Mathematical Reasoning

(For both General and Technical/Professional Cadres)

Total Marks-50

Mathematical Reasoning is based on the principles of Logic. A sound knowledge of Mathematical Reasoning prepares one not only to solve mathematical problems but also develops the intellectual ability to resolve problems in all spheres of public life and to arrive at impartial and impersonal intelligent decisions.

The examination in Mathematical Reasoning will test the ability of the candidate to apply knowledge of Mathematics and Mathematical Reasoning acquired up to secondary level, especially to concrete application-oriented problems.

The syllabus of the examination is given below:

1. Simplification of Arithmetic and Algebraic Expressions.
2. Unitary Method, Average, Percentage, Simple and Compound interest, LCM, GCD, Ratio and Proportion, Profit and Loss.
3. Algebraic Formulas, Factorization of Polynomials, Linear and Quadratic Equations, Linear and Quadratic Inequalities.
4. Systems of Linear Equations with two or three unknowns.
5. Exponents and Logarithms. Exponential and Logarithmic functions.
6. Arithmetic and Geometric Sequences and Series.
7. Line, Angle, Triangle related theorems. Theorem of Pythagoras, Circle – Theorems, Corollaries.
8. Area related theorems and construction, Mensuration – plane figures and solid objects.
9. Cartesian Geometry- Distance, Equation of a Straight Line.
10. Trigonometric ratios and functions. Problems on height and distances.
11. Set theory. Venn diagram.
12. Counting Principles, Permutations and Combinations. Elementary Probability.

Marks Distribution : Full marks is 50. Twelve questions will be set, each carrying five marks. The candidate will be asked to answer any ten questions out of twelve.