Name: ..... **Class:** ..... **Class .No.** .....

Date done: ..... **Student's sign**.....

Parents's sign:.....

Parent's ID no.....

Nyabururu Girls National School

FORM 4 CHEMISTRY APRIL 2016 ASSIGNMENT

Attempt all the questions in the spaces provided.

1. (a) Study part of the periodic table below. The letters do not represent the actual symbols. Use the letters to answer the questions that follow.

F				J	J	K	L	M
O	P			R				

(i) Which one element would form a divalent anion? (1mark)

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(ii) Write formula of the compound formed when P reacts with L (1mark)

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(iii) Monovalent cataion of X electronic configuration 2.8.8. Identify its position in the periodic table above. (1mark)

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(iv) Identify most reactive metallic element (1mark)

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(b) The table shows some properties and electron arrangements of common ions of elements represented by letters Q to X. Study the information provided then answer the questions that follow.

Element	Formula of ion	Ionic electron arrangement	Atomic Radius	Ionic Radius
Q	Q^-	2.8	0.072	0.136
R	R^+	2.8.8	0.231	0.133
S	S^{3+}	2.8	0.143	0.050
T	T^{2+}	2.8.8	0.133	0.074
U	U^{2+}	2.8	0.160	0.064
V	V^+	2.8	0.186	0.095
W	W^{3-}	2.8.8	0.110	0.190
X	X^-	2.8.8	0.099	0.181

(i) Give the atomic numbers of elements T and Q (2marks)

T.....

Q.....

(ii) Select two non-metals that belong to the same period (1mark)

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(iii) Which two elements would react violently with water to produce hydrogen? (2marks)

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(c) (i) Why is the atomic radius of R larger than its ionic radius? (2marks)

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(ii) Element S is suitable for making cooking pans. Explain (2 marks)

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2. (a) Give the names of the following compounds

(i) $CH_3CHCHCH_2CH_3$ (1mark)

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(ii) $CH_3 (CH_2)_2COOH$ (1mark)

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(b) Ethane and ethene react with Bromine according to the equations given below.

(i) $C_2H_{6\,(g)} + Br_{2\,(g)} \rightarrow C_2H_5Br_{(l)} + HBr_{(g)}$

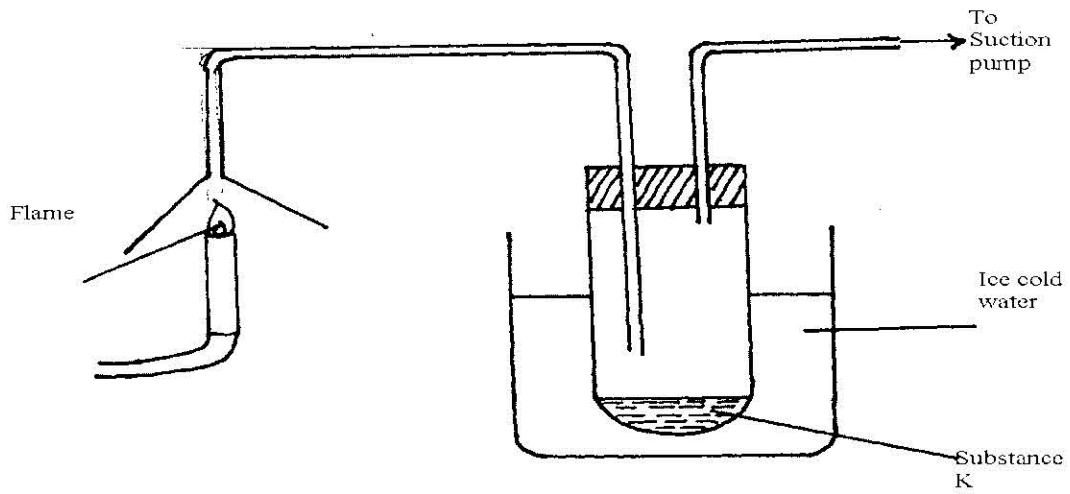
(ii) $C_2H_{4\,(g)} + Br_{2\,(g)} \rightarrow C_2H_4Br_{2(l)}$

Name the type of bromination reacting taking place in (i) and (ii) above (1mark)

(i) .....

