

**Ph.D. PROGRAMME IN MATHEMATICS
EDUCATION**

Term-End Examination

December, 2015

**RMT-012 : AN OVERVIEW OF MATHEMATICS
EDUCATION**

Time : 3 hours

Maximum Marks : 100

Note : Attempt *all* questions.

1. Give an example each to support the following statements : $5 \times 2 = 10$
- (a) The National Curriculum Framework of India, 2005, differs in many ways from the current National Curriculum in place in China.
 - (b) ICT is very useful for the teaching and learning of mathematics in a country like India.
 - (c) No assessment method can be considered purely formative or purely summative.
 - (d) Value education needs to be transacted implicitly through various areas across the curriculum.
 - (e) Every country uses similar standards to judge the mathematical ability of primary school children.

2. Explain the processes involved in 'thinking mathematically'. How can these processes be nurtured through the Open and Distance Learning (ODL) mode ? 10
3. (a) Give three social factors affecting the learning of mathematics by children with disabilities. How have these factors been addressed by any recent laws ? 5
- (b) Describe two informal ways in which mathematics can be learnt. Your description should include examples to support it. 5
4. Briefly explain Piaget's theory of learning. How does it differ from Vygotsky's theory of learning ? Your explanation should include examples pertaining to the development of spatial understanding. 15
5. Explain the difference between 'a difficulty in understanding a concept' and 'a misconception'. Also give an example of each pertaining to mathematics taught at the secondary level. 5
6. Give five important differences between the NCF, 2005 and the curriculum that was followed by your State Board in 1990. 10

7. Explain Bruner's theory about children's cognitive development. Also explain the revolution this brought in the field of teaching of mathematics. 10
8. Give three examples of the way one could use dancing to teach mathematical concepts to children in a rural upper elementary school in your State. In what way would these examples vary, if at all, if the school was a well-equipped urban school ? 10
9. Describe two different ways in which 'assessment for learning' can be undertaken. How would these methods alter to accommodate 'assessment of learning' ? Use examples from the context of learning of probability in support of your response. 10
10. Explain the process of 'transfer of learning' in the context of a secondary school learner. What are the implications of this process for a mathematics teacher ? 10
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