KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

ALLIANCE BOYS HIGH SCHOOL

CHEMISTRY

PAPER 2

MARKING SCHEME

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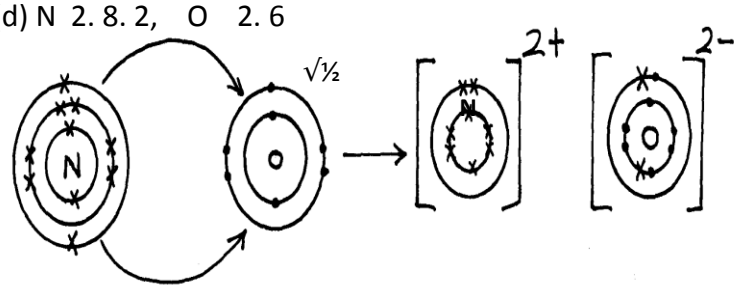
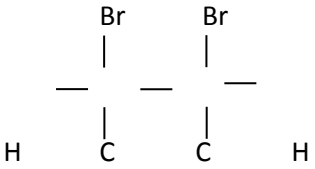
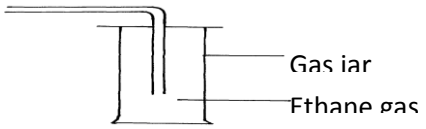
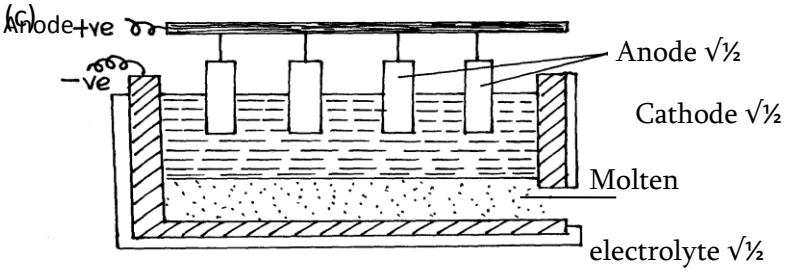
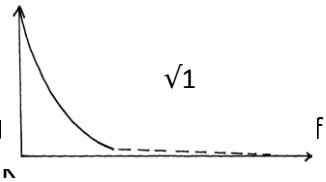
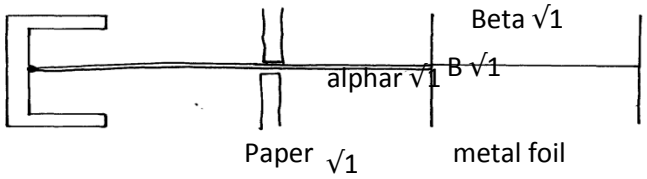
ALLIANCE BOYS HIGH SCHOOL KCSE TRIAL AND PRACTICE EXAM 2016

QUESTION PAPER 2

No	Answer (s)	marks	Remarks
1	(a) (i) 2.8.4 √1mk (ii)2. 8. 8 √1mk (b) N_2M_3 (c) **P** reacts faster with chlorine than **N**√1mk Because **P** is larger in size √1mk or its electrons are more shielded from the positive nucleus √1mk (d) N 2. 8. 2, O 2. 6  √½mk - correct number of outermost electrons √½mk - transfer of electrons √½mk - charges outermost electrons √½mk (e) Metal Q √½mk Reason: has largest atomic radius √½mk therefore loses electrons most readily√½mk metal **M**√½mk A transition metal √½mk (f) Physical: their freshly cut surface are shiny Chemical – displace it from cold water / tarnish by air (h) (i) $\frac{(75 \times 35 + 25 \times 37)}{100}$ √1mk = 35.5 √1mk (ii) Because existence of isotopes which differ in their relative abundance √½mk (g) Transition metal √1mk	1 1 2 1 2 ½ 2 ½ 2 2 1 2 1	Wrong substitution wrong answer
		16	
2	(a) 1- Sulphur / oxygen√½mk {if 1st is oxygen 2nd Sulphur) 2. Sulphur / oxygen √½mk 4- Oleum √½mk 6- Nitrogen √½mk 9 – Ammonium sulphate √½mk 8 – Nitrogen (IV) oxide √½mk (b) – Temperature 450- 500^{S}C√½mk - Pressure of about 2-3 atoms √½mk - Catalyst – Vanadium (V) oxide (V_2O_5) (c) 9:- $2NH_{3(g)} + H_2SO_{4(l)} \rightarrow (NH_4)_2SO_{4(s)}$ - Balanced with states √1mk - missing states √½mk - unbalanced 0mk 7:- $NH_{3(g)} + 5O_{2(g)} \xrightarrow[\text{Platinum catalyst}]{900^oC} 4NO_{(g)} + 6H_2O_{(l)}$ - As in (c) above √1mk - Conditions shown correctly √1mk	3 1½ 1 2	

