KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

STRATHMORE HIGH SCHOOL

CHEMISTRY

PAPER 1

MARKING SCHEME

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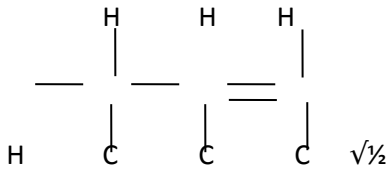
STRATHMORE SCHOOL KCSE TRIAL AND PRACTICE EXAM 2016
QUESTION PAPER 1
MARKING SCHEME

1. - Place the mixture in a beaker and cover the beaker with a watch glass containing cold water
   - Heat √½ the beaker gently. NH_4Cl sublimes √½leaving the mixture of sodium chloride and AgCl in the beaker. NH_4Cl deposits on watch glass.
   - Allow to cool then add water √1
   - Stir to dissolve NaCl
   - Filter √½ the mixture. Residue is AgCl, filtrate is $NaCl_{(aq)}$ solution.
   - Evaporate√½ filtrate to obtain NaCl crystals.

2. (a) U, T, S , R, Q, P√1 (→ Increasing atomic radius√1)
   (b) Both have metals/both react by losing electrons √1

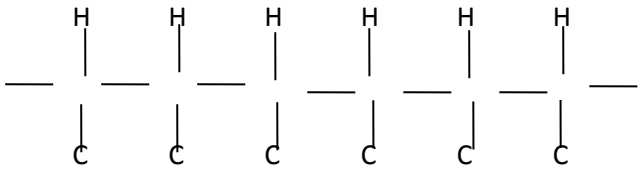
3. (a) $Y - NO_3^-$
   (b) Nitrogen (IV) oxide

4. (a) (i) 2-methylprop-1-ene
   (ii)



√½

   ii)



√½

   (b) (i) $CH_3CH_2CHCH_3$ √½
   Pent-2-ene √½
   (ii) Addition reaction√1

5. (a) (i) K √½ (ii) J√ ½
   (b) There are no H^+ ions √1
   (c) L is a better conductor than **J** because **L** is a stronger acid **than J.** √½

6. When solid sulphur is heated it melts into a liquid containing S8 √1rings which can flow easily. On further heating, the S8 rings break up√1 to form long chains which entangle√1 and cannot flow easily.

7. $\sqrt{\frac{RSO_2}{RO_2}} = \frac{\sqrt{MO_2}}{\sqrt{MSO_2}}$

$\sqrt{\frac{RSO_2}{0625}} = \frac{\sqrt{32}}{\sqrt{64}}$

$= 0.7071$ √1

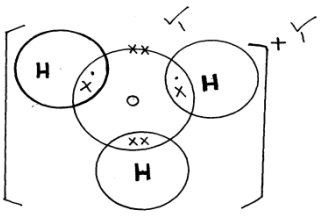
$RSO_2 = 0.7071 \times 0.625 = 0.4419 cm^3/sec$

$100cm^3 = ?$

$= \frac{100cm^3 \times 1sec}{0.4419cm^3}$ √1 = 226.3 seconds√1

8. $\Delta H_{soln.}$ = 250 x 4.2 x 1.5 = 1575J √½
Moles of NH_4NO_3 = $^5/_{80}$ = 0.0625moles
0.0625moels = 1575J
1mole = ?
= 1 x 1575J √1
0.0625
= +25200Jmole^{-1}

9. (a)



(b) It has weak van der waals forces√½ between molecules which require little energy to overcome. √½

10. (a)
(b) 30seconds √1
(c) $^{120}/_{30}$ √½= 40cm^3/second √½

11. Q = It = 0.5 x 1930 = 965C√1
965C 0.≅ 44g
? ≅ 88g
= $\frac{88 \times 9965}{0.44}$ = 19300C√1
Charge on P = $\frac{19300}{965000}$ = +2√1

