Ecolebooks.com

233/1
*****
PAPER 1
MARKING SCHEME 2020 FORM 4 TERM 1ENTRY EXAMS

1. a.
   i) Fractionating column; allow water vapour to condense into liquid and flow back to the flask before boiling point of water is reached. √1mk
   ii) Glass beads; - increase the surface area for condensation of water to take place. √1

   b. - Distillation of liquid Air in the manufacture of nitrogen and oxygen √1mk or
   - Distillation of crude oil.

2.
   a. R = 2.8.8.2 √ ½ mk
   S = 2 .6 √ ½ mk
   b. RO √1mk
   SCl_2 √1mk

3. Moles of oxygen gas. = $\frac{0.83}{32}$

   = 0.02594 √1mk

   Moles of $2NaNO_3$: O_2
   2 : 1

   Moles of $NaNO_3$ = 2 x 0.02594.
   = 0.05188 moles √ ½ mk
   Mass of $NaNO_3$ = 85 x 0.05188
   = 4.4098g √ ½ mk
   Percentage of$NaNO^3$ = $\frac{4.098}{5.35} X \frac{4.098}{5.35} 100$ 4.098/5.35X4.098/5.35100 = 82.45%

4.
   a. A = Non Luminous √1mk
   b. When the air hole is closed. √1mk

5.
   i) Double decomposition (precipitation) √1mk
   ii) $Ag^+_{(aq)} + Cl^-_{(aq)} \longrightarrow AgCl_{(s)}$ √1mk

DOWNLOAD MORE RESOURCES LIKE THIS ON ECOLEBOOKS.COM

Ecolebooks.com

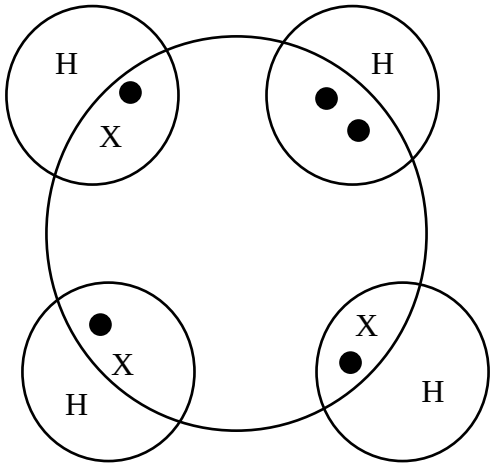
6. Empirical formula

Compounds present	:	$CuSO_4$:	nH_2O
Mass present		3.2	1.8
R.F.M		160.5	18 √1mk
No of moles		$\frac{3.2}{160.5}$	$\frac{1.8}{18}$ √ ½ mk
		0.02 :	0.1
Mole ratio		$\frac{0.02}{0.02}$:	$\frac{0.1}{0.02}$ √ ½ mk
		1 :	5
E.F.		$CuSO_4.5H_2O$	√1mk

7. a) Variety B
b)5.5-6.5 Soil Ph or 5.0-7.5

C)Add lime water which is basic for the soil PH to be neutral √1mk √1mk

8.



+ √1mk

√1mk

9. (a) The volume of a fixed mass of a gas is inversely proportional to the square root of the density.

(b) $\frac{250}{279} = \sqrt{\frac{32}{mx}}$

250 x Jmx = 277 x $\sqrt{32}$

$\sqrt{mx} = \frac{277\ x\ 532}{250}$ 2

Mx = $\left(\frac{277\ x\ \sqrt{32}}{250}\right)$

Mx = 39.29

DOWNLOAD MORE RESOURCES LIKE THIS ON ECOLEBOOKS.COM

c) Carbon (iv) oxide √1mk and water √1mk

d) Carbon √1mk and hydrogen √1mk

10. a) delocalized electrons
b) mobile ions

11. I mole of a gas occupy - $22.4dm^3$ at s.t.p

? - $11.2dm^3$ √1mk

$\frac{11.2 \times 1}{22.4} = 0.5mol$ √1mk

ii) $22.4dm^3 \rightarrow 64g/l$

$11.2dm^3 \rightarrow ?$

$\frac{11.2 \times 64}{22.4} = 32g$ √1mk

12.. reversing chemical change √1mk

i) Physical change √1mk

ii) Permanent chemical change √1mk

13 I. $CO_{2(s)} + C_{(s)} \rightarrow CO_{(g)}$

II. $2CO_{(g)} + O_{2(g)} \rightarrow CO_{(g)}$

14.

