

**Work for Year 7 – Science – Separating chemicals**

**Task 1** - Log on to <https://www.senecalearning.com/>

Sign up to an account if you do not already have one

Join the class using code: uj5f5704ll

Complete the assignments

**Task 2** – Make notes using your knowledge organiser for this topic and complete the self- quizzing questions

**Task 3** – Complete the questions on this sheet for acids and alkalis:

**Q1.** Paul had four substances:

citric acid

copper sulphate

indigestion tablet

sugar

He dissolved 1 g of each substance in 20 cm<sup>3</sup> of distilled water. He used universal indicator to find the pH of each solution.

- (a) (i) Sugar solution does **not** change the colour of green universal indicator.

What does this tell you about sugar solution? Tick the correct box.

It is an acid.

It is an alkali.

It is neutral.

It is sweet.

1 mark

- (ii) Suggest the pH of citric acid. ....

1 mark

- (iii) Indigestion tablets neutralise acid in the stomach.

What does this tell you about indigestion tablets?

.....

1 mark

**Q2.** Michelle added some universal indicator solution to four liquids. Michelle uses the pH chart to fill in her table of results.

**pH chart**

<b>pH</b>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>colour</b>	red			orange			green	blue		purple				

(a) The table below shows some of Michelle's results.

Complete Michelle's table of results below. Use the pH chart to help you.

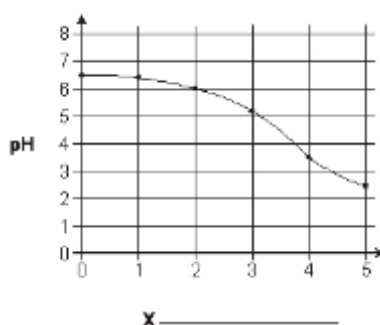
<b>liquid</b>	<b>colour of universal indicator solution</b>	<b>pH</b>
milk	green	
rain water		5
hydrochloric acid	red	
bleach		11

2 marks

(b) Explain why using acids can be dangerous.

..... . 1 mark

(c) Michelle measured the pH of some milk stored at room temperature for five days. The graph of Michelle's results is shown below. One of the axes has been labelled.



1 mark

(i) Write the axis label for the graph at **X**.

(ii) Use the graph. How does the pH of the milk change over the five days?

..... 1 mark

**Q3.**

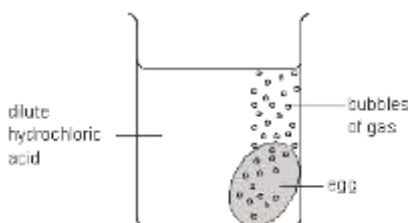
(a) The table below shows the pH of four acidic liquids.

acidic liquid	pH
grapefruit juice	3.1
ethanoic acid	3.0
lemonade	4.4
dilute hydrochloric acid	1.0

Which of these liquids is the **least** acidic?

1 mark

(b) Emilio cooked an egg until it was hard-boiled. He put the egg in a beaker of dilute hydrochloric acid as shown.



(i) The egg shell reacted completely with the acid. After two days the pH of the liquid in the beaker was 2.5. How did the **acidity** of the liquid in the beaker change? Use the table above to help you.

.....

1 mark

(ii) Emilio put another hard-boiled egg in some ethanoic acid. It took longer for the shell to react completely. Use the table to suggest a reason for this

.....

1 mark

(c) The chemical formulae for four acids are shown in the table below.

sulphuric acid	hydrochloric acid	nitric acid	ethanoic acid
$H_2SO_4$	HCl	$HNO_3$	$CH_3COOH$

(i) Give the **name** of the element that is present in all four acids.

..... 1 mark

(ii) Give the **names** of the two **other** elements present in sulphuric acid.

1. ....

1 mark

2. ....

1 mark

(iii) How many atoms are there in the formula  $\text{HNO}_3$  (nitric acid)?

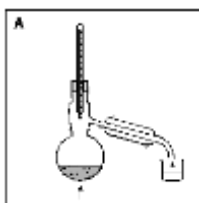
1 mark

**Task 4** – Complete the questions on this sheet for separating materials:

**Q1.**

Diagrams A, B and C show three pieces of apparatus for separating substances.

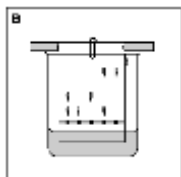
(a) Draw a line from each apparatus to the name of the method of separation. Draw only three lines. **diagram of apparatus** **method of separation**



chromatography



filtration



distillation

(b) Debbie has a mixture of sand and salt water. Look at the diagrams in part (a).

(i) Which apparatus would Debbie use to separate the sand from the salt water? Give the correct letter.

.....

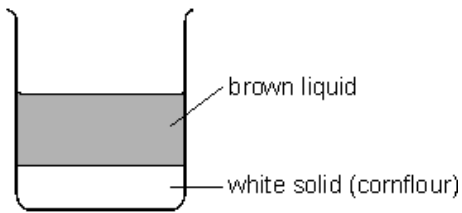
1 mark

(ii) Which apparatus would she use to separate pure water from the salt water? Give the correct letter.

.....1 mark

**Q2.**

Gravy powder contains: • a brown substance to make the gravy brown; cornflour to make the gravy thick. Dan mixed some gravy powder with cold water in a beaker. An hour later, the contents of the beaker looked like this:



(a) Use the words in the list below to fill the gaps in the following sentences.

**solvent      solution      soluble      insoluble**

The brown substance dissolves in water to form a brown .....

The cornflour settles at the bottom of the beaker because it is ..... in water. Water is the..... in this experiment.

3 marks

(b) Dan wanted to separate the brown liquid from the white solid. What could he do to separate them?

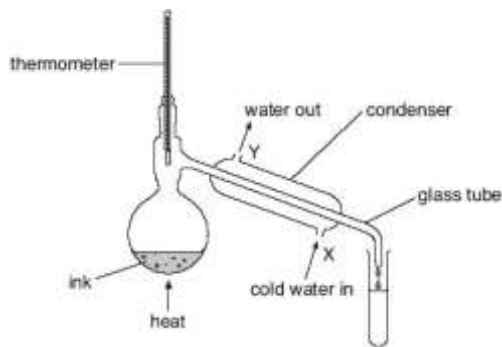
.....

1 mark

(c) Dan put a little of the brown liquid in a dish. The next day there was only a brown solid left in the dish. What had happened to the water?

.....1 mark

**Q3.** Rema used the apparatus below to distil 100 cm<sup>3</sup> of water-soluble ink.



(a) Which processes occur during distillation? Tick the correct box.

- condensation then evaporation
- evaporation then condensation
- melting then boiling
- melting then evaporation

1 mark

(b) Give the name of the colourless liquid that collects in the test-tube.

.....

1 mark

(c) What would the temperature reading be on the thermometer when the ink has been boiling for two minutes?

.....°C

1 mark

(d) (i) Water at 15°C enters the condenser at X. Predict the temperature of the water when it leaves the condenser at Y. ....°C

Explain this change of temperature.

.....  
 .....

1 mark