

Chapter VII,—§ 99; Statement of § 100; § 102, 6, *April*.

Centre of parallel forces. Chapter VIII to § 113. Short note on § 114, 15.

Formula $x = \frac{\sum (Px)}{\sum (P)}$. § 116-120.

Centre of gravity, Chapter IX to § 135. Trapezoid, alternative proof for § 136.

Results only for pyramid and cone § 137-140. § 141-3. Formula $\bar{x} = \frac{\sum (mx)}{\sum (m)}$ § 144-6, compared with § 114-5.

Properties of the centre of gravity, Chapter X, omitting § 154-6. Alteration of centre of gravity of a body or system when a portion is transferred to another position.

The lever and balances, Chapters XI, XII; omitting analytical proof of the requisites of a balance; § 173.

Machines; Chapter XIII; with a simpler view of a train of wheels, § 187, omitting all consideration of the size of the teeth. Machines in combination; product of their mechanical advantages.

Pulleys; Chapter XIV; omitting weights of pulleys, § 202-6, and second case of Spanish Barton given erroneously in § 207.

Inclined Plane; Chapter XV.

The Screw; Chapter XVI.

Compound Machines; Chapter XVII; proved by the principle of Virtual Velocities.

Virtual Velocities; definition and statement of principle; Chapter XVIII.

Certain forces may be omitted from the equation of Virtual Moments.

Friction. Co-efficient of friction. Angle of friction. Limiting angle of resistance. Chapter XIX; omitting § 255-7 and § 260.

Easy problems on the above course.

Marks—April, 100; June, 400.

Notes and Recitations..... 50.

3RD CLASS. (VOLUNTARY)—TOTAL, 2,000 MARKS.

Qualification,—one third for any section.

Marks—December, 200.

SECTION F.—*Euclid* XI, to Prop. 21.

SECTION G.—*Algebra* (*Todhunter's*). Theory of quadratics and quadratic expressions, Chapter XXII. Simultaneous equations involving quadratics, XXIII, XXIV. Imaginary expressions, Ratio, Proportion and Variation; practical examples only, XXV to XXVIII. Progressions, including the sum of the squares, cubes, &c., of the first n natural numbers, and thence the summation of series having the last term rational and algebraic, XXX to XXXII, omitting § 456-8. Mathematical Induction, XXXIII. Permutations and combinations, XXXIV, omitting § 500. Binomial theorem, proof for positive, integral exponent only, XXXV to XXXVI, omitting § 516-20, 523-25, and only reading over § 527. Logarithms, XXXVIII, XXXIX, omitting § 549, and only reading over § 551. Convergency of series, only reading over the investigations and applying them to examples, XL. Interest, XLI. Annuities, XLIII, omitting § 589, 90, 97-99. Continued fractions, XLIV, XLV, omitting § 604 11 and 613-22. Indeterminate equations, XLVI to § 626. Partial fractions and indeterminate coefficients, XLVIII, with notes on partial fractions involving multiple and irrational roots. Summation of series L, omitting § 661-4, 666, 670-1. Summation by finite differences without proof (*Notes*). Inequalities, LI to § 680. Note result of § 681.

Marks,—December, 200.

SECTION H.—*Plane Trigonometry* (*Todhunter.*) I to XVI, omitting § 180—210, but reading them over for comparison with the Differential Calculus; Inverse Functions—Chapter XVIII, omitting § 264. Demoiivre's Theorem—Chapter XIX, § 266-7, omitting proof for fractional and negative values of the exponent... Marks—April, 200.