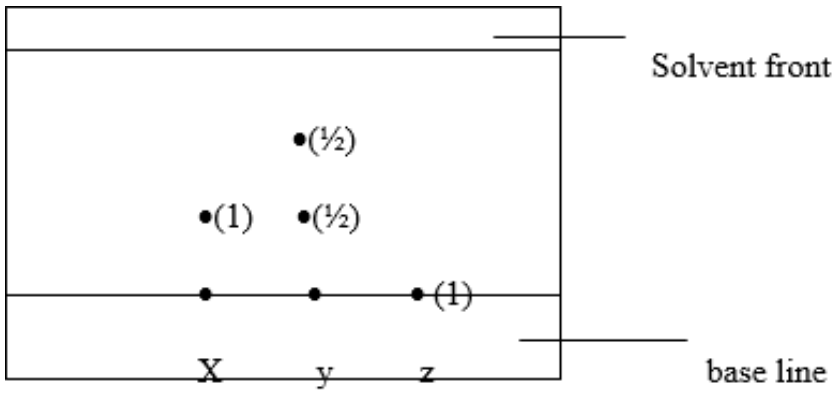
FORM FOUR CLUSTER KCSE MODEL 7

CHEMISTRY PAPER 1 ANSWERS

1. X W Y √ (2mks)
   Y W X√ with direction
   Increasing atomic size

2. –Add propamone to dissolve sugar. (1)
   -Filter to obtain sugar as filtrate and sodium chloride as resdue.(1).
   -Using a hot water bath heat the sugar sodium to evaporate propamone and obtain crystals of sugar.(1)
   -Refilt direct heat of sugar solution

3. 

4. a)
   $$OH^-_{(aq)} + H^+_{(aq)} \rightarrow H_2O_{(l)}$$
   (b). To speed up the neutralization proun.

5. (a). $^{93}_{36}$ (1) (b) $^{0}_{-1}e$ (1) (c). $^{4}_{2}$ He (1)

6.

	Ethanoic acid	Ammonia
Phenolphthalein	colourless(½)	pink /red (½)
Methy orange	Red /pink (½)	Yellow(½)
PH value	4/5/6. (½)	8/9/10 (½)

7. Whiteflames ½ dinowe in water mixed with universal indicator forming a red solution.(½). Phosphorus reacts with air forming phosphorus (V) oxide (1) that dissolves in water forming phosphoric and that turns universal indicator to red.(1).

8. The brown colour of bromine appears in the lower gas jar as the upper gas jar becomes colourless. (1).

   Particles of bromine being deriver than air diffine to the lower jar as air particles being lighter diffuse to the upper jar.(1)

9. (a). To condense (1) the product formed from burning hydrogen.

(b). Anhydrous calcium chloride/calcium oxide.(1) choose one.

c)

$$2H_{2(g)} + O_{2(g)} \longrightarrow 2H_2O(g) \quad (1)$$

10. .(a). No (1) because mg being more reactive reacts faster with oxygen/oxidized in preference to iron (1).

(b). Electroplating (1)

Enameling any 1 use

Oiling greasing.

Painting

Anodising

11.

$$11. \quad \frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

$$\frac{760\ x250}{298} = \frac{500\ x190}{T_2} \quad (1)$$

$$T_2 = \frac{500\ x\ 190\ x\ 298}{760\ x\ 250}$$

$$\frac{28310000}{190000} = 149k \quad (1)$$

12. (a). White anhydrous copper (II) sulphate turns blue. (1)
A white preupitate is formed in the water. (1)

b)

$$2NaHCO_{3(s)} \longrightarrow Na_2CO_{3(s)} + H_2O_{(l)} + CO_{2(g)}$$

(1)

13. .Amphoteric oxide is an oxide of metal that reacts both with dilute acids and alkalis. (1)
Neutral oxide is an oxide of a non-metal that does not react with an dilute acid nor alkali. (1)

14. (a). (i)Yield of NO2 increases as the forward reaction proceeds by decrease in volume /lower number of molecules. (1)

(ii). Yield of NO2 decreases as the forward reaction is exothermic. (1).
(b). Forward reaction will be favoured by increasing pressure and decreasing temperature. (1).

