

Serial Number 153/1937.



**THE PUBLIC SERVICE REGULATIONS, 1913,
AMENDMENT NO. 76.**

Enacting authority: The Public Service Commissioners with the approval of the Governor-General in Council.

Acts pursuant to which the regulations were made: The Public Service Act, 1912, and section 41 of the Finance Act, 1936.

Date on which the regulations were made: 2nd day of April, 1937.

Date of approval by the Governor-General in Council: 9th day of April, 1937.

Date of notification in *Gazette*: 15th day of April, 1937.

REGULATIONS.

1. These regulations may be cited as the Public Service Regulations, 1913, Amendment No. 76.

2. These regulations shall be read together with and form part of the regulations made under the Public Service Act, 1912, on the 31st day of March, 1913* (hereinafter called the "principal regulations").

3. These regulations shall come into force on the day following notification in the *Gazette* of the making hereof.

4. Regulation 155 of the principal regulations is amended by inserting the words "Public Service" before the words "Senior Examination" also before the words "Entrance Examination", and any reference to "Entrance Examination" and to "Senior Examination" in the principal regulations shall hereafter be deemed to be a reference to the "Public Service Entrance Examination" and to the "Public Service Senior Examination" respectively. Regulation 155 of the principal regulations is further amended by revoking the words "certificate of competency", and substituting the words "Certificate of Attainment"; and by revoking the figures "1908", and substituting the figures "1914".

5. Regulation 164 (1) (b) of the principal regulations is revoked, and the following substituted:—

(b) Provided further that if any person is available and otherwise eligible who has at any time qualified for a Higher Leaving Certificate or passed the Entrance Examination of the New Zealand University or the School Certificate Examination, although in any of these cases he may not have passed the Public Service Entrance Examination, he shall take precedence over candidates who have passed the Public Service Entrance Examination only.

* *Gazette*, 1st April, 1913, Vol. I, page 977.

6. Regulation 170 of the principal regulations is revoked, and the following substituted :—

TIME OF ANNUAL PUBLIC SERVICE ENTRANCE EXAMINATION.

170. A Public Service Entrance Examination shall be held annually in the month of November or December in every city or borough in which the Board of any education district has its office, and in any other places that may from year to year be appointed for the purpose by the Commissioners.

7. Regulation 173 of the principal regulations is revoked, and the following substituted :—

DATE OF APPLICATION FOR EXAMINATION.

173. Every candidate for the Public Service Entrance Examination must give notice of his intention to sit for such examination. Such notice must be in the form prescribed and must reach the Director of Education not later in any year than the Monday immediately following the date fixed by regulations for the time being in force for the commencement of the third term in public post-primary schools. With the aforesaid notice each candidate must send—

(a) A receipt for the payment of one pound at some money-order office of the Post and Telegraph Department in New Zealand. The candidate's notice may, however, be received by the Director of Education not later than the fourteenth day after the date fixed for the receipt of applications, if it is accompanied by a receipt for a late fee of ten shillings paid at some money-order office of the Post and Telegraph Department in New Zealand.

(b) The names of the optional subjects chosen by the candidate.

Candidates who through illness or other unavoidable circumstance are unable to present themselves for examination in any of the subjects for which they have entered shall be entitled, on application to the Director of Education, to a refund of the entrance fee to an extent which is reasonable in view of all the circumstances :

Provided that the Director of Education may, in his discretion, require of such candidates the production of medical or other such certificates setting out the circumstances.

8. Regulation 177 of the principal regulations is revoked, and the following substituted :—

SELECTION OF SUBJECTS.

177. Subject to any limitation hereinafter made, every candidate in the Public Service Entrance Examination shall be examined (a) in the subjects named in Group I of the examination schedule, lettering being alternative to handwriting, and practical mathematics to arithmetic ; (b) in one subject to be chosen by the candidate from Groups II or III ; and (c) in any other subject or subjects to be chosen from Groups II, III, or IV, in accordance with such schedule, but so that the total possible maximum of marks assignable in all the subjects in which he is to be examined shall not exceed 1,800 : Provided that

not more than three subjects may be chosen from Group II, and provided, further, that no candidate may present himself for examination in any one of the subjects woodwork theory, metalwork theory, dressmaking and needlework theory, without presenting himself also in the corresponding practical portion of the subject.

9. Regulation 178 of the principal regulations is revoked, and the following substituted :—

SCHEDULE OF SUBJECTS.

178. The following shall be the subjects of examination and the maximum marks assigned to the several subjects :—

					Maximum Marks.
<i>Group I.</i>					
(1)	English	..	..	..	400
(1A)	Handwriting or lettering	..	..	..	100
(2)	Arithmetic or practical mathematics	..	..	..	300
<i>Group II.</i>					
(3)	General experimental science	..	..	..	200
(4)	Chemistry	..	..	..	200
(5)	Magnetism and electricity	..	..	..	200
(6)	Technical electricity (not to be taken with (5) )	..	..	..	200
(7)	Heat and light	..	..	..	200
(8)	Heat engines (not to be taken with (7) )	..	..	..	200
(9)	Home science..	..	..	..	200
(10)	Agriculture	..	..	..	200
(11)	Botany	..	..	..	200
(12)	Dairy science..	..	..	..	200
<i>Group III.</i>					
(13)	History and civics	..	..	..	200
(14)	Geography	..	..	..	200
(15)	Mathematics (not with practical mathematics or alternative mathematics)	..	..	..	400
(15A)	Alternative mathematics (not with mathematics)	..	..	..	400
(16)	Applied mechanics	..	..	..	200
(17)	Hygiene	..	..	..	200
<i>Group IV.</i>					
(18)	Latin	..	..	..	400
(19)	French	..	..	..	400
(20)	Maori	..	..	..	400
(21)	Shorthand	..	..	..	200
(22)	Bookkeeping and commercial correspondence	..	..	..	200
(23)	Woodwork theory and practice	..	..	..	200
(24)	Metalwork theory and practice	..	..	..	200
(25)	Dressmaking and needlework theory and practice	..	..	..	200
(26)	Housecraft	..	..	..	200
(27)	Trade drawing	..	..	..	200
(28)	Drawing (any two of freehand, instrumental and design)	..	..	..	200

10. Regulation 178A of the principal regulations is revoked, and the following substituted :—

178A. For candidates for appointment as junior draughtsmen the following subjects are compulsory :—

	Maximum Marks.
(1) English	400
(1A) Handwriting or lettering	100
(2) Arithmetic or practical mathematics	300
(15) Mathematics, or (15A) alternative mathematics	400
(27) Trade-drawing	200
(28) Drawing (freehand and instrumental)	200

Such candidates shall select in addition any one other subject with a maximum of 200 marks.

Maximum obtainable 1,800

11. Regulation 179 of the principal regulations is amended by inserting after the word "arithmetic" the words "(or practical mathematics)".

