

UNIVERSITY OF SWAZILAND

FACULTY OF EDUCATION

MAIN EXAMINATION PAPER

B.Ed. II/PGCE

December 2015

Course Code/Title of paper: EDC279 Curriculum Studies: Chemistry
CTE529 Curriculum Studies in Chemistry I

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 and sub-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 NONE

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

Question 1

This question is compulsory

Activity 1 in the box below comes from the Science in Everyday Life Learners' Book 2 (2005, p 83-82). Study the activity and then answer the sub-questions below the box.

Activity 1 What chemical is it?

You will need: Solutions labelled A, B, C, D and E; red litmus paper, blue litmus paper and a watch glass.

In your exercise book, draw a similar table to the one below.

<i>Solution</i>	<i>Colour with red litmus paper</i>	<i>Colour with blue litmus paper</i>
<i>A</i>		
<i>B</i>		
<i>C</i>		
<i>D</i>		
<i>E</i>		

1. Put a small amount of Solution A into a watch glass.
2. Tear a small piece of red litmus paper and dip it into the solution.
3. Observe any colour change and record it in the second column in your table.
4. Tear a small piece of blue litmus paper and dip it into the solution.
5. Observe any colour change and record it in the second column in your table.
6. Wash your watch glass.
7. Repeat steps 1 to 6 above the remaining four solutions.
8. From your previous knowledge write the name of solutions that
a) change blue litmus paper red and keep red litmus paper red
b) change red litmus paper blue and keep blue litmus paper blue
c) keep red litmus paper red and blue litmus paper blue

Substances that turn blue litmus paper red are acidic in nature. They are called acids.
Substances that turn red litmus paper blue are basic in nature. They are called bases.
Bases that are solution in water are called alkalis. These are alkaline in nature.
Substances that do not change the colour of litmus paper are neutral.

- a) Suggest a topic and a sub-topic for a lesson involving Activity 1. [2]
- b) What type of practical work is Activity 1 representing? Justify your response. [4]
- c) State:
- i) the **processes of science** learners engage in while working on the activity.
Indicate the step where the process occurs, e.g. *Step 1- process*. [11]
- ii) Three examples of scientific knowledge learners may learn from engaging in Activity 1. [3]
- d) Why is it advisable for a Chemistry teacher to have well stated learning outcomes for Chemistry instructions? [5]

Question 2

- a) The aims of practical work in science can be organised into five broad aims.

Identify, and discuss, **three** of the five broad aims of practical of practical. Use examples from Chemistry to support your discussion. [12]

- b) Discuss how learning Chemistry at school contributes to **cognitive, affective** and **psychomotor** development of learners. Use examples from Chemistry to support your discussion. [13]

Question 3

Assessment of learning is an important step in the education of learners in science.

- a) What functions might assessment play in teaching and learning of Chemistry? [10]
b) Specification grids (tables) are critical steps when developing assessment instruments.

Discuss the importance of constructing a specification grid for Chemistry tests and examinations? [15]

Question 4

- a) Questions that can be used during the question and answer method of teaching in Chemistry can be classified in various ways. One way is to classify them as cognitive memory questions, convergent questions, divergent questions and evaluative questions.
- i) Describe the characteristics of the question and answer method of teaching? [5]
ii) Compare and contrast cognitive memory questions and convergent questions in the context of Chemistry. [8]
iii) How might a Chemistry teacher maximise learning when using the question and answer method of teaching? [5]
- b) A Chemistry teacher prepared the following learning outcomes for a lesson on "Heat transfer".

At the end of the lesson learners will

i) define conduction as a method of heat transfer in solids due to increased collision of particles as temperature increases

ii) conclude that metals are good conductors of heat while non-metals are bad conductors of heat after a practical activity.

iii) state at least 3 uses of good and bad conductors of heat.

Critique these three learning outcomes. [7]

Question 5

- a) Discuss the benefits of preparing schemes of work prior to embarking on Chemistry instruction. [12]
- b) i) Show, with justifications, why the lecture method might be suitable for teaching chemical bonding. [6]
- ii) What precautions might a Chemistry teacher take to ensure efficiency of the lecture method in teaching? [7]

THE END