15. $\left(\frac{80\,x\,x}{100}\right)+\left(\frac{81x100-x}{100}\right)=80.77$ (1)

$$\frac{80x+8100-81x}{100}=8077$$

$$80x-81x+8100=8077$$

$$-x=8077-8100=-23$$

$$botope80x=23\%botope81=77\%$$

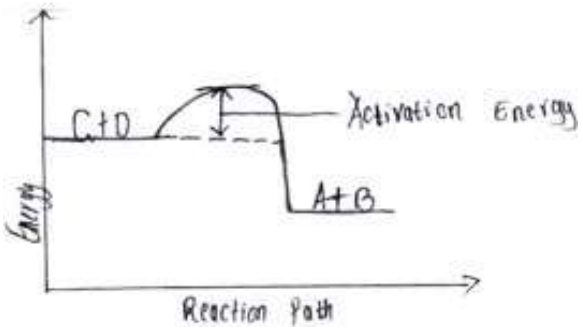
(½) (½)

15. (a). Precip itation. (1)
(b) Decomposition (1)
(c). Redox (1)

17. (a). 1 and 3 (1)
(b). 2 and 3 (1)
(c). Yellow and blue (1)

18. .(a). The minimum amount of energy required by reacting particles to cause an effective /successful collision to form products. (1).

(b)



c. Exothermic

19. .(a). Rhombic /monoctimic (1)

(b).(i). Vulcanization of rubber (1)
(ii). As a fungicide

20. (a). The yield decreases since forwarded reaction is exothermic. (1)

(b). Manufacture of fertilizer. (1)

21. A brown solid is formed in the combustion tube. (1

22.

$$Mg_{(s)} + Cu^{2+}_{(aq)} \longrightarrow Mg^{2+}_{(aq)} + Cu_{(s)} \quad (1)$$

23. (a). A basic oxide is a metallic oxide which only acts as a base,while (1) an amphoteric oxide is an oxide that exhibits both basic and acidic properties

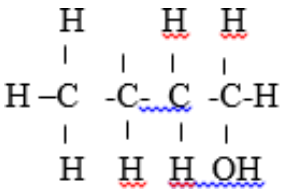
(b). Aluminum oxide (1)

24. .(a) Chlorofluorocarsons. (1)

(b). Global warming –High UV radiations reach the earth through clouds and atmosphere caring Green house effect /Global warming. (1)

25.

C	H	O	
64.9	13.5	21.6	
12	1	16	
5.408	13.5	1.35 (1)	$C_4H_{10}O$ (½)
4	10	1(½)	



(1)

26. $\triangle Hsol. = \triangle H_{Latt.} + \triangle H_{hydro}$

$= +801+(-322)+(-506)(1) = -27KJ/mol.$ (1)

27. The luminous flame is bright and can easily be seen to avoid a possible danger/accident.

28.

$39.6cm^3 \equiv 17.2g$

$\because 100cm^3 \equiv \frac{100x17.2}{39.6}$ (2)

$= 43.43/100gH_2O$

29.

(i). Zinc/zinc metal (1)

(ii). $[Zn(NH_3)_4]^{2+}$ (1)

(iii). $Ba^{2+}_{(aq)} + SO_4^{2-}{}_{(aq)} \rightarrow BaSO_{4(S)}$ (1)

30.

$HOCl_{(aq)}$ +dye $\xrightarrow{\text{conc. } H_2SO_4}$ (dye +O) +$HCl_{(aq)}$ (1)

(Bleached)

$SO_{2\,(g)}$ + (dye +O) $\longrightarrow$ dye + $SO_{3(g)}$ (1)

(bleached)

31.

Process	Type of change
(a).	Permanent (1)
(b).	Temporary (1)

32. .(a). SiH4 - It has a higher boiling point. (1)
(silane)

(b). No hydrogen bonding in CH4 and SiH4(l) (1)
While there is hydrogen bonding in H2O which is stronger than that in H2S.