UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION
JUNE EXAMINATION 2017

PROGRAMME:	B Ed
MODULE:	Introduction to Mathematics for Intermediate Phase 1A Mathematics for the Foundation Phase 1A
CODE:	MATINA 1& MFP10A1
TIME:	2 hours
MARKS:	150
EXAMINER:	Mr. G. Cheva and Prof. K. Luneta (Department of Childhood Education, UJ)
MODERATOR:	Prof C. Long (Department of Childhood Education, UJ)

(This paper consists of 4 pages)

INSTRUCTIONS

Read the following instructions carefully before answering the questions.

1. This paper has 9 questions
2. Answer all the questions without using a calculator

QUESTION 1

[10]

1.1 Explain how children who have a well-developed number sense work with numbers when solving problems (3)

1.2 How does the expression "number sense" differ from the expression "number system"? (3)

QUESTION 2

[10]

2.1 Describe the Egyptian number system. Give examples of the symbols, the number base, and any other important features. (2)

2.2 Represent the numbers: 2, 5, 10, 13 and 21 in the Egyptian number system. (5)

2.3 Explain how the Egyptian and the Mayan system differ in terms of symbols and number base. (3)

QUESTION 3

[6]

3.1 Describe the process you would use to teach number bonds to a Grade 3 or a Grade 6 class. (3)

3.2 Show how you would teach your class to mentally solve 43 x 5 (3)

QUESTION 4

[32]

4.1 Explain the term place value? (2)

4.2 Write the number 7.91 in a place value chart. (4)

4.3 Write the following numbers in expanded form notation

4.3.1 32 (2)

4.3.2 2365.11 (2)

4.3.3 2.0012 (3)

4.4 How many significant figures do the following numbers have?

4.4.1 863.5100 (1)

4.4.2 13.625 (1)

4.4.3 0.0015 (3)

4.5 Write the following numbers in standard form correct to the specified significant figures.

4.5.1 32.3652 to 3 significant figures. (3)

4.5.2 0.0000012 to 2 significant figures (3)

4.6 The following questions are on number bonds.

4.6.1 Explain what you understand by number bonds? (3)

4.6.2 Give 2 examples of number bonds (2)

4.7 The following questions are on numbers and numeration.

4.7.1 What is the difference between a digit and a numeral? (2)

4.7.2 Provide an example of each. (2)

4.8 Calculate using long multiplication to find the answer to: 16541 x 327 (4)

4.9 Calculate using long division to find the answer to: 1568 ÷ 56 (5)

QUESTION 5

[18]

5.1 Explain the difference between an arithmetic sequence and a geometric sequence, using two examples for each case. (6)

5.2 Write down in set form the numbers that represent these special number patterns

5.2.1 Triangular numbers (1)

5.2.2 Square numbers (2)

5.2.3 Fibonacci numbers (2)

5.3 Fill in the missing numbers in the patterns below

5.3.1 $\frac{1}{4}$ a $\frac{4}{36}$ b (2)

5.3.2 32 24 c d 8 (2)

5.3.3 4 e $\frac{1}{4}$ f $\frac{1}{64}$ (2)

QUESTION 6

[12]

6.1 There are three sets of numbers.

Set A = {2, 3, 4, 5},

Set B = {4, 5, 6, 7}

Set C = {10, 11, 12}

Describe the following terms, using examples from Set A, Set B and Set C.

6.1.1 Intersection set (3)

6.1 2 Subset (3)

6.1.3 Disjoint sets (3)

6.1 4 Power set (3)

QUESTION 7 **[10]**

7.1 Explain the statement "Real numbers are ordered" (2)

7.2 Provide the sets described below

7.2.1 The set of even numbers (2)

7.2.2 The set of multiples of 7. (2)

7.2.3 List the first 5 prime numbers (2)

7.2.4 The set of all the factors of 36 (2)

QUESTION 8

[18]

8.1 Given the universal set Q= {Positive integers less than 12}. Draw a Venn diagram that represents the following information.

8.1.1 A = {Factors of 12} (2)

8.1.2 B = {Odd numbers less than 13} (3)

8.1.3 C = {Numbers divisible by 4 less than13} (3)

8.2 Find the set representation of:

8.2.1 $A \cap B \cap C$ (2)

8.2.2 $(A \cup B' \cup C) \cap (A \cap B)$ (3)

8.2.3 $(A \cup C)' \cap (B \cup C)'$ (3)

QUESTION 9 **[15]**

9.1 Convert the following numbers from base 10 to the bases shown.

9.1.1 36 to base 2 (2)

9.1.2 121 to base 9 (2)

9.2 Calculate the following problems

9.2.1 $1010111_2 - 11101_2$ (2)

9.2.2 $324_5 - 142_5$ (2)

9.2.3 $31010001_2 + 111011_2$ (2)

9.2.4 $21_8 + 1111_2 + 221_4 + 113_7$ in base 10 (5)

TOTAL: 120