MURANG`A EAST 2021 [K.C.S.E. TRIAL EXAMINATION]

233/2

CHEMISTRY PAPER 2

MARKING SCHEME

I) To absorb excess Carbon (IV) oxide or gas B

To absorb unreacted Carbon (IV) oxide any one

II) Carbon (IV) oxide / CO2

III) Any Carbonate/hydrogen Carbonate and acid

IV) (I) CO2 (g) + C (s) 2CO (g)

(II) KOH (aq) + CO2 (g) KHCO3 (aq)

v) Use of Ca(OH)2 (aq) : CO does not form white precipitate with Ca(OH)2 while CO2 does

CO burns with a blue flame while CO2 does not support combustion.

VI (i) Brown fumes produced

Black substance dissolves any one

ii) HNO3 (aq) + C(s) CO2 (g) + 4NO2 (g)

VII) Reducing agent in the extraction of metals from the ores

Used as fuels any one correct

Manufacture of hydrocarbons

2. a) 2.8.8, 2.8

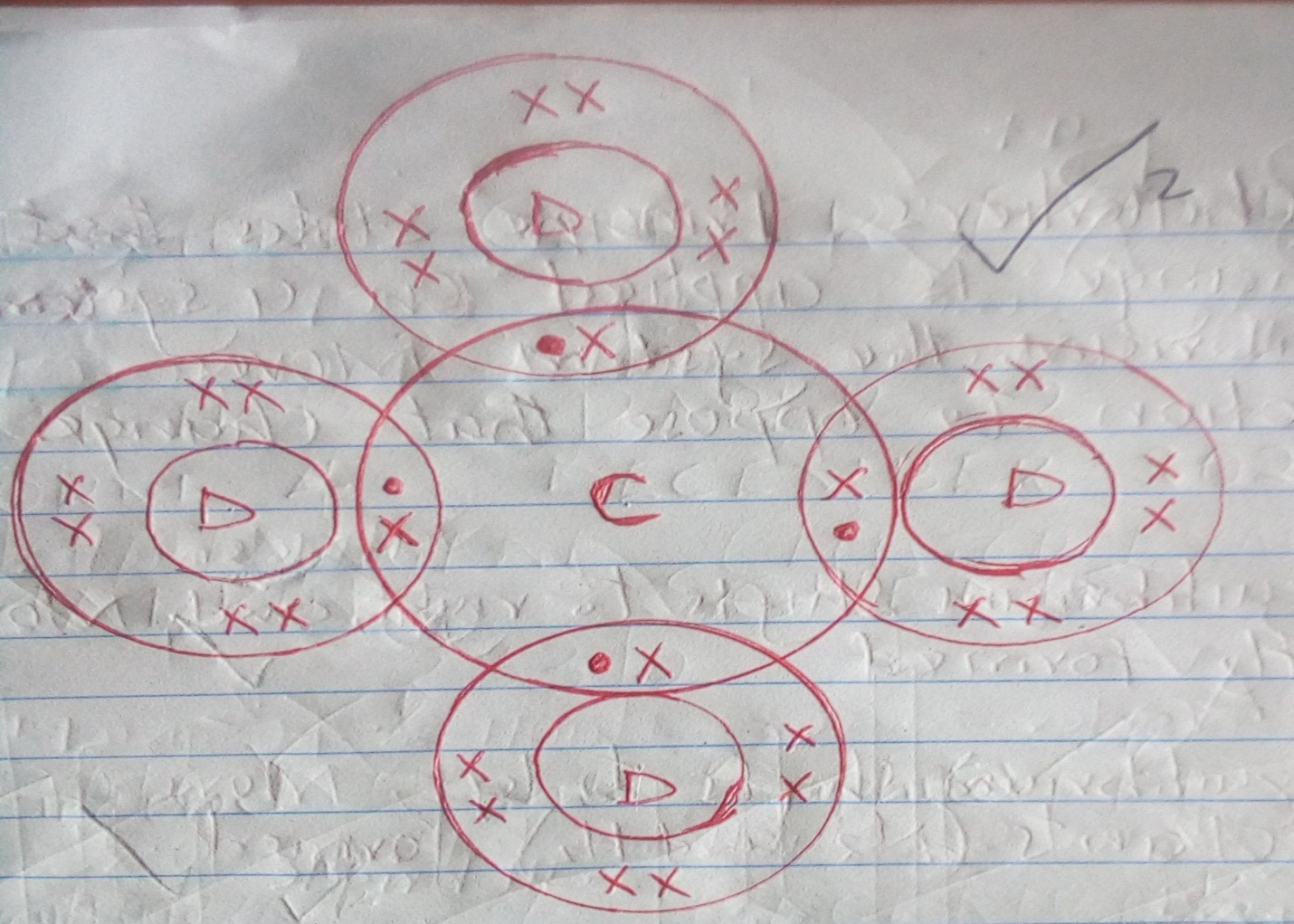
b) i) D

ii) A

iii) C

iv) Liquid The melting point is below 6610c

c) B is a better electric conductor than A, because it has more delocalized electrons than A.

d) 

e) B has a higher melting point than A because B has more delocalized electrons than A.

