

18.0.0 ACIDS, BASES AND SALTS ANS

For Examiners use only.

Question	Maximum Score	Candidates Score
1 - 14	46	

*This paper consists of [Please insert number of pages] Printed pages.
Candidates should check the question paper to ensure that all the
Papers are printed as indicated and no questions are missing*

- 1.
- (i) Can act as both an acid and a base/ reacts with both acids and bases (to form salts) / It has both acidic and basic properties (1) 1
- (ii) $Al_2O_3 + 6H^+ \rightarrow 2Al^{3+} + 3H_2O$ (1)
 $Al_2O_3 + 2OH^- + 3H_2O \rightarrow 2[Al(OH)_4]^-$ /
 $Al_2O_3 + 2OH^- \rightarrow 2AlO_2^- + H_2O$ (1) 2

- 2.
- a) D ü
- b) A strong acid is one which ionizes completely in water to produce higher concentration of hydrogen ions (1) ü while a concentrated acid is one which contains higher number of acid molecules per given volume of water ü

- 3.
- Hydrochloric acid solution is completely dissociated giving a high concentration of H^+ (1mk) while ethanoic acid is only partially dissociated being a weak acid. (1mk)

- 4.
- (a) $[Cu(H_2O)_6]^{2+}(aq) + 2OH^-(aq) \rightarrow Cu(OH)_2(s) + 6H_2O(l)$ [1m]
- (b) $Cu(OH)_2(s) + 4NH_3(aq) + 2H_2O(l) \rightarrow [Cu(NH_3)_4(H_2O)_2]^{2+}(aq) + 2OH^-(aq)$ [1m]

[Total 2m]

- 5.
- (a) tripod (1) accept: stand spatula (1) not: spoon [2]
- (b) fizz/bubbles/effervescence stops (1)
 solid/iron/powder visible / no more iron dissolves/ reacts (1) [2]
- (c) evaporation of water/steam (1) solid/residue/crystals formed (1)
 colour change turns brown/darker green (1)
 effect of heat on solid solid breaks down (1) max 3 [3]

[Total: 7]

- 6.
- Iron(III) oxide is a basic oxide. What type of oxide is:
- (i) amphoteric (1) (1)
- (ii) acidic (1) (1)
- (Total 2 marks)

- 7.
- i) Sublimation 1
- ii) Oxidation 1

iii) Dehydration¹

8.

- It ionizes in water (1mk)
- It doesn't ionize in CCl₄ (1mk)

9.

- (a) Points plotted correctly (3), -1 for each incorrect smooth curve (1) not a straight line [4]
 - (b) 47.1 or reading from graph (1) curve extrapolated on grid (1) [2]
 - (c) solid/crystals form white (1) 20g (1) [2]
- not solubility decreases

[Total: 8]

10.

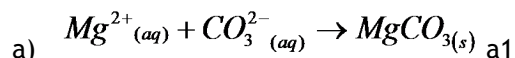
H₂O + a ½
It accepts a proton to form H₃O⁺ a ½

11.

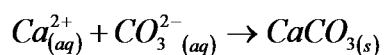
- (a) These are oxides that which combine with acids [1m] and with alkalis [1m] to form salts and water only.
- (b) (i) ZnO + 2HCl → ZnCl₂ + H₂O [1m]
- (ii) ZnO + 2NaOH → Na₂ZnO₂ + H₂O [1m]
- (iii) water or carbon monoxide, or nitrous oxide [1m]

[Total 5m]

12.



Or



Balance equation 1mk

Condition : state symbols are correct.

If not correct or missing penalize ½ mk

- b) Provide calcium / mineral for formation of teeth and bones. a1

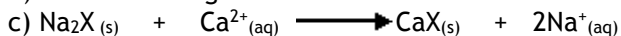
13.

a)

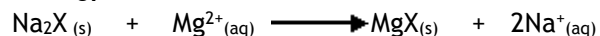
14.

a) Water which does not readily form lather with soap P1

b) Ca²⁺ P½ and Mg²⁺ P½



or



(Any 1 x 1mk)