UNIVERSITY OF FORT HARE

MNS 311

Bachelor of Education

Final Examination paper

June 2023

Subject: Natural Sciences Method

Marks: 100

Internal Examiner

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Internal Moderator

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Duration: 3 hours

Instructions

- The assessment consists of 4 questions
- Answer ALL questions
- Provide suitable examples wherever needed to support your answers
- Duration of this assessment is three hours
- Use a calculator where necessary.
- Plagiarism is a serious offence.

Question 1 Inclusivity in natural sciences

Design a lesson plan for grade 9 natural sciences lesson. The lesson plan should show all the lesson plan components as according to your lesson plan design, components such as:

- Lesson outcomes. (5)
- Teaching methods/strategies. (3)
- Teaching and learning resources. (5)
- Teaching, Learning and Assessment activities etc. (12)

In your planning, how would you accommodate learners with hearing problems and recognise learner diversity. [25 marks]

Question 2 Inquiry-based teaching and learning approach.

An inquiry-based learning approach is more than the content versus process debate. This approach assists learners in developing new understandings and meanings. Write an essay in which you outline the characteristics of a classroom which uses inquiry processes.

Your essay should answer the following questions:

- What are the key features on an inquiry-based classrooms?
- How are the learners engaged in the inquiry process?
- What is the role by the teachers in an inquiry-based classroom?
- Discuss five benefits of inquiry-based learning in teaching science.
- Explain how you would implement inquiry-based approach when teaching the topic of acids and bases in grade 9 natural sciences.

[25 marks]

Question 3 Teaching methods

3.1 You want to teach a Periodic table to Grade 8 learners.

31.1 Write FIVE important content knowledge/ concepts you would like your learners to learn in this topic.

(5)

3.1.2 Taking into consideration the cognitive levels according to Bloom's taxonomy, write at least FIVE questions of an assessment task that can be given to learners in this topic.

(10)

3.1.3 Identify ONE teaching resource that can be used when teaching Periodic table.

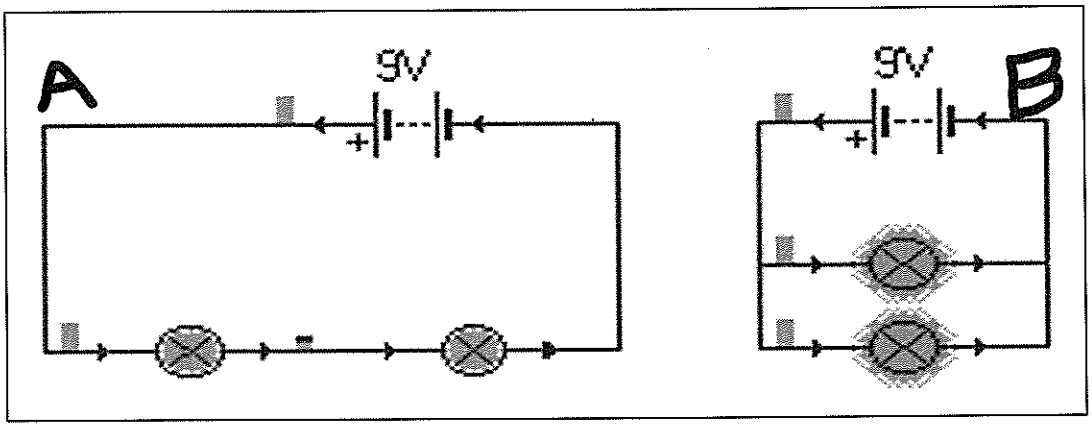
(1)

3.2 Specific aim 3 in natural sciences states that learners should understand the uses of natural sciences and indigenous knowledge in society and the environment. Provide and discuss THREE examples to show how you would teach the topic of separation of mixtures in grade 9 natural sciences. (9)

[25 marks]

Question 4 Energy and change

3.5 Grade 9 learners conducted an experiment to determine the relationship between voltage and current as shown in the sketch below.



4.1 For an experiment to be fair, there are variables that must be controlled. Identify TWO variables that must be controlled in this experiment. (2)

4.2Indicate the dependent and independent variables. (2)

4.3 Complete the table below by differentiating the properties of the two connections.

	Series connection	Parallel connection
Voltage	4.3.1_____ (2)	4.3.2 _____ (2)
Current	4.3.3 _____(2)	4.3.4 _____(2)
Resistance	4.3.5 _____(2)	4.3.6 _____(2)

4.4 Given the formula I=V/R, calculate the current passing in circuit A. Assume that each bulb has a resistance of 1Ω. (3)

4.5 Identify the resource that the learners used to measure:

4.5.1 Current (1)

4.5.2 Voltage. (1)

4.6 How is each resource mentioned in 4.5 connected in a circuit? (2)

4.7 Conclude the experiment by explaining the relationship between voltage and current? (2)

[25 marks]

[TOTAL: 100 MARKS]