

5.2 EXERCISE 2 – Physical and Chemical Properties of Period 3 Oxides

1. Explain the following observations:
 - a) The melting point of Al_2O_3 and MgO is higher than that of Na_2O .
 - b) The melting point of SiO_2 is very high.
 - c) The melting points of P_4O_{10} and SO_2 are much lower than that of SiO_2 .
 - d) The melting point of P_4O_{10} is higher than that of SO_2 .
2.
 - a) Write equations for the reactions of the following oxides with water and state the pH of the resulting solutions:
 - i) Na_2O
 - ii) MgO
 - iii) P_4O_{10}
 - iv) SO_2
 - v) SO_3
 - b) Write equations for the reactions of the following oxides with dilute hydrochloric acid:
 - i) Na_2O
 - ii) MgO
 - iii) Al_2O_3
 - c) Write equations for the reactions of the following oxides with dilute sodium hydroxide:
 - i) Al_2O_3
 - ii) SiO_2
 - iii) P_4O_{10}
 - iv) SO_2
 - v) SO_3
 - d) Using the equations given in (a), (b) and (c), describe the trend in acid-base character of the oxides and relate it to the type of bonding in these oxides.