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

732 CHEMISTRY TEACHING METHODS

Time: 3 Hours

2007 February, 15 Thursday p.m.

INSTRUCTIONS

1. This paper consists of sections A, B and C.
2. Answer all questions in sections A and B, and two (2) questions from section C.
3. Section A carries 36 marks, section B carries 40 marks and section C carries 24 marks.
4. Cellular phones are **not** allowed into the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

SECTION A (36 marks)

Answer all questions in this section.

1. Differentiate between Chemistry Syllabus and scheme of work.

2. Explain briefly the importance of using role play in teaching the following topic "The Kinetic Theory of Matter".

3. Give four (4) possible pieces of advice for the choice of a site for the construction of a Chemistry laboratory. .

4. State the types of emission from naturally occurring radioctive isotope.

5. Explain briefly the quality of a well constructed test.

6. Outline the objective to be attained after teaching the properties of salt at form II level.

7. Why is it important to write teacher's activities and student's activities in a lesson plan?

8. State four (4) characteristics of specific objectives when planning for a Chemistry lesson.

9. The following is one part of section A form II terminal examinations at Kaabure Secondary School June 2003.

(a) The process of changing a state of matter from gas to liquid is known as

(i) melting
(ii) condensing
(iii) boiling
(iv) subliming.

(b) The kinetic theory of matter explains two (2) fundamental concepts of

(i) atomic structure and periodic element
(ii) ions and molecules
(iii) solid and liquid
(iv) diffusion and brownian motion.

(c) In the ideal gas state the particles are completely.

(i) regularly arranged and rigidly held in position
(ii) more widely spaced
(iii) independent and are moving randomly
(iv) vibrate when temperature increases.

(d) Electro negativity increases as you move.

(i) down the group
(ii) across the period
(iii) decending in the group
(iv) accending in the group.

The students were required to circle the letter of the most correct answer. Suggest the possible answers for this section.

SECTION B (40 marks)
Answer all questions in this section.

10. Discuss the procedures, merits and demerits of discussion strategy in teaching Chemistry. Select an interesting topic to be used in your discussion.

11. The specification of concentrated nitric acid solution are as follows.
NITRIC ACID redistilled.
70% w/w HNO_3 in water.
Density is 1.490g /cm^3
Molecular weight of HNO_3 is 63.01g.
Maximum amounts presents:
Chloride Cl^- = 0.0005 % wt.
Sulphate SO_4^{2-} = 0.002 % wt.

(a) Calculate the molarity of the HNO_3 solutions

(b) Calculate the concentration of HNO_3 solution in g/dm^3

(c) How can you prepare 500cm^3 of a 0.5M aqueous solution from the concentrated HNO^3 Solution?

SECTION C (24 marks)
Answer two (2) questions from this section.

12. (a) What is inquiry approach?

(b) Discuss the characteristics and sequential steps in the inquiry approach. State the advantage and disadvantage of using this approach in teaching the Chemistry lesson.

13. (a) Discuss the bond formed between
(i) Nitrogen molecule (N_2).
(ii) Boron trichloride and ammonia.

(b) Explain the tools which you may use to evaluate the Chemistry subject at your school.

14. (a) Explain briefly the meaning of standard deviation and explain how it is used.

(b) Mitimingi gave his Chemistry students a midterm test and the scores were split into two (2) equal halves as shown in the table below.

Name of student	Sum of odd item	Sum of even item
Suma	51	45
Pili	48	51
Juma	46	56
John	44	40
Grace	42	50
Salum	38	44
Tatu	37	42
Nuru	36	41

(i) Use Spearman's formula to calculate the reliability coefficient of the full tes

$$r = 1 - \frac{6\Sigma D^2}{N\left(N^2 - 1\right)}.$$

(ii) Give the interpretation of the value of reliability coefficient obtained.

(c) Explain **four (4)** factors that can affect test reliability.

A good teacher should control and manage his classroom. Identify and discuss rules to be followed by your students in small group discussion during your lesson.