Statics.—Graphical and analytical methods; simple machines; centre of gravity; friction.

Dynamics.—Accelerated motion in a straight line treated graphically; uniformly accelerated motion in a straight line; composition of velocities and accelerations; uniform circular motion; motion under gravity; elementary illustrations and applications of dynamical principles. (In the absence of special instructions that a question is to be answered by a particular method, candidates are at liberty to choose their method from any branch of mathematics.)

Science (Physics and Chemistry). (Marks, 2,000.)

The questions set will be such as may be answered by candidates who have acquired their knowledge by an experimental treatment of the subjects.

Physics.

Heat.—Construction and use of thermometers. Expansion of solids, liquids, and gases. Specific heat. Phenomena of change of state; vapour-pressure, latent heat. Simple phenomena of conduction, convection and radiation of heat. Heat as a form of energy.

Light.—Rectilinear propagation. Reflection and refraction; formation of images by plane and spherical mirrors, and by concave and convex lenses. Telescope and microscope. The dispersion of light by a prism.

Magnetism.—Simple phenomena of magnetism; induction. Lines of force in a magnetic field; terrestrial magnetism. Elementary quantitative notions of strength of pole, magnetic force due to a pole, strength of field.

Static Electricity.—Electrification; induction. The electroscope; electrophorus. Elementary notions of potential and capacity. Distribution of charge on conductors.

Current Electricity.—Meaning of the units—volt, ampere, and ohm. The simple voltaic cell; Daniell cell; Leclanché cell; accumulator. Ohm's law with simple applications; arrangement of cells in series and parallel. Magnetic field due to a current; astatic galvanometer, tangent galvanometer, moving coil galvanometer. Laws of electrolysis; electro-chemical equivalent. Fundamental experiments of electro-magnetic induction.

Chemistry.

Classification of matter into single substances and mixtures, elements and compounds. Quantitative laws of chemical combination; outlines of the explanation of these laws by the atomic theory. Avogadro's law. General methods of determining chemical equivalents. The chemistry of water and of its constituent elements; water as a solvent; natural waters. The atmosphere; combustion; oxidation, the various classes of oxides. Acids, bases and salts. Chlorine and hydrogen-chloride; nitrogen, ammonia and nitric acid; sulphur, sulphur-dioxide and sulphuric acid. Carbon; the oxides of carbon; carbonates. The hydrocarbons, marsh-gas and acetylene; flame. The metals: General methods of preparation of the metals and their commoner salts. (Questions will not be set on metallurgy or on technical processes of manufacture.)

APPENDIX III.—SYLLABUS OF THE EXAMINATION IN MILITARY SUBJECTS. (See paragraphs 17 to 20.)

(*A.*) *Written Examination.*

	Marks.
1. Military history and strategy—	
(*a.*) One general paper dealing with the strategy and general conduct of a selected campaign, which will be notified in Army Orders annually in July ... (A knowledge of the details of battles and of the movements of small units is not required except in cases in which these immediately affect the general conduct of the campaign.)	500
(*b.*) One paper on a selected period of the campaign in (*a*), with reference to the principles laid down in "Field Service Regulations, Part I, Operations" (The object of this paper is to elicit from candidates their knowledge of tactical principles, and to test their power of applying those principles, while discriminating between the methods by which those principles were applied during the selected period of the campaign in question and the methods by which they would be applied at the present time.)	500
2. Tactics—	
(*a.*) One paper on the matter contained in "Field Service Regulations, Part I, Operations," and in the training manuals of the different arms ...	750
(*b.*) One paper on the application of tactical principles to schemes worked out on a map ... ... (This paper will be framed with a view of bringing out the intimate connection between Tactics, Map-reading, and Field engineering.)	750
3. Field engineering—	
(*a.*) One paper on the subject-matter of the "Manual of Field Engineering ...	500
(*b.*) Application of the principles contained in the above-named manual to schemes worked out on a map ... ... (Candidates are advised not to attempt to commit to memory the various formulæ given in the manual, or the contents of the tables given in the various appendices. When questions involving a knowledge of formulæ or the contents of the appendices are set, the necessary formulæ, figures, &c., will be supplied with the questions.)	500