Therefore B has stronger metallic bond than A thus high melting point.

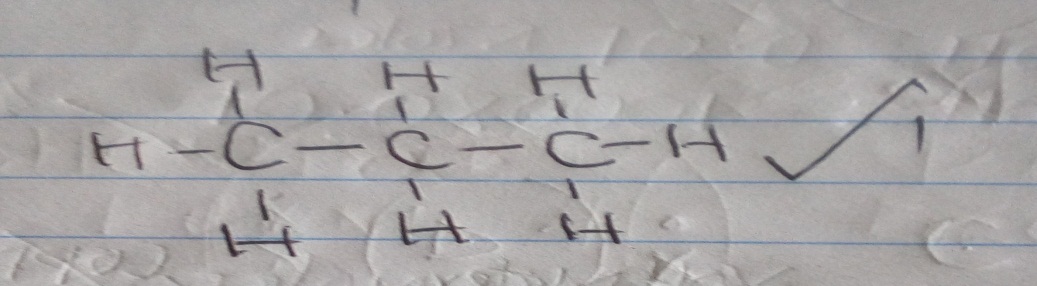
f) E(s) + H2O (g) EO(s) + H2 (g)

g. Add water to the mixture, Stir, E Chloride dissolves while Lead (II) Sulphate does not. Filter

and wash the residue with distilled water.

Evaporate the filtrate to obtain solid E Chloride

3. a) Propane



b) i) Reagent – Conc Sulphuric (VI) acid/Conc H2SO4

Condition – 160 – 1800c

ii) Reagent: Chlorine gas / C/ (g)

Condition: Ur light / sunlight

C (i) Carbon (IV) oxide

(ii) Hydrogen gas

(iii) Propan-1-oic acid

iv) 1-Bromopropane / 2 – Bromopropane

d) 2C3H7OH (l) + 9O2 (g) 6CO2 (g) + 8H2O (l)

e) Addition polymerization / polymerization

f) (3 x 12) + (1 x 6) = 42

42n = 21,000

N = 21,000 = 500 units

42

4.

i) a) Are substances which when molten or dissolved in water conduct an electric current and

decomposes.

b) i) Magnesium metal conducts since it contains free ions

c) i) P – PbSO4

Q – Mg (NO3)2

ii) Pb2+ (aq) +SO42- (aq) PbSO4 (s)

iii) Precipitation / Double decomposition

iv) Pb(NO3) (aq) + 2HCI (aq) PbCI2 (s) + 2HNO3 (aq)