12. Regulation 180 of the principal regulations is revoked, and the following substituted :—

180. In any case in which the marks assigned to a candidate's work in any subject are less than 25 per cent. of the maximum assignable in that subject, such marks shall not be included in reckoning the candidate's aggregate of marks.

13. Regulation 181 of the principal regulations is amended by omitting all the words after the words "various subjects".

14. The principal regulations are amended by inserting next after Regulation 181 thereof the following additional regulation :—

SCOPE AND STANDARD OF EXAMINATION.

181A. The scope of the examination in subjects (1) to (28) inclusive enumerated in Regulations 178 and 178(A) hereof is as set out hereafter. The scope of the practical examination in subjects (23) to (25) inclusive of the schedule of subjects contained in Regulation 178 hereof is such as may reasonably be expected at the end of a two-year course in a post-primary school.

GROUP I.

(1) *English.*

The English paper will be designed to test the literary comprehension and appreciation of the candidates, and a standard will be required in written composition such as can reasonably be attained after two years' post-primary study of good English models. Great importance will be attached not only to correctness of composition, but also to originality of thought and expression.

Grammar will be treated from the functional point of view. No formal parsing will be required. Sentences, clauses, phrases, and parts of speech should receive just enough attention to allow candidates to do analysis and to explain clearly errors in accident and syntax.

Questions may also be set on synthesis, direct and indirect speech, punctuation, the construction of sentences to indicate the meanings and uses of words, letter-writing, and the precis of literary or other matter.

(1A) (a) *Handwriting.*

The copying from print or manuscript of prose, poetry, business letters, tabulated matter, and commercial papers. In the assessment of marks for handwriting consideration will be given chiefly to legibility, regularity, neatness, and speed. Handwriting will be taken into account in all subjects tested by written examination.

Or—

(b) *Lettering.*

The test in lettering will consist of (1) drawing not more than three Roman letters about two inches high, (2) setting out in plain capitals based on the Roman forms a short title with sub-title in "lower case" letters of the same general character.

(2) (a) *Arithmetic.*

Vulgar and decimal fractions; metric system; approximations, proportion; partnerships; averages; percentages; profit and loss; bankruptcies; taxes, premiums; simple and compound interest; bankers' discount; stocks and shares; simple cases of exchange; square root; cube root of numbers reducible to prime factors not greater than 11; areas of plane rectilinear figures and of circles; mensuration of the prism, pyramid, sphere, circular cylinder, and circular cone. The use of algebraical symbols and processes, of graphical methods and of logarithms, will be permitted. Special importance will be attached to correct methods of setting out work.

Or—

(b) *Practical Mathematics.*

Long tots; vulgar and decimal fractions; metric system; proportion; averages; percentages; cost, length, time angle, area, volume, mass, weight; square root; cube root of numbers reducible to prime factors not greater than 11; areas of plane rectilinear figures, and of circles; mensuration of the prism, pyramid, sphere, right circular cylinder, and right circular cone; use of logarithms; the straight-line graph and its application to simple practical problems; evaluation of simple explicit functions; methods of estimating irregular areas; errors; approximations; rough checks. The construction of plane figures with sides of constant or zero curvature from sufficient data; and the solution of triangles by drawing to scale; simple geometrical constructions required in drawing such figures; plotting graphs from given numerical data and reading interpolation from graphs so plotted.

GROUP II.

(3) *General Experimental Science.*

(Candidates who select this subject in addition to chemistry are required to take Section 1 and Section 2. Other candidates who select this subject take Section 1 and either Section 2 or Section 3.)

Section 1.—British and metric systems of measurement. Errors of observation and errors arising from too great reliance upon arithmetical calculations. Volumes of solids and liquids. Use of the balance. Flotation (iceberg, ship, Plimsoll line, submarine boat, dirigible).

Principle of Archimedes. Density and specific gravity of solids and liquids. Common hydrometer and lactometer. Simple experiments dealing with solution of gases and solids in liquids. Evaporation, condensation, distillation, filtration, crystallization, emulsion.

Section 2.—Ideas of pressure and thrust in fluids (U tube, water-level, spirit-level, gauge-glass, town water-supply, artesian well). Transmission of fluid pressure (hydraulic press, jack, pressure-gauge). Pressure of gases (Boyle's law, syringe, siphon, cycle-pump, lift-pump). The barometer (mercurial and aneroid). Representation of forces. The spring balance. Experimental determination of the resultant of two concurrent forces and of parallel forces; graphical determination of the former. Moments and the couple. Tests of accuracy of a balance and methods of weighing. Centre of gravity and its bearing on equilibrium. Determination of position of centre of gravity in very simple cases. Simple and common contrivances based upon the lever and the inclined plane.

Section 3.—Simple experiments on the properties and composition of air. Combustion (fire, candle, Bunsen burner, gas-stoves, petrol). Ventilation and heating of rooms. Oxidation and the formation of oxides, particularly oxides of carbon. Respiration and the carbon cycle. Composition and properties of water. Simple experiments of oxygen, hydrogen, and carbon.

And either—

- (a) The difference between chemical and physical change and between mechanical mixtures and chemical compounds; indestructibility of matter; hard and soft waters; chief impurities of water; an elementary study of sulphuric acid, caustic soda, common salt, washing-soda, copper sulphate, and limestone as examples of acids, alkalies, and salts; *or—*
- (b) Simple study of the plant as an organic whole; an elementary knowledge of the chemical constituents of plants and the sources from which the plant derives them, treated as a cycle of transformations from living to non-living matter and back again; simple qualitative and quantitative experiments illustrating the nutrition of plants, the conduction of water and food substances in the plant, storage of reserve material, respiration, and transpiration; influences of temperature, moisture, and light on the growth of plants.

The candidate will be expected to show that he has acquired by actual experiment, observation, and measurement his knowledge of the matters set forth in the sections of the above syllabus selected by him; but he will not be expected to show that he is familiar with other than the simple apparatus and appliances commonly used in connection with elementary instruction in practical physics or chemistry in post-primary schools. He will be required to forward, before the date of examination, a certificate in the prescribed form that he has carried out satisfactorily a course of practical work based on the syllabus.

(4) *Chemistry.*

Air ; its weight ; rusting of iron and the effect on the composition of air ; effect of heating in air, lead, copper, sulphur, phosphorus, magnesium ; volumetric analysis of air ; detection of water and carbon dioxide in the air ; constituents of air ; respiration and the carbon cycle.

Air and combustion ; the burning of a candle ; structure of candle and gas flames ; fuels (wood, coal, coke, charcoal, coal-gas, kerosene, petrol) ; products of combustion ; danger of imperfect combustion.

Water ; natural waters ; common impurities and methods of removing them (*e.g.*, sedimentation, boiling, distillation, chlorination) ; hardness of water ; composition of water ; water of crystallization (easy experiments).

