UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2005:   BED I PRIMARY

COURSE NUMBER: PEC 100

COURSE NAME: BASIC NUMERICAL SKILLS

TIME ALLOWED: 3   HOURS

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INSTRUCTIONS: 1.   THIS PAPER IS DIVIDED INTO TWO SECTIONS.

2.   SECTION A: ALL QUESTIONS ARE COMPULSORY. YOU MAY THEN CHOOSE ANY THREE (3) QUESTIONS FROM SECTION B.

3.   SECTION A IS WORTH A MAXIMUM OF 52 MARKS AND SECTION B IS WORTH 48 MARKS.

4.   DOCUMENTS REFERRED TO IN SOME OF THE QUESTIONS ARE ATTACHED. IF YOU CAN'T FIND THEM ASK FOR THEM.

5.   ANY PIECE OF MATERIAL WHICH IS NOT FOR MARKING PURPOSES MUST BE CROSSED OUT CLEARLY.

SPECIAL REQUIREMENTS: GRAPH PAPER
PLAIN PAPER

THIS PAPER MUST NOT BE OPENED UNTIL PERMISSION IS GIVEN BY THE INVIGILATOR

SECTION A - 52 MARKS

Answer <u>ALL</u> questions from this section. The use of calculators in not advisable.

Question 1

a) Describe the following numbers in the most precise terms using the hierarchy of numbers.

(i) $^3/4$ (ii) $^{-6}/3$ (iii) $\sqrt{4}$ (iv) $\sqrt{5}$ (2)

b) Which figures are in the tens position in the following numbers below

(i) 13.936   (ii) 0.606   (iii) 734.054   (iv) 253   (2)

Question 2

Calculate and give your answer to the places shown in the following table

	The nearest whole number	2 significant figures	one decimal place
$\frac{73.4 \times 1.2}{-3}$			

(3)

Question 3

a) Arrange the following fractions in ascending order of size

$7/9$ $5/8$ $3/4$ $5/6$ $2/3$ $5/9$ (2)

b) Copy and complete this table   (6)

Fraction	Decimal	Percentage
$\frac{2}{3}$		
	0.55	
		30%

Question 4

a) Work out the following

(i) $812.09 + 27.1 \times 2 - 36.75 + 300$ (3)

(ii) $-6 \times -5 + 7 - ^-3$ (2)

(iii) $\dfrac{2(-7 - ^-2) + 10}{3}$ (2)

(iv) $3\frac{1}{2} + \frac{3}{4} - 1\frac{1}{4}$ (2)

(v) $\frac{2}{3} \times ^1/5 \div \frac{1}{4}$ (2)

Question 5

a) Write the following information in symbols.

(i) Set M is the set of multiples of 7 between 8 and thirteen. (2)
(ii) Vowels (set V) are also letters of the alphabet (set A). (2)

b) Given that set $A = \{ a, e, i, o, u \}$
$B = \{ a, b, c, d, e \}$
$C = \{ 1, 2, 3, 4, 5\}$

(i) Write the elements of sets A∩B and A∪C. (4)
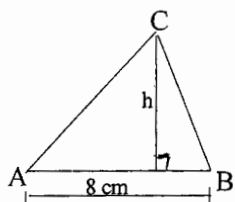(ii) How are sets A, B, and C related? (2)

Question 6

Divide 48 in the ratio 2 to 4 (3)

Question 7

Draw a mapping diagram for the following numbers from -2 and 2 for the mapping.
x --------> 2x + 1 (3)

Question 8

a) Find h in the figure below if the area is 16cm². (3)

b) Write 10m in cm (2)
c) Write 16cm² in m². (2)

3

Question 9

A Grade IV class wrote a mathematics test which was marked out of 20. The following distribution shows the scores of 10 pupils.

16, 13, 4, 7, 5, 10, 7, 13, 19, 7

Find the

a)	mean	(2)
b)	median	(1)
c)	modal score	(1)

Question 10

a) Simplify

      (i) $m + 3n - 4m + 5m$ (2)

      (ii) $\dfrac{3(2x - 1) + 3 - 2x}{3x}$ (2)

b) Factorise

      (i) $x^2 - 6x + 9$ (2)

Answer any **THREE** QUESTIONS FROM THIS SECTION.

