FORM FOUR CLUSTER KCSE MODEL5

CHEMISTRY PAPER 2 ANSWERS

a) i) -Protons/+/positive√½

-Neutrons/-/ √½

ii) The number of positive charge equals number of negative charge √½ therefore the charge cancelsout in an atom.√½//No of protons is equal to No of electrons.

iii) The outer energy level is completely filled up with maximum number of electrons/it has

theinert structure.√1 //it is staple in dupletstate.

iv) B and C√1 Both have one electron in their outermost energy level/ both belong in the

samegroup.√1 acc D, Thium and sodium; are in same group//both loss one electron. 2

b) i) Forms a solid/freeze√1

/solidifies 1 ii) Neon √1

1 iii) Argon√1

1 Reason: Because the boiling point is almost the same or only 3 degrees

different.√1 1 N/B - Do not allow reference to mpt.

2. a) i) 2,3 – dimethyl/butane √1

1 ii) pent-2—ene √1

1 iii) hept-3-yne √1

1 b) i) Add acidified√1 potassium manganite

(vii) (4 2MnOK) or bromine water or potassium dichromate

(vi) to each of the compound in separate test –tubes.

-Propane does not decolourise√½bromine water and acidified potassium manganate

(VII) orange potassium dichromate (VI) remains orange.√½

2 -With propyne potassium permanganate, Bromine water are decolorized. Potassium dichromate

(VI) changes colour from orange to green ALT ii) Burn √1 each of the compounds separately. Propane burns with a blue non -luminous flame/ non-sooty flame. Propyne burns with yellow luminous sooty flame√1

c) i) Homologous series is a family of organic compound in which successive members differ in composition by a constant factor.

ii) -Have same general method of preparation.

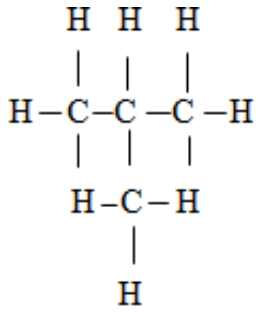
-Share some chemical properties. Although they vary in reactivity along the series.

-Physical properties of members vary gradually as members of carbon atoms per molecule increases.

iii) Increase in molecular mass of homologous leads to

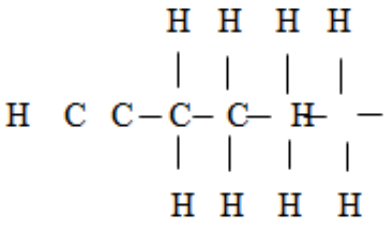
increase in strength of van der waals forces between molecules hence change from gas to liquid.√1

iv)



2, methylpropane√½

(2marks)



Butane √½

Iron (II) sulphide.

4. a) i) Fused calcium chloride/CaO//quick lime)any

correct√1 1 ii) To remove carbon (IV) oxide/ CO_2

iii) $4Fe_{(s)} + 3O_{2(g)} \rightarrow 2Fe_2O_{3(s)}$ balance + state symbols

1 balance no state symbol √½ not balanced 0

iv) Argon/ Helium/Neon/Krypton any
√1 ar / He /Ne / /Kr

v) Provide very low temperature so that the semen does not decompose/ is not

destroyed.√1; it offers an inert atmosphere for the semen 1

b) i) (I) Wrong method of collection√1

Reason Ammonia is less dense than air√½ should be collected by upward delivery

(II) Flask not slanting downwards.√1

Reason Water produced will run back and crack the

flask√½ Ammonia will dissolve in moistured reactants√½

ii) Calcium Oxide/CaO (not quick lime)√1

iii) $2NH_4Cl_{(s)} + Ca(OH)_{2(s)} \rightarrow 2NH_{3(g)} + 2H_2O + CaCl_{2(s)}$

Balanced +correct state symbols√1

Balanced and no state symbol √1

Not balanced 0

iv) Pass dry HCl√1 through Ammonia. Mixture forms white fumes.√½or

-Dip glass rod in concentrated HCl and put it into a gas jar of ammonia.√1 White fumes forms.

√½ (any correct statement) Acc Potassium.

5. a) i) H√- It has the largest atomic √1 radius. 2

-It most readily lose an electron/or its outermost electrons are furthest from the nucleus.

ii) B Or /N/Nitrogen √1 1

iii) D/Magnesium/Mg √1 1

iv) A√1- It has a smaller atomic radius therefore its outermost electrons is strongly held by the nucleus.√1

2 v) PH-7√1- Forms a neutral solution √1(any 1 explanation)

- Chlorides of A are neutral√1 2

-Chlorides of A forms neutral solution√1 1 vi) I√

b) i) Molten CaCl2 and MgCl2 have mobile ions √½ which conduct electricity√½ while ccl4 and s,cl4 have

a simple molecular structure √½ with a giant covalent structure hence no mobile ions to conduct electricity. √½ 2

ii) Neon is mono atomic gas with molar mass of 20√½ while Fluorine is diatomic gas with molar mass of 38.√½ thelower the molar mass the faster the diffusion.√1 2

7. a) i) A and D √1

1 Formula of their hydroxides show they have same number of electrons in outer most energy level.√ 1

ii) B, √½ D, √½ A, √½ C √½ (in that order otherwise penalize fully) 2

iii) Iron reacts with steam forming hydrogen gas√½ which is explosive√½ when mixed with air. 1

b) i) To provide uniform temperature.√1

ii) Strength of the acid is not the same √½. A is a strong acid, fully dissociated strong acid √½ and C is a weak

acid partially dissociated with few ion in solution. √1 2