UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION

AEGROTAT AND SUPPLEMENTARY EXAMINATION

JULY 2014

PROGRAMME: FOUNDATION PHASE

MODULE: MATHEMATICS FOR FOUNDATION PHASE 1A

CODE: **MFP10A1, MNS1A10 and MFP1A10**

TIME: 2 HOURS 30 MINUTES

MARKS: **100**

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                MRS N. MBUSI

MODERATOR: DR. K. LUNETA

(This paper consists of 4 pages)

INSTRUCTIONS:
- Read each question carefully before answering it.
- Answer all the questions.
- Show your full working at all times.
- Questions can be answered in any sequence but ensure that you clearly number your answers.
- Calculators are **not allowed**.

**QUESTION 1**   **[15]**

1.1   Explain the meaning of **Number Sense** in mathematics.   (3)
1.2   Define a **Number System**.   (3)
1.3   What is the name given to the number system used in South Africa?   (1)
1.4   Other than the Hindu/Arabic number systems, write four other number systems   (8)
      that you have learnt in this course and for each system write the symbols for 1, 4,
      8 and 12.

QUESTION 2   **[19]**

2.1   What do you understand by the following terms in **Set Theory**?
2.1.1   Union set   (2)
2.1.2   Power set   (2)
2.1.3   Disjoint sets   (2)

2.2   A survey was conducted among students about their favourite sports. The
          data is given below
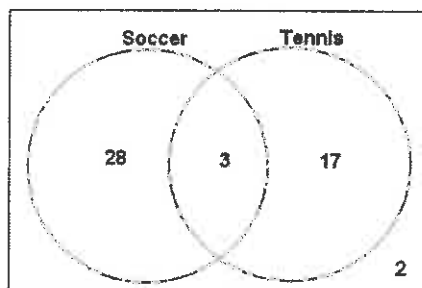
2.2.1   How many students like soccer?   (1)
2.2.2   How many students like both soccer and tennis?   (1)
2.2.3   How many students like only tennis?   (1)
2.2.4   How many students like neither soccer nor tennis?   (1)
2.2.5   How many students took part in the survey?   (1)

2.3   Given the universal set U = {Whole numbers less than 13}
          A = {Even numbers less than 10}
          B = {Multiples of 6 less than 13}
          C = {Numbers divisible by 3 less than 10}
          Draw a Venn diagram that represents the above information.
          Now find the set representation of:
2.3.1   (AUBUC)'   (2)
2.3.2   (AUB)' ∩ C'   (3)
2.3.3   n[(A∩C)']   (3)

QUESTION 3 [16]

3.1 Indicate whether the statement is **true** or **false** and **explain why**

3.1.1 A whole number is a rational number. (2)

3.1.2 Integers are negative numbers. (2)

3.1.3 A number can either be rational or irrational, but not both. (2)

3.1.4 All non-terminating decimals are irrational. (2)

3.2 Give examples of the following

3.2.1 An integer that is less than zero. (2)

3.2.2 A common fraction that is found anywhere between ½ and 1. (2)

3.2.3 A recurring decimal that is less than 1. (2)

3.2.4 An irrational number. (2)

QUESTION 4	[20]

4.1 Convert the following numbers from base 10 to the **bases shown**

4.1.1 159 to base 2 (3)

4.1.2 970 to base 6 (3)

4.2 Calculate the following problems

4.2.1 $345_6 + 113_6$ (4)

4.2.2 $101111_2 - 11101_2$ (4)

4.2.3 $42_5 + 201_3 - 41_7 + 12_9$ in base 10 (6)

QUESTION 5 [17]

5.1 With the aid of TWO examples for each case explain the difference between an arithmetic sequence and a geometric sequence (4)

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

5.2.1 Triangular numbers (2)

5.2.2 Fibonacci numbers (2)

5.2.3 Cube numbers (2)

5.3 Fill in the missing numbers in the patterns below (7)

5.3.1	1	6	11	_	16	26
5.3.2	3	_	48	192	_	
5.3.3	48	24	_	6	_	
5.3.4	4	_	$\frac{1}{4}$	_	$\frac{1}{128}$	

QUESTION 6   **[13]**
6.1   Write the number 4132.5807 in a place value chart   (4)

6.2   How many significant digits do the following numbers have?
6.2.1   45,100   (1)
6.2.2   304.0501   (1)
6.2.3   0.0076   (1)

6.3   Write the following numbers in standard form correct to the specified
            significant figures
6.3.1   377.218 to 2 significant figures   (3)
6.3.2   0.0004159 to 3 significant figures   (3)

END OF EXAMINATION   **TOTAL = 100**