UNIVERSITY OF SWAZILAND
FACULTY OF EDUCATION
SUPPLEMENTARY EXAMINATION PAPER
JULY 2012
B. Ed. III AND PGCE

Title of paper : Curriculum Studies: Chemistry

Course number : EDC 379

Time allowed : 3 hours

Instructions :

1. This paper contains SIX questions
2. Question 1 is COMPULSORY. You may then choose ANY THREE questions from questions 2, 3, 4, 5, 6.
3. Each question is worth 25 marks
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 (6888) syllabus (Chemistry section)

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

QUESTION 1

a) Below is a list of sub-topics taken from the chemistry section of the SGSCE-Physical Science syllabus (attached).

Suggest an order for teaching these topics and sub-topics, giving reasons to support your sequence.

Molecules and covalent bonds
Periodic trends
Bonding and the structure of matter
Group properties
Ions and ionic bonds [15]

b) Computers can be a useful resource to chemistry teachers. Show the strengths of computers, and their accessories in facilitating teaching and learning of chemistry. [12]

QUESTION 2

a) Discuss how each of the following may help learners develop deeper understanding of chemistry concepts.

i) Concept mapping [5]
ii) Advance organisers [4]

b) What is the role of language in learning of concepts? [6]

c) Chemistry can be considered to comprise a body of knowledge as well as the language used to communicate that knowledge.
What are your views on this statement? [10]

QUESTION 3

a) The following alternative conceptions were identified by Taber (1994), through interviews involving Grade 12 students:

1. *The atomic electronic configuration determines the number of ionic bonds formed. For example, a sodium atom can only donate one electron, so it can form only one bond.*
2. *Bonds are only formed between atoms that donate/accept electrons. For example, in sodium chloride, the chloride is bonded to the specific sodium atom that donated an electron to it.*

i) What is your understanding of alternative conceptions in the context of chemistry teaching and learning? [2]

ii) Give an example of a topic to which these conceptions might belong? [1]

iii) Discuss how the teaching of concepts in the topic stated in (a)(ii) might contribute to the development of the identified misconceptions? [10]

b) The difficulties learners may experience in learning chemistry are sometimes attributed to the learning of chemistry at the **macroscopic, microscopic, and symbolic levels**. Discuss these three levels of chemical concepts and indicate how their learning may cause problems for learners. [12]

QUESTION 4

a) Poor management of school science departments may lead to ineffectiveness in chemistry teaching. Discuss the kinds of problems a chemistry teacher may face as a result of poor management of a science department. [15]

b) How, in your view, might these problems be minimised? [10]

QUESTION 5

a) What strategies might a chemistry teacher use to enhance the relevance of school science curricula during implementation? [10]

b) The following criteria are generally used in selecting content during curriculum development: scope; sequence; significance, and continuity.

Describe what each criterion entails. [15]

QUESTION 6

Teaching Practice is an integral component of teacher education. Discuss, **fully,** your views on the importance of engaging in the Teaching Practice exercise of part of your training to be a chemistry teacher. [25]