

# FOCUS A365

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## FORM 4 TERM 2 CHEMISTRY EXAMINATIONS 2018

NAME: \_\_\_\_\_ ADM NO: \_\_\_\_\_ CLASS: \_\_\_\_\_

### MARKING SCHEME.

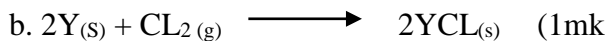
1. It is very hot.  
Does not form soot            each ½ mks
2.        R.A.M=35.5  
$$35.5 = \frac{3}{4} \times 35 + \frac{1}{4} \times x \quad (1\text{mk})$$
$$142 = 105 + x \quad (1\text{mk})$$
$$X = 37 \quad (1\text{mk})$$
3. (a)    ChloroHydrocarbon            (1mk)  
  
(b)    When ozone layer is depleted high energy radiation reach the earth and may cause cancer to human beings.            (1mk)  
  
(c)    Global warming. (1mk)
4. (a)     $\text{NH}_4\text{NO}_3(\text{s}) \xrightarrow{\text{heat}} \text{N}_2\text{O}(\text{g}) + 2\text{H}_2\text{O}(\text{g})$             (1mk)  
  
(b)    Over warm water, it's fairly soluble in cold water            (1mk)  
  
(c)    Both red blue litmus paper were not affected / did not change. (1mk)
5.  $\frac{R_{\text{SO}_2}}{R_{\text{G}}} = \frac{\sqrt{M_{\text{G}}}}{\sqrt{M_{\text{SO}_2}}}$             1mk  
  
$$\frac{25}{26.26} = \sqrt{\frac{M_{\text{G}}}{64}}$$
  
$$M_{\text{G}} = \frac{25 \sqrt{64}}{26.26} \quad 1\text{mk}$$

$$= 7.6166$$

$$M_G = 58 \quad 1\text{mk}$$

6. (a) Group I (½ mk)

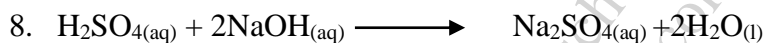
Period 6 (½ mk)



7.  $C_2H_3Cl_3$



(Each 1mk)



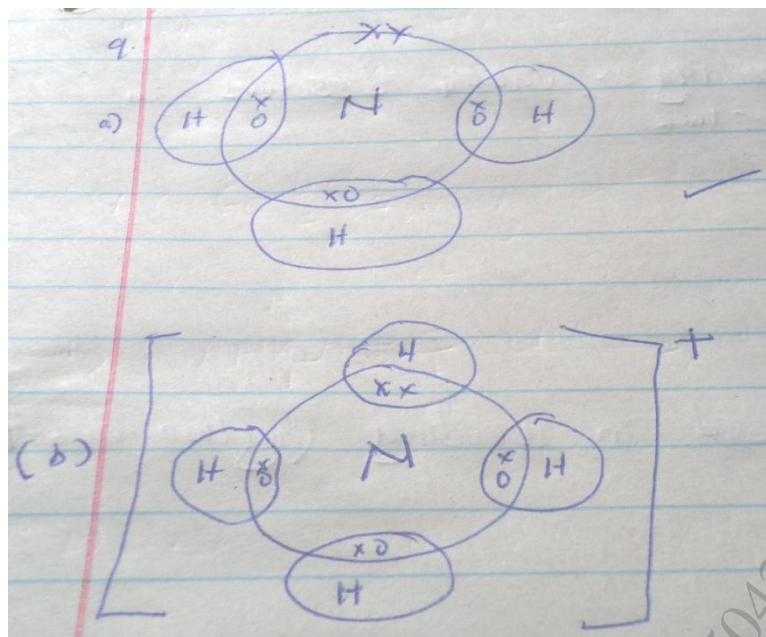
$$\begin{aligned}
 \text{Moles of KOH} &= \frac{30 \times 0.2}{1000} \\
 &= 6/1000 \\
 &= 0.006 \text{ MOLES} \quad (1\text{MK})
 \end{aligned}$$

Moles of  $H_2SO_4$  reacting ratio 1:2

$$\begin{aligned}
 &= \text{moles of } H_2SO_4 = \frac{0.006}{2} \\
 &= 0.003 \text{ moles} \quad (1\text{MK})
 \end{aligned}$$

$$\begin{aligned}
 0.003 &= \frac{0.6 \times V}{0.6} \\
 &= 3/0.6 = 5\text{cm}^3 \quad (1\text{MK})
 \end{aligned}$$

9.



