Qn.Code: MEDC34(2)

N.V.K.S.D. COLLEGE OF EDUCATION

(AUTONOMOUS)

M.Ed. Degree Third Semester Examination, December 2025

(For the candidates admitted during the academic year 2024-2025)

Specialization based on Discipline: ADVANCED METHODOLOGY IN MATHEMATICS EDUCATION

Course code: MED3SD002

Time: 3 Hours **Maximum Marks: 70**

SECTION A (10 x 1 = 10 marks)

Answer ALL the questions by selecting the appropriate answers.

1. The branch of Mathematics constitutes set theory, abstract algebra, and mathematical logic is
   a) Classical Mathematics b) Applied Mathematics
   c) Modern Mathematics d) Geometry
2. Bruner's spiral curriculum emphasizes
   a) Teaching concepts once in detail
   b) Repetition and deepening understanding of concepts over time
   c) Memorization of formulas
   d) Individual learning only
3. Choose an option that is not an example of digital resources
   a) e- textbooks b) Interactive e-books
   c) Online learning modules d) Work book
4. A classroom project combining robotics (engineering) and design (arts) is an example of
   a) STEM education b) STEAM education
   c) Traditional education d) Pure Mathematics
5. TPCK framework was introduced by
   a) Piaget b) Shulman c) Vygotsky d) Bruner
6. CMI stands for
   a) Computer Managed Instruction b) Computer Moderated Interaction
   c) Centralized Management Instruction d) Computer Module Integration
7. An in-service programme that helps experienced teachers update their knowledge and skills periodically is
   a) Refresher Course b) Orientation Programme
   c) Conference d) Seminar
8. Mathematics fairs and exhibitions primarily aim to
   a) Show off students' artistic skills
   b) Improve memorization skills

c) To focus on exams
d) Apply mathematical concepts in real-world situations

9. Action research in mathematics education primarily focuses on
   a) Developing new theories only b) Improving classroom practices
   c) Conducting laboratory experiments d) Writing historical accounts
10. A primary advantage of virtual labs is
   a) Safe experimentation b) Memorizing formulas
   c) Experiential learning d) Inquiry-based learning

SECTION B (5 x 2 = 10 marks)
Answer all the FIVE questions in about 100 words each.

11. How does existentialism influence individual learning in Mathematics?
12. State the objectives of remedial teaching.
13. How do smart classrooms improve student engagement?
14. 'Participating in co-curricular activities related to Mathematics Education is considered as a core professional competency for teachers.- Defend the statement.
15. How does research help in improving teaching methods in Mathematics?

SECTION C (6 x 5 = 30 marks)
Answer any SIX questions in about 200 words each.

16. How can a Mathematics teacher apply the theory of Vygotsky in classroom teaching to improve students' understanding?
17. Compare and contrast mind mapping and concept mapping as teaching strategies in Mathematics education.
18. Discuss the advantages and limitations of the Heuristic approach in Mathematics education.
19. Examine the potential of Web 3.0 tools in creating interactive and adaptive Mathematics learning environments.
20. Prepare a sample e-content module for teaching 'fractions'.
21. How do teachers maintain their professional competency in a rapidly changing technological environment?
22. Describe the role of professional bodies in promoting professionalism among teachers.
23. Discuss the steps in conducting action research in a Mathematics classroom. Illustrate with examples.

SECTION D (2 x 10 = 20 marks)

Answer BOTH the questions in about 500 words each.

24. a) Discuss the structure of Mathematics with reference to axioms, postulates, and propositions. Explain how these elements contribute to the development of mathematical theories.

(Or)

b) Explain the various types of curriculum materials used in Mathematics education, including textbooks, workbooks, handbooks, lesson transcripts, and digital books.

25. a) Discuss the concept of blogging and its importance in Mathematics education. Describe the step-by-step procedure for developing a blog to teach Mathematics effectively.

(Or)

b) Explain the major areas of research in Mathematics education and discuss their significance in improving teaching and learning.