Dnyan Ganga Education Trust's College of Education (B.Ed.)

Semester 2 / 3

Pedagogy of School Subject – Mathematics

Unit-wise Question Bank

Unit 1: Basics of Academic Disciplines

1. "Becher-Biglan typology provides a framework for classification of Academic Disciplines." Elaborate.

2. Explain Becher - Biglan Typology of classification of Academic Discipline.

3. Explain the classification of Academic disciplines given by Becher-Biglan.

4. Characteristics of Academic disciplines.

5. Meaning of Academic Discipline.

7. Explain meaning of academic disciplines and add a note on relationship between academic discipline and mathematics.

8. Discuss in detail classification of Becher – Biglan typology.

9. Elucidate place of mathematics in present school curriculum.

Unit 2: Introduction to the Teaching of Mathematics

1. Elucidate any four values of teaching Mathematics.

2. What is the meaning of Mathematics? Enumerate the objectives of teaching Mathematics at secondary and Higher Secondary Level (NCF-2009).

3. Enumerate the Aims & Objectives of teaching mathematics at Secondary & Higher Secondary levels as stated by NCF (2009).

4. Discuss the meaning, nature, and scope of Mathematics.

5. Nature of Mathematics.

6. Place of Mathematics in the present school curriculum.

7. Any two values of teaching Mathematics.

8. Advantages of teaching Mathematics.

9. Explain the meaning and nature of Mathematics.

10. Explain the meaning and scope of Mathematics.

11. Explain the aims and objectives of teaching Mathematics at Secondary Levels (NCF 2009).

12. Explain the aims and objectives of teaching Mathematics at Higher Secondary Levels (NCF 2009).

13. Explain any two values of teaching Mathematics.

14. Explain Disciplinary and Moral value of teaching Mathematics.

15. Elaborate Aesthetic and Cultural value of teaching mathematics.

16. Explain Intellectual and International value of teaching Mathematics.

Short Notes

1. Nature of mathematics.

2. Scope of mathematics.

3. Objectives of teaching Mathematics at secondary level (NCF 2005)

4. Objectives of teaching Mathematics at Higher secondary level (NCF 2005)

5. Cultural value in teaching of Mathematics.

6. Aesthetic value in teaching of Mathematics.

7. Utilitarian value in teaching of Mathematics

8. International value in teaching of Mathematics

9. Intellectual value in teaching of Mathematics

10. Social value in teaching of Mathematics

11. Moral Value in teaching of Mathematics

Unit 3: Essentials of Teaching Mathematics and Curriculum Transaction

1. Explain the concentric approach of curriculum construction in Mathematics with relevant examples and state its merits.

2. Explain the concentric and topical approaches of organizing the content in Mathematics.

3. Explain the approaches of curriculum construction in Mathematics with suitable examples.

4. Advantages of the concentric approach of curriculum construction in Mathematics.

5. Elucidate the importance of Maxims of teaching. Illustrate any two Maxims of teaching Mathematics.

6. Explain the significance of Maxims of teaching. Illustrate the maxims From Known to Unknown and From Simple to Complex.

7. Explain the importance of Maxims of teaching. Illustrate the maxims From Particular to General and From Concrete to Abstract.

8. Explain the significance of Maxims of teaching. Illustrate the maxims from Known to Unknown and From Whole to Part.

9. What is meant by maxims of teaching? Discuss any two maxims with two examples.

10. Explain/Illustrate any three maxims of teaching Mathematics.

11. Illustrate the concentric approach of curriculum construction in Mathematics. Illustrate the topical approach of curriculum construction in Mathematics.

12. Compare the concentric and topical approach of organization of syllabus in Math's with respect to its advantages and limitations.

13. "Concentric and Topical approach are both essential in construction of curriculum of Maths". Justify.

14. "The concentric approach helps in the logical and psychological organization of content in Mathematics." Explain with a suitable example.

15. Explain the concentric approach of organizing Mathematics curriculum. State its advantages and limitations.

16. Illustrate the topical approach of organization of mathematics content. Illustrate concentric approach of organizing the mathematics content.

