ALLIANCE HIGH SCHOOL
FORM 3 CHEMISTRY
END OF TERM II EXAM 2015
TIME 2 HOURS

NAME_____ Adm No_____ Class _____

Answer all the question in the spaces provided.

1. When a hydrocarbon was burnt, the total mass of the products was found to be greater than original mass of hydrocarbon.
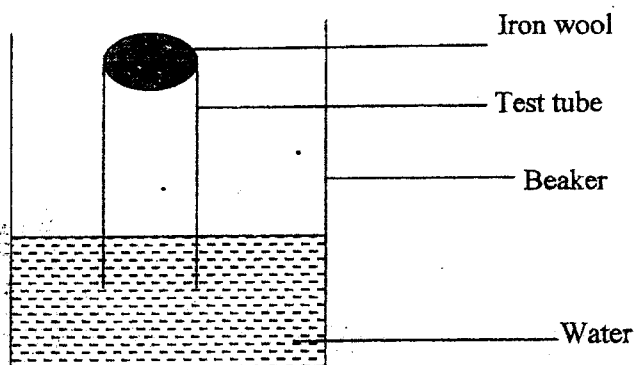   Explain   (2 mks)

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2.   The set up below was used to study some properties of air.

State and explain two observations that would be made at the end of the experiment.   (3 mks)

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3.   Charcoal is a fuel that is used for cooking, when it burns it forms two oxides
   a)   Name the two oxides.   (2 mks)
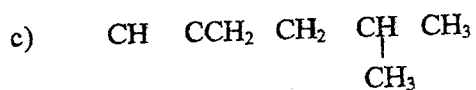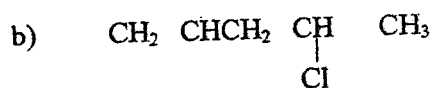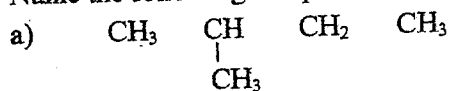
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   b)   State two uses of the oxides formed when charcoal is burnt in excess air.   (2 mks)

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4.   Name the following compounds

a) CH_3 CH CH_2 CH_3

                            |

                       CH_3

b) CH_2 $CHCH_2$ CH CH_3

                               |

                           Cl

c) CH CCH_2 CH_2 CH CH_3

                                   |

                                CH_3

(3 mks)

5.   Draw and name isomers of C_5H_{12}

6.   3.2g of XOH reacts completely with $20cm^3$ of 2M sulphuric (VI) acid solution($0 = 16$, $H=1$, $S = 32$)

a)   Write the chemical equation of the reaction.   (1 mk)

b)   Calculate the relative atomic mass of X in the formula of XOH.   (3 mks)

7.   The electron arrangement of ions A^{3+} and B^{2-} are 2,8 and 2, 8,8 respectively.

a)   Write the electron arrangement of the atoms.   (2 mks)

    A and B.

b)   Write the formula of the compound that would be formed between A and B.   (1 mk)

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8.   If it takes 30 seconds for $100cm^3$ of carbon (IV) oxide to diffuse through a porous plate, how long will it take $100cm^3$ of nitrogen (I V) oxide to diffuse across the same plate under similar conditions ? (C=12, N= 14, 0 = 16)   (3 mks)

9   A student set up the experiment below to collect gas L. The moist glass wool was heated before heating the Zinc powder.
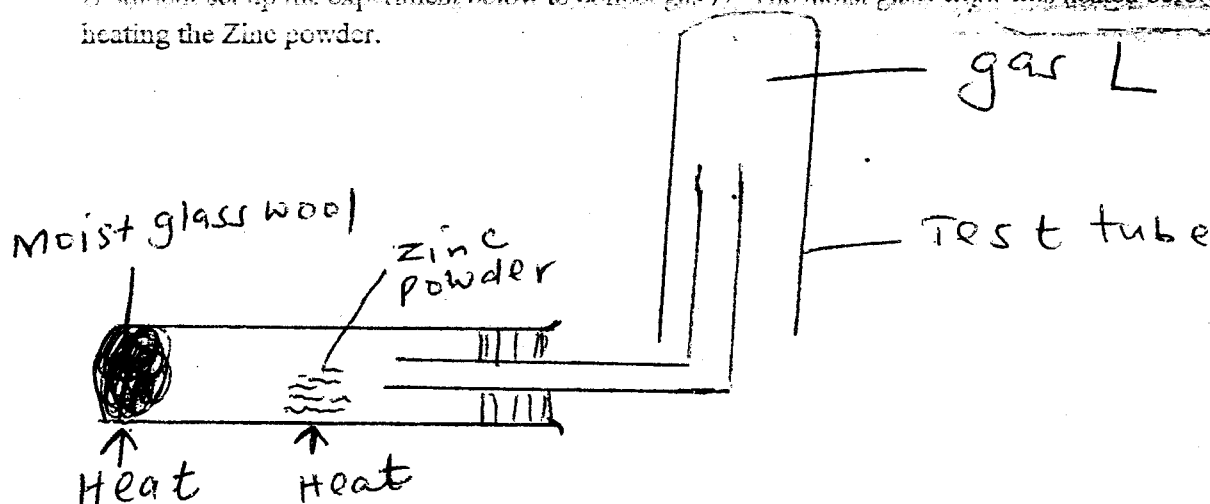
a)   Why is it necessary to heat the moist glass wool before heating Zinc powder.   (1 mk)

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b)   What was observed when zinc was heated and after the reaction.   (2 mks)

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c)   What property of gas L makes it possible to be collected as shown in the diagram.   (1 mk)

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10. Iron (III) Oxide was found to be contaminated with copper (II) Sulphate. (3 mks)
   i) Describe how a pure sample of Iron (III) Oxide can be obtained.

