

## PART II.

## WRITTEN EXAMINATION.

*Appliances to be provided.*

7. Each candidate shall provide himself with book of mathematical tables; a 20-40 scale, a parallel ruler (15 in. most suitable), a protractor, and all necessary appliances for plan drawing, except paper.

Traverse tables may be used. Calculating machines, slide rules, &c., are not allowed in the examination-room.

Books of tables shall be subject to the approval of the Board, and shall not contain notes.

*Subjects of Examination.*

8. The examination shall embrace the following subjects:—

## (a) Principles and Practice of Surveying—

Details of practice, including the keeping of field notes.

Cadastral, Stadia, Topographical, Trigonometrical, and Underground Surveying.

Setting out areas and curves.

Barometric and other measurements of heights.

The use of contour maps for locating and laying out roads.

Designing for the subdivision of town, suburban, and country lands.

Principles of town planning.

Surveying under the Real Property Acts.

Redetermination of boundaries.

Writing technical descriptions of boundaries.

Plotting and drawing plans, sections, and contours.

## (b) Computations—

Reduction of traverses, co-ordinates, computations connected with triangulation and the setting-out of roads and curves, adjustment of discrepancies in surveys, computation of areas, including such as have irregular and curved boundaries.

## (c) Solution of spherical triangles, azimuth, altitude, hour angle, right ascension, declination, and the relations between them; use of ephemerides; time, correction to sun or star observations, effect of errors of adjustment of instruments, the principles of elementary geodesy, including spherical excess and convergence of meridians; declination of magnetic needle, projection of maps and charts.

## (d) Engineering Surveys—

Computations in connection with levelling, grading, setting out, and measurement of earthworks.

## (e) Miscellaneous—

Elementary physics, elementary geology, and elementary forestry.

Physics. The subject generally as contained in any good elementary text-book, with a more detailed knowledge of the laws underlying the construction and use of surveying instruments—*e.g.*, the pressure of liquids and gases, as affecting the barometer, thermometer, and level.

The allowances to be made for the effects of heat in the practical work of the surveyor.

The reflection and refraction of light; lenses, &c.

Terrestrial magnetism and variation of the compass.

Geology: The subject generally as contained in any good elementary text-book, with special reference to—

The classification of areas of land according to their formation, rocks, soils, &c., and to their adaptability for industrial purposes.

NOTE.—Specimens of rock will be submitted for classification and description.

Forestry: The distribution of native timbers and their economic values. The influence of forests on climate and water-supply, the principles of afforestation.