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

731 **PHYSICS TEACHING METHODS**

Time: 3 Hours ***Monday, May 08, 2006 a.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 in the examination room.
5. Write your ***Examination Number*** on every page of your answer booklet(s).

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This paper consists of 3 printed pages.

SECTION A (36 marks)

Answer **all** questions in this section.

1. Discuss briefly **five (5)** differences existing between transmittal and non-transmittal approaches of teaching.

2. What do you understand by the following terms?

   (a) Physics teacher's guide .

   (b) Physics student's book.

3. Outline the major problems likely to be experienced by a teacher without a physics lesson plan in the classroom.

4. What do you understand by the term "Physics laboratory management"?

5. Explain briefly the limitations of using simulation as a method of teaching Physics.

6. Define **four (4)** safety related items that a Physics laboratory must possess.

7. "The nature of the subject is one of the criteria used by teachers in the teaching and learning process". Substantiate.

8. Give **two (2)** reasons why the use of lesson notes is important in the teaching and learning physics concepts.

9. Explain the differences existing between experimentation and demonstration in the context of Physics Teaching Methods.

SECTION B (40 marks)

Answer **both** questions in this section.

10. Explain how you would arrange a field trip for form four students to study production of X-rays.

11. Discuss the role of a physics teacher in teaching the topic "magnetic properties" to form three students using the inquiry method.

SECTION C (24 marks)

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

12. The lecture method is unavoidable for a large group of students and acquisition of abstract knowledge/concepts. Discuss briefly its modification to suit the purpose.

13. Suppose you were appointed to head the Physics Department in a certain school, what would be your roles?

14. Prepare a marking scheme for the following question.

An electric train moves from rest with a uniform acceleration of 1.5 m/s^2 for the first 10 seconds. It continues with an acceleration of 0.5 m/s^2 for further 20 seconds and then moves with constant velocity for 90 seconds. It finally takes 30 seconds to decelerate uniformly to rest.

(a) Draw a graph of velocity against time for the journey.

(b) Deduce the total distance travelled from the graph or otherwise.

(c) What is the average speed of the train for the whole journey?

15. Prepare instructional materials to be followed by form four students when doing the experiment on how to determine acceleration due to gravity using simple pendulum.