The determination and graphic representation of the solubility of solids in water at different temperatures (easy cases).

Preparation (laboratory and commercial) and properties of oxygen, nitrogen, and hydrogen.

Elements, mixtures, compounds ; chemical and physical changes ; indestructibility of matter ; symbols, formulæ, equations ; the determination in easy cases of the weight of the materials required to yield or to combine with a given weight of a given substance.

Experiments illustrating modes of chemical action. The nature and general properties of oxides, acids, bases and salts.

The most important properties of carbon, sulphur, phosphorus, and sulphuric acid ; the preparation and properties of the oxides of carbon, sulphur dioxide, chlorine, ammonia, hydrochloric acid and nitric acid.

An elementary experimental study of limestone, quicklime, slaked lime, washing-soda, caustic soda, common salt, and copper sulphate.

The candidate will be expected to show that he has acquired by actual experiment, observation, and measurement his knowledge of the matters set forth in the above syllabus ; but he will not be expected to show that he is familiar with other than the simple apparatus and appliances commonly used in connection with elementary instruction in practical chemistry in post-primary schools. He will be required to forward, before the date of examination, a certificate in the prescribed form that he has carried out satisfactorily a course of practical work based on the syllabus.

(5) *Magnetism and Electricity.*

Properties of magnets ; methods of making magnets ; induction ; elementary notions of the magnetic field and lines of force ; the earth as a magnet ; dip ; declination ; mariner's compass.

Electrification by friction and by induction ; conductors and non-conductors ; the gold-leaf electroscope and its use ; distribution of electrification on conductors ; hollow conductors ; the electrophorus.

Elementary notions of the electric current, of the means of producing it, of its magnetic, heating, and chemical effects ; water and silver voltameters ; elementary notions of electromotive force and resistance ; Ohm's law ; electrical units (ampere, volt, ohm, watt, Board of Trade unit).

The galvanometer, its use in detecting changes in the strength of a current and in comparing (roughly) the strength of different currents and the resistances of different conductors ; ammeters and voltmeters (treated simply) ; the resistance-box.

Electromagnet ; electric bell ; glow-lamp.

Very elementary ideas of electro-magnetic induction.

The candidate will be expected to show that he has acquired by actual experiment, observation, and measurement his knowledge of the matters set forth in the above syllabus ; but he will not be expected to show that he is familiar with other than the simple apparatus and appliances commonly used in connection with elementary instruction in practical physics in post-primary schools. He will be required to forward, before the date of examination, a certificate in the prescribed form that he has carried out satisfactorily a course of practical work based on the syllabus.

(6) *Technical Electricity.*

Simple experiments with compass and magnet.

Elementary magnetic properties of iron and steel. An elementary study of magnetic fields and lines of force.

The Leclanche cell. Magnetic field about a wire carrying a current. Solenoids and electromagnets. The electric bell. The relay, the telegraph, and the telephone.

Practical units of current, quantity, electromotive force, resistance, power and energy. Laws of resistance. Use of Ohm's law for simple circuits.

Heating effect of an electric current treated quantitatively. Heaters, hot-wire instruments, and fuses. Electric lamps.

Principles underlying construction and use of ammeters and voltmeters (moving-iron and moving-coil).

Production of electro motive force by change of magnetic flux through an electric circuit. Simple application of principle to direct-current generators and motors.

Very elementary ideas of the alternating current, including its employment for experimental work in simple non-inductive circuits, within the limits of the above syllabus. Practical use of the transformer.

The candidate will be expected to show that he has acquired by actual experiment, observation, and measurement his knowledge of the matters set forth in the above syllabus. He will be required to forward, before the date of examination, a certificate in the prescribed form that he has carried out satisfactorily a course of practical work based on the syllabus.

(7) *Heat and Light.*

Experiments to illustrate the expansion of solids, liquids, and gases (qualitatively). Measurement of expansion of solids and liquids. Practical applications of the principle of expansion. Mercury and alcohol thermometers. Maximum and minimum thermometers. The anomalous expansion of water and its significance.

Experiments on melting and solidifying points (paraffin wax, butter, water), on boiling-points (water, salt solution). Effect of pressure on the boiling-point (digestor). Change of volume on solidification (water, paraffin). Change of volume on vaporization and applications (steam-pressure). Distillation and fractional distillation (water, alcohol, mineral oil).

Distinction between temperature and heat quantity. Units of heat. Measurement of specific heats of solids and liquids by method of mixtures. Absorption of heat during fusion and vaporization (treated simply) and applications thereof.

Heat transference (very elementary). Safety-lamp, hay-box, ventilation, winds, hot-water heating-system, cooling system of petrol-engine, thermos flask.

Nature and propagation of light. Pinhole images. Shadows and eclipses.

Intensity of illumination. Candle-power photometry.

Laws of reflection of light at plane surfaces. Images in plane mirrors.

Laws of refraction of light at plane surfaces. Passage of light through a plate, prism, and a lens. Formation of images by single convex lenses. Simple magnifying-glass. Camera. Astronomical telescope. Periscope.

Dispersion of light. The spectrum. The rainbow. Colour of bodies.

The candidate will be expected to show that he has acquired by actual experiment, observation, and measurement his knowledge of the matters set forth in the above syllabus; but he will not be expected to show that he is familiar with other than the simple apparatus and appliances commonly used in connection with elementary instruction in practical physics in post-primary schools. He will be required to forward, before the date of examination, a certificate in the prescribed form that he has carried out satisfactorily a course of practical work based on the syllabus.

(8) *Heat-engines.*

Expansion by heat of solids, liquids, and gases. Expansion joints. Thermometers, mercurial and water-tube. Fahrenheit and centigrade scales (the former to be used in all calculations involving practical applications).

A simple study of Boyle's and Charles's laws and of isothermal and adiabatic expansion (the latter treated only with the aid of steam tables).

Specific heat of water, copper, iron. The British thermal unit. Calorific values of various fuels, including coal-gas and petroleum products.

Latent heat and total heat of steam at various temperatures. Wet, dry, and superheated steam. Simple calculations on mixtures of water at various temperatures; mixtures of steam and water; evaporative power of fuels.

Transference of heat by conduction, convection, and radiation. Heat-insulation. Simple studies of common types of boilers and condensers.

A very elementary study of Joule's equivalent in connection with the conversion of heat into work in cylinders of simple steam-engine, gas-engine, petrol-engine. Indicator-diagrams for the above, and their use in practice. Principles underlying impulse and reaction steam turbines.

Simple studies in design of cylinder, piston, slide-valve and poppet-valve, steam-valve, water-gauge, pressure-gauge, injector, feed-pump, carburettor.

The candidate will be expected to show that he has acquired by actual experiment, observation, and measurement his knowledge of the matters set forth in the above syllabus. He will be required to forward, before the date of examination, a certificate in the prescribed form that he has carried out satisfactorily a course of practical work based on the syllabus.