	C	H	O	
10. % Composition	69.42	4.13	26.45	½ MK
R.A.M	12	1	16	
MOLES	5.785	4.13	1.653	½ MK
MOLES RATIO	<u>5.785</u>	<u>4.13</u>	<u>1.653 = 1</u>	
	1.653	1.653	1.653	
	3.5	2.5		
Whole number ratio	3.5 × 2 = 7	2.5 × 2 = 5	1 × 2 = 2	½ mk



$$(C_7H_5O_2)_n = 242$$

$$(84 + 5 + 32)_n = 242$$

$$121n = 242$$

$$n = 2 \text{ (½ mk)}$$



11. It means that a maximum of 19g of  $CuSO_4$  dissolves in 100g of water at  $15^\circ C$ . 1mk

12. - Manufacture of  $O_2HCl_{(aq)}$   
 - Manufacture of ammonia  
 - Hardening of oils into fats.  
 - In hydrogen flame which is used in welding (any two 1mk)

13. Add water to the mixture potassium chloride dissolves it is ionic while sulphur is molecular. Filter the mixture to obtain sulphur as residue and potassium chloride as filtrate. Evaporate the filtrate to obtain solid KCl.

14. Pale blue precipitate is formed. 1mk

b. Deep blue solution will be formed. 1mk

15. with water



With steam



16. (a) Y 1mk

(b) Y and Z (1mk) because they have the same (1mk) number of protons but different number of neutrons.

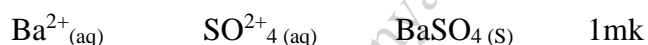
17. (i) An element is a substance made of one kind of atom and cannot be split into simpler substance by chemical means. 1mk

(ii) Atomic number is the number of protons in an atom of an element.

(b)  $\text{Ti}_2(\text{SO}_4)_3$

18. Anion  $\text{SO}_4^{2-}$  1MK

Cation  $\text{Zn}^{2+}$  1mk



19. Sublimation 1mk



The white precipitate would dissolve due to formation of soluble calcium hydrogen carbonate. 1mk

21. 2, 2-dimethylpropane.

Pent-2-yne

22. Burning magnesium produces a lot of heat which breaks the bond between sulphur and oxygen in  $\text{SO}_2$ . Magnesium then uses the oxygen which was broken from sulphur to continue burning; a burning splint does not produce a lot of heat.

23. Yellow solid (sulphur) is deposited. 1mk



H<sub>2</sub>S is oxidized to sulphur 1mk

24. This existence of an element in more than one form in the same physical state. 1mk

Diamond 1mk

Graphite 1mk

25.  $2\text{NH}_3(\text{s}) + \text{H}_2\text{SO}_4 \rightarrow (\text{NH}_4)_2\text{SO}_4(\text{aq})$

R.M.M of  $(\text{NH}_4)_2\text{SO}_4 = 28 + 8 + 32 + 64$   
 $= 132$

Moles required to produce 25kg  
25000g

Moles  $= \frac{25000\text{g}}{132} = 189.39$  moles 14mks

Moles of  $\text{H}_2\text{SO}_4$  required = 189.39 moles

R.M.M of  $\text{H}_2\text{SO}_4 = 98$

Mass =  $98 \times 189.39$  1mk

= 18560g

= 18.56kg 1mk

26.  $6\text{NaOH}(\text{aq}) + 3\text{Cl}_2(\text{g}) \longrightarrow \text{NaClO}_3 + 5\text{NaCl}(\text{aq}) + 3\text{H}_2\text{O}(\text{l})$

Manufacture of bleaching agents.

27. Methylbenzene is a non-polar compound hence hydrogen chloride in it does not ionize but exist as a molecule substance but in water hydrogen chloride ionizes to give  $\text{H}^+$  and  $\text{Cl}^-$  ions that's why it conduct electricity in water.

28. It is endothermic 1mk . This is because the products are heavy more than energy than the reactants. 1mk.

29. These are oxides which react with both acids and alkalis. 1mk

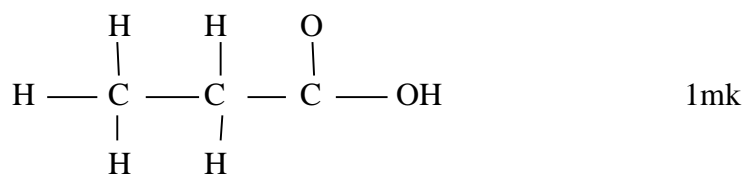
$\text{Al}_2\text{O}_3$ ,  $\text{ZnO}$  and  $\text{PbO}$ . Any two

30. It would react with  $\text{HCl}(\text{g})$  since it is basic and  $\text{HCl}$  is acidic to form calcium chloride and water.

Concentrated  $\text{H}_2\text{SO}_4$

Anhydrous calcium chloride.

31. (a) Propanoic acid 1mk



(b) Esters

32. (a)  $X^{2+}$  2.8.8  
 $Y^{2-}$  2.8

(b) XY

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