



UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION

MAY/JUNE 2014 EXAMINATION SUPPLEMENTARY

PROGRAMME: BED INTERMEDIATE PHASE

MODULE: INTRODUCTION TO MATHEMATICS FOR INTERMEDIATE
PHASE 1A

CODE: MATINA1A10

TIME: 3 HOURS

MARKS: 120

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(This paper consists of 4 pages)

INSTRUCTIONS:

Read each question carefully before answering it. Answer all the questions.
Questions can be answered in any sequence but ensure that you clearly number
your answers. Calculators are not allowed.

QUESTION 1

Discuss the difference between a **number sense** and a **number system**.

[4]

QUESTION 2

Describe four number systems and represent the symbols: 1, 8, 11 and 15 in those number systems.

[10]

QUESTION 3

What do you understand by the following terms in Set Theory?

- i. Intersection set (3)
- ii. Subset (3)
- iii. Disjoint sets (3)
- iv. Power set (3)

[12]

QUESTION 4

Provide the sets described below

- i. A set of Natural numbers (2)
- ii. A set of multiple of 6. (2)
- iii. A set of prime numbers (2)
- iv. A set of factors of 32 (2)

[8]

QUESTION 5

Given the universal set $Q = \{\text{Positive integers less than 10}\}$. Draw a Venn diagram that represents the following information.

$A = \{\text{Natural numbers less than 10}\}$

$B = \{\text{Multiples of 3 less than 10}\}$

$C = \{\text{Numbers divisible by 4 less than 10}\}$

(8)

Find the set representation of:

- i. $(A \cap B \cap C)'$ (2)
- ii. $(A \cup B \cup C) \cap (A' \cap B')$ (3)
- iii. $(A \cup C)' \cap (B \cup C)'$ (3)
- iv. $n[(A \cap C) \cup (B \cap C)']$ (4)

[20]

QUESTION 6

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

- i. 33 to base 2 (2)
- ii. 120 to base 9 (2)

B. Calculate the following problems

- i. $101011_2 - 11001_2$ (2)
- ii. $117_8 - 67_8$ (2) 3
- iii. $1011001_2 + 111011_2$ (2) X
- iv. $31_7 + 1101_2 + 31_4 + 13_6$ in base 10. (4)

[15]

QUESTION 7

A. With the aid of TWO examples for each case explain the difference between an arithmetic sequence and a geometric sequence. (6)

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

- i. Triangle numbers (2)
- ii. Square numbers (2)
- iii. Cube numbers (2)

C. Fill in the missing numbers in the patterns below

- i. $1/4$ _ $4/36$ $8/108$ _ (2)
- ii. 32 24 _ 8 _ (2)
- iii. 4 _ $1/4$ _ $1/64$ (2)

[18]

QUESTION 8

8.1 What do you understand by the term place value in mathematics?

(2) 1

8.2 Write the number 9873.10090 in a place value chart:

(4) 2

8.3 Write the following numbers in expanded form notation.

i. 57 (2) ii. 677.97 (2) iii. 82.01154 (2)

8.4 How many significant figures do the following numbers have?

i. 27.4200 (1) ii. 89.111 (1) iii. 0.00096 (1)

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

i. 342.321 to 3 significant figures. (~~3~~) 2

ii. 0.000124 to 2 significant figures. (~~3~~) 2

8.6. Define a **Number Bond**? Give 2 examples (~~5~~) 4

8.7 What is a digit? Give examples (2)

8.8 What is a numeral ? Give examples (2)

8.9 Use long multiplication to find the answer to 4796×6168 (~~4~~) 3

9.0 Use long division to find the answer to $96900 \div 32$ (~~5~~) 3

[30]

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