17. Explain Pedagogical/Content Analysis in mathematics with an illustration.

18. Explain Unit analysis in mathematics with an illustration.

19. Construct lesson plan to teach any unit from mathematics subject at secondary level of school. (Rare chance to ask this question)

Short Notes

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.

7. Advantages of Topical approach to curriculum construction in Mathematics.

8. Limitations of Topical approach to curriculum construction in Mathematics.

Unit 4: Methods and Techniques of Teaching Mathematics

1. Illustrate the maxims "Simple to Complex" and "Concrete to Abstract" in the teaching of Mathematics.

2. "Maxims help to make the teaching of Mathematics more meaningful and interesting." Illustrate with reference to the maxims 'Particular to General' and 'Concrete to Abstract' in teaching of Mathematics.

3. What are Maxims of teaching? Illustrate ANY 2 maxims of teaching Mathematics.

4. Describe the use of any three maxims of teaching Mathematics.

5. Illustrate the Lecture-cum-demonstration method in the teaching of Mathematics.

6. "The teaching of Mathematics becomes holistic and effective by the use of the Analytic - Synthetic method." justify with an illustration.

7. Illustrate the use of analytic and synthetic method in teaching of Mathematics.

8. Elucidate Analytic-synthetic method of teaching Mathematics.

9. Describe the steps of the Problem-Solving method of Mathematics with a suitable example.

10. "Problem-solving method develops inquisitive attitude in the students." Justify with reference to the steps and advantages of Problem-solving method in Mathematics.

11. "Drill and assignments are useful techniques in Mathematics learning". Justify.

12. "Inductive-Deductive method is useful in the teaching of generalisations in Mathematics". Justify.

13. Explain Inductive Deductive process in Mathematics with an illustration.

14. Elucidate Analytic Synthetic method in teaching of mathematics in solving proofs.

15. Explain the steps of Problem solving Method with example.

16. Explain Lecture-cum-Demonstration method in mathematics in math construction.

17. Explain Drill and review techniques of teaching Mathematics.

18. Elucidate Analytic Discuss assignment techniques in teaching of mathematics.

Short Notes

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

6. Merits/ Demerits of assignment technique.

Unit 5: Learning Resources

1. "Mathematics Laboratory provides experiential learning" Explain with reference to objectives and significance of Mathematics laboratory.

2. "Mathematics Laboratory provide experiential Learning". Explain with reference to needs and importance of it.

3. Elucidate the application of GeoGebra for teaching Mathematics. State it's advantages and limitations.

4. Applications of Geogebra.

5. Significance of Mathematics club.

6. "Mathematics Club provides opportunities to create interest in Mathematics." Justify with reference to the activities of Mathematics club.

7. Characteristics of a good Mathematics Textbook.

8. Explain objectives and significance of mathematics laboratory.

9. Explain objectives and significance of mathematics club.

10. "As a mathematics teacher on the basis of which characteristics you critically a math textbook".

11. Explain meaning and application of any one (Geogebra/ Virtual manipulative) digital resources for teaching mathematics. Add a notes on its advantages.

12. Explain meaning and application of any one (Geogebra/ Virtual manipulative) digital resources for teaching mathematics. Add a notes on its limitations.

Short Notes

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: Professional Development of Mathematics Teacher

1. Elaborate the need and avenues for continuous professional development of a Mathematics teacher.

2. "A Mathematics teacher needs continuous professional growth." Explain with respect to need and avenues of professional growth.

3. "Teachers of mathematics should make consistent efforts for their continuous professional development". Illustrate with reference to the need and avenues for continuous professional development.

4. Need for continuous professional development of Mathematics Teacher.

5. Discuss in detail competencies of mathematics teacher.

6. Explain need and avenues of continuous professional development of mathematics teacher.

7. Write contribution of any one (Aryabhatta / Ramanujan / Euclid /Pythagoras) mathematician in field of mathematics.

Short Notes

1. Competencies of mathematics teacher.

2. Need of continuous professional development of mathematics teacher.

3. Contribution of any one mathematician.