(9) *Home Science.*

Simple experiments and investigations bearing on the following :—

1. Expansion of solids, liquids, and gases. Conduction, convection, and radiation treated simply, and especially in their relation to household appliances and operations.
2. The chief properties of carbohydrates, fats, proteins, and mineral matter.
3. The composition and structure of milk, eggs, meat, root and green vegetables and fruit, and of wheat in comparison with other common cereals.
4. Principles on which are based the various methods of preparing and cooking foods, including the use of baking-powders and yeast.
5. Changes in weight and character of foods in cooking.
6. Changes in food due to the agents of digestion.

The candidate will be required to forward before the date of the examination a certificate in the prescribed form that she has carried out satisfactorily a course of practical work based on the above syllabus.

(10) *Agriculture.*

The candidate will be expected to show (a) that he has a practical knowledge of the operations incident to the work of a school-garden, and (b) that he has conducted experiments and observations bearing on the life and growth of plants, on the lines indicated below under the head of "Experimental and Observational Work" :—

(a) *Work in the Garden.*—General: Preparation of the land; digging, trenching, hoeing, raking, and surface cultivation. Drawing drills. Sowing, thinning, pricking off, hardening, and planting out seedlings. Methods of treating light and heavy soils. Fertilizers; the time of year and the condition in which to apply fertilizers; the selection of fertilizers for particular purposes. Use of lime, soot, clay, road-sweepings, ashes, leaf-mould, &c., as soil-improvers. Arrangement of the garden to the best advantage from the points of view of space, succession of crops, and weeding.

Special: Methods of plant-cultivation. Cultivation and management of—

- (i) Green, pod-bearing, and tap-rooted vegetables, potatoes, onions, vegetable marrows, tomatoes. Gathering and storing of vegetables.
- (ii) Cereals and other grasses, and fodder-plants generally. Succession of crops. An elementary study of the common weeds of the candidate's district.

(b) *Experimental and Observational Work.*—The seed: Parts of the seed. Conditions necessary for germination and growth. Testing the vitality of seeds. The collection and preservation of seed. Experiments illustrating the phenomena of germination and the establishment of the young plant (*e.g.*, absorption of moisture by seeds; temperature of and pressure exerted by germinating seeds; how seeds escape from their covers; how seeds get buried in the soil; how young plants get above the ground; and how they deal with obstacles met with during the process; how seeds on the surface get their roots into the ground; proof that germinating seeds take in oxygen and give out carbon dioxide, &c.).

The root: The function of the root. Root-systems. The use of root-hairs and root-caps. Effect of injury to these parts. How roots grow. Experiments illustrating the work of roots (*e.g.*, relation between root-hairs and soil-particles; exploration of soil by roots in search of moisture; the quantity of water required by roots; use made by roots of mineral matters dissolved out of soil by water; proof that roots require air and give out carbon dioxide, &c.).

The leaf: The general structure, forms, and functions of leaves, treated simply.

Stems and their modifications. Buds.

The flower and fruit: The parts of the flower and their functions. Causes influencing the opening and closing of flowers. Pollination. The formation of fruits. Different types of fruits. Devices for the protection of seeds from foes. Dissemination of seeds.

The soil: How soil is made. The mechanical analysis of soil. The texture of soil. The soil as a sponge from which a plant may obtain water, as a storehouse of plant-food, and as a laboratory in which plant-food is prepared and dissolved. Experiments with soils (*e.g.*, how moisture is held in the soil; how moisture moves through the soil; how the moisture-holding capacity of a soil may be increased; conservation of moisture; evaporation at surface of different soils; how the texture of a soil may be improved; conditions governing soil temperature).

The candidate will be required to forward before the date of examination a certificate in the prescribed form that he has carried out satisfactorily a course of practical work based on the above syllabus.

(11) *Botany.*

The candidate will be required to show that he has acquired his knowledge of the following topics by observation, investigation, and experiment:—

The organs of flowering-plants, their arrangement and principal modifications; their functions, so far as can be ascertained by observation and simple experiments.

The main phenomena of the life-history (excluding microscopic processes) of common flowering-plants ; germination ; establishment and growth ; comparison of different types of germination ; the mechanism of pollination ; fruit and seed dispersal.

Adaptation of plants to their surroundings and to cold and drought ; protection against animals. Comparison of creeping-plants, climbing-plants, rosette-forming plants, grass-like plants, shrubs and trees. Plant societies.

The description and dissection of commonly occurring native and introduced flowering-plants (technical descriptions will not be demanded).

The candidate will be required to forward, before the date of examination, a certificate in the prescribed form that he has carried out satisfactorily a course of practical instruction based on the above syllabus.

(12) *Dairy Science.*

The constituents of milk ; causes of variations and of defects in the composition of milk ; the physical and chemical properties of milk ; the coagulation of milk ; the composition of skimmed milk, separated milk, buttermilk, and cream ; the uses and value of separated milk, buttermilk, and whey ; methods of determining the fat in milk ; acidity and the estimation of acidity ; sampling ; the care of milk ; influence of temperature on milk ; pasteurizing and sterilizing milk ; objections to the use of chemical preservatives ; conveyance of milk ; milk as a medium for conveying disease.

Methods of raising and separating cream ; the ripening of cream ; use of starters ; the process of churning ; composition of butter ; washing, working, and salting butter ; common faults in butter.

A very elementary knowledge of the general anatomy and physiology of the cow, with special reference to the parts concerned in nutrition and milk-production ; the care, management, and feeding of dairy cows and calves.

The candidate will be expected to show that during the course he has acquired a knowledge of elementary chemistry and physics sufficient to enable him to understand (a) the principles of the apparatus and appliances, and (b) the processes used in the study of milk.

The candidate will be required to forward before the date of examination a certificate in the prescribed form that he has carried out satisfactorily a course of practical work based on the above syllabus.

GROUP III.

(13) *History and Civics.*

NOTE.—A reasonable choice of questions will be permitted. Two-thirds of the questions must be answered from Section C and the remaining third from either Section A or Section B, or from both.

A.—Ancient History.

The hunting, pastoral, and agricultural stages of development in the life of primitive man.

Early settlements in the river valleys ; the Sumerians, Babylonians, Assyrians, and Egyptians.

The Hebrews : Their peculiar contribution to mankind.

Cretan civilization ; the Homeric period ; Athens and Sparta ; the struggle against Persia ; Athens in the Age of Pericles ; our debt to Greece.

Rome : Some idea of the social and political life of the people during the later Republic. The Empire : Its extent and influence ; Roman colonization and civilization ; the period of decline ; division into East and West ; Fall of the Western Roman Empire.

The Teutonic nations in Europe ; Anglo-Saxons and Danes in Britain.

B.—The Middle Period.

