**MARKING SCHEME CHEMISTRY PAPER 233/1**

**1. (a)**The solution turns from colourless to brown then a black solid is seen✓1

(b) Cl2(g) + 2I-aq 2Cl-aq + I2(s) ✓1

**2.** C H O

 64.86 13.51 21.63✓1

 12 1 16

Moles:5.405 13.51 1.3518

 1.3518 1.3518 1.3518

 4 10 1✓1

 E.F = C4H10O✓1

**3. (a)** molar heat of fusion/latent heat of fusion✓1

 **(b)** negative/-ve, the process is exothermic/heat is given out when steam condenses to water✓1

**4.** P1V1 =P2V2✓1

 T1 T2

 250 x 750 = V2 x 750✓1

 300 315

 V2=262.5cm3✓1

|  |  |
| --- | --- |
| **5.** | Number of |
| Particle | Protons | Neutrons | Electrons |
|  | 16 | 18 | 18 |
|  | 26 | 30 | 23 |

6. (a) Moles of acid 🗸 1



 Moles of MCO3 🗸 1



(b) 0.1 moles = 12.5g🗸 1

1. mole = ?

 

7.(a) scum✓1

(b) contains calcium ions which helps to strengthen the teeth

8.(i) black specks✓1 and white powder✓1

(ii) C02(g) + 2Mg(s) 2MgO(s) + C(s) ✓1

9.(a) solution E✓1

(b)Solution H✓1

(c) Solution F✓1

10. ✓1

 

 

 

 =0.41786cm3/s✓1

 Rate =

 0.411785=

 Time =582.8251✓1

11. (62.93 x 69.09) + (64.93 x30.91) ✓1

 100

 Evaluation ✓1

 =63.548✓1

12.(a)alkali metals✓1

(b)C✓1

(c) darts on the surface and melts into asilvery ball

13. (a)(i)Cu2+, ✓ ½ and Zn2+ ✓ ½

 (ii) S042 ✓1

 (b) Zn(OH)2(s) + 4NH3(aq)  Zn(NH3)42+(aq) +2OH(aq)

(c) Neutralization ✓1

14.(a) sodium and magnesium are metals with delocalized electrons, While phosphorous lacks delocalised electrons since it is anon metal

(b) it exists in allotropic form/it has two allotropes

(c).due to increase in the strength of nuclear charge due to increase in the proton

 number,outermost energy level strongly attracted to the nucleus.

15.(i) sample 3

(ii) boiling precipitates calcium or magnesium ions hence removing hardness

16. -add distilled water to potasiumsulphate to make a solution✓½

 - Dissolve lead carbonate in dilute nitric acid to form lead nitrate✓½

- React lead nitrate with potasiumsulphate solution to precipitate leadsulphate✓1

- Filter out lead sulphate✓½ and dry it between filter papers✓½



17.

18. .- Heat change = MCT

 =  ✓ ½

 = 109.2kJ ✓ ½

 Moles of ethanol = = 0.2174 mol ✓ ½

 If 0.2714 moles give 109.2kJ

 then 1mole gives 1 x 109.2 ✓ ½

 0.2174

 = 501.4kJ ✓ ½

 Molar enthalpy of combustion of ethanol = -501.4 kJ mol-1 ✓ ½

19. sample (ii),since it does not form scum with hard water

20.(a)propane

(b)2-methylpropane

21. (a).C.A,B ✓1

 (b).C✓1

 (c).AgNO3, Hg(NO3)2✓1

22. they have the same molecular mass✓1

23. I. minimize on wastage✓1

 II. it ia magnetic✓1

 III. during extraction a lot of electricity is used to melt the ore and maintain it in molten state✓1

24.P-making lubricants,making brushes for dynamos

 Q-making drilling bits,jewellery

25(i). NH4NO3  - 28 x 100

 80

 = 35%✓1

 (NH4)2HPO4 28 x 100

 132

 =21%✓1

(ii) they support rapid growth of acquatic plants which compete for oxygen with animals causing death hence pollution of water✓1

26. .(a) CH3 CH2CH2OH✓1

(b) (i) propanoic acid✓1

(ii) Dehydration✓1

27. (a) When the air-hole is open ✓1

 (b)- It is hotter than the luminous flame

 - It does not produce soot (Any 1 x 1mk

28. .(i) Fractional distillation✓1

 (ii) N-addition of water to magnesium nitride✓1

 P- Addition of hydrogen in presence of finely divided iron

29. mass of solid =30.4-26.2=4.2g

 Mass of solution =42.4-26.2=16.2g

 Mass of solvent =16.2-4.2=12g

 12g contains 4.2g of solute

 100g contains?

 =35g/100gH2O