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11. When lead (II) nitrate was heated, one of the products was a brown gas. (1 mk)
   a) Write the equation of the reaction that occurs.

_____

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   b) If 290cm^3 of the brown gas was produced, calculate the mass of lead (II) nitrate that was
   heated gas volume. $= 24dm^3$, RFM of lead (II) nitrate $= 331$). (3 mks)

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                                                                    (3 mks)

12. Define the following process
   a)   Deliquescence

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   b)   Hygroscopy

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   c)   Neutralization

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                                                                    (2 mks)
13. Distinguish between the terms isomers and isotopes.

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14.   Chlorine water is a mixture of two acids (a) Name the two acids   (2 mks)

_____

_____

b)   State the observation made when moist red litmus is placed in chlorine water.   (1 mk)

_____

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c)   Write an equation when chlorine water is exposed to sunlight.   (1 mk)

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15.   Name the type of bond when a molecule water combines with hydrogen ion to form hydroxonium ion and draw the structure of hydroxonium ion   (3 mks)

16.   a)   State Charles Law.   (1 mk)

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b)   The Capacity of a balloon to hold a gas at $10^{o}C$ is $1dm^{3}$ before it bursts due to expansion. Show whether it will hold or not at $40^{o}C$ if pressure remains constant.   (3 mks)

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17. What is the name given to each of the following

    a) Ability for a metal to made into a wire.   (1 mk)

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    b) Minimum energy required for a chemical reaction to start.   (1 mk)

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18. Calculate the number of hydrogen ions in 20cm^3 of 0.5M sulphuric (VI) acid.
    (L = 6.0 X 10^{23})   (3 mks)

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19. In the laboratory preparation of carbon (IV) oxide, calcium carbonate and dilute suplhuric
    (VI) acid was used . The reaction stopped after a short time. Explain.   (2 mks)

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20. Sodium burns in air to form two oxides. Name the two oxides.   (2 mks)

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    b)   Write the equation when the oxides are dissolved in water.   (2 mks)

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21. Analysis of a compound showed that it had the following composition 69.42% carbon, 4.13%
    hydrogen and the rest oxygen.
    a)   Determine the empirical formula of the compound (C = 12, H = 1, O = 16)   (2 mks)

    b)   Given the molecular mass of the compounds 242. Determine its molecular formula. (2 mks)

22. a) Draw the structure and name the second member of the alkyne homologous series (2 mks)

b) Study the flow chart below and answer the questions that follow.
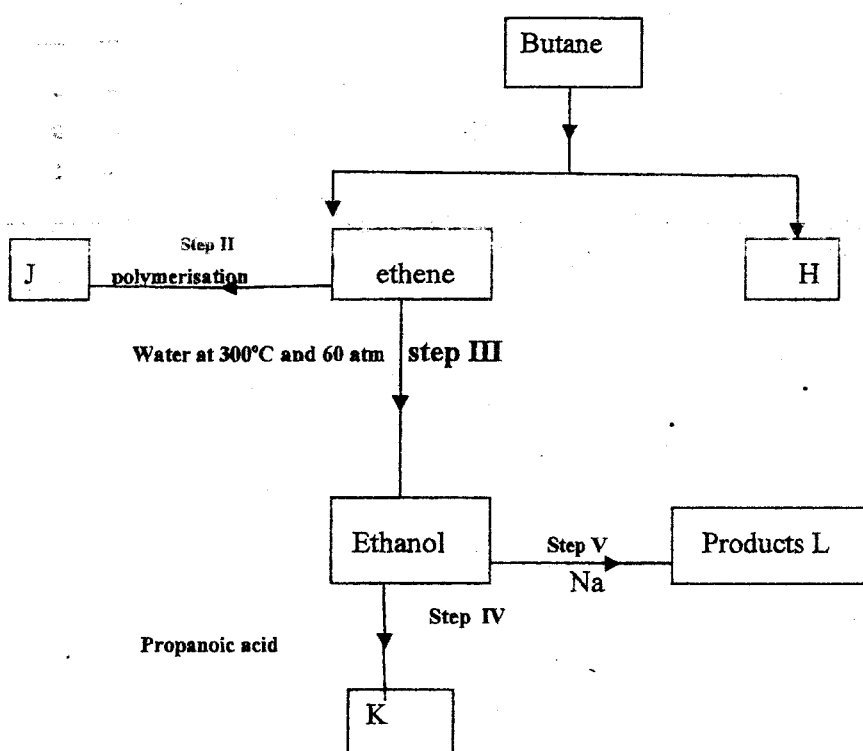
i) State the conditions for the reaction in Step I to Occur. (2 mks)

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_____

ii) Identify substance H. (1 mk)

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iii) Write the equation of reaction in step II (1 mk)

_____

_____

iv) Name the process that takes place in step III. (1 mk)

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v) Name and Draw the structural formula of substance K. (2 mks)

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vi) Write the equation of reaction that takes place in Step (V) (1 mk)

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vii) The relative molecular mass of J is 16800.Calcualte the number of monomers that makes J.
(2 mks)

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viii) Name two compound that can be reacted to produce substance H. (1 mk)

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