i) Iron (II) sulphide √1mk

ii) $Fe_{(s)} + S_{(s)} \rightarrow FeS$ √1mk

iii) A gas with rotten egg smell is produced √1mk

A pale green solution is formed

15. R.A.M $= \frac{54 \times 6 + 56 \times 92 + 57 \times 2}{100}$ √1mk

$= \frac{324 + 5152 + 114}{100}$ √1mk

$= \frac{5590}{100}$

$= 55.9.9^{mk}$

16. R~~STQ~~ √1mk increasing reactivity √1mk

17. Ammonia gas does not burn in air. Thus it did not ignite. √1mk

b) i) The gas ignites with green – yellow flame √1mk

DOWNLOAD MORE RESOURCES LIKE THIS ON ECOLEBOOKS.COM

Ecolebooks.com

ii) $4NH_3(g) + 3O_{2(g)} \rightarrow 2N_{2(g)} + 6H_2O_{(g)}$ √1mk

18

i) a) Manganese (IV) oxide √1mk

a) Water √1mk

ii) Oxy – hydrogen √1mk very hot flames for cutting of metal

Oxy – acetylene

19.

i) X – green copper (II) carbonate changes to black copper (ii) oxide. √1mk

Y – The colorless solution of limewater turns to a white ppt. √1mk

ii) $CuCO_{3(s)} \xrightarrow{heat} CuO_{(s)} + CO_{2(g)}$ √1mk

20

a) By use of universal indicator solution √1mk and compairing the colour obtained with the PH scale.

b) Basicity - 2 √1mk

3 √1mk

21. a) Protons 18 √1mk neutrons 22 √1mk

b) X : 2,8,8 √1mk

22. i) Yellow colour of chlorine turns to colourless √1mk and a black solid is formed at the bottom of the solution.

ii) $2KI_{(aq)} + Cl_{2(g)} \rightarrow 2KCl_{(aq)} + I_{2(g)}$

Chlorine is the oxidizing agent √1mk because its oxidation number changes form 0 to -1

23. i) Sublimation √1mk

ii) Oxidation √1mk

iii) Dehydration √1mk

24. i) U ,T ,S ,R ,Q ,P √1mk

Decreasing atomic size

ii) Both P and Q need to loose √1mk electrons to become stable, therefore they cannot react to form a compound.

DOWNLOAD MORE RESOURCES LIKE THIS ON ECOLEBOOKS.COM

25. a) A yellow deposit of sulphur is observed and a white powder of MgO formed.

b) $2Mg_{(s)} + SO_{2(g)} \rightarrow 2MgO_{(s)} + S_{(s)}$ √1mk

c) Oxidising agent/property

26. a) A method used to separate coloured pigments. √1mk

ii) In food industry to identify contaminants in food and drinks. √1mk

iv) In sports to identify illegal substances e.g steroids in urine or blood samples. √1mk

27. i) X – Covalent bond √1mk

Y – Hydrogen bond √1mk

28. $Fe_{(s)} + CuSO_{4(aq)} \rightarrow FeSO_{4(aq} + Cu_{(s)}$

1mol 1mol

Moles of iron used = $\frac{3.36}{56}$

= 0.06moles √1mk

Mole ratio of reaction

Fe : Cu

1 : 1√1

Moles of Cu produced is 0.06.

Thus mass of copper deposited

= 0.06 x 63.5

= 3.81g√1

DOWNLOAD MORE RESOURCES LIKE THIS ON ECOLEBOOKS.COM