

MINISTRY OF EDUCATION, HERITAGE AND ARTS
YEAR 13 CHEMISTRY
REVISION WORKSHEET 2

Write the answers to the following questions in your exercise/activity books.

Strand 2: Investigating Matter

Sub-strand: Atomic Structure and Bonding

1. State the **Hund's rule**. (1 mark)
2. (i) Write the electron configuration of **manganese (Mn) atom** using s, p, d, notation. (1 mark)
(ii) Write the **abbreviated** electron configuration of **manganese (Mn) atom**. (1 mark)
(iii) Write the electron configuration of **manganese ion (Mn²⁺)** using s, p, d, notation. (1 mark)
3. The electron configuration of nitrogen is given as: N – 1s² 2s² 2p³
Determine the **four** quantum numbers for the **2nd electron** in the **2p subshell**. (2 marks)
4. Draw the Lewis structures for the following ions.
(i) NO₃⁻ (2 marks)
(ii) H₃O⁺ (2 marks)
5. The key list given below gives some of the shapes of molecules.
Use them to answer the questions that follow.

Trigonal bipyramidal	V-shaped	Linear
Trigonal planar	Octahedral	Tetrahedral
- Select the correct shape from the key list for each of the compounds given below.
(i) BCl₃ (ii) PCl₅ (iii) H₂O (3 marks)
6. Differentiate between **molecular geometry** and **electron group geometry**. (2marks)
7. Use the **VSEPR Theory** to explain why ammonia (NH₃) has a trigonal pyramidal shape. (2marks)
8. Consider a carbon dioxide (CO₂) molecule to answer the questions that follow.
(i) State whether carbon dioxide is a **polar** or **non-polar molecule**. (1 mark)
(ii) Provide a reason for answer to part (i) above. (2 marks)

The End