RMSA- Recruitment to Model Schools
Category of Post: TGT - Mathematics
Syllabus

Part – I
GENERAL KNOWLEDGE AND CURRENT AFFAIRS (Marks: 10)

Part – II
PERSPECTIVES IN EDUCATION (Marks: 10)

1. Education: Meaning, Aims of Education, Functions of Education, Types of Education; Constitutional Provisions, important articles and their Educational implications for General and disabled population; Universalization of Elementary Education - Schemes and Programmes to achieve UEE like OBB, APPEP, DPEP, SSA, Open schools, Mid-day-Meals; Recommendations of various committees and commissions during pre-independent and post-independent period.
2. Teacher Empowerment: Meaning, interventions for empowerment, Professional code of conduct for teachers, Teacher motivation, professional development of Teachers and Teacher organizations, National / State Level Organizations for Teacher Education, Maintenance of Records and Registers in Schools.
3. Educational Concerns in Contemporary India : Inclusive Education: Conceptual Clarification and Definition, Prevalence, Myths & Facts, Characteristics, Classification & Types, Importance of Early Identification and Assessment, Planning Inclusive Education, Programming and Classroom Management in Inclusive Education, Evaluation, Documentation and Record Maintenance, Psycho-Social management, Awareness & Sensitization Strategies; Environmental Education: Concept, Objectives of Environmental Education, Environment and Natural Resources; Environmental Pollution – causes and effects and measures for the protection of environment, Development of Environmental Values through Environmental Education. Literacy: Saakshar Bharat Mission, National Programme for Education of Girls at Elementary Level (NPEGEL) School Health Programme, Disaster Management, Population education, Adolescence Education and Life Skills, Liberalization, Privatization and Globalization, Value Education
4. Acts / Rights: Right of Children to Free and Compulsory Education Act, 2009 and Andhra Pradesh Right of Children to Free and Compulsory Education Rules 2010 and Child Rights.
5. National Curriculum Framework, 2005: Perspective, Learning and Knowledge, Curricular Areas, School Stages and Assessment, School and Classroom Environment, Systemic Reforms.

Part - III
Content: (Marks 44)

1. NUMBER SYSTEM: Rational Numbers, Irrational Numbers, Real Numbers, Squares and Square roots, Cubes and Cube roots, Euclid's Division Lemma, The Unique Factorization theorem, Real Numbers and their decimal expansions.
2. ALGEBRA:
   Polynomials: Polynomials in one variable, Zero of a Polynomial, Remainder theorem, Factorization of Polynomials, Algebraic Identities, Relationship between Zeros and Coefficients of a Polynomial, Division algorithm for

polynomials, Algebraic Identities, Relationship between zeros and Coefficients of Polynomial and Division algorithm for Polynomials.

Linear Equations and in-equations in one and two variables:

Pair of Linear equations in two variables, Algebraic methods of solving a pair of linear equations (i) Substitution method, (ii) Elimination Method, (iii) Cross-multiplication method and equations reducible to a pair of equations in two variables

In-equations: Algebraic solutions of linear in-equations in one variable and Solution of system of linear in-equations in two variables.

Quadratic Equations: Quadratic Equations, solution of a quadratic equation by Factorization, Solution of a quadratic equation by completing the square and Nature of roots.

Progressions or Series: Arithmetic progressions (A.P), Geometric progressions (G.P), Relation between A.M and G.M.

3. TRIGONOMETRY: Trigonometric ratios, Trigonometric ratios of Complementary angles, trigonometric functions, trigonometric functions of a sum and difference of two angles, Trigonometric Identities, Trigonometric Equations, Angle of elevation and depression, Heights and Distances.
4. MENSURATION: i) Areas of triangles, Quadrilaterals and other polygons ii) Solid shapes and volume of a cube, cuboid and Cylinder
5. GEOMETRY: (Two dimensional geometry)

   Lines and angles: Intersection of lines and Non-intersecting lines, pairs of angles, Parallel lines and a transversal, Lines parallel to the same line and Angle sum properties of a triangle.

   Triangles: Congruence of triangles, criteria for congruence of triangles, Properties of triangles, Inequalities, Properties of triangles and Inequalities in a triangle.

   Quadrilaterals: Angle sum properties of a quadrilateral properties of different quadrilaterals and the mid point theorem.

   Circles: Angle subtended by a chord at a point, Perpendicular from the centre to a chord, Circle through three points, Equal chords and their distances from the centre, Angle subtended by an arc of circle, Tangent to a Circle, number of tangents from a point on a circle, perimeter and area of a circle and Cyclic quadrilaterals.
6. CO-ORDINATE GEOMETRY: Distance formula, section formula, area of a triangle, slope of a line, various forms of the equation of a line, general equation of a line and distance of a point from a line.
7. THREE DIMENSIONAL GEOMETRY: Direction cosines and direction ratios of a line, equation of a line in space, angle between lines, shortest distance between two lines, plane, coplanarity of two lines, angle between two planes, distance of a point from a plane and angle between a line and a space.
8. STATISTICS: Collection of data, presentation of data, Measures of Central tendency or measures of first order, Measures of dispersion or measures of second order, and Analysis of frequency distribution.
9. PROBABILITY: Probability – A Theoretical Approach, Probability – An Experimental Approach, Random Experiments, Event, Axiomatic Approach to Probability, Conditional Probability, Multiplication Theorem on Probability, Independent Events, Bayee's theorem and Random variables and its Probability distributions.

Part IV

Teaching Methodology (Marks: 16)

1. Meaning and Nature of Mathematics, History of Mathematics.
2. Contributions of Great Mathematicians – Aryabhatta, Bhaskaracharya, Srinivasa Ramanujan, Euclid, Pythagoras, George cantor.
3. Aims and Values of teaching Mathematics, Instructional objectives (Blooms taxonomy).
4. Mathematics curriculum: Principles, approaches of curriculum construction, Logical and Psychological, Topical and Concentric, Spiral approaches. Qualities of a good Mathematics text book.
5. Methods of teaching mathematics- Heuristic method, Laboratory method, Inductive and Deductive methods, Analytic and Synthetic methods, Project method and Problem Solving method.
6. Unit Plan, Year Plan, Lesson Planning in Mathematics.
7. Instructional materials, Edgar Dale's Cone of Experience.
8. Evolving strategies for the gifted students and slow learners.
9. Techniques of teaching mathematics like Oral work, Written work, Drilling, Assignment, Project, Speed and Accuracy.
10. Mathematics club, Mathematics structure, Mathematics order and pattern sequence.
11. Evaluation – Types, Tools and Techniques of Evaluation, Preparation of SAT Analysis, Characteristics of a good test.