C copper and sulfur

D ethanol and ethanoic acid

2. June/2021/Paper_11,12.13,21,22&23/No.3

Which statement about paper chromatography is correct?

A A solvent is needed to dissolve the paper.

B Paper chromatography separates mixtures of solvents.

C The solvent should cover the baseline.

D The baseline should be drawn in pencil.

3. June/2021/Paper_12/No.2

Some sugar is contaminated with glass.

How is a sample of solid sugar obtained from the mixture?

A dissolve in water and then evaporate

B dissolve in water, then filter and then dry the solid residue

C dissolve in water, then filter and evaporate the filtrate

D dissolve in water and then distil

4. June/2021/Paper_13/No.6

Which piece of apparatus is used to measure exactly 25.00 cm^3 of hydrochloric acid?

A beaker

B measuring cylinder

C pipette

D balance

5. June/2021/Paper_22/No.2

A mixture of colourless compounds is separated using chromatography.

Which type of reagent is used to detect these compounds after separation?

A a dehydrating agent

B a locating agent

C an oxidising agent

D a reducing agent

6. March/2021/Paper_12&22/No.2

Gases are separated from liquid air by fractional distillation.

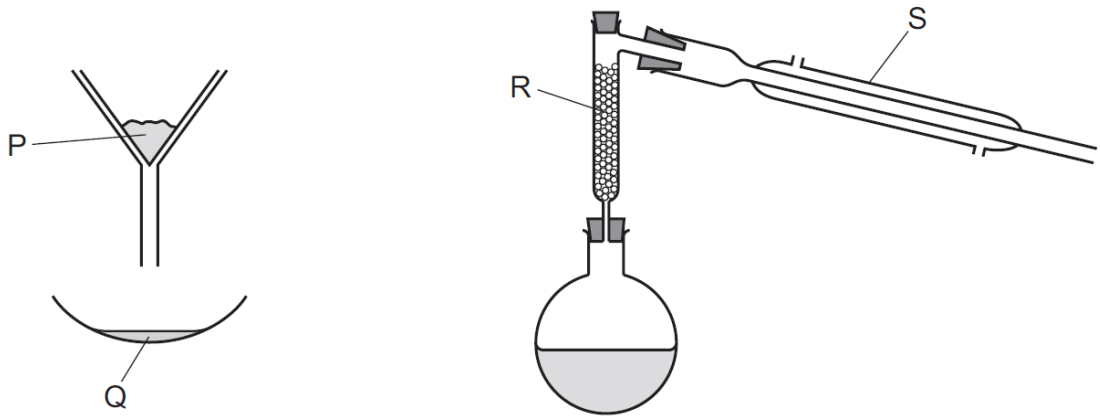
The boiling points of four gases are shown.

Which gas is both monoatomic and a liquid at –200 °C?

	gas	boiling point / °C
A	argon	–186
B	helium	–269
C	neon	–246
D	nitrogen	–196

7. March/2021/Paper_12/No.4

The apparatus used to separate a mixture of sand, methanol and ethanol is shown.



Which row identifies the labels on the diagrams?

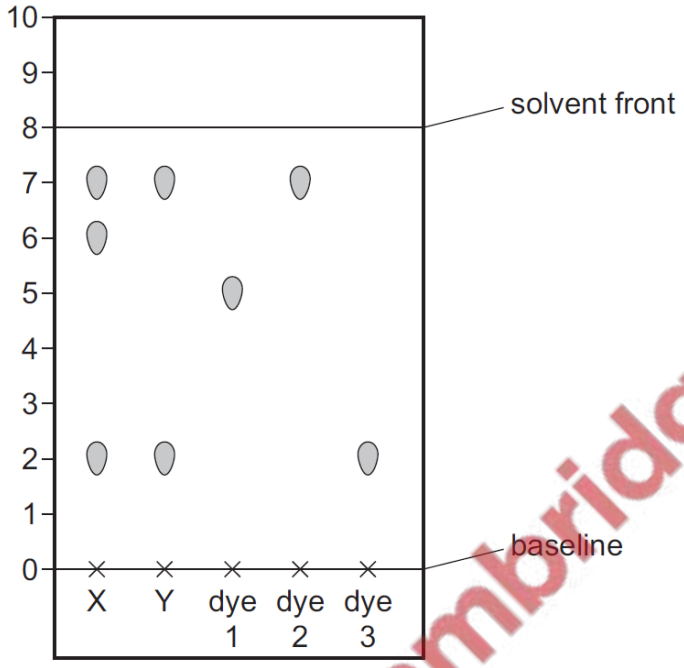
	P	Q	R	S
A	filtrate	residue	condenser	fractionating column
B	filtrate	residue	fractionating column	condenser
C	residue	filtrate	condenser	fractionating column
D	residue	filtrate	fractionating column	condenser

8. March/2021/Paper_22/No.3

Two different food colourings, X and Y, are tested using chromatography.

Three pure dyes, 1, 2 and 3, are also tested.

The chromatogram is shown.



Which statements are correct?

1 X and Y both contain two or more dyes.

2 Dyes 2 and 3 are present in both X and Y.

3 The R_f of dye 1 is 0.625.

A 1 and 2 only **B** 1 and 3 only **C** 1, 2 and 3 **D** 2 and 3 only

9. June/2021/Paper_41/No.1

Give the name of the process that is used:

(a) to produce ammonia from nitrogen

..... [1]

(b) to separate nitrogen from liquid air

..... [1]

(c) to produce bromine from molten lead(II) bromide

..... [1]

(d) to separate an undissolved solid from an aqueous solution

..... [1]

(e) to produce amino acids from proteins

..... [1]

(f) to separate a mixture of amino acids.

..... [1]

[Total: 6]

10. June/2021/Paper_43/No.1

Give the name of the process that is used:

(a) to produce large molecules from monomers

..... [1]

(b) to separate oxygen from liquid air

..... [1]

(c) to make ethanol from glucose

..... [1]

(d) to separate water from aqueous sodium chloride

..... [1]

(e) to produce aluminium from aluminium oxide in molten cryolite

..... [1]

(f) to separate the products of hydrolysis of long chain carbohydrates

..... [1]

(g) to separate an aqueous solution from an undissolved solid.

..... [1]

[Total: 7]

11. March/2021/Paper_42/No.2

The elements shown are gases at room temperature and pressure.

hydrogen
nitrogen
oxygen
chlorine

(a) State which **one** of these gases is green.

..... [1]

(b) The gases shown exist as diatomic molecules.

State the name of **another** element which has diatomic molecules and is a gas at room temperature and pressure.

..... [1]

(c) When separate samples of each of these gases are placed in a container they will diffuse.

(i) Describe why these gases diffuse.

..... [1]

(ii) State which of these four gases has the highest rate of diffusion.

Explain your answer.

gas .....

explanation .....

.....

[2]

(d) Nitrogen, oxygen and other substances are found in clean, dry air.

(i) State the percentage of nitrogen in clean, dry air.

..... [1]

(ii) Other than nitrogen and oxygen, identify another element found in clean, dry air.

..... [1]

(iii) Identify a compound found in clean, dry air.

..... [1]

(iv) Nitrogen and oxygen can be separated from liquid air.

State the name of this process.

..... [2]

[Total: 10]