UNIVERSITY OF JOHANNESBURG

FACULTY OF EDUCATION

JUNE EXAMINATION 2019

PROGRAMME: B Ed Intermediate phase programme

MODULE: Mathematics for the Foundation Phase & Introduction to Mathematics for the Intermediate Phase

CODE: MFP01A1 & MATINA1

TIME: 2 hours

MARKS: 90

EXAMINER: Mrs K Fonseca

MODERATOR: Professor C. Long

(This paper consists of 5 pages)

INSTRUCTIONS:

Read the following instructions carefully before answering the questions.

1. This question paper consists of 5 questions.
2. Answer all the questions.
3. Number the questions correctly as in the question paper.
4. Read each question carefully before answering.
5. Show ALL working out.
6. You may **NOT** use a calculator.
7. Write NEATLY and LEGIBLY.

Question 1: Multiple Choice **10 marks**

1.1 Sam writes 7^4 on the board. Which of the following expressions are another way to represent the value above? (1)

A. 7×4

B. 4×4

C. $4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4$

D. $7 \times 7 \times 7 \times 7$

1.2 462 473 rounded off to the nearest 5 is ….. (1)

A. 462 470

B. 462 475

C. 462 479

D. 462 480

1.3 At the fruit market, Jeff packs 785 oranges onto racks that can each hold 85 oranges. How many oranges will be left after filling the racks? (1)

A. 10

B. 20

C. 25

D. 85

1.4 2 x (6 + 8) + 8 x (6 + 8) = ? (1)

A. 140

B. 148

C. 96

D. 38

1.5 At school A, the bell rings every half hour. At school B a bell rings every 35 minutes. If the two bells ring together at 08:00, when will they ring together again? (1)

A. 10 : 30

B. 10 : 55

C. 11 : 30

D. 12 : 00

1.6 What number is 12 tens more than 30 605? (1)

A. 30 617

B. 30 725

C. 31 805

D. 42 605

1.7 Mr Short divides 24 learners into 8 equal groups. Each group has Δ learners. Which number sentence is true? (1)

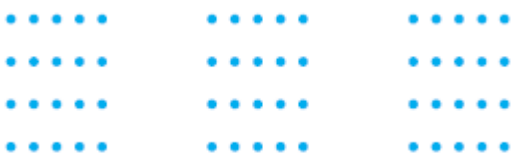
A. $24 = \Delta - 8$

B. $24 = \Delta + 8$

C. $24 = \Delta \div 8$

D. $24 = \Delta \times 8$

1.8 Which expression fits the diagram below? (1)



A. 4 x (5 x 5)

B. 3 x (4 x 5)

C. 3 x (3 + 4)

D. 3 + (4 x 5)

1.9 Timmy has 15 marbles less than Thepo. Together they have 95 marbles. How many marbles does Thepo have? (1)

A. 80

B. 55

C. 50

D. 40

1.10 The prime factors of 52 are: (1)

A. 2 X 2 X 12

B. 2 X 3 X 13

C. 2 X 2 X 13

D. 2 X 3 X 12

Question 2 **25 marks**

2.1 The base ten system has six important characteristics. Name the six characteristics (6)

2.2 In what base does 43 + 43 = 54? (3)

2.3 Would you rather have $R200_{ten}$ or $R1000_{five}$? Show all calculations to justify your answer. (3)

2.4.1 Represent the following number, 304_{five} on an abacus. (2)

2.4.2 Calculate $505_{five} - 35_{five.}$ Represent your answer on an abacus. (4)

2.4.3 Write the base ten representation of $2\ 134_{six}$. (3)

2.5 Explain how you would respond to one of your learners who claims that the base-six representation of 282_{ten} is $746_{six.}$ (4)

Question 3

25 marks

3.1 Use mental processes to perform these calculations. Show all processes

3.1.1 18 + 3 + 14 + 6 + 7 + 2 + 14 + 13 + 6 + 17 (3)

3.1.2 67 x 5 = (3)

3.2 Round each of these numbers to the position indicated:

3.2.1 2 461 to the nearest thousand (2)

3.2.2 27 462 312 to the nearest million (2)

3.3.1 Would rounding to the leftmost digit give a very good estimate of this sum? Why or why not? (4)

$$\begin{array}{r} 1478 \\ 2395 \\ 1492 \\ +\ 5481 \\ \hline \end{array}$$

3.3.2 What would you suggest your learners do to obtain a more accurate estimate? (2)

3.3.3 Compute the accurate answer to the addition in 3.3.1. (2)

3.4 Learners will be asked to round 217 to the nearest ten. Some will write (3)

200 300
↖ ↗
217

and try to decide whether the answer should be 200 or 300. How would you help them move to a correct approach? Explain.

3.5 Justify each step in this calculation by stating a property of the whole numbers: (4)

$17 \cdot 4 = (10 + 7) \cdot 4$	expanded notation
$= 10 \cdot 4 + 7 \cdot 4$	**(a)** _____
$= 10 \cdot 4 + 28$	one-digit multiplication fact
$= 10 \cdot 4 + (2 \cdot 10 + 8)$	expanded notation
$= 4 \cdot 10 + (2 \cdot 10 + 8)$	**(b)** _____
$= (4 \cdot 10 + 2 \cdot 10) + 8$	**(c)** _____
$= (4 + 2) \cdot 10 + 8$	**(d)** _____
$= 6 \cdot 10 + 8$	one-digit addition fact
$= 68$	expanded notation

Question 4 **20 marks**

4.1 Calculate the following using expanded notion. (3)

2 458 306 + 345 678

4.2.1 Explain how a grade 3 learner will solve the following problem using the difference model: (3)

When FundaUjabule tuck shop opened on Monday there were 102 lollipops. By the end of Friday 88 lollipops had been sold. How many lollipops were left?

4.2.2 Illustrate on a number line how a grade 3 learner will solve the same problem in 4.3.1, using the resting on the tens strategy. (3)

4.3 Bongani was asked to subtract a three-digit number fro another three-digit number. Bongani wrote:

$$\begin{array}{r} 706 \\ -\ 327 \\ \hline 421 \end{array}$$

4.3.1 Identify what Bongani is doing incorrectly. (2)

4.3.2 Explain how you will help correct his error. (3)

4.4 Multiply 185 x 36 using the area-model (4)

4.5 Use a clue board/Egyptian method to find the quotient of $78 \div 13$ (2)

Question 5 **10 marks**

5.1 State the Fundamental Theorem of Arithmetic (2)

5.2 A learner claims that 157 163 is divisible by 3 since the last digit in the number is 3. Explain how you would correct the learner's thinking. (3)

5.3.1 Find the highest common factor (HCF) of 75, 120 & 900. (5)