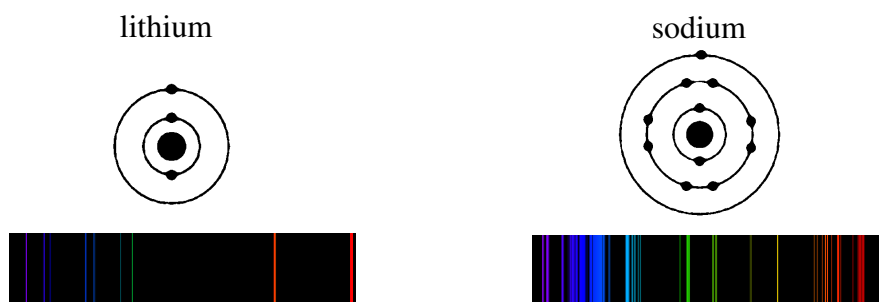


Year 11 Chemistry
Test: Elemental Chemistry

- 1.
- State the element found in group 4, period 2 /1
 - Determine the number of neutrons in an isotope of nitrogen which has a mass of 14. /1
 - The diagram below compares the electron configuration of two elements and the colours of light their gas emits when heated.



State one difference between the colours emitted by lithium and the colours emitted by sodium, and suggest a reason for the difference. /2

2. Write the symbol and charge for the following:
- magnesium ion
 - chloride ion
 - ammonium ion
 - cobalt ion
 - silver ion
 - iron (III) ion
- /6
3. Write the chemical formula for the following:
- potassium sulfide
 - chromium phosphate
 - tin (II) oxide
 - oxygen gas
 - carbon dioxide
 - carbonic acid
- /6
4. Balance the following equations:
- $\text{K} + \text{Cu}(\text{NO}_3)_2 \rightarrow \text{KNO}_3 + \text{Cu}$
 - $\text{HCl} + \text{Al} \rightarrow \text{AlCl}_3 + \text{H}_2$
- /2
5. For the following, state (i) the primary bonding type and (ii) when (if ever) the substance will conduct electricity:
- BaBr_2
 - Ni
 - N_2
- /6

6. Draw the following molecules, showing bonding and shape.
- a) O_2
 - b) H_2S
 - c) SO_3
 - d) PO_4^{3-}
- /8
7. Describe, using a diagram for each, the following:
- a) a polar bond
 - b) a polar molecule
 - c) hydrogen bonding
- /6
8. The compounds KCl and Ca_3P_2 are both ionic. KCl has a high melting point of $770^\circ C$ and Ca_3P_2 has a melting point of $1600^\circ C$.
- State why the melting point of Ca_3P_2 is much higher than the melting point of KCl .
- /1
9. Draw structural formula for the following
- a) propane
 - b) 2,2-dimethyl butane
- /3
10. Write the general formula for this homologous series:
- C_2H_5O
 - C_3H_7O
 - C_4H_9O
 - $C_5H_{11}O$
 - ...
- /1
11. Describe one use of nanomaterials in nature or society.
- /2

TOTAL /45

