

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

B.Ed(P) II – Mathematics in Lower Primary II (MAT202)

Full mark: 100

Pass mark: 50

Time: 3 hours

Instruction:

This question paper consists of two sections, A and B. Section A consists of objective type questions and section B consists of long answer questions. The weighting for Section A is 20 marks and weighting for section B is 80 marks. Every question in section A is worth 2 marks and section B 16 marks. The intended marks for the questions in section B are given alongside every question. Instructions for each section are mentioned accordingly.

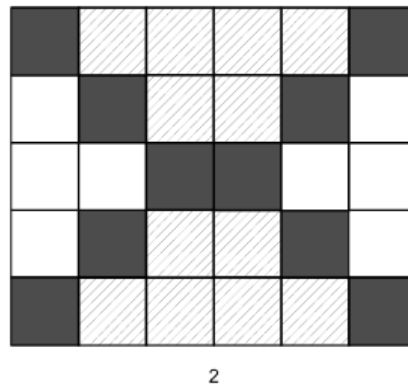
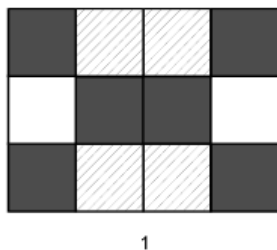
Section A Compulsory ($10 \times 2 = 20$ marks)

Instruction: *There are ten questions in this section. Answer all the questions. Choose only one correct answer for each question and write in the answer script with the answer against the question number. e.g. Q 1. a. D. Millimeter*

Question 1

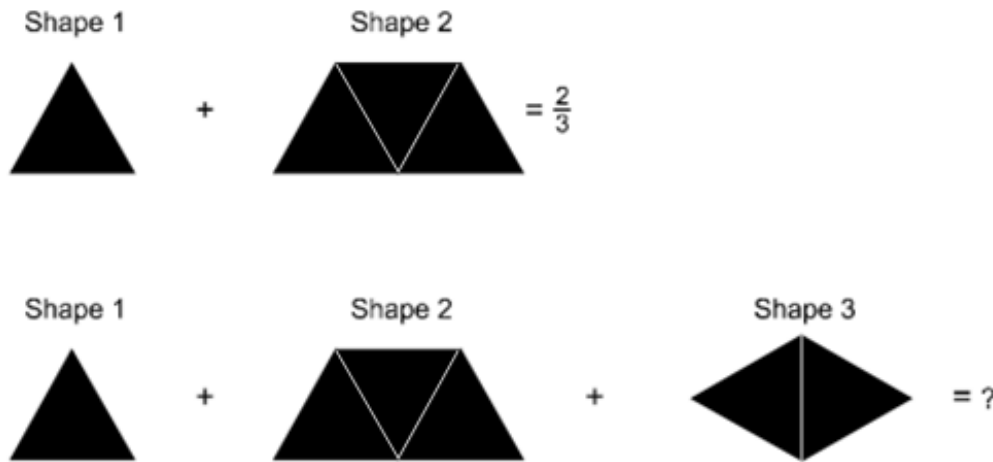
- a. The best unit to measure the length of the classroom is:
- A. Millimeter
 - B. Meter
 - C. Centimeter
 - D. Kilometer
- b. In an octagon, if 6 parts are shaded, then the shaded portion represents:
- A. $\frac{1}{4}$
 - B. $\frac{3}{4}$
 - C. $\frac{1}{2}$
 - D. $\frac{2}{6}$
- c. The temperature of a certain place for 24 hours can be represented best by using:
- A. Bar graph
 - B. Line graph
 - C. Pie-chart
 - D. Pictograph
- d. Which one of the following cannot be estimated just through observation?
- A. Mass
 - B. Capacity
 - C. Weight
 - D. Area

- e. Which one of the following properties of rhombus is not always true?
- All four sides are equal
 - All four interior angles are 90°
 - Opposite sides are parallel
 - Diagonals bisect at 90°
- f. When a die (numbered 1 to 6) is rolled the theoretical probability of getting 1 and 6 is about:
- 50%
 - 25%
 - 33%
 - 75%
- g. The first two elements of a pattern are shown in the diagram below.



- If the pattern continues, how many black boxes will there be in the fifth element of the pattern?
- 16
 - 18
 - 20
 - 22
- h. Which one of the following is not true about 'Tetrahedron'?
- It is a polyhedron
 - It has four faces and four vertices
 - It is a pyramid
 - It is a prism
- i. A rectangular tank, 40 cm long and 20 cm wide, has water of depth 9 cm. When a stone is added the water level rises to a depth of 15 cm. What would be the volume of the stone?
- 12000 cm^3
 - 19.2 L
 - 4800 mL
 - 12 L

- j. A class is using manipulative tiles in the shape of equilateral triangles to explore fractions. One of the students makes up the problem illustrated below.



