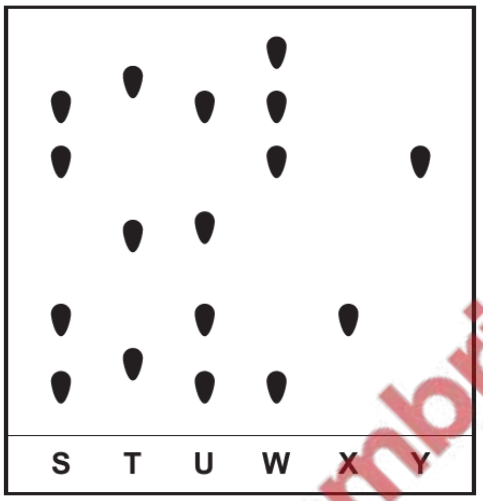
1. 0620/33/O/N/19/No.8

This question is about dyes.

(a) Chromatography can be used to separate a mixture of dyes.
S, **T**, **U** and **W** are four different mixtures of dyes.
S, **T**, **U** and **W** were placed on a piece of chromatography paper.
Two pure dyes, **X** and **Y**, were also placed on the same piece of chromatography paper.

The results of the chromatography are shown.



(i) Which mixture, **S**, **T**, **U** or **W**, contains dye **X** but **not** dye **Y**?

..... [1]

(ii) Which mixture, **S**, **T**, **U** or **W**, contains the smallest number of dyes?

..... [1]

(iii) Which mixture, **S**, **T**, **U** or **W**, contains neither dye **X** nor dye **Y**?

..... [1]

(b) Indigo is a blue dye.

When an alkaline solution of indigo undergoes reduction, it turns colourless.

(i) What is meant by the term *reduction*?

..... [1]

(ii) A piece of white cloth is soaked in the colourless solution.
When the cloth is left in the air it turns blue.

What type of chemical reaction occurs?

Draw a circle around the correct answer.

decomposition **fermentation** **oxidation** **polymerisation** [1]

[Total: 5]