UNIVERSITY OF SWAZILAND

FACULTY OF EDUCATION

MAIN EXAMINATION PAPER

DECEMBER 2017

B. Ed. II /PGCE

Course Code/Title of paper: CTE229/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. Each question carries 25 marks. 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

Suppose you wish to use the activity "***Practical 2***" below for a lesson involving practical work?

> ***Practical 2***
>
> *Chemicals:* *anhydrous calcium chloride, paraffin.*
> *Equipment:* *test tubes, nails, cotton wool, test tube rack.*
> *Procedure:* *(i)* *Place one clean, unused nail in a test tube containing tap water. Leave the test tube uncovered.*
> *(ii)* *Put some boiled tap water in a second test tube. Place one unused nail in the test tube and seal off the surface of the water by adding a layer of paraffin.*
> *(iii)* *Place one clean, new nail in a third dry test tube and plug with cotton wool. Place a layer of anhydrous calcium chloride on top of the cotton wool. Leave all the test tubes for three days. Make and record your own observations.*
> *Questions:* *1* *Why was the water boiled in test tube two?*
> *2* *What was the purpose of anhydrous calcium chloride in test tube three?*
> 3 Which nails became rusty? Give reasons.

a) What do you understand by **practical work** as a teaching method in chemistry? [2]

b) Suggest an aim for "***Practical 2***" [2]

c) Indicate **process(es) of science** which learners may engage in while performing "***Practical 2***" [10]

d) What scientific knowledge learners might learner learn from "***Practical 2***" [4]

e) What type of practical work is the activity in ***"Practical 2"***? Justify your response. [7]

QUESTION 2

a) Stating learning outcomes for a lesson is an important step when preparing for instruction in Chemistry. Justify the use of learning outcomes for chemistry lessons. [5]

b) A chemistry teacher prepared the following learning outcome for 70-minute lesson from the JC Science syllabus topic *Experimental Techniques*.

> *Learners will be able to:*
>
> 1. *Describe methods of separating mixtures by: decanting, filtration, evaporation, crystallisation, distillation, fractional distillation, separating funnel, sublimation, paper chromatography.*
> 2. *Describe he preparation and properties of crystals*

i) Critique the two outcomes given above. [10]

ii) Where necessary, reconstruct the outcomes for 70-minute lesson. [10]

QUESTION 3

Using **specific examples** from **Chemistry** discuss the use of the **question and answer** method in teaching chemistry. [25]

QUESTION 4

a) Appropriate assessment is critical is teaching and learning situations. Briefly discuss the importance of assessment in chemistry teaching and learning. [7]

b) How might a chemistry teacher ensure reliability during assessment? [8]

c) Construct a marking guide for the following test item. [10]

(a) (i) Draw the arrangements of the electrons in shells for an atom of carbon and an atom of oxygen. [4]

(ii) Draw a dot-cross diagram to show how bonds are formed between carbon and oxygen in carbon dioxide [3]

(iii) By referring to your diagram, explain why carbon is relatively unreactive. [3]

(b) Magnesium oxide has a similar relative formula mass to carbon dioxide, but magnesium oxide is a very high melting point solid. Explain this difference in terms of the structures of the two oxides. [5]

QUESTION 5

a) Show **three** ways that justify the inclusion of science in the school curriculum. [9]

b) Describe **three** functions of the National Science Teaching Panel. [9]

c) The information below is taken from the SGCSE Physical Science Syllabus.

Explain the significance of this information. [7]

SGCSE PHYSICAL SCIENCE Syllabus 6888
November 2017 and November 2018 Examinations

Specification Grid

The approximate weightings allocated to each of the Assessment Objectives in the assessment model are summarised in the table below.

Assessment Objectives	Paper 1 (marks)	Paper 2 (marks)	Papers 3 and 4 (marks)	Weighting of assessment objectives in overall qualification
A Knowledge with understanding	25-30	48-52	0	50 (not more than 25% recall)
B Handling information and solving problems	10-15	27-32	0	30
C Experimental skills and investigations	0	0	100%	20
Weighting of paper qualification	27%	53%	20%	

THE END & GOOD LUCK