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**OPENER CAT, TERM II, 2015**

**FORM 4**

**CHEMISTRY**

**NAME:………………………………………….……... ADM.NO:………...CLASS:………...**

1. a) Define the following terms:-
2. Rate of reaction. (1mk)

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1. Activation energy. (1mk)

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1. Reversible reaction. (1mk)

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b) State two factors that affect the rate of reaction. (2mks)

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1. When zinc is burnt in oxygen, the compound formed reacts with both dilute hydrochloric acid and sodium hydroxide solution.
2. Write a chemical equation of the reaction of zinc and oxygen. (1mk)

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1. What property of the compound formed between zinc and oxygen makes it possible to react with both dilute hydrochloric acid and sodium hydroxide solution? (2mks)

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1. A balloon contains 80cm3 of gas at 30oC and 4 atmospheres. Calculate the volume of the balloon at 50oC and 2 atmospheres. (3mks)

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1. Sulphur (IV) oxide react with oxygen in the presence of a catalyst to form Sulphur (VI) oxide according to the equation.

2SO2 + O2 2SO3 + Heat

 (g) (g) (g)

1. (i) Explain why vanadium (V) oxide is used in preference to platinum as a catalyst. (2mks)

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(ii) State two optimum conditions for the production of Sulphur (IV) oxide. (2mks)

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1. Sulphur (VI) acid is a dibasic acid.
2. Explain the term dibasic acid. (1mk)

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1. Write an equation to show how sulphuric (VI) acid dissociate in water. (1mk)

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1. (a) State Le Chatelier’s principle. (1mk)

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(b) Name one factor which may disturb a chemical equilibrium. (1mk)

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(c) What is the use of a catalyst in a chemical reaction? (1mk)

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1. a) Excess dilute nitric acid reacts more rapidly with powdered marble chips than with lumps of marble chips. In both, the rate of reaction decrease with time. Explain these two observations. (3mks)

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b) The graph below shows the volume of carbon (IV) oxide produced and time taken when lump of marble chips are reacted with excess 2M nitric acid.

Volume of CO2(cm3) produced

Time taken

(i) Sketch on the same axis, the curve obtained when the same mass of marble powder and excess 2M nitric acid are reacted. (1mk)

(ii) Write the chemical equation for the reaction. (2mks)

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1. The production of ammonia through the Haber process involves the following reversible reaction.

N2 + 3H2 2NH3 ΔH = -ve

(g) (g) (g)

(a) What does ΔH = -ve indicate? (1mk)

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(b) Suggest two conditions that are likely to shift the equilibrium position from left to right. (2mks)

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(c) Name a catalyst used in the Haber process. (1mk)

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