Mathematics Pedagogy

Unit 1
Essay Questions (10 marks)

1. Explain meaning of academic disciplines and add a note on relationship between academic discipline and mathematics.
2. Discuss in detail classification of Becher – Biglan typology.
3. Elucidate place of mathematics in present school curriculum

Unit 2
Essay Questions (10 marks)
1. Explain the meaning and nature of Mathematics.
2. Explain the meaning and scope of Mathematics.
3. Explain the aims and objectives of teaching Mathematics at Secondary Levels (NCF 2009)
4. Explain the aims and objectives of teaching Mathematics at Higher Secondary Levels (NCF 2009)
5. Explain any two values of teaching Mathematics.
6. Explain Disciplinary and Moral value of teaching Mathematics.
7. Elaborate Aesthetic and Cultural value of teaching mathematics.
8. Explain Intellectual and International value of teaching Mathematics.

Short Notes (5 marks)
9. Nature of mathematics.
10. Scope of mathematics.
11. Objectives of teaching Mathematics at secondary level (NCF 2005)
12. Objectives of teaching Mathematics at Higher secondary level (NCF 2005)
13. Cultural value in teaching of Mathematics,
14. Aesthetic value in teaching of Mathematics
15. Utilitarian value in teaching of Mathematics
16. International value in teaching of Mathematics
17. Intellectual value in teaching of Mathematics
18. Social value in teaching of Mathematics
19. Moral Value in teaching of Mathematics

Unit 3
Essay Questions (10 marks)
1. Elucidate the importance of Maxims of teaching. Illustrate any two Maxims of teaching Mathematics.
2. Explain the significance of Maxims of teaching. Illustrate the maxims From Known to Unknown and From Simple to Complex.
3. Explain the importance of Maxims of teaching. Illustrate the maxims From Particular to General and From Concrete to Abstract.
4. Explain the significance of Maxims of teaching.. Illustrate the maxims from Known to

Unknown and From Whole to Part.

5. What is meant by maxims of teaching? Discuss any two maxims with two examples.
6. Explain/Illustrate any three maxims of teaching Mathematics.
7. Illustrate the concentric approach of curriculum construction in Mathematics. Illustrate the topical approach of curriculum construction in Mathematics.
8. Compare the concentric and topical approach of organization of syllabus in Math's with respect to its advantages and limitations.
9. "Concentric and Topical approach are both essential in construction of curriculum of Maths". Justify.
10. "The concentric approach helps in the logical and psychological organization of content in Mathematics." Explain with a suitable example.
11. Explain the concentric approach of organizing Mathematics curriculum. State its advantages and limitations.
12. Illustrate the topical approach of organization of mathematics content. Illustrate concentric approach of organizing the mathematics content.
13. Explain Pedagogical/Content Analysis in mathematics with an illustration.
14. Explain Unit analysis in mathematics with an illustration.
15. Construct lesson plan to teach any unit from mathematics subject at secondary level of school. *(Rare chance to ask this question)*

Short Notes (5 marks)
1. Use of Maxim "From Unknown to known" in Mathematics,
2. Use of Maxim "To Proceed from Simple to Complex" in Mathematics, Use of Maxim "From Particular to General" in Mathematics,
3. Use of Maxim "From Whole to Part" in Mathematics,
4. Use of Maxim "From Concrete to Abstract" in Mathematics,
5. Advantages and limitations of Concentric approach to curriculum construction in Mathematics,
6. Limitations of Concentric approach to curriculum construction in Mathematics, Advantages of Topical approach to curriculum construction in Mathematics, Limitations of Topical approach to curriculum construction in Mathematics

Unit 4
Essay Questions (10 marks)
1. Explain Inductive Deductive process in Mathematics with an illustration.
2. Elucidate Analytic Synthetic method in teaching of mathematics in solving proofs.
3. Explain the steps of Problem solving Method with example.
4. Explain Lecture-cum-Demonstration method in mathematics in math construction.
5. Explain Drill and review techniques of teaching Mathematics.
6. Elucidate Analytic Discuss assignment techniques in teaching of mathematics

Short Notes (5 marks)
1. Merits/Demerits of Inductive deductive Method
2. Merits/Demerits of Lecture-cum-Demonstration Method
3. Merits/Demerits of Problem solving
4. Merits/Demerits of Analytical Synthetic
5. Merits/Demerits of drill and review technique
6. Merits/Demerits of assignment technique.

Unit 5

Essay Questions (10 marks)

1. Explain objectives and significance of mathematics laboratory.
2. Explain objectives and significance of mathematics club.
3. "As a mathematics teacher on the basis of which characteristics you critically a math textbook."
4. Explain meaning and application of any one (Geogebra/ Virtual manipulative) digital resources for teaching mathematics. Add a nots on its advantages.
5. Explain meaning and application of any one (Geogebra/ Virtual manipulative) digital resources for teaching mathematics. Add a nots on its limitations.

Short Notes (5 marks)

1. Objective/significance of mathematics laboratory
2. Objective/significance of mathematics club
3. Application/advantages/limitations of Geogebra
4. Application/advantages/limitations of Virtual manipulative

Unit 6

Essay Questions (10 marks)

1. Discuss in detail competencies of mathematics teacher.
2. Explain need and avenues of continuous professional development of mathematics teacher.
3. Write contribution of any one (Aryabhatta / Ramanujan / Euclid /Pythagoras) mathematician in field of mathematics.

Short Notes (5 marks)

1. Competencies of mathematics teacher.
2. Need for continuous professional development of mathematics teacher.
3. Contribution of any one mathematician.