**Topics: Metals and Non-metals**
**Subtopics:Reaction between Metals and Non-metals**

**Questions**

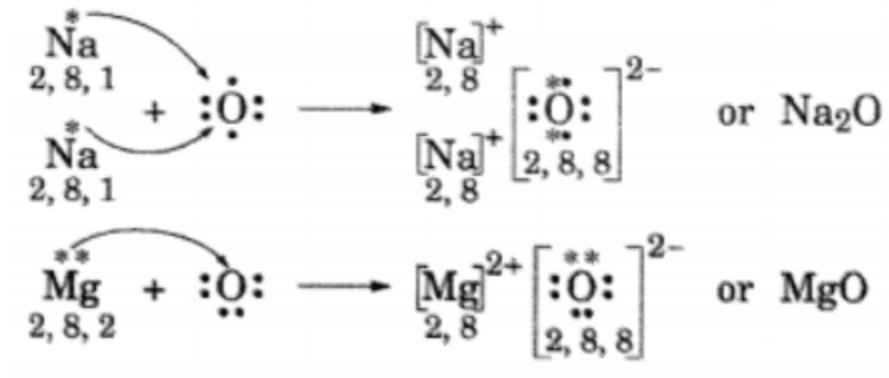
Q1.Write the electron dot structures for sodium, oxygen and magnesium.
Q2.Show the formation of $Na_2O$ and MgO by the transfer of electrons.What are ions present in these compounds?
Q3.Why do ionic compounds have high melting points ?
Q4.Write the electron dot structures for potassium and chlorine.
Q5.Show the formation of KCl by the transfer of electrons.
Q6.(a) Show the formation of CaS by the transfer of electrons.
(b) Name the ions present in this compound CaS.
Q7 .Explain the formation of ionic compound CaO with electron dot structure.
Q8.Why are ionic compounds usually hard?
Q9.How is it that ionic compounds in the solid state do not conduct electricity but they do so when in molten state?
Q10.Why are aqueous solutions of ionic compounds able to conduct electricity?

**Answers**

1.

| Element | Sodium (Na) | Oxygen (O) | Magnesium (Mg) |
|---|---|---|---|
| Electron dot structure | Na<br>2, 8, 1 | ·Ö·<br>2, 8, 6 | Mg<br>2, 8, 2 |

2.Formation of $Na_2O$ and MgO




In $Na_2O$, ions present are $Na^+$ and $O^{2-}$.In MgO, ions present are $Mg^{2+}$ and $O^{2-}$.

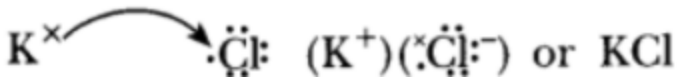
3.The ionic compounds are made up of positive and negative ions. There is a strong electrostatic force of attraction between the oppositely charged ions, so a lot of heat energy is required to break this force of attraction and melt the ionic compound. Due to this, ionic compounds have high melting points.

4.


5.

$$K \longrightarrow K^+ + e^-$$

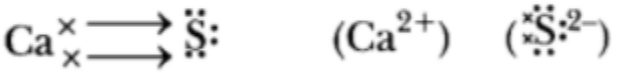
$$Cl + e^- \longrightarrow Cl^-$$




6.

$$Ca \longrightarrow Ca^{2+} + 2e^-$$

$$S + 2e^- \longrightarrow S^{2-}$$




$Ca^{2+}$ and $S^{2-}$ ions are present in CaS.

7.

$$Ca \longrightarrow Ca^{2+} + 2e^-$$
2, 8, 8, 2 2, 8, 8

$$O + 2e^- \longrightarrow O^{2-}$$
2, 6 2, 8

$(Ca^{2+})$ $(\ddot{\underset{\times}{O}}:^{2-})$

8.It is due to strong electrostatic force of attraction between oppositely charged ions.

9.In solid state, ions are not free to move whereas in molten state ions are free to move, therefore, they conduct electricity in molten state.

10.In aqueous state ions are free to move, therefore, they conduct electricity in molten state.