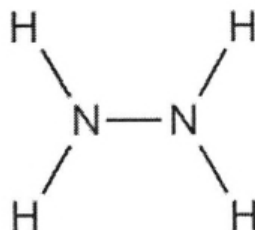


O Level Pure Chemistry MCQs

Chemical Bonding Test 2.0

Q1

The diagram shows the structural formula of the covalent molecule hydrazine, N_2H_4 .

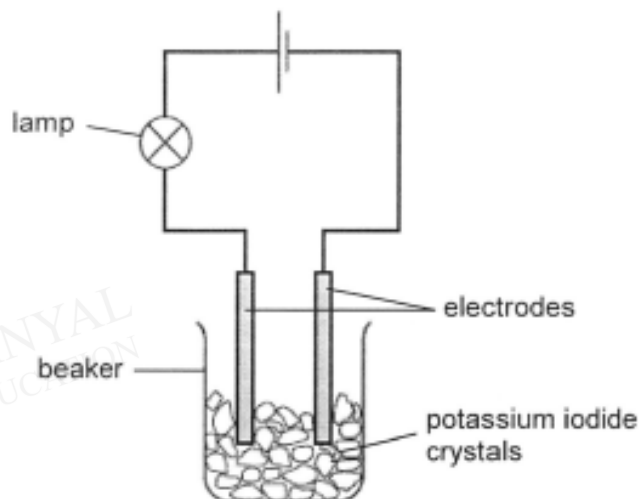


Consider all the electrons in a molecule of hydrazine.
Which description fits the arrangement of these electrons in the molecule?

	total number of electrons involved in bonding	total number of electrons not involved in bonding
A	5	4
B	5	8
C	10	4
D	10	8

Q2

The experiment shown is used to test the electrical conductivity of potassium iodide crystals.

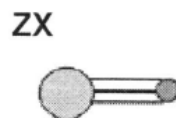
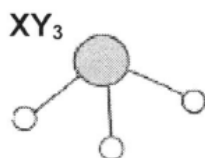


The lamp does not light up.
Distilled water is then added to the beaker and the lamp lights.
Which statement explains these results?

- A Metal ions are free to move when potassium iodide melts.
- B Metal ions are free to move when potassium reacts with water.
- C Electrons are free to move in the solution when potassium iodide dissolves.
- D Oppositely charged ions are free to move in the solution when potassium iodide dissolves.

Q3

The models and formulae for some molecules are shown below.



Which of the following, **A**, **B**, **C** or **D**, is the correct model for a molecule of the compound between **Y** and **Z**?

A



B



C



D



Q4

Two elements, **S** and **T** have proton numbers between 1 and 12. The atom **S** has two electrons less than a noble gas while the atom **T** has five electrons more than a noble gas. Which of the following compounds **cannot** be formed between **S** and **T**?

A TS

B TS_6

C TS_2

D TS_3^-

Q5

The table shows the number of protons, neutrons and electrons in particles **S**, **T**, **U** and **V**.

particle	proton	neutron	electron
S	17	20	17
T	17	18	18
U	20	20	18
V	20	21	20

Which pair of particles would combine to form an ionic compound?

A S and T

B S and U

C T and U

D T and V

Q6

Element X has n protons and forms ions with a charge of -2 . Element Y has $(n+1)$ protons.

Which compound is formed when element X reacts with element Y?

- A a covalent compound XY_2
- B a covalent compound X_2Y
- C an ionic compound XY_2
- D an ionic compound X_2Y

Q7

Metals have positive ions in a 'sea of electrons'.

Which metal atom contributes the least number of electrons to this 'sea of electrons'?

- A aluminium
- B magnesium
- C sodium
- D zinc

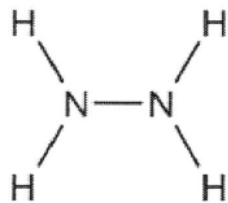
Q8

An investigation of the properties of the chlorides of Period III elements shows that the boiling points of sodium chloride and silicon tetrachloride are 1465°C and 57°C respectively. This difference in boiling points is a result of

- A covalent bonds being weaker than ionic bonds.
- B sodium chloride having strong metallic bonds.
- C silicon tetrachloride having weak intermolecular forces of attraction.
- D silicon forming weaker bonds with chlorine than does sodium.

Q9

The diagram shows the structural formula of the covalent molecule hydrazine, N_2H_4 .



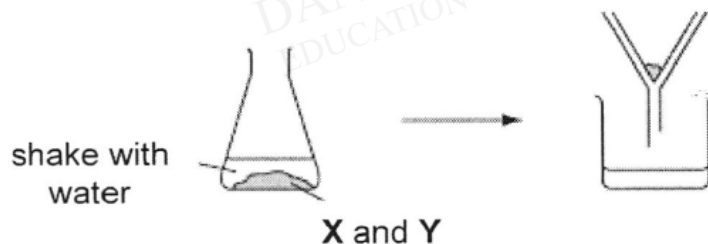
Which statement is true of the number of electrons in the molecule?

	total number of electrons involved in bonding	total number of electrons not involved in bonding
A	5	4
B	5	8
C	10	4
D	10	8

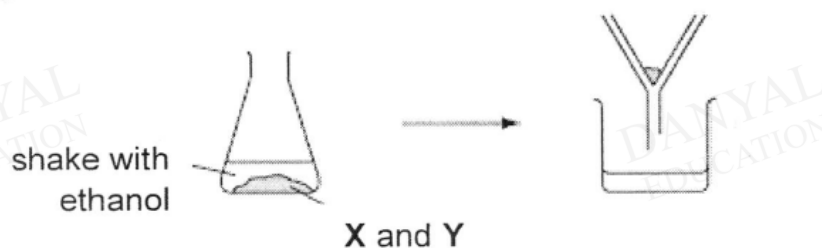
Q10

A solid mixture contains an ionic salt, **X**, and a covalent organic compound, **Y**.
 Two students suggest methods of separating the mixture as shown.

method 1



method 2



Which methods of separation are likely to work?

	method 1	method 2
A	✓	✓
B	✓	X
C	X	✓
D	X	X

Answers

Chemical Bonding Test 2.0

Q1 D

Q2 D

Q3 B

Q4 B

Q5 C

Q6 A

Q7 C

Q8 C

Q9 D

Q10 A

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