(ii) .....

(c) Study the diagram below and answer the questions that follow.



(i) Write the equation for the complete combustion of butane

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(ii) The pH of substance K was found to be less than 7.

Explain the observation (2marks)

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(d) The polymerization of tetra fluorocarbon (C_2F_4) is similar to that of ethane (C_2H_4)

(i) What is meant by polymerization? (1mark)

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(ii) Draw the structural formula of the polymer obtained from monomer C_2H_4 (1mark)

(iii) State any two advantages of synthetic polymers over natural polymers. (2marks)

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(e) Propanol and ethanoic acid react according to the following equation

$$CH_3CH_2CH_2OH_{(aq)} + CH_3COOH_{(aq)} \rightleftharpoons R_{(aq)} + H_2O_{(l)}$$

Name

(i) Product R (1mark)

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(ii) The type of reaction that produce R (1mark)

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3. Study the standard electrode potential for the half-cells given below and answer the questions that follow. The letters do not represent the actual symbols of the elements

	E^{θ} - Volts
$N^{+}_{(aq)} + e^{-} \rightarrow N_{(s)}$	-2.92
$J^{+}_{(aq)} + e^{-} \rightarrow J_{(s)}$	+0.52
$K^{+}_{(aq)} + e^{-} \rightarrow \frac{1}{2} K_{2(g)}$	0.00
$\frac{1}{2} G_{2aq)} + e^{-} \rightarrow G^{-}_{(aq)}$	+1.36
$M^{2+}_{(aq)} + e^{-} \rightarrow M_{(s)}$	-0.44

(i) Identify the strongest oxidizing agent. Give a reason for your answer (1 ½ marks)

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(ii) Which two half-cells would produce the highest potential difference when combined?

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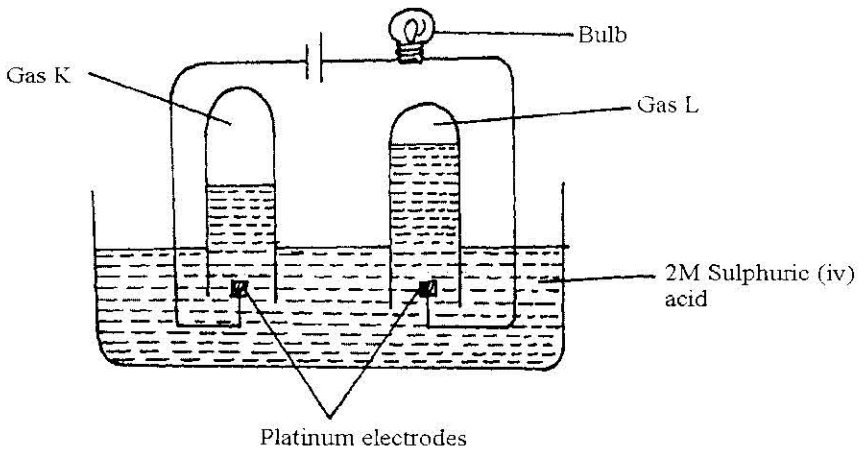
(1mark)

(iii) Explain whether the reaction represented below can take place (2marks)

$M_{(s)} + 2N^{+}_{(aq)} \rightarrow M^{2-}_{(aq)} + 2N_{(s)}$

(b) $100cm^3$ of 2M sulphuric (iv) acid was electrolyzed using the set-up represented diagram below.



(i) Write an equation for the reaction that produces gas L (1mark)

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(ii) Describe how gas K can be identified (1 ½ mks)

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(iii) Explain the differences in;

(I) volume of gases produced at electrodes (1mark)

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