	(d) Conc. H_2SO_4 acts as a oxidizing agent √½mk, but dil. H_2SO_4 is not instead reaction will proceed for a shorter time and stops √½mk due to the formation of an insoluble sulphate which stops further reaction √½mk	1½	
		9	
3	(a) (i) Dissolve excess Lead (II) oxide in warm HNO_3 in a Beaker √1mk - Filter off excess Lead (II) oxide √½mk - Heat the filtrate to evaporate most of the water √½mk - Cool the contents to let the crystals form √½mk - Dry the crystal between the filter papers √½mk (ii) $PbO_{(s)} + 2HNO_{3(aq)} \xrightarrow{heat} Pb(NO_3)_{2(aq)} + H_2O_{(l)}$ - Conditions as in (c) above (b) (i) Clear droplets √½mk on cooler part of test tube and brown gas observed √½mk - A colourless gas √½mk which relights a glowing splint also formed √½mk - The solid residue which is red when hot √½mk and turns to yellow on cooling √½mk is formed. (ii) $2Pb(NO_3)_{(s)} \rightarrow 2PbO_{(s)} + O_2 + 4NO_{2(g)}$ (c)(i) White ppt √½mk formed which is insoluble in excess. Explanation; OH^- in the alkali react with Pb^{2+} ions √½mk to form $Pb(OH)_S$ √½mk which is insoluble (ii) $Pb^{2+}_{(aq)} + 2OH^-_{(aq)} \rightarrow Pb(OH)_{2(s)}$ (d) $\frac{(0.1 \times 300)}{2}$ √½mk = 0.03mol √½mk Moles of PbI_2 formed = $\frac{(1 \times 0.03)}{2}$ √½mk = 0.015 PbI_2 = 207 + 254 √½mk = 461 mass = 0.015 x 461 = 6.915 √½mk	3 1 3 1 2 1 3	Accept any other method of drying Conditions as a(ii) above
		14	
4	(a) (i) 2,3 – dimethyl-pentane √1mk (ii) 2-methyl prop-1-ene or 2-methylpropene √1mk (b) (i) Cracking √1mk (ii) $C_2H_{4(g)} + Cl_{2(g)} \rightarrow C_2H_4Cl_2$ √1mk 1,2 – dichloro-ethane √1mk (c) (i) 1, 1, 2, 2 – tetrabromo ethane √1mk (ii)  (iii) Reagents – Hydrogen of nickel catalyst √½mk Type of reaction- Hydrogenation/addition √½mk (iv) Polymer is a big molecule formed when many small monomers combine √1mk (v) HCl √1mk (d) (i) I – Conc. sulphuric (VI) acid II- Ethanol √½mk		

	 (ii) $C_2H_5OH_{(l)} \xrightarrow{\text{Conc. } H_2SO_4} C_2H_{4(g)} + H_2O_{(l)}$ √1mk		
5	(a) Bauxite √½mk (b) – Iron (II) oxide - Silicon (IV) oxide (c)  (d) (i) Aluminium oxide is mixed with molten cryolite (Na_3AlF_6) √½mk (ii) Its boiling point is below 800°C √1mk (e) $Al^{3+}_{(aq)} + 3e^- \rightarrow Al_{(s)}$ √½mk (f) Q = It = 40,000 x 60 x 60 = 144,000,000C 3F produce 1mol. A1 3 x 96500C √1mk produce 1 mol Al. = 27g $\frac{144000000 \times 27}{1000 \times 3 \times 96500}$ √½mk = 13.43Kg √½mk (g) – Food packaging material - Head lamp reflectors -Overhead electrical cables -Alloys of al is used in construction of air crafts and ship bodies	½ 1 1 ½ 1 1 1 3 2	Any one Accept if polarities labeled Charges in ion should be correct Any 2
		11	
6	(a) (i) Large unstable nuclide splits √½mk up to give smaller √½mk more stable nuclides (ii) smaller and lighter nuclides combine √½mk to form heavy nuclide √½mk (b) (i) 8.1 from the graph (½ x 400 = 200) (ii)  (iii) The spont f the radioactive nuclides √1mk (iv) Reading mass after 16.2days from graph = 100g $^{100}/_{400} = ¼$ (c) (i)  (d) step I: Beta particles (β)√1mk	1 1 1 1 1	Accept if smaller is used alone Should not touch the axis at all Accept if symbol alone is stated

	Step II: gamma rays (γ) √1mk (ii) $^{210}_{}Pb \rightarrow {}^{4}_{}He + {}^{206}_{}Pb$ (e) = $(\frac{1}{2})^n$ $6.25 = (\frac{1}{2})^n \times 5$ $(\frac{1}{2})^n = \frac{6.25}{50} = 0.125$ $n = \frac{\log 0.125}{\log 0.5} = 3$ √½mk 45.3 ÷5 √½mk = 15days √½mk (f) – can cause cancer - Causes biological damage to human tissues ``-Cause somatic and genetic mutation in living things -Causes physiological and biological disorders in living cells	2 2	Any two
		16	