Question 11

Mr Soko, a farmer, entered for the maize competition in the year 2003. He spent E10 000 on fertilizers, maize seeds, hired tractor and wages in the ratio 1: 3: 2: 4.

a)   Calculate the cost of
      (i)   hiring a tractor   (2)
      (ii)   wages   (2)

b)   Find the percentage of the total cost spent on wages alone.   (2)

c)   His yield was 30 bags per acre and he sold each bag for E120. Given that he had cultivated 0.5 hectares and that 1 hectare = 1000 acres, calculate

      (i)   The total yield in bags.   (2)
      (ii)   The money collected if he sold two thirds ($\frac{2}{3}$) of his yield.   (3)

d)   Mr. Soko entered for the same competition in the year 2004. This time his yield decreased by 15% due to heavy rains. How many bags did he get in 2004? (2)

      Suppose he sold $\frac{2}{3}$ of his bags in the year 2004, and that the cost of maze increased to E140 per bag. Did he increase or decrease his profit in 2004?   (3)
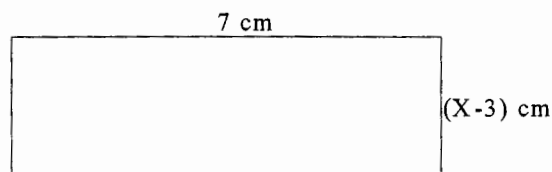
Question 12

a)   Simplify.

      (i) $2\frac{3}{4} + 1\frac{1}{3} - 3\frac{1}{2}$ (2)
      (ii) $5(a + 2b) - 3(2a - b)$ (2)
      (iii) $x^2 - 8x + 15$ (2)
      (iv) $\frac{5a - 4}{3} - 4 + \frac{2b}{5}$ (3)

b)   Solve for x.

      (i) $x^2 + 6x = -8$ (2)
      (ii) $x^2 - 36 = 0$ (1)

c)   Solve the simultaneous equations

      $3x - 4y = 19$ (3)
      $2x + y = 9$

Question 13

a)   A carpenter makes a table 2m long and 90cm broad. Find the area of the top of the table in

    (i) m^2 (2)
    (ii) cm^2 (2)

b)   On the plain paper provided, draw the parallelogram FGHJ with FG = 85 mm, GH = 48 mm, and, FĜH = 55°.   (5)

Find the area of the parallelogram in

    (i) mm^2 (2)
    (ii) cm^2 (2)

c)   The area of this rectangle is $14cm^2$

7 cm

(X-3) cm

Find x   (3)

Question 14

The number of eggs laid per week by 50 hens was recorded as follows:

8	8	5	3	6	4	7	3	5	6
6	5	8	2	7	8	1	5	4	3
3	7	6	8	5	6	7	4	8	0
4	8	3	5	7	2	4	8	6	5
7	8	7	4	5	6	3	2	1	7

a)   Show this information in a frequency table using the headings "number of eggs", "tally marks" and "number of hens".   (4)

b)   On the graph paper provided, draw a frequency bar chart to illustrate this information

6

(8)

c)   Use your frequency table to find the

   (i)   mean number of eggs laid   (2)
   (ii) median number of eggs laid   (1)
   (iii) modal number of eggs laid   (1)

Question 15

a)   Write the mappings for the following mapping diagrams.

   (i)   x -------->   (ii)   x ------->
          1 --------> 3   -2 -------> 7
          2 --------> 5   -1 -------> 6
          3 --------> 7   0 --------> 5
          4 --------> 9   1 --------> 4   (4)

b)   For the mapping x --------> 2x - 1

   (i)   A mapping diagram   (2)
   (ii) An arrow diagram   (2)

c)   On the graph paper provided, draw an x an y-axis. Number the x-axis from -2 to 4 and
     the y-axis from -3 to 8.

   (i)   On the same axis draw graphs for the lines;

         x = -1   and   y = 2x - 1   (6)

   (ii) Mark the point P where the two lines meet.   (1)
   (iii) Write the coordinates for point P.   (1)