ASSIGNMENT BOOKLET

LMT-01

Certificate Programme in Teaching of Primary School Mathematics (CTPM)

LEARNING MATHEMATICS

(Valid from 1st July, 2022 to 30th June, 2023)

It is compulsory to submit the assignment before filling in the exam form.

School of Sciences
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068
(For July, 2022-2023 Session)

Dear Student,

Please read the section on assignments in the Programme Guide that we sent you after your enrolment. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation, **which would consist of one tutor-marked assignment** for this course. The assignment is in this booklet.

Instructions for Formatting Your Assignments

Before attempting the assignment please read the following instructions carefully:

1) On top of the first page of your answer sheet, please write the details exactly in the following format:

ROLL NO.: ……

NAME: ……

ADDRESS: ……

……

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COURSE CODE: ……..

COURSE TITLE: ……..

STUDY CENTRE: ……..….. **DATE:** ……..……...

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

3) Leave 4 cm margin on the left, top and bottom of your answer sheet.

4) Your answers should be precise.

5) While solving problems, clearly indicate which part of which question is being solved.

6) This assignment is valid only upto 30th June, 2023. If you have failed in this assignment or fail to submit it by 30th June, 2023, then you need to get the assignment for the next cycle and submit it as per the instructions given in that assignment.

7) It is compulsory to submit the assignment before filling in the exam form.

We strongly suggest that you retain a copy of your answer sheets.

We wish you good luck!

ASSIGNMENT

Course Code: LMT-01
Assignment Code: LMT-01/TMA/2022-23
Maximum Marks: 100

1. Which of the following statements is correct? Mark clearly as (✓) or (✗) and justify your answer with an example for each. (10)

   a) Children are blank slates when they join school.

   b) Assessment is a symbiotic part of the teaching – learning process.

   c) There is a difference between teaching by giving information and teaching by guiding.

   d) Active exploration helps children build their own understanding.

   e) Rote learning helps a child to become an autonomous learner.

2. a) Illustrate the following in the context of the programme model of learning of place value of class 5 children. (3)

      i) Role of the teacher
      ii) Classroom arrangement
      iii) Learning process

   b) Jaya says that algebra is a generalisation of arithmetic. Do you agree with her? Explain your answer giving two examples from distinct areas of arithmetic. (4)

   c) Illustrate the processes of particularisation and of induction in the context of developing spatial understanding. (3)

3. a) Explain each of the following through one example from algebra. (6)

      i) Assimilation
      ii) Algorithm
      iii) Knowledge as construction.

   b) Create a motif for a non-regular tessellation which has: (4)

      i) Reflection symmetry
      ii) Rotational symmetry

4. a) Which of these are key features of the programming model? Give reasons for choosing a feature as being of the programming model or it not being a feature of the model. (6)

      i) No load should be put on children, and knowledge should be given in small chunks, bit by bit.
      ii) Give children different kinds of problems that would require them to think of solutions.
      iii) Children must memorise all the facts and the solutions of all given problems.

iv) Children should be given the predefined procedure to solve problems. They should follow the procedure line by line.

b) Vibha claims that when you toss a coin you cannot get 4 heads in a row. At most you can get 2 heads in a row. How would you help her understand that this is not correct? What are the chances of getting 3 heads in a row? (4)

5. a) What is a frequency table? Give an example of a frequency table representing data, that a Class 2 child can make. How would you help this child represent the same data in a bar diagram? (4)

b) Give two distinct misconceptions children have about the concept of area. Give a series of two activities that can be done with class 4 children to introduce them to the concept of area. (6)

6. a) Write the numbers .05, .004, .5, 25, 9 in descending order. What is the process you used for doing this? How would a constructivist teacher help class VI children to understand the process? (5)

b) Explain the difference between an axiom, a conjecture and a theorem. Also give examples of each. (5)

7. a) The statement that a bottle that can hold one litre water cannot hold one litre oil is: (3)

i) Correct, because oil is lighter than water, would not fit into the bottle.
ii) Wrong, because oil is denser so will occupy less space and bottle would be empty.
iii) Wrong, because 1 litre of oil and 1 litre of water would occupy the same space.
iv) None of those above is correct.

Choose the one that you agree with and give reason for your answer.

b) i) Give a series of three activities, requiring different ability levels, to help children relate 2D pictures of objects with the objects concerned.

ii) Justify your choice of activities.

iii) Further, try these activities out with some children of the target group you aimed at while designing the activities. How did you assess whether or not these activities met the objectives you had in mind? (7)

8. a) Use the principle of mathematical induction to prove that $2^n > n \times (n-1)... \times 2 \times 1$ for all $n \in \mathbb{N}$. Is there any part of the proof of that uses deductive reasoning? Give reasons for your answer. (6)

b) Explain the relationship between the abilities to conserve and to reverse one's thinking, through an example pertaining to addition of numbers. (4)

9. a) "Teachers need to try and make the formal system as informal as possible." Give three suggestions for doing this, and any problems you foresee in doing this, in the context of teaching Class 6 children mathematics. (6)

b) Create a motif for a non-regular tessellation which has (4)

i) only rotational symmetry
ii) no kind of symmetry

Justify your choice of examples also.

10. a) List the 4 stages of 'scaffolding' in a constructivist framework. Illustrate them in the context of helping Class 4 children understand 'fraction'. (8)

b) Illustrate the difference between a scheme and schema, using an example related to astronomy. (2)