

(e) Swimming and Life-saving: The rescue drill on land; the release drill on land; the drill for the Schafer method of resuscitation; the drills for rescue in the water, second and fourth methods, together with one method of release. In the rescue methods the subject shall be carried a distance of not less than ten yards. Object diving from the surface of the water, or from the side of the bath, preferably the former. Swimming a distance of not less than 50 yards breast stroke and 25 yards back stroke.

Candidates holding the "elementary certificate" of the Royal Life-saving Society, or its equivalent, shall be exempt from any test in swimming and life-saving. In exceptional circumstances a candidate may be exempted by the Director from qualifying in swimming and life-saving.

Part II (Optional Subjects).

Division I.

(10) *Geography, including Physiography and Economic Geography* (three-hour paper).—(a) The earth as a globe: Size, shape, and general structure; motions of rotation and revolution and their effects—*e.g.*, day and night; seasons. The earth as a member of the solar system: Inclination of the earth's axis and its effects; meridians and parallels; latitude and longitude; measurement of time; the construction and use of maps; projections (equidistant, conical, and Mercator's only); rhumb-line and great-circle sailing.

(b) The Atmosphere: Composition; distribution of pressure; isobars and barometric gradient; seasonal changes of temperature; isotherms; winds; planetary circulation; trade winds, &c.; cyclones and anticyclones; monsoons, &c.; rainfall, its cause and seasonal distribution; rainy and dry belts; climate; factors of irregular distribution of land and water; climatic control over forms of vegetation; meteorological instruments; weather records; interpretation of weather charts; principles of weather forecasting.

(c) The Ocean and its Work: Form of ocean basins; composition temperature, and pressure of ocean-water; waves, currents, tides; processes at work on shore-lines; effect of earth-movements in modifying coasts, especially as regards their effect on human activities; special attention to the influence of the oceans on the life of man.

(d) The Land: Stratified and unstratified rocks; causes and effects of weathering; the work of running-water; work of destruction; corrosion, carving out of land-forms, &c.; transportation; removal of waste; work of construction; such aggradational forms as flood-plains, terraces, alluvial-fans, deltas; the cycle of erosion; its importance in systematizing the study of land-forms; initial, consequent, and subsequent drainage features; influence of geological structure on development of land-forms; stages in the cycle of geographic development; complications of geographic cycle due to differential movements of earth's crust; work of ice; glaciers; erosion forms of mountain or valley glaciers; moraines; importance to man of the work of ice in the past; volcanic and thermal activity; movements of the earth's crust; origin of the various types of mountains, valleys, plateaux, plains, lakes, and islands; methods of representing topographical features on maps and diagrams.

(e) Man on the Earth: The division of the world into natural, economic, and political regions; geographical factors controlling the production and exchange of commodities, especially the chief foods and foodstuffs, minerals, and raw materials, and the staple manufactures; distribution of the chief economic plants and animals; factors encouraging or hindering trade.

This section will have special reference to the British Empire and the Pacific area, America and Europe, dealing with the chief geographical and local conditions under which commodities are produced and distributed; with the chief trade-routes and means of transit; with social and political conditions affecting or likely to affect trade with New Zealand; with ports or harbours, coaling-stations; the chief post and telegraph routes; the distribution of population, of minerals, of forests, and of vegetable products; the necessary conditions of development in manufactures, agriculture, and commerce; the distribution of industries.

A candidate in geography will be required to forward to the Department a certificate on the prescribed form that he has carried on satisfactorily a course of practical work in the subject occupying at least thirty hours. Generally speaking, not less than one-half of this total must be spent in the field.

(11) *Agriculture and Dairy Science* (three-hour paper).—(a) Plant Work: General knowledge in considerable detail of the work carried out by plants, with special reference to osmosis, photosynthesis, transpiration, respiration, sap elaboration, translocation, and digestion of reserve foods. Fertilization