FLAME TESTS – TOPIC TEST 1

QUESTION 1
Emission spectra are caused by:

A Excited atoms moving to a higher energy level.
B Electrons in excited atoms returning to their original energy level.
C Excited atoms releasing energy.
D Electrons in excited atoms moving to a higher energy level.

QUESTION 2
As an analytical tool, flame testing is:

A Both qualitative and quantitative.
B Quantitative only.
C Less reliable as a quantitative tool.
D Qualitative only.

QUESTION 3
Flame testing is limited to a number of cations only because:

A Some atoms may not be excited by the Bunsen flame.
B Some atoms give off energy which is not in the visible range.
C All of the above.
D None of the above.

QUESTION 4
Result from flame tests can become confusing because:

A Some colours are very similar and cannot be easily distinguished by the naked eye.
B Some metals exhibit exactly the same colours.
C Some colours are too bright and can damage the eyes.
D All of the above.

QUESTION 5
Emission spectra occur when:

A Electrons in an atom move to a higher energy level.
B Electrons in an atom transfer their energy to other electrons.
C Electrons in an atom return to their normal energy level after having moved to a higher one.
D None of the above.

QUESTION 6
Briefly explain the principle behind flame testing in terms of emission spectra.

Solution

QUESTION 7
List two advantages and two disadvantages of flame testing.

Solution

QUESTION 8
Explain why it is recommended to use thin steel wire or match sticks for flame testing rather than copper wire.

Solution

SOLUTIONS

QUESTION 1 Answer is B

QUESTION 2 Answer is D

QUESTION 3 Answer is C

QUESTION 4 Answer is A

QUESTION 5 Answer is C

QUESTION 6

Points to be described are:

- When exposed to a source of energy, electrons in atoms move to higher energy levels.
- Because electrons at this higher level are less stable, they tend to return to their original lower levels.
- The energy absorbed to get to the higher level is released in a variety of forms, including visible light.
- Atoms emitting visible light, can be identified by the typical colour they give off which is related to the wavelength of energy release.

QUESTION 2

Advantages; two of:

- Quick and easy.
- Doesn't require specialised equipment.
- Can be easily carried out by junior students, with due safety precaution and supervision.
- Can be used to identify some common metals.

Disadvantages; two of:

- Use is limited to identify only a few metals.
- Some colours are very similar therefore are difficult to distinguish.
- Contamination by other salts may confuse results.
- Qualitative only.

QUESTION 3

Copper itself gives off a blue-green colour which would interfere with the result.