If Shape 1 and Shape 2 is equal to $\frac{2}{3}$, what will be the sum of Shape 1 + Shape 2 + Shape 3?

- A. $\frac{5}{6}$
- B. 1
- C. $1\frac{1}{3}$
- D. $1\frac{1}{2}$

Section B ($16 \times 5 = 80$ marks)

Instruction: There are eight questions in this section. Answer any **five** questions. Sub-questions must be answered in order and completely for every question. Intended marks for all the sub-questions are mentioned alongside.

Question 2

- a. In a feely bag there are 16 snap cubes. 8 of them are red, 5 are green and 3 are white. If you take out a snap cube: (2+2+2 marks)
 - i. Which colour snap cube are you more likely to take out? Why?
 - ii. Will there be any chance of taking out white snap cube? What would be the chance factor?
 - iii. How can you increase the probability of taking out green snap cube?
- b. What are the two approaches of introducing Addition? Explain using your own story and representation of story. (5 marks)
- c. What are 3D shapes and 2D shapes? Explain in your own words with appropriate examples and illustrations. (5marks)

Question 3

- a. The weight of 30 children in class III is given as below in terms of kilogram. Choose suitable class interval, make a tally sheet and draw bar graph to represent this information. (6 marks)

27	32	31	43	36	29	34	25	40	39	28	27
26	35	44	46	47	37	42	24	25	39	41	33
26	39	40	29	30	33						

- b. What are the two approaches of introducing division to class II children? Explain with appropriate illustrations and your own example. (5 marks)
- c. What is the difference between mass and weight? Design an activity to familiarize children to measure mass directly and indirectly. (5 marks)

Question 4

- a. What are the 4 basic 3D shapes that are introduced in class PP? How would you introduce these 4 basic 3D shapes to class PP children? (6 marks)
- b. Here is a multiplication phrase: 37×48 . Solve and explain the given problem using any three different methods. (5 marks)
- c. How would you introduce halves and quarters to class II children. Use appropriate illustrations as is necessary. (5 marks)

Question 5

- a. Prepare an instruction card on how to find the area of irregular shapes *e.g. a leaf*. Draw suitable diagram as necessary. (6 marks)
- b. In what kind of situation do we use the idea of line graph? Design an activity choosing your own suitable data to make a line graph. (5 marks)
- c. Design a net for constructing a cube. Write all the properties of the shape. (5 marks)

Question 6

- a. Design a short activity to teach effectively the concept of faces, edges and vertices of 3D shapes to class-I children. (6 marks)
- b. How would you teach children subtraction of three digit number from another three digit number with two regroupings using the idea of base ten blocks? Use illustrations to explain. (5 marks)
- c. i. Design a fraction board to help children understand the concept of equivalent fractions.
ii. How will you find equivalent fraction of half using the fraction board. Draw wherever necessary. (2 + 3marks)

Question 7

- a. A wire of certain length always occupies same area when enclosed to form any polygons. Do you agree or disagree? Justify your answer by giving a suitable example with illustrations. (6 marks)
- b. Explain how you would teach reflection symmetry to class I children with appropriate examples and illustrations. List and draw four things in nature that show reflection symmetry exactly. (3 + 2 marks)
- c. Nima rolls a die (numbered 1 to 6). What will be the theoretical probability of...?
- Getting an even number. (5 marks)
 - Numbers greater than 2.
 - The numbers which are multiples of 3.
 - Getting an odd number greater than 5.
 - Getting a number 4

Question 8

- a. Design a suitable game to help children develop addition skill. (6 marks)
- b. One of the objectives on measurement is that the children will be able to measure length directly and indirectly. What activities would you carry out to achieve this objective? (5 marks)
- c. Compute the following. (show the steps clearly) ($2\frac{1}{4} + 2\frac{1}{2}$ marks)
- $[(18 - 7) + (20 \div 2)^2] \times 6^2$
 - $[(13 + 4) - (12 \div 2)^2] \times 3^2$

Question 9

- a. Write four simple word problems on subtraction in which: ($1\frac{1}{2} \times 4$ marks)
- Two problems should be on subtraction of two digit numbers from another two digit number with one regrouping.
 - Two questions should be on subtraction of two digit numbers from three digit numbers with two regrouping.
- b. i. What are the two types of probability? Use examples as necessary. (2 + 3 marks)
- ii. Write two probability sentences (future events) for each the following.
- Certain.
 - Possible
 - Impossible
- c. List three areas that can be asked in the lower primary classrooms to collect data and help in teaching the concept of graph. Choose one of the suitable areas mentioned in the list and prepare a graph with representations. ($1\frac{1}{2} + 3\frac{1}{2}$ marks)