

PSS: Mathematics
QUESTION BANK (F.Y.B.Ed.)

MODULE 1: FUNDAMENTALS OF MATHEMATICS EDUCATION

UNIT 1: Basics Of Academic Disciplines

➤ **Essay Questions**

1. Define Academic Disciplines. Explain any four characteristics of Mathematics Discipline.
2. Illustrate Relationship between Academic Disciplines & Mathematics with suitable examples.
3. Elucidate the concept of Academic Disciplines with suitable examples.
4. Explain the place of Mathematics in present school Curriculum with suitable examples.
5. Explain the Classification of Academic Disciplines according to Becher-Biglan typology.
6. "Becher-Biglan typology provides a framework for classification of Academic disciplines". Elaborate

➤ **Short Notes**

1. Mathematics as a Academic Disciplines
2. Relationship between Mathematics & Academic Disciplines
3. Becher-Biglan typology (Pure Hard & Pure Soft)
4. Becher-Biglan typology (applied Hard & applied Soft).
5. Place of Mathematics in the present school curriculum

UNIT 2: Introduction to the Teaching Of Mathematics

➤ **Essay Questions**

1. Explain the meaning and nature of Mathematics.
2. What is Mathematics? Elucidate the nature of Mathematical Statements.
3. Elucidate four two values of teaching Mathematics with suitable examples.
4. Illustrate Disciplinary and Moral value of teaching Mathematics.
5. Elaborate Aesthetic and Cultural value of teaching mathematics.
6. Elaborate Intellectual and International value of teaching Mathematics.
7. Elaborate the aims and objectives of teaching Mathematics at Secondary Levels (NCF 2009)
8. Elucidate the aims and objectives of teaching Mathematics at Higher Secondary Levels (NCF 2009)
9. Enumerate the objectives of teaching Mathematics Secondary & Higher Secondary levels. (NCF 2009)**

➤ **SHORT NOTES**

1. Meaning & Nature Of Mathematics.
2. Meaning & Scope of Mathematics.
3. Cultural value in teaching of Mathematics,
4. Aesthetic value in teaching of Mathematics,

5. Utilitarian value in teaching of Mathematics,
6. International value in teaching of Mathematics,
7. Intellectual value in teaching of Mathematics,
8. Social value in teaching of Mathematics,
9. Moral Value in teaching of Mathematics,
10. Objectives of teaching Mathematics at secondary level (NCF 2009)

UNIT 3: Essentials of Teaching Mathematics And Curriculum Transaction

➤ Essay Questions

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 any three maxims of teaching Mathematics.
7. Illustrate any three maxims of teaching Mathematics.
8. Illustrate the Maxims "Concrete to Abstract" and "Simple to Complex" in the teaching of Mathematics.**
9. Illustrate the concentric approach of curriculum construction in Mathematics.
10. Illustrate the topical approach of curriculum construction in Mathematics.
11. Compare the concentric and topical approach of organization of syllabus in Math's with respect to its advantages and limitations.
12. "Concentric and Topical approach are both essential in construction of curriculum of Math's". Justify.
13. "The concentric approach helps in the logical and psychological organization of content in Mathematics." Explain with a suitable example.
14. Explain the concentric approach of organizing Mathematics curriculum. State its advantages and limitations.
15. Illustrate the topical approach of organization of mathematics content.
16. Illustrate concentric approach of organizing the mathematics content.
17. Explain Content Analysis in mathematics with an illustration.
18. What is Pedagogical Analysis ? Write lesson planing for any one topic in Mathematics.
19. What is Pedagogical Analysis ? Write Unit planing for any one Unit in Mathematics.

➤ SHORT NOTES:

1. Advantages and limitations of Concentric approach to curriculum construction in a Mathematics.
2. Limitations of Concentric approach to curriculum construction in Mathematics.
3. Advantages of Topical approach to curriculum construction in Mathematics.
4. Limitations of Topical approach to curriculum construction in Mathematics.
5. Use of Maxim "From Unknown to known" in Mathematics

6. Use of Maxim “To Proceed from Simple to Complex” in Mathematics
7. Use of Maxim “From Particular to General” in Mathematics
8. Use of Maxim “From Whole to Part” in Mathematics
9. Use of Maxim “From Concrete to Abstract” in Mathematics
10. Merits of Content Analysis
11. Merits of Instructional Objectives
12. Merits of Instructional Strategies
13. Use of any one maxim of teaching mathematics
14. Advantages and limitations of concentric approach
15. Advantages and limitations of Topical approach

MODULE 2: TRANSACTING MATHEMATICS CURRICULUM

UNIT 4: Methods and Techniques of Teaching Mathematics

➤ Essay Questions

1. Explain Inductive Deductive process in Mathematics with an illustration.
2. Elaborate the steps of the Problem solving Method of Mathematics with a suitable example.**
3. Explain Lecture-cum-Demonstration method in mathematics in maths construction.
4. Elucidate Analytic Synthetic method in teaching of mathematics in solving proofs.
5. Elaborate the Analytic and Synthetic method of teaching Mathematics. State its merits & limitations.**
6. Explain the –Drill and Review technique in teaching of Mathematics with suitable examples.
7. Explain the Assignment technique in teaching of Mathematics with a suitable examples.

➤ SHORT NOTES

1. Merits of Deductive Method.
2. Merits of Inductive Method.
3. Merits of Lecture-cum-Demonstration Method
4. Merits of Problem solving
5. Merits of Drill & Review Technique.
6. Use of Assignments in Teaching of Mathematics
7. Merits of Analytical Synthetic Method
8. Steps involving in Problem Solving Method

UNIT 5: Learning Resources

➤ Essay Questions

1. “The maths lab provides an opportunity for the students to discover Mathematics through doing”. Justify the statement regarding to objectives & Significance of Mathematics Lab.
2. “Mathematics club plays important role in motivating the students to learn mathematics with interest and involvement.” Justify the statement regarding to objectives & significance of Mathematics Club.

3. "Every School should have a Mathematics Club." Justify with reference to the objectives and significance of the Mathematics Club.**
4. "A Textbook is a comprehensive compilation of content in a branch of study." Justify the statement regarding to characteristics of ideal Textbook.
5. Explain the Critical Analysis of Mathematics textbook with suitable examples.
6. Define Virtual Manipulatives ? Explain the application of Virtual Manipulatives for Effective Teaching of Mathematics.
7. What is Geogebra ? Explain its application and Advantages in the teaching of Mathematics.

➤ **Short Notes**

1. Mathematics Club
2. Mathematics Laboratory
3. Characteristics Of the Mathematics Textbook
4. Application of Geogebra in Mathematics.
5. Advantages Of Virtual Manipulatives in the Teaching of Mathematics

UNIT 6: Professional Development of Teacher

➤ **Essay Questions**

1. Explain the Competencies of Mathematics Teacher.
2. Explain the need and Avenues of Continuous Professional Development Of Mathematics Teacher.
3. "Euclid and Pythagoras have contributed immensely to mathematics." Justify.
4. 'Ramanujan' and Aryabhata' have contributed immensely in the field of Mathematics. Justify.

➤ **Short Notes**

1. Need of Continuous Professional Development.
2. Avenues of Continuous Professional Development
3. Contribution Of Ramanujan in Mathematics.
4. Contribution of Aryabhata in Mathematics.
5. Competencies of Mathematics Teacher
