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CB

THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
DIPLOMA IN SECONDARY EDUCATION EXAMINATION

732/1 **CHEMISTRY 1**

Time: 3 Hours **Monday, 18th May 2009 a.m.**

Instructions

1. This paper consists of sections A, B and C.
2. Answer all questions in section A and two (2) questions from each of sections B and C.
3. Section A carries 40 marks, section B carries 40 marks and section C carries 20 marks.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).
6. You may use the following constants:

   H = 1, C = 12, O = 16, Na = 23, S = 32, Ag = 108,
   1F = 96,500C.
   Molecular weight of H_2SO_4 is 98g/mol.

SECTION A (40 Marks)

Answer **all** the questions in this section.

1. Outline the four (4) steps you will follow in deducing the formular of copper (II) chloride.

2. (a) What is meant by order of reaction?

   (b) Derive an expression for the 1st order chemical reaction A → Products with initial concentration $[A]_o$. After time t its concentration becomes $[A]_t$.

3. (a) What is a molar solution?

   (b) Study the table below and answer the questions that follows:

Burette readings in (cm^3)	Titration			
	Pilot	1	2	3
Final reading (cm^3)	24.80	49.00	24.70	48.95
Initial reading (cm^3)	0.40	24.60	0.50	24.70
Titre Volume in (cm^3)	24.40	24.40	24.20	24.25

   (i) What is the volume of the acid used in the titration?

   (ii) If the molar concentration of the acid is 0.1M, calculate the concentration of the base solution during titration if the pipette used was $25cm^3$. Consider the molar ratio of the acid to base to be one to one (1:1).

4. (a) Why do atoms bond?

   (b) Write electronic configuration of the following:

   (i) $_{11}Na$

   (ii) $_{20}Ca$

   (iii) $_{17}Cl$

5. (a) What do you understand by the term fractional distillation?

   (b) Study Figure 1 and answer the questions which follow:

