Syllabus for Maths Entrance Test

Arithmetic

1. Use of non-programmable scientific calculators.
2. Factors and multiples, highest common factor, lowest common multiple.
3. Fractions, arithmetical operations on fractions. Decimals. Approximations, decimal places, significant figures and standard form.
4. Applications of averages, percentages, ratios, proportions and rates.

Mensuration

5. Areas and perimeters of square, rectangle, triangle, parallelogram, trapezium, and circle.
6. Surface areas, volumes, weights and densities of cube, cuboid, cylinder, prism, pyramid, cone and sphere.

Algebra

7. The laws of indices and their manipulation.
8. Addition, subtraction, multiplication and division of polynomials.
9. Factorisation, perfect square, difference of two squares, factorisation of quadratic polynomials, factorisation by grouping.
10. Manipulation of formulae: change of subject of a formula and evaluation of formulae.
11. Manipulation of algebraic fractions.
12. Solving linear equations.
13. Solving quadratic equations by (i) factorization, (ii) formula.
14. Solving simultaneous linear equations with two unknowns.

Trigonometry

15. Angular measure in radians.
16. Length of arc and area of sector.
17. Pythagoras Theorem.
18. Trigonometric ratios of acute angles including special angles of $0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°.
19. Trigonometric ratios for angles of any magnitude.
20. Problems based on right-angled triangle including angles of elevation and depression, bearings and distances.
21. Solution of triangles including simple three-dimensional problems and use of sine and cosine rules for acute–angled triangles.

Graph

22. Graphs of equations of the linear form y = mx +c, graphs of quadratic form $y = ax^2 + bx + c$ and cubic form $y = ax^3 + bx^2 + cx + d$.
23. Interpretation and use of graphs (interpolation and extrapolation).

Geometry

24. Similarity and congruency. Areas of volumes of similar figures.
25. Symmetry and angle properties of circle and polygon.

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