

UNIVERSITY OF SWAZILAND
FACULTY OF EDUCATION
SUPPLEMENTARY EXAMINATION JULY 2014
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, and answer, ANY THREE 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**

QUESTION 1

This question is compulsory

- a) The following misconceptions have been reported in various literature sources:
1. *Water expands on heating due to the increase in size of the water molecules*
 2. *Water molecules are flat*
 3. *Molecules form from isolated atoms*
 4. *Ionic bonds are the transfer of electrons, rather than the attractions of the ions that result from the transfer of electrons. The reason electrons are transferred is to achieve a full shell.*
- i) Why might misconceptions, such as those given above, be of interest to chemistry teachers? [4]
- ii) What teaching practices might lead to misconceptions 3 and 4 listed above? Use examples to illustrate your response. [6]
- b) Topic C13. Organic Chemistry of the SGCSE syllabus (Chemistry section) comprises nine sub-topics. Propose a possible sequence for teaching these subtopics and justify your sequence. [15]
- [25 marks]

QUESTION 2

Pupils, parents and the organization of school activities are just some of the factors that create and/or sustain gender imbalances in Science studies and in Science careers.

- a) Show how each of these factors may be responsible for the said imbalances. [16]
- b) What might a Chemistry teacher do in his or her classrooms to minimise the impact of the influences of the factors listed above? [9]

QUESTION 3

Moly-mod models also known as atomic/molecular or ball and stick models are a useful teaching resource in Chemistry.

- a) Identify **three** Chemistry topics for which moly-mod models could be appropriate to use. [3]
- b) What might be the strengths of these models for the **topics**? [6]
- c) From the topics identified in (a) above, identify **four** specific concepts (at least one concept from each topic), that pupils could learn through the use of moly-mod models. [8]
- d) What precautions might you take when using atomic/molecular models for teaching? [8]

[25 marks]

QUESTION 4

- a) The following are some of the steps involved in the rigorous process of developing a relevant Science curriculum:

- *Identifying and formulating objectives,*
- *selecting content, and*
- *designing learning experiences*

Briefly describe what each of the three processes referred to above involve, indicating how each is related to the other. [12]

- b) Discuss how Chemistry curriculum relevance may be achieved during curriculum development and curriculum implementation. [13]

QUESTION 5

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

Discuss this statement and support your response by means of examples from Chemistry. [15]

- b) How might you ensure that pupils learn Chemistry ideas behind the scientific vocabulary? [10]
- [25 marks]

**SWAZILAND GENERAL CERTIFICATE OF SECONDARY
EDUCATION**

PHYSICAL SCIENCE SYLLABUS 6888

(CHEMISTRY SECTION)

SPECIAL REQUIREMENTS FOR

Curriculum Studies in Chemistry

EDC279 and EDC379

Main

and

Supplementary

Examinations

PLEASE DO NOT MARK THE SYLLABUS IN ANY WAY

TO BE COLLECTED WITH EXAMINATIONS SCRIPTS

SGCSE PHYSICAL SCIENCE Syllabus 6888
November 2013 and November 2014 Examinations

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NOTE

Changes have made to the Curriculum content. These include additions to and deletions of topics and concepts, and movement of topics and concepts between the Core Curriculum and the Extended Curriculum.

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