Feudal society, with particular reference to England. The Crusades and their permanent results in English life. Growth of towns and trade ; new industries. Simple treatment of problems and discontents of the fourteenth and early fifteenth centuries ; social and economic effects of wars with France and of the Black Death. Simple treatment of the growth of legislative institutions in England. Improvements in administration of justice.

The Age of Discovery ; Portuguese and Spaniards ; effect of their discoveries on trade, colonization, and sea-power. The Renaissance ; its causes and chief phases. Simple sketch of growth of National Church ; conflicts with Spain, religious, commercial, naval.

Prosperity under the Tudors ; development of peace and strong government.

The seventeenth century conflict between King and Parliament ; the Puritan rule ; final establishment of supremacy of Parliament contrasted with the growing despotism of France.

C.—Modern History.

The beginnings of British colonial expansion ; rivalry with Dutch and French in America and India ; loss of the American colonies.

Union of England and Scotland.

The defects of the English parliamentary system in the eighteenth century ; parliamentary reforms of the nineteenth and twentieth centuries.

Union of Great Britain and Ireland.

The French Revolution and its significance to Englishmen ; a summary of Napoleon's imperialistic designs and their outcome ; the salient features of Great Britain's resistance.

Social and industrial conditions of the people of England in the eighteenth and nineteenth centuries ; the industrial and agrarian revolutions ; chief reforms of the nineteenth and twentieth centuries (without numerical details) in working-conditions, the treatment of criminals, education. Religious toleration ; the abolition of slavery. Trades-unionism.

Development of the United States, Italy, Germany.

The British Empire since 1840 ; attainment of self-government and further progress in Canada, Australia, and South Africa.

The Indian Mutiny and subsequent British policy in India ; relations with Egypt.

The evolution of the Irish Free State.

The "Triple Alliance" and the "Entente"; rivalries leading to the war of 1914-1918; its world-wide character; its consequences; reorganization of Europe; League of Nations; Bolshevism, Fascism, Hitlerism.

Simple treatment of current topics.

New Zealand History since 1840, and New Zealand Civics.

The New Zealand Company and its early settlements; policies of Hobson, Fitzroy, Grey; foundation of Otago and Canterbury.

Granting of constitution.

Gold discoveries.

Causes and effects of Maori Wars.

Abolition of Provincial Governments.

Links with Home Government; Parliament; its members and mode of election; the passing of a Bill; chief developments in democratic legislation since the time of Ballance; the Cabinet and different Departments of Government, illustrated from two or three of those with which pupils come directly in contact, such as Post and Telegraph, Education, Railways; the development of export trade and industries since 1880.

The division of the Pacific Islands among the Great Powers; a brief treatment of the outstanding problems of the Pacific, including Japanese expansion.

Effects of the Great War and of the economic depression.

Provision of revenue; Land and Income Tax; Customs; special taxes.

The system of local government in barest outline.

Provision for punishing law-breakers; Police and Courts.

Special topical subjects; Imperial Conferences; pensions; unemployment and health insurance; public works; after-careers of pupils (vocational guidance); employment of leisure.

(14) *Geography.*

(a) Physical and mathematical geography, as follows: The approximate size and form of the earth; its daily rotation; the north and south line; latitude and longitude, meridians and parallels, local time; annual revolutions of the earth round the sun; the altitude of the sun at the equinoxes and at the solstices; the inclination of the earth's axis to the plane of its orbit; the length of the day; the zones, the seasons, winds, and currents (treated in an elementary way), trade winds, monsoons. Rainfall and its distribution; controlling factors. Temperature; its distribution; isotherms. Different types of climate; climatic regions of the world. Connection between temperature, moisture, and resultant vegetation. Variation of vegetation with altitude and latitude. Typical animal life in different parts of the earth. Distribution of industries and products as controlled by physical conditions (treated on very broad lines). The work of rain, rivers, ice, wind, and sea. Scales of maps; contours; easy map-reading.

(b) The physical, political, and economic geography of the British Empire.

(c) An elementary knowledge of the geography of the lands bordering upon the Pacific and of the rest of the world (including great geographical discoveries and the chief trade routes of the world).

(15) *Mathematics.*

(a) *Algebra.*

Fundamental operations; easy fractions; factors of expressions that are the product of two binomial factors, and of such expressions as $a^3 \pm b^3$ and $a^3 \pm 3a^2b + 3ab^2 \pm b^3$, only numerical coefficients being used; common multiples and divisors to correspond; simple equations involving one or two unknown quantities; the solution by factors of easy quadratic equations involving one unknown quantity; easy problems; graphs of simple algebraical functions within the limits of the foregoing work, and graphical methods of solving simple equations involving two unknown quantities.

(b) *Geometry.*

No formal proofs shall be required for examination purposes of the theorems in Part I. The truth of these should be established by intuition and experiment, and the teaching of formal geometry should be based upon the quasi-axiomatic acceptance of these results.

Every candidate shall be expected to answer questions in both theoretical and practical geometry. The questions in theoretical geometry shall consist of theorems contained in subsection (a), Part II, together with questions upon these theorems; easy deductions from them and arithmetical illustrations. The questions in practical geometry shall be set on the constructions, &c., contained in subsections (b) and (c), Part II, together with easy extensions of them. All figures should be drawn accurately. The constructions in subsections (b) are those of which formal proofs shall be expected.

Any proof of a proposition shall be accepted which appears to the examiners to form part of a systematic treatment of the subject.

PART I.

If a straight line stands on another straight line, the sum of the adjacent angles so formed is equal to two right angles; and the converse.

If two straight lines intersect, the vertically opposite angles are equal.*

When a straight line cuts two other straight lines, if a pair of corresponding angles are equal, the two straight lines are parallel; and the converse.

When a straight line cuts two other straight lines, if (i) a pair of alternate angles are equal, or (ii) a pair of interior angles on the same side of the cutting line are supplementary, then the two straight lines are parallel; and the converse.*

Straight lines which are parallel to the same straight line are parallel to one another.*

If two triangles have two sides of the one equal to two sides of the other, each to each, and also the angles included by those sides equal, the triangles are congruent.

If two triangles have two angles of the one equal to two angles of the other, each to each, and also a side of one equal to the corresponding side of the other, the triangles are congruent.

If two triangles have three sides of the one equal to three sides of the other, each to each, the triangles are congruent.

The area of a rectangle is measured by the product of the measures of its sides.

There is one circle and only one circle which passes through three given points not in the same straight line.

(NOTE.—The theorems marked * may serve in the class-room as a useful introduction to the process of logical deduction.)

PART II.

Section 1:—

(a) The sum of the angles of a triangle is equal to two right angles.

If the sides of a convex polygon are produced in order, the sum of the exterior angles so formed is equal to four right angles.

If two sides of a triangle are equal, the angles opposite those sides are equal; and the converse.

If two triangles have two sides of the one equal to two sides of the other, each to each, and the angles opposite to one pair of equal sides are right angles, the triangles are congruent.