12. Moles of Fe = 320000000
= 2000 000moles√½
Mole ratio = 1:2
Moles of Fe = 2000 000 x 2 √½= 4000 000moles
Mass of Fe = $\frac{4000\ 000 \times 56}{1000\ 000}$√½
= 224Kg√½

13. (a) Its solubility decreases with increase in temperature √1
(b) 40g →100g water
→? 65g water
= $\frac{65 \times 40}{100}$ √1 = 26g of solute √1

14. (a) Step I Beta particle√½
Step II alpha particle √½

(b) $^{214}_{}Bi \rightarrow {}^{210}Po + {}^{4}He$

(c) In detecting leakages in oil pipelines √1

15. $Na_2CO_{3(aq)} + H_2SO_{4(aq)} \rightarrow Na_2SO_{4(aq)} + H_2O_{(l)} + CO_{2(g)}$

Moles of acid used = $\frac{25 \times 0.1}{1000}$ = 0.0025moels √1

Mole ratio acid: base = 1:1

Moles of Na_2CO_3 = 0.0025moles

Concentration = $\frac{0.0025 \times 1000}{20}$ √½

= 0.125moles/dm^3 √1

Unbalanced – 0mks

16. (a) To remove air initially present in apparatus. √1

No symbols – ½ mks

(b) $3Fe_{(s)} + 4H_2O_{(g)} \rightarrow Fe_3O_{4(s)} + 4H_{2(s)}$ √1

(c) By upward delivery √1

17. Add PbO √½ a little at a time to dilute $HNO_{3(aq)}$ while stirring until no more dissolves.

- Filter off excess PbO √1

Filtrate is $Pb(NO_3)_2$ solution. √½

Add $NaCl_{(aq)}$ soln. to the filtrate. √½

A white ppt. of $PbCl_2$ forms. √½

Filter wash the $PbCl_2$ residue and dry √½

18. (a) Protect it from oxygen √1

(b) Zinc is prefentially oxidized√1

19. (a) $P_2 = \frac{P_1V_1T_2}{T_1V_2} = \frac{1 \times 2500 \times 300}{310 \times 5000}$√1

= 4.38atm√1

20. (a) Vanadium (V) oxide √1

(b) $2SO_{2(s)} + O_{2(g)} \rightarrow 2SO_{3(g)}$ √1

(c) Manufacture of drugs, explosives , Lead/acid accumulators (any one)

21. (a) Polychloroethene

(b)

22. Cannot be stored√1 Q is more reactive, √1 hence goes into solution

23. (a) Deliquescence √1

(b) Drying of gases

24. In methylbenzane, there are no√1 H^+ ions in water, H^+ ions are present √1

25. (a) Heating curves √½

(b) Solid **N**; does not sharp meting point.

26. (a) Hydrogen √½

(b) Testing for $CO_{2(g)}$

(c) Reacts with $CO_{2(g)}$ to form $CaCO_{3(s)}$

27. (a) Name: Copper pyrites Formula $CuFeS_2$

(b) Mixing with water √½ and oil, then blowing √½ with air. Separates into two layers. Lower √½

layer contains √½ mud. Upper layer contains pure ore.

28. (a) $2CO_{(g)} + O_{2(g)} \rightarrow 2CO_{2(g)}$ √1

(b) 2vols. ≅ $40cm^3$

1vol. ≅ $20cm^3$

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

Vol. of CO_2 = 40cm^3

Vol. unreacted of O_2 = 40-20 = 20cm^3

29. (a) Water

(b) Black CuO changes to brown

(c) $3CuO_{(s)} + 2NH_{3(g)} \rightarrow 3Cu_{(s)} + N_{2(g)} + 3H_2O_{(l)}$ - *unbalanced equation – 0mk no state symbols – ½ mk*

30. $\frac{(0.34 \times 36) + (0.06 \times 38) + (99.6 \times 40)}{100}$ √1

$= \frac{12.24 + 2.28 + 3984}{100}$

$= \frac{3998.52}{100} = 39.9852$√1