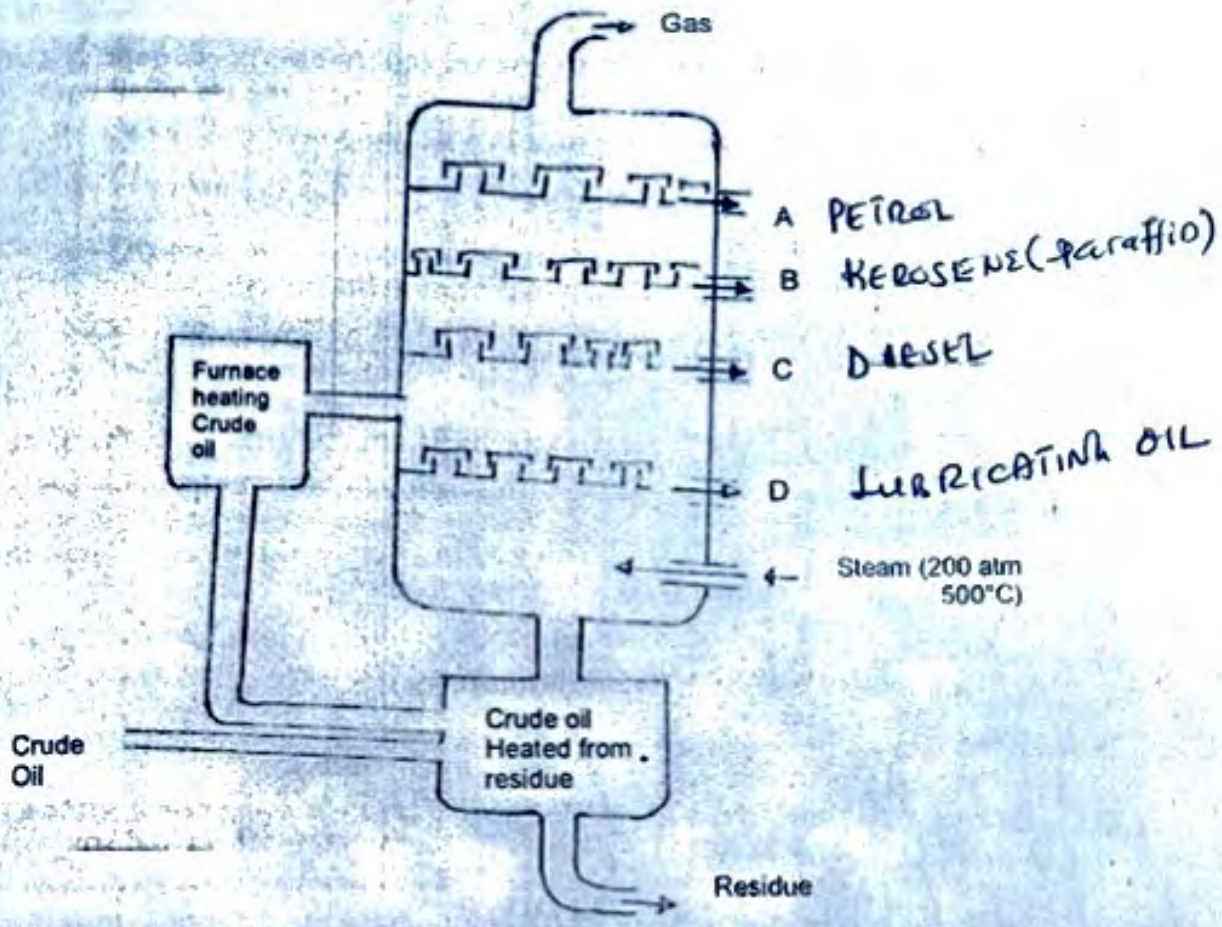

Figure: 1

(i) What is the name of the process above?

(ii) Mention products which are collected at A, B, C and D.

(iii) What property guides the collection of specific products above?

(iv) Mention conditions which should be fulfilled for the reaction to occur in the above process.

6. (a) What is a standard solution?

(b) Show clearly the calculations by which you may carry out to dilute 96% pure sample of commercial concentrated sulphuric acid of density 1.82g/cm^3 to get a 1 litre of 0.1M H_2SO_4 acid.

7. (a) State Faradays' first law of electrolysis.

(b) If 1.542g of silver is liberated when 0.65A electric current is passed through the electrolyte for 30 minutes, determine the chemical equivalent of silver.

8. (a) What is hydrogen bond?

(b) Describe briefly the position of hydrogen in the periodic table.

9. (a) What is Chemical Kinetics?

(b) Explain briefly three (3) factors which can affect the rate of a chemical reaction.

10. What quantity of electricity will be required to liberate 1kg of aluminium from a solution by electrolysis?

SECTION B (20 Marks)

Answer **two (2)** questions from this section.

11. Discuss the importance of lesson plan to administrators, teachers and students.

12. (a) Prepare a Table of Specification for testing ten (10) questions from five (5) topics of O-level Chemistry.

(b) Describe briefly three (3) advantages of using a Table of Specification.

13. The Management of Mtukwao Secondary School has appointed you to be the head of Chemistry Department. Prove to them that their appointment was not accidental by preparing rules which will ensure safety in the Chemistry laboratory.

14. The following are scores of form two students in one of the secondary schools.

88	54	60	56	68	52	88	94	72	80	86

Assume the national average is 50 and 11 is standard mark. Calculate the standardized score for each student.

SECTION C (20 Marks)

Answer **two (2)** questions from this section.

15. (a) What do you understand by the term curriculum materials?

(b) Explain clearly the types of curriculum materials. Give examples in each type.

16 Explain five (5) principles that can be used in the teaching and learning of Chemistry.

17. Suppose you are the only Chemistry teacher at your school. How will you advice the school administration on the qualities of a Chemistry laboratory?

18. Describe necessary procedures required to prepare a specified concentration of dilute mineral acid from a commercial concentrated acid in the laboratory.

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