UNIVERSITY OF JOHANNESBURG

UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION
DECEMBER SUPPLEMENTARY
EXAMINATION 2016

PROGRAMME:	PGCE and B Ed (SENIOR PHASE)
MODULE:	TEACHING METHODOLOGY & PRACTICUM: SP MATHEMATICS SUBJECT METHODOLOGY: MATHEMATICS SUBJECT METHODOLOGY: MATHEMATICS (PGCE)
CODE:	MPSMAY1 LMW4B10
TIME:	3 hours
MARKS:	150
EXAMINER:	Mrs K Ramatlapana
MODERATOR:	Dr A Essien (WITS)

(This paper consists of **four (4)** pages)

INSTRUCTIONS

Read the following instructions carefully before answering the questions:

1. This question paper consists of **eight (8)** questions.
2. Answer **ALL** the questions.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Write legibly and present your work neatly.
5. Read the questions carefully before answering them.
6. Questions are to be answered in English.

QUESTION 1

1.1 GeoGebra is a very versatile tool for mathematics education in secondary schools. Identify four ways in which GeoGebra might be used when teaching mathematics. (4)

1.2 Discuss at most five (5) challenges that mathematics teachers are faced with in their endeavor to integrate technology in the teaching and learning of mathematics. (10)

(14)

QUESTION 2

2.1 Select and clearly state three (3) "big ideas" relating to **Data Handling** as prescribed in the CAPS Senior Phase (SP) document. (3)

2.2 Suggest a possible teaching strategy for simplifying **each** "big idea" in 2.1 to SP learners. (6)

2.3 Identify a common misconception related to each "big idea". (3)

2.4 Provide a possible teaching strategy to address this specific misconception related to each "big idea". (9)

2.5 Design an assessment task or activity to demonstrate learners' understanding of each "big idea". (15)

2.6 Discuss three (3) ways in which the average or arithmetic mean of a distribution can be interpreted. (9)

(45)

QUESTION 3

3.1 A curriculum can be interpreted as 'that which is planned and guided'. Give three (3) claims that Mathematics SP CAPS make about each of the following aspects:

3.1.1 Learning and the learner (3)

3.1.2 Teaching and the teacher (3)

3.2 Critically discuss four (4) aspects of the curriculum. (12)

(18)

QUESTION 4

A **lesson plan** is a teacher's detailed description of the course of instruction, or 'learning trajectory' for a **lesson**. Briefly discuss the following:

4.1 The six (6) principles of a lesson plan. (12)

4.2 The three (3) phases of a lesson plan. (9)

(21)

QUESTION 5

5.1 Identify five (5) examples of teaching models in a behaviourist Mathematics environment. (5)

5.2 Briefly discuss four (4) approaches to teaching mathematics. (12)

(17)

QUESTION 6

Mathematics has a vocabulary of symbols or words language, has grammar consisting of rules of how these symbols which have a range of meanings that can be communicated with these symbols. Briefly discuss the three (3) kinds of vocabulary in mathematics textbooks. (6)

(6)

QUESTION 7

7.1 Reflect on your Work Integrated Teaching experience this year. Identify any four (4) aspects of an effective mathematics teacher. (4)

7.2 During your Teaching Practicum you asked Grade 8 learners to calculate:

–6 + (-10) =

Look at two learners' answers to the questions

Learner A: **– 6 + (-10) = -4**

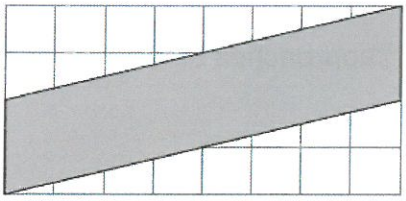
Learner B: **– 6 + (-10) = 16**

Explain the possible reasoning that they might have used to obtain their answers. (4)

7.3 Assessment of performance is an important part of learning mathematics. Curriculum and Assessment Policy Statements for Mathematics (CAPS) uses four (4) cognitive levels to guide all assessment tasks. Identify and provide the cognitive demands of these levels. (8)

7.4 The following question was given to a Grade 10 class.

What is the area of the shaded figure?



□ = 1 square unit

Categorize with reasons the mathematical task above according to the Stein & Smith (1998) levels of cognitive demand. (3)

(19)

QUESTION 8

8.1 Analyze the following graph and explain why it is misleading. (4)

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