UNIVERSITY OF SWAZILAND

FACULTY OF EDUCATION

MAIN EXAMINATION PAPER MAY 2016

B. Ed. III AND PGCE

Title of paper : Curriculum Studies in Chemistry II

Course number: EDC379 B.Ed. III

CTE530 PGCE

Time allowed : 3 hours

Instructions :

1. This paper contains FIVE questions
2. Choose and answer ANY FOUR questions.
3. Marks for each question/ sub-question are indicated at the end of the question/ sub-question.
4. Any piece of material or work that is not intended for marking purposes should be clearly CROSSED OUT
5. Ensure that responses to questions are NUMBERED CORRECTLY

Special Requirements

None

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

QUESTION 1

a) Describe the role of resources in developing learner understanding of chemistry concepts. [10]

b) Suppose you intend your learners to be able to:

Describe macromolecules (polymers) in terms of large molecules built up from small units (monomers), different macromolecules having different units and/or linkage.

i) Describe **two** resources that might be appropriate for facilitating the attainment of the above learning outcome. Justify your choice of resources. [10]

ii) What precautions need to be considered when using the resources named in (b) (i) above? [5]

QUESTION 2

a) Chemistry content is generally *abstract* and its learning is *cumulative*.

Using examples from Chemistry, indicate the learning challenges learners may experience due these characteristics *(in italics)* of Chemistry content? [6]

b) The following information is extracted from a Physical Science Syllabus 688.

C7.0 Chemical reactions
All learners should be able to :

C7.1 Production of Energy
1. *describe the use of **hydrogen as a fuel** e.g. in rockets*
2. *describe the **production of energy from simple cells** i.e. two electrodes in an electrolyte*

C7.2 Energetics of a reaction
1. *describe, using examples, **exothermic** and **endothermic reactions***
2. *describe bond breaking as endothermic and bond formation as exothermic*
3. *perform an experiment to measure the **energy released in the combustion of fuels** (e.g. ethanol) and food (e.g. peanuts) with associated calculations to find the energy released per unit mass*

C7.3 Speed of reaction
1. *define **speed of reaction***
2. *define a **catalyst** as a substance that changes the speed of a chemical reaction without undergoing any chemical change*
3. *describe the of **effect concentration, particle size, catalyst and temperature on the speed of reactions***

Using only the words in **bold typeface** provide, and justify, a sequence for teaching the concepts. [NB: consider lesson planning in your suggested sequence]. [10]

c) *"...misconceptions built by learners are so resistant to instruction that a significant fraction of the population, even after 900 hours of laboratory and lectures, continues to hold them"* (Horn 2004:6).

Explain why misconceptions tend to be resistant to change, even with good instruction. [9]

QUESTION 3

Discuss language in the teaching and learning of school level Chemistry. [25]

QUESTION 4

a) Science is a compulsory school subject in Swaziland. This ensures that all pupils take science as a school subject, and thus, provides adequate representation of girls in school science subjects.

What strategies might a chemistry teacher employ during lessons to sustain adequate representation of women in scientific fields of study and employment? [10]

b) In the context of Chemistry, discuss the relationship between science and society. [15]

QUESTION 5

a) Discuss strategies for dealing with misconceptions in chemistry. [15]

b) When preparing a scheme of work a chemistry teacher is required to carry out a **syllabus analysis** and a **topic analysis**.

i) Describe each of the **bolded** terms, and show how they benefit the process of preparing a scheme of work. [6]

ii) Why is it necessary to specify the teaching and learning resources at the time of preparing a scheme of work? [4]