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RMT-012

Ph.D. PROGRAMME IN MATH EDUCATION

Term-End Examination

00412

December 2014

RMT-012 : AN OVERVIEW OF MATHEMATICS EDUCATION

Time : 3 hours *Maximum Marks : 100*

Note : *Attempt* ***all*** *questions.*

1. India is moving towards Universalisation of Secondary Education (USE), which requires inclusive mathematics classrooms and many more teachers. Thus, India currently needs to develop the ability to teach mathematics to lakhs of secondary school teachers. Outline a curriculum for doing this, with all aspects clearly delineated. *15*

2. Provide, with justification, at least two misconceptions and three difficulties, children of Class 9 usually have about 'proof' in the context of mathematics. *10*

3. Give a detailed example of a learning indicator and of a learning outcome, in the context of children learning fractions. Also illustrate CCE in this context. *10*

4. Provide, with justification, three social factors affecting the learning of mathematics of female children in UP. Do these differ in different parts of UP ? If so, how ? If not, why not ? *10*

5. Explain, with examples, the statement, "Certain mental processes are required for Euclidean geometry which are not needed for drawing and measurement." Further, what are the implications of this statement for mathematics teachers ? *15*

6. Explain the process of concept formation using the example of 'variable'. Also explain the implications of this process for teaching this concept for a teacher who follows *15*

   (a) the behaviourist approach;

   (b) the Vygotskian approach.

7. Suppose you are a mathematics teacher of a secondary school in which each student has access to a computer. How would you leverage this situation for 'improving the transaction' of the mathematics curriculum ? Give examples to support your explanation.

   Further, give an example to illustrate the limitations of this mode of transaction. *10*

8. Explain the processes involved in "Mathematical Thinking". Further, is the statement "Mathematical Thinking can be nurtured through distance education" true or false ? Give reasons for your answer. *8*

9. List five standards you would use for measuring the mathematical achievement of a child of Class 8 in a rural school in your State. Would you use the same standards if the child is in a well-equipped urban school ? Give reasons for your answers. *7*