(NOTE.—The ambiguous case should be discussed.)

If two sides of a triangle are unequal, the greater side has the greater angle opposite to it; and the converse.

Of all straight lines that can be drawn to a given straight line from a given point outside it, the perpendicular is the shortest.

The opposite angles of a parallelogram are equal; and the converse.

The opposite sides of a parallelogram are equal and each diagonal bisects the parallelogram; and the converse of the first part.

The diagonals of a parallelogram bisect one another; and the converse.

If a pair of opposite sides of a quadrilateral are equal and parallel, it is a parallelogram.

The straight line drawn through the middle point of one side of a triangle parallel to another side bisects the third side.

The straight line joining the middle points of two sides of a triangle is parallel to the third side and equal to one-half of it.

If three or more parallel straight lines make equal intercepts on any transversal, they make equal intercepts on any other transversal.

(b) To bisect a given angle.

To bisect a given straight line.

To construct a perpendicular to a given straight line (i) from a given point in the line, (ii) from a given point outside the line.

To construct an angle equal to a given angle.

To draw a straight line parallel to a given straight line.

(c) To divide a straight line into any number of equal parts or in a given ratio.

The construction of angles of 60° , 45° , 30° .

The construction of triangles and quadrilaterals from sufficient data and the solution of triangles by drawing to scale.

Section 2 :—

(a) The area of a parallelogram is equal to the area of a rectangle on the same base and between the same parallels ; and is therefore measured by the product of the measures of its base and its altitude.

Parallelograms on the same or equal bases and of the same altitude are equal in area.

The area of a triangle is equal to one-half of the area of a rectangle on the same base and between the same parallels ; and is therefore measured by one-half of the product of the measures of its base and its altitude.

Triangles on the same or equal bases and of the same altitude are equal in area.

Equal triangles on the same or equal bases are of the same altitude.

The square of the hypotenuse of a right-angled triangle is equal to the sum of the squares on the other two sides ; and the converse.

Geometrical proofs of the following algebraic identities :—

$$\begin{aligned} k(a + b + c) &= ka + kb + kc \\ (a + b)^2 &= a^2 + 2ab + b^2 \\ (a - b)^2 &= a^2 - 2ab + b^2 \\ a^2 - b^2 &= (a + b)(a - b). \end{aligned}$$

(b) To construct a triangle equal in area to a given quadrilateral. To construct a rectangle equal in area to a given triangle.

(c) The determination by measurement of the areas of plane rectilinear figures.

The experimental proof of the theorem of Pythagoras.

Section 3 :—

(a) The locus of points equidistant from two fixed points is the perpendicular bisector of the line joining the two fixed points.

The locus of points equidistant from two intersecting straight lines consists of the pair of straight lines which bisect the angles between the two given lines.

(b) The construction or plotting of the loci of points subject to simple geometrical conditions.

Section 4 :—

Determination by measurement of the ratio of the circumference of a circle to its diameter.

Determination (approximately) of the area of a circle.

Construction of tangents to a given circle.

Simple cases of the construction of circles from sufficient data.

The inscription in or circumscription about a given circle, by geometrical methods, of regular figures of three, four, six, and eight sides.

(15A) *Alternative Mathematics.*

(a) General idea of number as a quantity having unlimited positive and negative range ; rational and irrational numbers.

Quantities that can be wholly represented by numbers—*e.g.*, length, cost, area, angle, time. Relationships between such quantities treated graphically. Ideas of variation, variable, and function. Graphical work with two variables to give practice in curve tracing

only. Ideas of continuity and limit. Linear relation between two variables—i.e., the function $Y = aX + b$, treated symbolically and graphically with oblique as well as rectangular axes.

Dimensions of length, area, and volume functions. Simple functions stated in algebraic symbols, and commonly known as formulæ. Practice in evaluation, including cases where it is necessary to change

the independent variable in formulæ such as $a = \frac{v-u}{t}$, $T = 2\pi \sqrt{\frac{l}{g}}$.

Simple manipulative exercises in the addition, subtraction, multiplication, division, and factorization of algebraical expressions, limited, as far as possible, to trinomials of no higher degree than the second. The methods used must invariably show work written in lines, with a full understanding of the meaning and use of the sign of equality. Simple equations involving one or two unknown quantities, and problems thereon, provided that the examples set must bear the stamp of reality, whether they be expressed in symbols or stated in words.

(b) Ideas of direction and of similarity of space. The straight line defined as one of uniform direction, and its minimum treated as a consequence of its "directness." All straight lines similar to one another: application to making of straight edges. Plane surfaces: application to surface plates.

The angle treated as a quantitative change in direction. Rotational proofs of the simple angular properties of figures, especially figures of three and four sides.

Parallels treated as straight lines in the same direction. Angular properties of figures with parallel sides.

(c) Ideas of symmetry and superposition. Uniqueness of figure formed by three given straight lines in the same plane. Congruence of triangles deduced from this result, and consequently such geometrical results in reference to triangles and parallelograms as are usually proved in an elementary course from congruent triangles.

Use of scales: scale ratio. Simple cases of proportionality, including similarity of triangles and other plane figures, treated with reference to scale ratio. The recognition and use of the sine, cosine, and tangent of an angle, regarded both as a function of the angle and as a ratio between the sides. Graphs and functional scales of sine, cosine, tangent.

Areas of rectangles, triangles, and parallelograms. Proofs by dissection, combined with symbolic expression, as in the geometrical truths illustrated by the expressions—

$$\begin{aligned} \text{Area of triangle} &= \frac{1}{2} bh = \frac{1}{2} bc \sin A = \frac{1}{2} ca \sin B \\ (a + b + c)x &= ax + bx + cx \\ (a + x)x &= ax + x^2 \\ (a \pm b)^2 &= a^2 \pm 2ab + b^2 \\ (a + b)(a - b) &= a^2 - b^2 \end{aligned}$$

Areas of similar figures proportional to the squares of the ratios of corresponding sides. Pythagoras' theorem deduced from this result together with the fact that the perpendicular from the right angle to the hypotenuse divides the triangle into two parts both similar to it.

(d) The simplest treatment of directed quantities, such as displacements, to show that certain quantities cannot be fully represented by numbers alone. Ideas of addition and subtraction for such quantities applied in simple diagrams drawn to scale, such as are usually met with in elementary practical questions on heights and distances.

(16) *Applied Mechanics.*

Linear measurements—use of scales; principle of the vernier and micrometer and their uses. Meaning of “allowance” and “tolerance” in connection with working parts of machines; limit gauges.

Ideas of mass, density and relative density. Use of balance and the experimental determination of the densities of solid bodies. Archimedes principle. Vectorial representation of force; the parallelogram, triangle, and polygon of co-planar forces; experimental determination of the resultant of two or more co-planar forces.

