

UNIVERSITY OF SWAZILAND
FACULTY OF EDUCATION
MAIN EXAMINATION MAY 2010
B. Ed. III AND PGCE

Title of paper: Curriculum Studies: Chemistry

Course number: EDC 379

Time allowed: 3 hours

Instructions:

1. This paper contains FIVE questions
2. Question 1 is COMPULSORY. You may then choose ANY TWO questions from questions 2, 3, 4, 5.
3. Marks for each question are indicated at the end of the question.
4. Any piece of material or work which is not intended for marking purposes should be clearly **CROSSED OUT**
5. Ensure that responses to questions are **NUMBERED CORRECTLY**

Special Requirements

SGCSE Physical Science Syllabus 6888 (Chemistry section)

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR

SECTION A

QUESTION 1

This question is compulsory

- a) In a 1992 article Griffiths and Preston report to have identified the following misconceptions among Grade 12 (Form 5) learners:

The size of water molecules depend on its temperature

Temperature and pressure affect the shape of water molecules

Water molecules are flat

Water molecules from the solid phase (ice) are the heaviest

Water molecules from the gaseous phase (steam) are the lightest (page 616).

They also conclude that while “*these misconceptions were not particularly widespread ... they will be of interest to science teachers ...*” (623)

- i) What is meant by “misconceptions” in chemistry? [3]
- ii) Why might misconceptions, such as those given above, be of interest to chemistry teachers? [5]
- iii) What might be the source(s) of the misconceptions presented above? [7]
- iv) Describe how a teacher might assist learners modify the above ideas to appropriate ones. [15]
- b) Topic C12 Non-metals of the SGCSE syllabus (Chemistry section) comprises seven sub-topics. Propose a possible sequence for teaching these subtopics and justify your sequence. [10]

SECTION B

Answer any two questions

QUESTION 2

The search for explanations for the under representation of women in science, mathematics and engineering has prompted an ongoing inquiry into the processes which inhibit the development of interest, and other career aspirations in these fields among young girls, and of confidence in their ability to undertake them (Seymour, 1995:437).

- a) Why is the ‘under representation of women science fields’ a problem? [6]

- b) What explanations for the under representation women in science fields have been advanced? [12]
- c) Why might explanations for the under representation women in science fields be important for the chemistry teacher? [5]
- d) Outline **three** strategies a teacher may employ in a classroom to improve interest, career aspirations and confidence of girl learners in learning chemistry. [7]

QUESTION 3

Molymod models also known as Atomic- molecular or ball and stick models are a useful teaching resource in chemistry.

- a) What is meant by a teaching resource? [3]
- b) Identify **two** chemistry topics or sub-topics for which molymod models would be appropriate to use. [2]
- c) What might be the strengths of these models for these topics? [7]
- d) Identify specific concepts pupils could learn through the use of molymod models and describe the activities learners might engage in to learn the concepts. [10]
- e) What precautions might teachers need to take when using atomic and molecular models for teaching? [8]

QUESTION 4

The following factors maybe cited as constraining or enabling the effective implementation of science curricula in Swaziland.

Teachers
Science education policy
Culture
Resources
Relevance of the curriculum

Discuss how each of the factors may affect curriculum implementation. [30]

QUESTION 5

“Students learn a scientific vocabulary, but not the ideas behind the words” (Kind, 2004:35).

Discuss the above statement and show the importance of language and its use for effective learning in chemistry classrooms. [30]