

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) 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)

(ii) acidic (1)

(Total 2 marks)

(1) (1)

7.

i)
Sublimation¹ ii)
Oxidation¹

iii) Dehydration 1

8.

- It ionizes in water (1mk)
- It doesn't ionize in CCl_4 (1mk)

9.

- (a) Points plotted correctly (3), -1 for each incorrect smooth curve (1) not a straight line [4]
- (b) 47 or reading from graph (1) curve extrapolated on grid (1) [2] (c) solid/crystals form (1) 20g (1) [2] not solubility decreases

[Total: 8]

10.

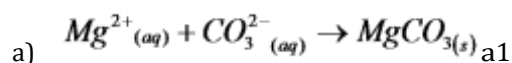
$\text{H}_2\text{O} + \frac{1}{2}$
It accepts a proton to form H_3O^+ a $\frac{1}{2}$

11.

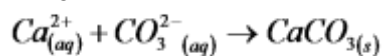
- (a) These are oxides that which combine with acids [1m] and with alkalis [1m] to form salts and water only.
- (b) (i) $\text{ZnO} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2\text{O}$ [1m]
- (ii) $\text{ZnO} + 2\text{NaOH} \rightarrow \text{Na}_2\text{ZnO}_2 + \text{H}_2\text{O}$ [1m]
- (iii) water or carbon monoxide, or nitrous oxide [1m]

[Total 5m]

12.



Or



Balance equation 1mk

Condition : state symbol are correct.

If not correct or missing penalize $\frac{1}{2}$ mk

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

13.

a)

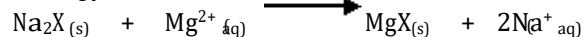
14.

a) Water which does not readily form lather with soap

b) Ca^{2+} and Mg^{2+}



or



(Any 1 x 1mk)