The use of triangle and polygon of forces for determining the stresses in a pin-jointed framework, such that not more than three members meet at any one joint. Application to simple machines such as jibs, cranes, hinges of doors and gates, &c.

Parallel forces, centres of mass and gravity; moments of forces; resultant moments; moments to be regarded vectorially; sum of moments to be zero for equilibrium. Application to simple machines such as levers, wheel and axle. Spur and bevel gearing. Energy—principle of conservation of energy—kinetic energy of moving body. Potential energy.

Work; how measured; graphical representation and calculation of force-space diagrams.

Velocity ratio; application to machines, such as pulleys, worm gears. Mechanical advantage.

Friction—general laws of friction of unlubricated surfaces experimentally verified. Fluid friction.

Efficiency of machines.

Power—measurement of power experimentally; brake horsepower.

(17) *Hygiene.*

(a) *The Home.*—General considerations of site, aspect, construction, &c., in order to obtain hygienic conditions. Value of a garden, fresh air, and sunlight. Heating and lighting. Number and arrangement of rooms. Storage of food. Water-supply (quantity of water required for each person, methods of collection and distribution; effects of insufficient or impure water-supply; methods of purification). Sanitary arrangements (good systems of domestic drainage; water and earth). Dust and dirt. Disposal of refuse. Necessity for cleanliness of home and surroundings.

(b) *Personal Cleanliness.*—Cleanliness, washing and bathing; structure of skin; care of the mouth and teeth; care of the hair; care of the feet; exercise and fatigue; rest and sleep; clothing; materials; cleanliness of clothing.

(c) *Structure of the Body.*—General idea of cell as unit of tissues and organs of the body; division of labour. General form and characteristics of body; form and relative positions of parts of skeleton and of

chief muscles, organs, great blood-vessels and nerve trunks. Mode of attachment and action of muscles. The structure and mechanics of the principal joints. The arrangement of the alimentary canal. The mechanics of respiration and circulation; differences between inspired and expired air, between venous and arterial blood and between blood and lymph. The physical composition and functions of blood. The general differences between arteries, capillaries, and veins, and in the flow of blood therein. The chief sources of heat-production in the body; the mean temperature of the body of man and the chief agents keeping it uniform. A general knowledge of the arrangement of the nervous system; an elementary knowledge of the functions of the brain and spinal cord.

(d) *First Aid and Home Nursing*.—Signs of fracture, first aid to be rendered in such accidents; treatment of bruises and sprains. Bandaging with triangular and roller bandages. Artificial respiration and its application in cases of drowning or suffocation. Treatment of cuts and wounds; points where the main blood-vessels may be compressed. Treatment of faints, burns, scalds, bites, stings, and poisoning. Arrangement of a sick-room and general care of the sick. Infection, disinfection. Common disinfectants and antiseptics, their use and action.

The candidate will be expected to be familiar with the more important steps to be taken in dissecting, say, a rabbit, and he may be required to recognize and describe parts of the animal body from specimens or photographs.

The study of food and ventilation, which usually form part of a prescription in hygiene, are included in the prescription for home science.

GROUP IV.

(18) *Latin*.

Candidates will be expected to show such a knowledge of the language and of its vocabulary and grammar as may be gained from a two years' study of the subject. Translation will be set of a standard not higher than that of the simpler books of Cæsar. With the aid of a vocabulary of unusual words, the candidate will be expected to render into English easy passages of unprepared translation, or to answer in Latin easy questions expressed in Latin upon the same passages, or to render into Latin easy sentences based expressly upon the language and subject-matter of one of the passages.

(19) *French*.

Candidates will be expected to show such a knowledge of the language and of its vocabulary and grammar as may be gained from a two years' study of the subject. The candidate should be able, with the aid of a vocabulary of unusual words, to render into English easy passages of unprepared translation and to answer questions in grammar thereon, also to answer in French easy questions expressed in French upon the same passages. The rendering into French of easy sentences or passages or the writing in French of a free composition of a simple kind on a familiar subject will also be required. Pronunciation will be tested on phonetic lines.

(20) *Maori.*

Candidates will be expected to show such a knowledge of the language and of its vocabulary and grammar as may be gained (1) by easy conversation in Maori about the facts of everyday life, (2) by the study of the story of Tawhaki in Sir George Grey's "Mythology and Traditions of the New-Zealanders"; but candidates will not be expected to have read that particular story, nor will the passages for translation necessarily be taken from it. Great importance will be attached to translation from Maori, and to the writing of easy passages and sentences in Maori.

(21) *Shorthand.*

Transcribing into shorthand, fully vocalized, a short printed passage as a test of accuracy and neatness of shorthand outline. Writing in shorthand an easy passage dictated at the rate of fifty words a minute, and transcribing it accurately into longhand.

(22) *Book-keeping and Commercial Correspondence.*

The requirements will include commercial arithmetic and tots and easy précis-writing.

Book-keeping: The object and value of book-keeping. Double entry, its meaning and advantages. The form, nature, and classification of simple commercial terms such as debit, credit, balance, profit (gross and net), interest, discount, commission, insurance, assets, liabilities, capital, bankruptcy, composition, bad debts, folio, trial balance, company (limited and unlimited), invoice, receipt, voucher, cheque, bill of exchange. A knowledge of the transactions involved and the special terms used in connection with cheques, promissory notes, and bills of exchange. The forms and uses of the cash-book, the purchase-book, or invoice-book, the sales-book or day-book, the journal and the ledger, and methods of keeping them. Journalizing an easy set of transactions, posting the journal, taking out trial balance, preparing profit-and-loss account, and balance-sheet. The prevention, detection, and rectification of errors.

(23) *Woodwork. Theory and Practice.*

Tools and timbers: The classification, description (illustrated by hand sketches), proper uses, and correct handling of tools; care of tools; their hardening, grinding, and sharpening; the functions of their several parts; the mechanical principles underlying their construction and manipulation.

A very elementary knowledge of the geographical distribution, appearance, and general character (including structure of trunk and limbs) of trees from which the timbers in common use in New Zealand are obtained; the countries and ports from which New Zealand receives its supplies of foreign timbers; the forms in which timber is brought into the market; the growth, felling, conversion, seasoning, storage, and preservation of timber; measurement of timber; selection of timber for particular purposes; methods of working hard and soft woods; appearance, characteristic properties (including specific gravity), and defects of timbers. Candidates may be required to identify specimens of timbers in common use.

Bench-work : Measuring and setting out work ; dressing a piece of timber truly ; principles to be observed in designing joints and fastenings. Processes—sawing, planing, paring, grooving and trenching, slotting, gouging, cutting curves, shaping and filing, chamfering, finishing ; fastening-devices—nails, screws, dowels, pins, cleats, keys, and wedges. Joints—the ordinary joints, including haunched mortise and tenon, bridle, mitre, common dove-tail. Use of glues.

