**Course Code EDC 382. 2005.**

# UNIVERSITY OF SWAZILAND

## FACULTY OF EDUCATION

## DEPARTMENT OF CURRICULUM AND TEACHING.

FINAL EXAMINATION QUESTION PAPER, MAY 2005

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| TITLE OF PAPER | : | CURRICULUM STUDIES IN PHYSICS |
| COURSE CODE | : | EDC 382 |
| STUDENTS | : | B. ED. YEAR 111, PGCE |
| TIME | : | THREE (3) HOURS |
| INSTRUCTIONS | : | 1. ANSWER QUESTION ONE AND TWO OTHER QUESTIONS<br>2.ANSWER EACH QUESTION ON A FRESH PAGE.<br>3. QUESTIONS CARRY MARKS AS INDICATED. |

# Section A

**Compulsory question.**

Question 1

Explain how each of the following can be used in physics instruction?

a. Wait time [5]
b. Concept maps [5]
c. Lived experiences of children [5]
d. Advance organizer [5]
e. History of physics. [5]

# Section B

**Answer any two questions.**

**Question 2**

The Swaziland Ministry of Education is preparing to **adopt** the UK based International General Certificate of Secondary Education curriculum. Teaching will reflect a **Swazi context and relevance** of science. Some foreseen advantages of this are quality assurance and recognition in international centres of higher education.

a. Justify the adoption of a foreign curriculum. [5]
b. In your view, what constitutes a "**Swazi context and relevance**" in the teaching of Physics. [10]
c. Basing on the experience of the Swaziland Integrated Science Program, what precautions would you advise the Ministry of Education to take in developing new curriculum changes? [10]

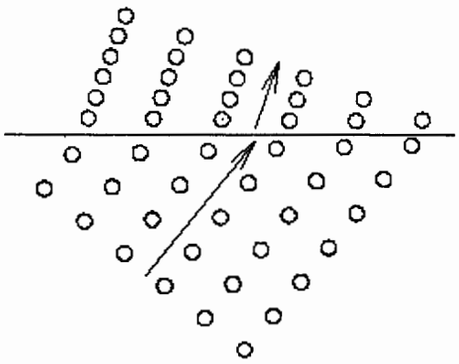
**Question 3**

Analogies are used by teachers and textbooks to simplify physics concepts. However analogies have often been the source of serious misconceptions which hinder later development of advanced concepts.

Douglas C. Giancoli's textbook, [Physics, 3rd ed., Prentice-Hall 1991, Fig 11-28] describes the "Soldier analogy to derive law of refraction for waves."

> *The soldiers are marching from firm ground (medium 1) into mud (medium 2) and hence are slowed down. The soldiers that reach the mud first are slowed down*

*first and the row bends as shown in Fig. 11-28a.*



a) What characterises a good analogy in teaching physics. [10]
b) Identify two weaknesses in the Giancoli analogy above. [5]
c) Design and describe an analogy that can be used to develop the concept of voltage, current and resistance in an electric circuit at Ordinary level. [10]

Question 4

Here is a list of objectives taken from different lesson plans in student teachers' files.

*At the end of the lesson, the pupils should be able to;*
*- design a flowchart*
*-show the areas which they are weak in*
*-demonstrate their appreciation of learning science*
*-use a sharp pencil*
*-solve a problem*

a) Rewrite each of these objectives correctly, using the three criteria for writing instructional objectives. State the domain and level of information processing for each of the above objectives. [15]

b) Construct a test item to assess the achievement of each objective. [10]