The Royal University of Bhutan
Paro College of Education
Spring Semester Examination – 2012

B Ed(P) IV – Math in the Upper Primary I (MAT403)

Full mark: 100 **Pass mark: 50** **Time: 3 hours**

Instruction:

There are six questions. Attempt ANY Five questions. Each question carries 20 marks. Marks or part of marks are given in the square brackets.

Question 1

a. "Communication" is important while learning mathematics. Why or why not? Support the statement. (8)
b. How will you teach 'factor' to your students? Mention the method and materials that you are going to use. You may use diagrams and representations. (6)
c. Explain how you will teach 'prime factor' using factor tree/tree diagram. (6)

Question 2

a. Explain how you are going to teach 'Index notation' using base ten counting system. You can model by using base ten blocks. Give example(s) and explain. (5)

b. Explain how you are going to teach the following problems using 'counters' or 'Algebra tiles/Number lines. There should be a detailed explanation for each problem. Define the concepts wherever possible. (15)

i. -5 – (-7)
ii. (-3) x (-4)
iii. (-4) x 5

Question 3

a. Explain how you are going to teach the following problem: Dividing $\frac{1}{2}$ an apple among 5 people. Model the problem using Cuisenaire rods/diagrams. (7)
b. Multiply the following problems using Grid paper.
$\frac{1}{3}$ x $\frac{1}{4}$ Shade the answer and explain. (6)
c. Solve the following problem using base ten blocks.
Divide 312 by 13. Sketch the diagram and explain. (7)

Question 4

a. Solve $\frac{1}{3} + \frac{1}{4}$ and $\frac{1}{3} - \frac{1}{4}$ using Cuisenaire rods/diagram. Sketch your answer and explain the difference between the two problems. (8)

b. How will you express $\frac{2}{5}$ into i) decimal and ii) percentage. Explain. (6)

c. Fill in the blanks and write a rule for the pattern:

   i. 1, 7,13, 19, 25, --, 37, 43, …

   ii. 1, 1, 2, 3, 5, 8, 13, 21, --, 55, --, 144, … (6)

Question 5

a. Write a pattern for each rule provided for you.

   $i\ 2^n - 1$ ii. $n^2 - 1$ (5)

b. Explain how you are going to derive the formula to find the area of a triangle. Explain with diagrams and examples wherever possible. (10)

c. The table below shows different games played by the students of Class VI at Shaba Lower Secondary School. Represent the following information by a column graph and explain the steps. (5)

Basket ball	Volley ball	Foot ball	Archery	Khuru	Degor
125	85	245	60	90	55

Question 6

a. In a class test on subtraction of decimals, a student did the subtraction as shown below: 45.05 – 34.5 = 11.55 (12)

   i. What is the mistake of the child?

   ii. What could be the possible reasons for making such mistakes?

   iii. Write in detail how you would help the student to overcome such mistake.

b. A child solved a problem in the following manner. $3 \div \frac{1}{3} = 6$ (8)

   i. Why do you think the child solved this problem in this way?

   ii. Suggest one strategy to avoid such a mistake in future and lead the child to a more conceptual knowledge.