

(a.) *Heat, including Radiant Heat*.—Temperature; expansion; conduction and convection; latent heat; specific heat; calorimetry; hygrometry; sources of heat; the steam-engine; conservation and dissipation of energy; and radiation, absorption, transmission, reflection, and refraction of heat.

(b.) *Sound and Light*.—The production and propagation of sound; vibrations of sounding bodies; interference; and the physical theory of music. Nature, production, and propagation of light; absorption; reflection; refraction; prismatic dispersion; spectra; fluorescence; interference; plane polarization; and the principal optical instruments and vision. Or—*Electricity and Magnetism*.—Production and properties of statical and voltaic electricity; induction, including secondary currents; thermo- and magneto-electricity; electro-dynamics; magnetism and dia-magnetism; the electric telegraph; and electric measurements.

(9.) **CHEMISTRY**.—(Two papers.)—The chemical relations of cohesion, heat, light, and electricity; the general principles of chemical combination, notation, and nomenclature; the description and classification of the more important elements and compounds, and of organic bodies; qualitative analysis and calculations of chemical problems; and the description of the leading chemical theories.

NOTE.—The division of this subject into two papers will be left to the discretion of the Examiner.

(10.) **NATURAL SCIENCE**.—Either of the following branches:—

A. *Geology and Mineralogy*.—(Two papers.)—Systems of crystallization; physical properties and chemical composition of the more important minerals; origin and classification of rocks; formation of rock-beds and structure of rock masses; denudation and movements of the surface of the earth; chronological classification of rocks; the origin of the surface features of the earth; and the laws and generalizations of palæontology.

NOTE.—The division of this subject into two papers will be left to the discretion of the Examiner.

B. *Biology*.—(Two papers.)—(a.) General principles of biology, including those of physiology, of distribution, and of classification. (b.) One of the following:—(1.) *Zoology*.—Animal morphology, the principal characters of the chief groups of animals, and the main facts of their distribution in time and space. (2.) *Botany*.—Vegetable morphology, including histology, the principal characters of the chief groups of plants, and the main facts of their distribution in time and space. (3.) *Anatomy and Physiology*.—Human anatomy and physiology.

A candidate in natural science will be required, on presenting himself for examination, to furnish to the Supervisor a certificate from a teacher of the subject or branch subject that he has passed a practical examination in such subject, as follows:—For *Geology*.—Determination by physical characters of minerals and rocks; determination of fossils; construction of geological sections. For *Zoology*.—Dissection and microscopical examination of types of four different groups of invertebrate animals, and of the different groups of vertebrate animals. For *Anatomy and Physiology*.—Dissection of the human body. For *Botany*.—Dissection and microscopical examination of types of four different groups of cryptogamic plants, and of eight different orders of phanerogamic plants.

(11.) **MENTAL SCIENCE**.—(Two papers.)—(a.) *Psychology*.—Outlines of the physiology of the nervous system; instinct; the senses and the intellect; abstraction; perception. *Ethics*.—The psychology of the will; the ethical standard; the moral