SYLLABUS FOR COMPUTER BASED RECRUITMENT TEST (CBRT)
FOR THE POST OF ASSISTANT DISTRICT EDUCATIONAL INSPECTORS/
TEACHER GRADE –I (MATHS)
UNDER
DIRECTORATE OF EDUCATION
(Advt No. 04 Year 2023)

I. General English including Grammar   **- 05 marks**

II. General Knowledge, Current Affairs and Events of National and International Importance   **- 10 marks**

III. Logical Reasoning and Analytical Ability   **- 10 marks**

IV. Core: - **50 marks**

PART-I(30 Marks)

1 Sets, Relations and Functions :Different kinds of sets and their basic properties, Relations, types of relations, Different types of real valued functions.
2 Limit, Continuity and Differentiability : Limit, continuity and differentiability of algebraic functions, trigonometric functions, exponential functions and logarithmic functions.
3 Complex and Vector Algebra : Complex numbers and their algebraic properties, polar representation, square root of a complex number, Vectors and scalars, types of vectors and their algebraic properties, scalar and vector product of two vectors, scalar triple product.
4 Differential calculus : Derivatives of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions. Derivatives of implicit and explicit functions. Increasing and decreasing functions. Concept of second order derivative.
5 Integral calculus : Integration of functions by the method of substitution, partial fraction and by parts. Basic properties of definite integrals and their uses to evaluate them.
6 Differential equations : Order and degree of a differential equation, solution of differential equations of first order and first degree.
7 Permutations and combinations : Derivation of formulae, their connections and simple applications. Binomial theorem : Binomial theorem for positive integral indices, general and middle terms in binomial expansion.
8 Matrices : Various types of matrices, their basic operations and properties. Invertible matrices and their inverse. Determinant : Determinant of a square matrix and their properties. Solution of system of linear equations in two or three variables using inverse of a matrix.
9 Two dimensional geometry : Straight line, standard equations and simple properties of circle, parabola, ellipse, hyperbola.
10 Applications of derivatives and integrals : Tangent and normals, maxima and minima of functions of one variable. Area under simple curves, area between the simple curves.
11 Statistics : Mean, Mode, Median for grouped data, measure of dispersion. Probability and their elementary laws, conditional probability.

PART-II (20 Marks)
I: The Teacher In The Emerging Indian Society
- Relationship between Philosophy and Education
- Educational Provisions in the Constitution of India
- Naturalism, Pragmatism, Humanism
- Socialization and Education - The role of family, peer group, school and the media of communication
- Education and Social Stratification
  - Inequalities of educational opportunity: religion, caste, class and gender
  - Social determinants of educability
  - The role of education in mobility
  - Education and Social Change

II: Psychology of the Learner and Learning
- The role of heredity and environment in development.
- Cognitive Development (Piaget)
- Characteristics of Adolescence (physical, mental/cognitive, emotional, social).
- Gardner's theory of multiple intelligences,
- Dealing with Individual Differences
  - Children with learning disabilities

- Emotionally disturbed children
- Gifted students
- Fostering creativity in students

Information Processing (Sensory register, STM and LTM)
- Classroom implications of the Information Processing Theory
- Forgetting and causes of forgetting
- Constructivist view of learning
- Critical thinking
- Transfer of learning
- Classroom implications of the Cognitive Learning Theory
- Intrinsic and Extrinsic Motivation
- Classroom climate and group dynamics

III: Evaluation and Assessment
- Concept and Function of Educational Evaluation
    Basic types of Evaluation
    Placement, Formative Diagnostic, Summative Evaluation
- Phases of Evaluation
  - Collecting evidence...- Forming judgements - Taking decisions
- Taxonomy of Educational Objectives
    Various steps of setting a question paper: Blue print, preparation of test items,   review of test items, scoring key
- Need for grading
    - Direct grading versus indirect grading
    - Absolute grading versus relative grading
- Continuous Internal Assessment - Need, Areas, Advantages
- Portfolio Assessment

IV: Educational Technology
- Components of an Instructional System
- Application of Systems Approach to planning lessons and instructional Material.
    Communication – meaning, modes and functions
    - Communication Process (Communication cycle)
- Barriers to communication and overcoming these barriers
- Kinds of Communication
    - Verbal communication - improving listening and speaking skills
    - Non verbal Communication - Art, Forms, Symbols, Appearances and Body language (Touch, Facial expression, Eye contact).
    - Improving non-verbal communication

Dale's cone of experiences
Computer assisted learning
-Subject specific software and its uses
-General educational software e.g. encyclopaedia
- Computers for simulation, drill/practice, educational games and tutorials
- Computer aided evaluation
- Advantages and Limitations in the use of computers

Note:
Duration for C.B.R.T :   90 Minutes
Maximum Marks for C.B.R.T : 75 Marks