Practical Examination : The scope will be such as may reasonably be expected at the end of a two years' course in a post-primary school.

(24) *Metal-work. Theory and Practice.*

The use of scales, calipers, and micrometer and vernier calipers ; measurement to ordinary tolerances in fitting and machine work. Simple workshop calculations, including questions involving elementary mensuration. The characteristics and properties of the commoner metals and alloys employed in metal-work, such as iron, steel, copper, brass, zinc, aluminium, &c.

The description, use, and care of setting out, measuring, and testing instruments and of hand tools. The setting-out of a simple piece of work from the drawing. Bench and forge work of a very simple character, drilling, hand riveting, soldering, and brazing.

Practical Examination : The scope will be such as may reasonably be expected at the end of a two years' course in a post-primary school.

(25) *Dressmaking and Needlework. Theory and Practice.*

Selection : Choice and selection of clothes ; comparison of cost and wearing-values of cotton, linen, silk, wool, and mixtures ; suitable colours and appropriate style of clothes.

Patterns : Making of simple drafts from pupils' own measurements without reference to charts or other mechanical devices ; use and adaptation of commercial patterns.

Making up : Making up of articles for personal and household use ; the various stitches and processes used in dressmaking ; the application of ornamental stitchery to garments and household articles.

Care : Care of clothes ; removal of stains ; pressing ; mending and repairing garments, household linen and furnishings. Adaptation of adult garments for children's wear as required.

Practical Examination : The scope will be such as may reasonably be expected at the end of a two years' course in a post-primary school.

(26) *Housecraft.*

House : Arrangements of house and position of equipment (especially with regard to kitchen, dining-room, and pantry) ; principles, construction, management of ranges, and of gas, electric, and oil stoves ; hot-water services ; how to set, light, and regulate fires ; fuels and economy of fuels. Care and cleaning of stoves, kitchen sinks and traps ; care and cleaning of floors, walls, windows, wood-work (plain, painted, and polished) ; the yard, including care and cleaning of drains, dustbins, and closets ; appliances for cleansing purposes ; cleaning and care of other things of the house. Arrangement of daily and weekly work.

Laundry : Choice and care of utensils and appliances. Sorting, steeping, washing, and finishing a household wash. Simple methods of disinfecting ; removal of stains ; treatment of fast and loose colours.

Foods : (a) Preservation of foods for out-of-season use.

(b) Planning, preparation, cooking, and serving of meals (including school lunches) for the different seasons of the year for a family consisting of adults and children. The meals should contain all the essentials of a normal diet for adults and children, and be chosen so that economical meals can be prepared, using different methods of cooking, without great expenditure of energy and time. The meals should be compared with respect to their values as sources of carbohydrates, fats, proteins, minerals, vitamins, and roughage.

(c) Modifications of diet suitable for invalids and convalescents.

(27) *Trade Drawing.*

All candidates must take Part I, and either Part IIA or IIB.

I. Use and care of drawing-instruments, including scales, pencils, pens, compasses, dividers, protractors, set-squares, and T square. How to test the accuracy of drawing-instruments, and how to correct errors. Hand-sketching in plan, elevation, and section. Use of squared paper.

IIA. *Engineering, &c.*—Measuring simple machine parts, determining position of centre lines, and dimensioning sketches. Sketching simple machine parts from memory. Drawing centre-lines, and completing plans, elevations, and sections to scale in pencil from dimensioned sketches of simple machine parts. Tracing in ink, and dimensioning, &c. Conventional representation of screw-threads. Details of nuts, bolts, studs, rivets, cotters, keys, pins, and other fastening and locking devices.

IIB. *Building, &c.*—Hand-sketching in isometric projection. Proportions of the ordinary woodwork joints. Plans, elevations, and sections of simple building elements such as roof-joints, floor-construction, doors and door-frames, casement frames and sashes, cupboards, gates, &c. Details and proportions of simple mouldings, fastenings, &c.

Tracing in ink and dimensioning, &c.

(28) *Drawing.*

Any two of the following :—

I. *Freehand Drawing.*—Free drawing with pencil or brush. The candidate shall be required to draw on a quarter imperial sheet of paper (i) a natural object, or (ii) a fashioned or artificial object or group of such objects placed before him either above or below the line of sight. The object or objects are to be represented as seen from the point of view at which the candidate may be seated. The candidate may use the pencil or brush to estimate the apparent relative sizes of the objects or parts of the objects to be drawn, but only by holding it between the eye and the objects. No other form of measuring and no ruling or other mechanical means of execution are allowed. The

drawing should express as clearly as possible the forms, contours, and textures of the several objects and their relative proportions and positions, and must fairly fill the sheet of drawing-paper.

II. *Instrumental Drawing*.—The candidate will be expected to be familiar with the geometrical operations and constructions set out in the prescription for geometry in subject (15). Mathematics: The measurement of straight lines and of angles. The construction of plain scales. Drawing to scale from dimensioned sketches. The method of enlarging and of reducing a given diagram. Plans and elevations of straight lines and of plane figures lying in, standing vertically on, or inclined to the horizontal plane (but not in the latter case inclined also to the vertical plane). Plans and elevations and conventional isometric views of the following solids and of simple objects based thereon: the cube, the rectangular block, the triangular and square prism, the square and the hexagonal pyramid, the solid or object, as the case may be, having its base in the horizontal plane.

III. *Design*.—The planning and design of simple pattern. Elementary principles governing leading lines, distribution of parts and masses, and general arrangement. Rhythm and balance. The study of natural forms and their adaptation to elementary design for crafts such as stencilling, leatherwork, needlework, wood-carving, plasterwork, &c.

Simple exercises in writing and illuminating. The Roman alphabet, uncials and half-uncials; use of the first-named in design.

Candidates may be required to draw or model natural forms, and to draw or model designs (based on the natural form drawn) to fill set spaces, or to be executed in given simple materials.

15. Regulation 186 of the principal regulations is revoked, and the following substituted:—

PUBLICATION OF RESULTS.

186. As soon as possible after a Public Service Entrance Examination has been held the Commissioners shall publish in the *New Zealand Gazette* a list of the names of the candidates who have passed the examination, arranged in the order of their merit, which order shall be wholly determined by the totals of the marks assigned to the candidates in their several subjects. Candidates shall be notified of the result of the examination, and shall be entitled to receive a statement of the marks obtained in the several subjects.

If a candidate desires any other statement with respect thereto, the Director of Education may issue such certificate or statement on payment by the candidate of a fee of 2s. 6d.

16. Regulation 187 of the principal regulations is amended by inserting after the word "arithmetic" the words "or practical mathematics".

17. Regulation 200 of the principal regulations is amended by revoking the word "Matriculation", and substituting the word "Entrance".

Issued under the authority of the Regulations Act, 1936.

These regulations are administered by the Office of the Public Service Commissioners.