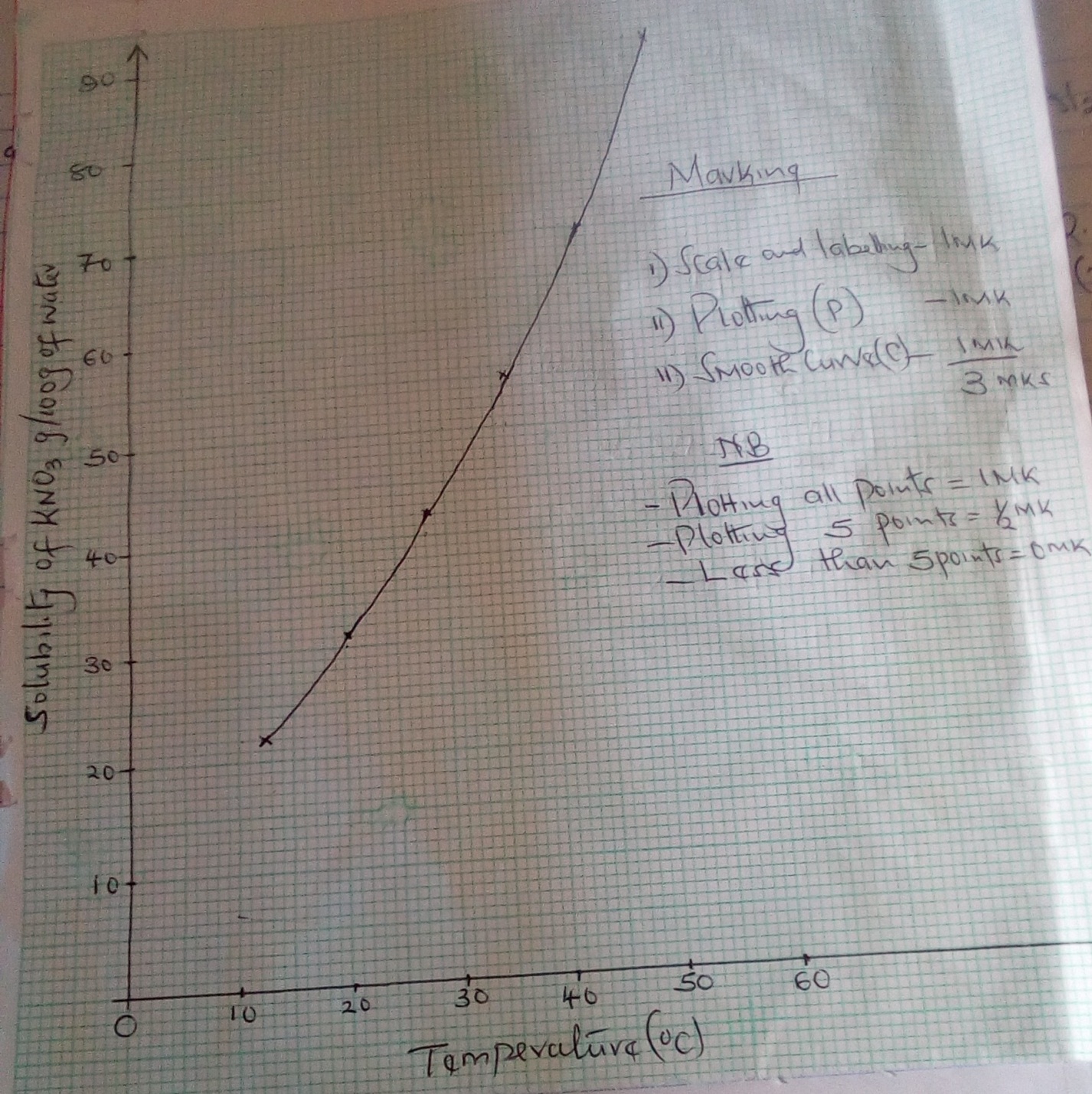
v) Heat/warm

vi) Effect of temperature on solubility

vii) It is used as anti-acid medicine because Mg (OH) 2 is a non-toxic base.

5. a) A solution which cannot dissolve any more solute at a particular temperature.

b (i)



ii) (i) 25g per 100g of water

(ii) Mass dissolved = 62g

Mass of undissolved = 80 – 62 = 18g

c) R.F.M of KNO3 =101

Moles of KNO3in 100g water = 25 = 0.2475 moles

101

Moles in 1000g of water = 0.2475 x 1000

100

= 2.475 moles

6. a) i) Al2O3(s) + 6HCI (aq) 2AlCI3 (aq) + 3 H2O (l)

(ii) R.F.M of Al 2O3

(27 x 2) + (16 x 3) = 102

Moles of Al2O3 = 153 = 1.5 moles

102

Moles of HCI = 1.5 x 6 = 9 moles

b) i) 2NaOH (aq) + H2SO4 (aq) Na2SO4 (aq) + 2H2O (l)

(ii) (I) Mole ratio of NaOH: H2SO4 = 2: 1

Moles of H2SO4 reacted = 20 x 0.25 = 0.005 moles

1000

Moles of NaOH reacted = 2 X 0.005 = 0.01moles

(II) If 50cm3 of NaOH = 0.01 moles

1000cm3 of NaOH = 1000 X 0.01

50

= 0.2 moles

(III) Molar mass of NaOH = 40 gmol-1

Mass of NaOH reacted = 40 x 0.2 = 8g

Mass of NaCI = 8.8 – 8.0 = 0.8g

% of NaCI = 0.8 x 100 = 9.090%

8.8

7. i) Galena

ii) Some of the Sulphide is converted into Lead Oxide and Sulphur (IV) oxide

iii) Carbon (II) oxide or carbon (IV) oxide

iv) PbO (l) + C (s) Pb (l) + CO (g)

v) To reduce unreacted Pbs to Pb

vi) Sulphur (IV) oxide – causes acid rain

Lead – causes lead poisoning

b) Hard water contains Mg2+ / Ca2+ ions. These ions form a protective layer of calcium Sulphate

or Magnesium Carbonate hence does not dissolve lead.

Soft water does not form these deposits.

c) Radioactive shielding

Lead acid accumulators

Making roof