

EEC Assignment 1 ANSWERS

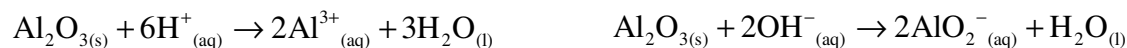
1. (a) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
(b) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2$
(c) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$
(d) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5$
(e) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^9$

2. (a) s
(b) d
(c) f
(d) p

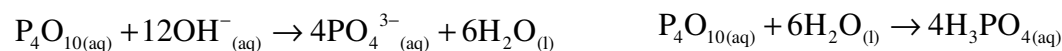
3. (a) Sodium has a metallic nature and a low electronegativity
Aluminium has a metalloid nature and an intermediate electronegativity
Phosphorus has a non-metal nature and a high electronegativity
(b) Sodium oxide is basic, so it reacts with hydrogen ions:



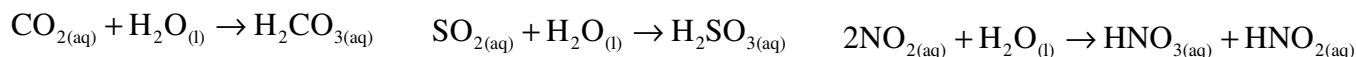
Aluminium oxide is amphoteric, so it reacts with both hydrogen ions and hydroxide ions:



Phosphorus oxide is acidic, so it reacts with hydroxide ions:

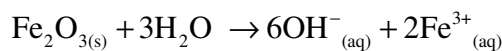
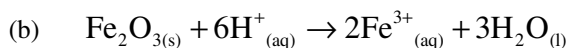


4. carbon/sulfur/nitrogen (*not* silicon as it does not dissolve in water)

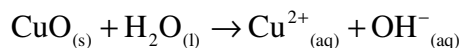
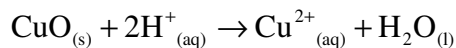


5.

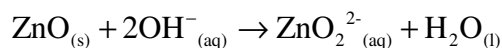
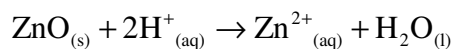
- (a) Iron (or chromium)



6. Copper (basic)



Zinc (amphoteric)



7.

- (a) GO_3 would be acidic, Q_2O would be basic, and J_2O_3 would be amphoteric.
(b) (1) G, since it forms an acidic oxide and therefore is likely to be found to the right of the periodic table.
(2) Q, since it forms a basic oxide and therefore is likely to be found to the left of the periodic table.
(c) G : group VI, Q : group I, J : group III