**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ADM. NO.\_\_\_\_\_\_\_\_\_STREAM:\_\_\_\_\_\_\_**

**CHEMISTRY FORM THREE**

**END OF TERM EXAM – TERM TWO 2015.**

* **Answer all the questions.**
1. Name the method you would use to separate the following mixtures:-
2. Calcium carbonate and ammonium chloride. (1 mark)
3. Oil and water (1 mark)
4. Kerosene and crude oil. (1 mark)
5. Methane diffuses through a porous material at the rate of 8 cm3s-1. Calculate the rate at which gas P with a molecular mass of 28.44 g will diffuse through the same material.

(C =12, H = 1) (3 marks)

1. (a) State two chemical tests for ammonia gas. (2 marks)

(b) Aqueous ammonia was added to a solution of copper (II) sulphate drop wise until in

 excess state the observations made when:-

1. A few drops of aqueous ammonia were added. (1 mark)
2. Excess aqueous ammonia was added. (1 mark)
3. State two observations made when a piece of sodium metal is dropped in to a beaker containing water. (2 marks)
4. A compound contains 50% element X and 41% of oxygen. Given that the relative formula mass of the compound is 78, determine its molecular formula. (X = 23, O = 16) (3 marks)
5. A form three student in NEP Girls’ High School reacted lead (II) sulphate with sulphuric (VI) acid in order to prepare lead (II) sulphate salt.
6. Explain why she was unable to prepare the lead (II) sulphate using the above reagents. (2 marks)
7. Give one other reagent she would use in place of lead (II) carbonate. (1 mark)
8. 18 cm3 of dilute sulphuric (VI) acid required 25 cm3 of 0.2 M sodium hydroxide solution for complete neutralization. Calculate the concentration of sulphuric acid in moles per litre.

 (3 marks)

1. Common drying agents such as concentrated sulphuric (VI) acid are not used to dry ammonia gas.
2. State and explain why concentrated sulphuric (VI) acid is not a suitable drying agent for ammonia gas. (2 marks)
3. Name a suitable drying agent for ammonia gas. (2 marks)
4. The atomic radius of sodium is 0.157 $nm$ and its ionic radius is 0.098$nm$. Explain why this is the case. (2 marks)
5. Element T has an atomic number of 13.
6. State the group and the period to which it belongs. (2 marks)
7. What will be the formula of its sulphate? (1 mark)
8. State two similarities between rusting and combustion. (2 marks)
9. A fixed mass of a gas occupies 200 cm3 at a temperature of 23°C and a pressure of 740 mmHg. Calculate the volume of the gas at -25°C and 780 mmHg pressure. (3 marks)
10. The table below shows some physical properties of some substances.

|  |  |  |  |
| --- | --- | --- | --- |
| **Substance** | **Melting** | **Boiling** | **Electrical Conductivity** |
| **Solid** | **Liquid** |
| P | 1080 | 2590 | Good | Good |
| Q | 800 | 1400 | Poor | Poor |
| S | -113.9 | -84.9 | Poor | Poor |
| T | 3555 | 4820 | Poor | Poor |

Which of the substances are likely to be:-

1. Metals \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1 mark)
2. Liquid at room temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(1 mark)
3. Gaseous at room temperature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(1 mark)
4. Zinc metal conducts electricity where as solid zinc chloride does not explain. (3 marks)
5. A mixture of calcium hydroxide and ammonium chloride was heated to produce gas P.
6. Identify gas P. (1 mark)
7. Write equation for the reaction that produces gas P. (1 mark)
8. Draw a diagram to show a method that can be used to collect gas P. (1 mark)
9. The set-up below was used to study the effect of carbon (II) oxide on hot copper (II) oxide.
10. What substance is that burning at Z? (1 mark)
11. Write an equation for the burning of substance in (a) above. (1 mark)
12. What is the purpose of liquid X? (1 mark)
13. Define the following terms as used in organic chemistry. (3 marks)
14. Homologous series
15. Isomerism
16. Cracking
17. A hydrocarbon has a molecular formula of C4H8.
18. Give the name of the Homologous series to which the hydrocarbon belongs. (1 mark)
19. Draw two positional isomers of the hydrocarbon above and name them. (2 marks)
20. State observations made when the first members of the above homologous series is passed over acidified potassium dichromate (VI). (1 mark)
21. In the preparation of nitrogen gas, ammonium nitrite decomposes to give nitrogen.
22. State the reason why the nitrogen obtained from the above reaction is less dense than the one prepared by fractional distillation of liquefied air. (1 mark)
23. Name two uses of nitrogen gas. (2 marks)
24. 40 cm3 of carbon (II) oxide reacted with 40 cm3 of oxygen to form carbon (IV) oxide. Determine the volume of the gas that was left unreacted. (3 marks)
25. When burning magnesium ribbon is lowered in to a gas of jar containing carbon (IV) oxide, it continues to burn.
26. Explain this observation. (2 marks)
27. Write an equation for the reaction. (1 mark)
28. Name two allotropes of sulphur. (2 marks)
29. Sulphur is extracted in large scale by Frasch process.
30. Name one impurity contained in sulphur. (1 mark)
31. State the roles of:- (2 marks)
32. Superheated water
33. Hot compressed air
34. Explain why?
35. Ethyne burns with sooty flame while ethane burns with pale blue flame. (2 marks)
36. Propene has higher solubility than propane. (2 marks)