**PRESIDENT’S OFFICE**

**REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT**

**LINDI REGION**

**FORM FOUR MONTHLY TEST – FEBRUARY 2019**

**CHEMISTRY**

**TIME: 2HRS  *FEB 2019,***

**INSTRUCTIONS**

1. This paper consist of TWO sections
2. Attempt all questions from all sections
3. All writings must be in black or blue pen, diagrams must be drawn by using sharp pensil
4. Show all necessary steps in your calculations
5. Write your name on every page of your answer sheet
6. Where necessary the following can be used

Atomic masses Ag = 108, Cu = 63.5, Zn = 65, Fe = 53, C = 12, O = 16, Na = 23, K = 39,

Ca = 40, H = 1

Avogadro’s constant = 6.02 x 1023

GMV = 22.4dm3

Faraday’s constant = 96,500 coulombs

1dm3 = 1000cm3 = 1litre

**This paper consists of 4 printed pages**

**SECTION A (30MARKS)**

1. The following are the multiple choice items, read the statement or question very carefully and then write the letter of the most correct answer from the given alternatives
2. Chlorine gas prepared in the laboratory by reacting concentrated hydrochloric acid with manganese dioxide usually contains hydrogen chloride as an impurity. This impurity may be removed by passing the gas through
3. Dilute sodium hydroxide solution
4. Dilute calcium hydroxide solution
5. Sodium hydrogen carbonate solution
6. Water
7. Which of the following pairs of substances are good drying agents
8. Concentrated sulphuric acid and sodium carbonate
9. Calcium oxide and potassium hydroxide
10. Anhydrous calcium chloride and calcium oxide
11. Concentrated sulphuric acid and concentrated nitric acid
12. A strong electrolyte differs from a weak electrolyte for the following reasons
13. A strong electrolyte conduct electricity in an aqueous solution or in the molten state while a weak electrolyte does not
14. A strong electrolyte loses electrons in aqueous solution while a weak electrolyte gains electrons
15. A strong electrolyte is completely ionized in aqueous solution while a weak electrolyte is only partially ionized in solution
16. A strong electrolyte is readily decomposed by electricity while weak electrolyte does not.
17. A substance that can be used to remove colouring matter from wood pulp in paper industry is
18. Wood charcoal
19. Animal charcoal
20. Lamp black
21. Bleaching agent
22. When an egg shell is dropped into dilute hydrochloric acid, effervescence occurs because
23. Carbon dioxide gas is evolved
24. Hydrogen sulphide gas is evolved
25. Oxygen gas is evolved
26. Hydrogen chloride gas is evolved.
27. The following are the matching items, match the items in lists A with the correct responses in list B by writing the letter of the correct response against the item number

|  |  |
| --- | --- |
| **LIST A** | **LIST B** |
| 1. It reduces acidified potassium dichromate IV solution to chromium III sulhate solution 2. Forms milky solution when passes bubbled over 3. Produces dense white fumes when passes over ammonia solution 4. Non poisonous gas which is usually used as refrigerant 5. Poisonous gas which is a product of incomplete combustion | 1. Carbon dioxide 2. Water 3. Hydrogen 4. Oxygen 5. Ammonia 6. Hydrogen chloride 7. Nitrogen 8. Sulphur dioxide 9. Nitrogen dioxide 10. Chlorine 11. Carbon monoxide |

**SECTION B**

1. a) Give reason as to why
2. diamond is used in making drilling machines and glass cutters
3. graphite is used in making lubricant
4. concentrated sulphuric acid is not used as drying agent in preparation of ammonia

b) Give reasons as to why diamond does not conduct electricity while graphite does.

1. a) define the following terms
2. electrolysis
3. cathode
4. anions

b) A current of 30 amperes was passed through two voltammeters X and Y containing

dilute solutions of

calcium chloride and copper II sulphate respectively for 1 hour.

1. How many faradays used in the experiment
2. Calculate the mass of copper deposited at the electrode in voltammeter Y if 32.67dm3 of hydrogen gas were liberated from the cathode in the other voltammeter.
3. Write a balanced chemical equation for the following chemical reactions
4. Nitrogen reacts with excess oxygen gas
5. Carbon dioxide is passed over sodium hydroxide solution
6. Production of ammonia in Haber process
7. production of nitrogen from ammonium nitrite
8. a) What is allotropy?

b) Name any three allotropes of sulphur

c) Draw the diagram showing how sulphur dioxide is prepared from sodium sulphite

1. write a balanced chemical equation for the reaction above
2. Can the gas be collected over water? give reason
3. With reason, name the method used to collect the gas
4. Study the chemical equation below for the production of ammonia and then answer the questions that follow; 3H2(g)  + N2(g)  ⇌ 2NH3(g)
5. Draw the energy profile diagram for the forward reaction in the equation above
6. Explain what will happen to the equilibrium position in the reaction above if
7. Temperature of the system is raised
8. Pressure is reduced
9. Ammonia is removed from the system
10. Calculate the volume of hydrogen gas required to react with nitrogen to produce 6.02x1023 molecules of ammonia