

(5.) Practical Examples: Reduction of traverses on meridian and perpendicular; calculations of areas; boundary-lines; opposite sides of roads; sides of triangles, &c. (50 marks.)

Advanced Computations.

(6.) Plane and spherical trigonometry; trigonometric series, exponential formula, solution of spherical triangles; Legendre's theorem interpolation. (100 marks.)

(7.) Method of Least Squares: Application to base-line measurements; adjustment of quadrilateral, polygon; astronomical observations for time, azimuth, and latitude, and lines of levels. (100 marks.)

(8.) Geodesy: Reduction of base-line measurement and observations in major and primary triangulation; theory of the figure of the earth; computation of differences of latitude, longitude, and azimuth of points of the spheroid. (100 marks.)

(9.) Elementary Theory of Map Projections: The curve of alignment, the geodesic, error of scale, radius of curvature of meridians and parallels, projections commonly used in map-construction and the calculation of the co-ordinates. (100 marks.)

(10.) Elementary Practical Astronomy: Systems of spherical co-ordinates, the various kinds of time, the calendar, use of the ephemeris, star catalogues; precession mutation, refraction, parallax and aberration; reductions of observations to the centre of the earth. (100 marks.)

Special subject to be taken by candidates for admission to the Computing division of the Head Office staff.

(11.) Reduction of tidal observations; the automatic tide-gauge record; measurement of the hourly heights, and entry in the computation forms; harmonic analysis of the hourly heights; angles and factors for reduction and arguments at epoch; calculation of the tidal constants for the prediction of the time and height of high and low water. (100 marks.)

Special subject to be taken by candidates for admission to the position of assistant on the staff of the Magnetic Observatory.

(12.) (a.) Theory of terrestrial magnetism; observations of deflection and vibration; calculations of the horizontal force; observations of declination and inclination; use of micrometers; determination of rate of chronometers and clocks. (100 marks.)

(b.) Meteorology: Distribution of temperature; pressure and circulation; atmospheric electricity; atmospheric optics; atmospheric acoustics; meteorological instruments. (100 marks.)

(c.) Seismology: Earthquakes and earth tremors; transmission of waves in an isotropic solid determination of centrum; instruments; graphic records. (100 marks.)

(d.) Development of photographic films, papers, and plates. (100 marks.)

Text-books suggested.

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| 1. Elementary Trigonometry .. | Hamblin Smith. |
| Chambers Mathematical Tables and Explanation of the Tables .. | James Pryde. |
| Boileau's Traverse-tables and Introduction | J. T. Boileau. |
| 2. Computation | E. M. Langley. |
| Adjustment of Observations (Dr. Bowditch's Rule for balancing a Survey only) | Wright and Hayford. |
| 3. Makers' Instructions for the various Instruments. | |
| 4. Survey Regulations | N.Z. Land and Survey Department. |
| Cadet's Manual | Part II (in preparation). |
| 5. Cadet's Manual | Part I. |
| 6. Plane and Spherical Trigonometry .. | W. Chauvenet. |
| Introduction to Mathematical Tables | S. Newcomb. |
| 7. Adjustment of Observations .. | Wright and Hayford. |
| Geodesy and Least Squares .. | C. I. Crandal. |
| 8. Geodesy | A. R. Clarke (out of print). |
| Geodesy and Least Square .. | C. I. Crandal. |
| 9. Maps, their Uses and Construction .. | Morrison. |
| Map Projections | Hinks. |
| 10. Mathematical Astronomy, Chapters I-XI | Barlow and Bryan. |
| 11 and 12. Admiralty Manual of Scientific Inquiry, 5th Edition | R. S. Ball. |