UNIVERSITY OF FORT HARE

EDN 222

BACHELOR OF EDUCATION: YEAR 2

SUPPLEMENTARY EXAMINATIONS

2019

Subject: **NATURAL SCIENCE METHOD 1**

Time: 3 Hours
Marks: 100

This paper consists of 4 pages

Examiner 1: Dr Y. Nsubuga

Examiner 2: Mr C Thomas

Instructions:

1. Answer all 4 questions
2. Use the mark allocations as a guide when responding to questions

QUESTION 1 (25 MARKS)

1.1 Some of the factors that contribute to poor Science education at many of South Africa's schools include:

- Ineffective teaching methods
- Lack of resources
- Large classes

1.1.1 For each factor listed above, explain how it contributes to poor Science education. (12)
1.1.2 List THREE *other* factors that contribute to poor Science education at many of South Africa's schools. (3)

1.2 You have been posted to a rural school where most learners lack interest in studying Science subjects. Suggest with reasons THREE strategies you would use to motivate learners to study Science. (10)

……

QUESTION 2 (25 MARKS)

2.1 Your school has recently purchased a large poster of the Periodic Table. Briefly describe TWO ways in which you would use the Periodic Table in your Grade 8 Natural Sciences class. (4)

2.2 Provide the correct chemical formula for the following substances:
2.2.1 Nitric acid.
2.2.2 Ammonia gas.
2.2.3 Sodium Carbonate.
2.2.4 Aluminium hydroxide. (4)

2.3 Balance the following chemical equations:
2.3.1 $Fe + O2 \rightarrow Fe_2O_3$
2.3.2 $H_2O_2 \rightarrow O2 + H_2O$ (4)

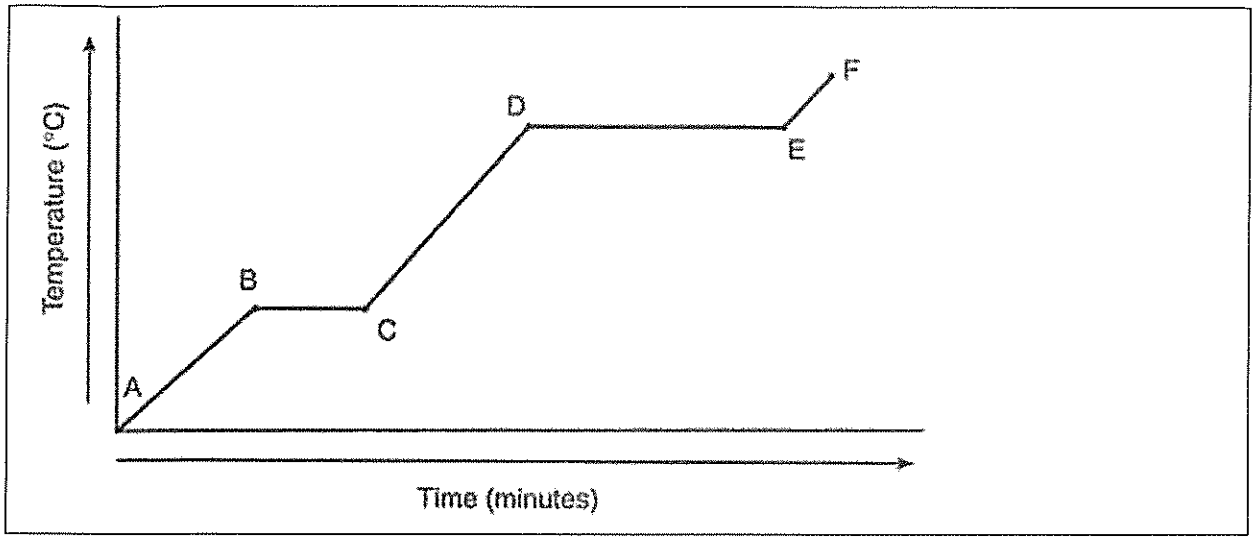
2.4 Simple diagrams are very useful in helping learners understand abstract science concepts. Draw simple diagram(s) you would use to illustrate differences between particles in a:
2.4.1 Particles in a solid and gas
2.4.2 Particles in a compound and mixture. (8)

2.5 Define the following Scientific terms:
2.5.1 Sublimation.
2.5.2 Atomic number.
2.5.3 Molecule.
2.5.4 Element.
2.5.5 Latent energy (5)

……

QUESTION 3 (25 MARKS)

3.1 A group of Grade 8 learners heated some ice in a beaker and recorded the temperature until the water formed boiled. They illustrated their results in the graph shown below.



3.1.1 Provide a suitable heading for the graph shown above. (2)
3.1.2 Identify the *process* that took place between B and C. (2)
3.1.3 Briefly explain why the temperature remains constant between D and E. (4)

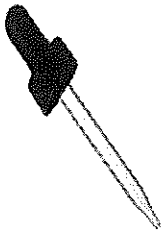
3.2 Briefly describe how you would demonstrate to your Grade 8 learners the presence of the following substances.
3.2.1 Carbon dioxide.
3.2.2 Oxygen. (5)

3.3 Provide the correct name for the laboratory apparatus shown in the diagrams below.

3.3.1

3.3.2

3.3.3



3. 4 Briefly explain the purpose of each the above apparatus during your Natural Science practicals. (6)

3.5 Rusting results in expensive damage to iron products. Briefly describe THREE methods that can be used to prevent iron products from rusting. (6)

……

Question 4: (25 Marks)

A Grade 9 teacher carried out a series of practical demonstrations to illustrate to her learners what happens when non-metals and metal react with oxygen. The results were recorded in the table below.

4.1 Study the table and fill in the missing information.

Non- metal / Metal	Physical properties	observations	Product formed
4.1.1	Yellow powder	Blue flame	4.1.2
Copper	Red brown solid	Green flame	4.1.3
Magnesium	Silver grey solid	4.1.4	4.1.5
Carbon	4.1.6	Glow red	Carbon dioxide

(6)

4.2 Briefly discuss THREE reasons why the burning non-metals in oxygen / air is important. (6)

4.3 Describe a practical demonstration you would carry out to teach your learners how to find out the pH of milk. (5)

4.4 Study the information below about an unknown element.

$$X_{35}^{17}$$

4.4.1 Draw a simple diagram you would use to illustrate the atomic structure of the element illustrated in the diagram. (6)

4.4.2 Suggest TWO properties of Element **X** according to its position in the Periodic Table. (2)

..... [100] .....