Chemical Analysis
Multiple Choice Questions
Set 2

You may use a periodic table to help you answer these questions.

Tick **one** box.

1. Which statement about pure substances is **not** correct?

   A. they contain a single element or compound ☐
   B. they have a specific melting point and boiling point ☐
   C. they have had nothing added to them ☐
   D. they must be a natural substance ☐

Table 1 shows the ingredients listed on the label of a tomato ketchup bottle.

Table 1

Tomato Ketchup
Ingredients:
tomato concentrate sugar vinegar salt natural flavouring

2. Which word best describes the tomato ketchup?

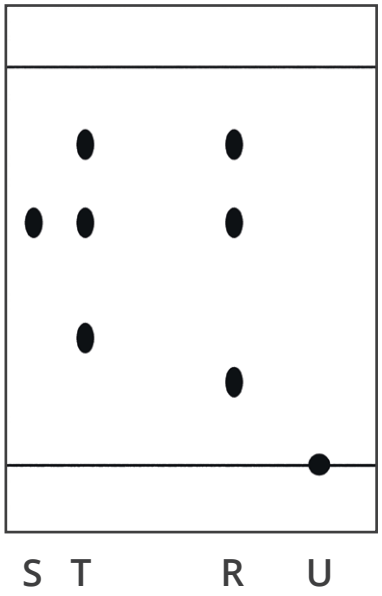
   A. element ☐
   B. compound ☐
   C. formulation ☐
   D. pure ☐

3. Which method is used to determine the presence of oxygen gas in a test tube?

   A. bubbling the gas through limewater ☐
   B. placing a burning splint at the opening of the test tube ☐
   C. placing a glowing splint inside the test tube ☐
   D. placing damp litmus paper at the opening of the test tube ☐

Figure 1 shows a chromatogram.

Figure 1



4. How many substances are there in mixture T?

A. 1 ☐
B. 2 ☐
C. 3 ☐
D. 4 ☐

5. What is the stationary phase in paper chromatography?

A. the ink samples ☐
B. the paper ☐
C. the R_f value ☐
D. the solvent ☐

6. Which of the following is an example of a formulation?

A. diamond ☐
B. glucose ☐
C. soap ☐
D. water ☐

Four students made copper sulfate crystals in a laboratory. They each tested the purity of their crystals by finding their melting point. Their results are shown in **Table 2**.

Table 2

Student	Melting Point of Copper Sulfate (ºC)
A	110
B	109 – 111
C	103 – 109
D	109 – 110

7. Which student made a pure sample of copper sulfate?

A. A ☐
B. B ☐
C. C ☐
D. D ☐

A student carried out some tests to identify an unknown sample of gas. Their observations are recorded in **Table 3**.

Table 3

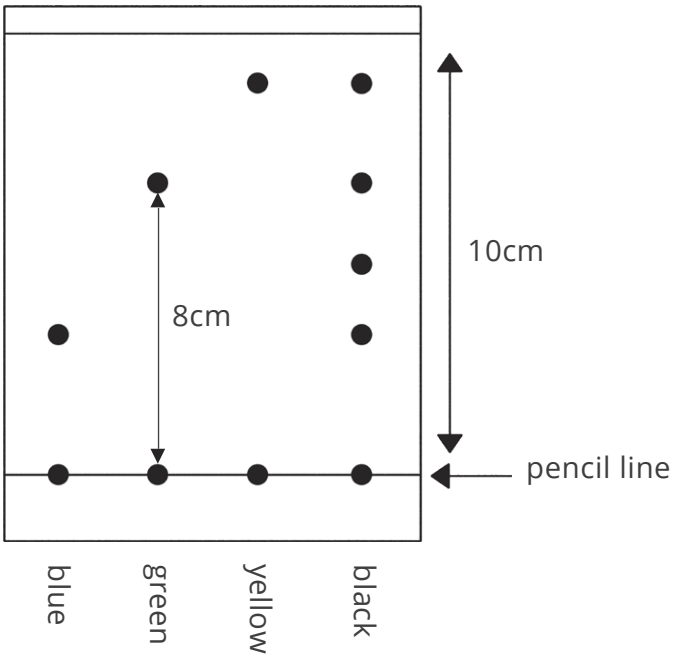
Test	Observation
burning splint	no change
glowing splint	no change
damp litmus paper	turns white
limewater	no change

8. Which gas was present in the sample?

A. carbon dioxide ☐
B. chlorine ☐
C. oxygen ☐
D. hydrogen ☐

Figure 2 shows a chromatogram.

Figure 2



9. What is the R_f value of the green ink in **Figure 2**?

A. 0.8 ☐
B. 1.25 ☐
C. 18 ☐
D. 80 ☐

10. In **Figure 2,** which pure ink has the strongest attraction to the solvent?

A. black ☐
B. blue ☐
C. green ☐
D. yellow ☐