

Registration of Agricultural Chemists Regulations, 1946

GN No. 166 of 1946

Regulations made by the Governor in Executive Council under

Section 6 of the Registration of Agricultural Chemists Ordinance, 1944

1. Short title.

These Regulations may be cited as the Registration of Agricultural Chemists Regulations, 1946.

2. Definitions.

In those Regulations-

"Agricultural Chemist" means an Agricultural Chemist registered under the Ordinance;

"Director" means the Director of Agriculture

"The Ordinance" means the Registration of Agricultural Chemists Ordinance, 1944.

3. Board of Examiners.

(1) There shall be a Board of Examiners (hereinafter referred to as "the Board") appointed annually by the Governor for the purpose of conducting examinations under the Ordinance.

(2) The Board shall consist of-

- (a) the Director who shall be Chairman;
- (b) two members nominated by the Committee of the Société des Chimistes et des Techniciens des Industries Agricoles de Maurice;
- (c) two members of the staff of the department of Agriculture;
- (d) one member of the staff of the Royal College.

(3) Every member of the Board shall be paid a fee of fifty rupees in respect of each subject in which he is the examiner.

4. Committee.

(1) There shall be a committee (hereinafter referred to as "the Committee") for the purpose of supervising the working of the Ordinance.

(2) The Committee shall consist of the members of the Board and of the President of the Société des Chimistes et des Techniciens des Industries Agricoles de Maurice.

(3) The Director shall be the Chairman of the Committee.

(4) The Committee shall cause the name of any person registered as Agricultural Chemist to be struck off the Register of Agricultural Chemists if the Committee are satisfied that his name has been wrongly entered in the register.

5. Register of Students.

(1) A Register of "Students shall be kept by the Director at the Department of Agriculture, and every entry made in the Register shall be dated and signed by the Director.

(2)-(a) Any person who has passed the Cambridge School Certificate Examination, with credit in at least three subjects, or such other examination as the Committee shall consider to be the equivalent thereof shall, upon application made in writing to the Director in that behalf, be entitled to have his name entered in the Register of Students.

(b) Any application made under the foregoing sub-paragraphs shall state the name of the person under whose tuition the applicant has been, or is being, trained, as well as particulars of the course of training already undergone or being undergone by the applicant at the time of his application.

(3) Any Agricultural Chemist training any student, as well as the student concerned, shall report to the Director any change in the particulars affecting the course of training of such student, and the Director shall thereupon cause an entry of any such change to be made in the Register of Students.

(4) The Committee may, for serious reasons of which the Committee shall be the sole judge, cause the name of any student to be struck off the Register of Students.

6. Examinations.

There shall be held at the College of Agriculture once in every year at such date or dates as the Committee may fix, two examinations: the Preliminary Examination and the Final Examination for the certificate of registration as Agricultural Chemist.

7. Subjects for Preliminary and Final Examinations.

(1) The subjects in which candidates taking the Preliminary Examination shall be examined shall be-

(a) General and Organic Chemistry;

(b) Elementary Physics;

(c) Elementary Biology.

(2) The subjects in which candidates taking the Final Examination shall be examined shall be-

(a) Agricultural Chemistry;

(b) Technology of Sugar Manufacture.

(3) The syllabus for the Preliminary and Final Examinations shall be as set forth in Schedule I to these Regulations.

8. Conditions of admission to Preliminary and Final Examinations.

(1) No student shall be admitted to sit for the Preliminary Examination unless-

- (a) he has reached the age of seventeen;
- (b) he is registered as a student;
- (c) he has produced a certificate of good character, to the satisfaction of the Director;
- (d) he has applied in writing to the Director in that behalf not later than the first of June immediately preceding the holding of such examination;
- (e) he has paid, or caused to be paid, to the Director an entrance fee of twenty five rupees.

(2) No student shall be admitted to sit for the Final Examination unless-

- (a) he has passed the Preliminary Examination at least two years before the holding of the Final Examination to which he seeks admission;
- (b) he has applied in writing to the Director in that behalf not later than the first of June immediately preceding the holding of such examination;
- (c) he has paid, or caused to be paid, to the Director an entrance fee of fifty rupees.

9. Percentage of marks required for a pass in the Preliminary and Final Examinations.

Subject to the provisions of the next succeeding paragraph no student shall be allowed a pass in the Preliminary or Final Examinations unless he shall have obtained forty per cent of the marks allotted to each subject set for such examinations and an aggregate fifty per cent of the total number of marks allotted in respect of the whole examination.

10. Re-examination when allowed.

Any student admitted to sit for either the Preliminary or Final Examination shall be required to take all the papers set for such examination at one and the same sitting:

Provided that any student who shall have failed to obtain forty per cent of the marks in one of the subjects set for such examination may be allowed to present himself

for examination in that subject only at one of the two subsequent examinations on payment of a fee equivalent to half of the entrance fee for the whole examination; and further provided that if, at such subsequent examination, he obtains not less than 40 per cent of the marks allotted for that subject, and if the number of marks he so obtains together with the total number of marks obtained by him in the subject or subjects in which he has previously satisfied the examiners amount in the aggregate to not less than the percentage of marks required for a pass, then such student may be held to have qualified at such subsequent examination and may be allowed a pass.

11. Registration fee.

Any person entitled to registration under section 3 of the Ordinance shall pay a fee of fifty rupees on being so registered.

12. Register of approved laboratories.

(1) A register shall be kept at the Department of Agriculture for the purpose of recording the laboratories (hereinafter referred to as “approved laboratories”) which in the opinion of the Committee are adequately equipped for-

- (a) any analysis of agricultural products or by-products;
- (b) any analysis of substances used in agriculture, or in industry dealing with agricultural products, or in both agriculture and industry dealing with agricultural products;
- (c) any analysis under Ordinance No. 47 of 1941.

(2) No laboratory shall be registered as an approved laboratory under the preceding sub-paragraph unless a certificate in the form set out in Schedule II to these Regulations has been obtained from the Director on application in writing.

Such certificate which shall be valid for one year may be renewed annually with the consent of the Director.

13. Analyses to be made by an Agricultural Chemist.

(1) It shall not be lawful for any person except an Agricultural Chemist to make for any other person any analysis-

- (a) of agricultural products or by-products;
- (b) of substances used in agriculture, or in industry dealing with agricultural products, or in both agriculture and industry dealing with agricultural products.

(2) It shall not be lawful of an Agricultural Chemist to make for any other person any analysis under the preceding sub-paragraphs except in an approved laboratory.

14. Analyses under Ord. No. 47 of 1941 to be made in approved laboratories.

It shall not be lawful to make any analysis under Ordinance No. 47 of 1941 except in an approved laboratory.

15. Penalty.

Any person acting in contravention of any of the provisions of these Regulations shall be liable to a fine not exceeding five hundred rupees.

16. Revocation.

The Regulations published under Government Notification No. 217 of the 26th December, 1931,, are hereby revoked.

Approved by the Governor in Executive Council on the twelfth day of August, one thousand nine hundred and forty-six and ordered to come into force at once.

SCHEDULE

1. PRELIMINARY EXAMINATION

A-CHEMISTRY

(Two papers and a practical examination)

1. GENERAL CHEMISTRY

The rise and development of modern atomic and molecular theories. Fundamental laws of chemistry. Methods for the determination of equivalent, atomic and molecular weights. Valency and structural formulae.

General properties of gases, liquids, and solids. Solution. Properties of dilute solutions. Osmosis, Theory of electrolytic dissociation, Nature of chemical change. Mass action. Catalysis. Colloids. The whole to be treated in an elementary manner.

The classification of the elements. Periodic system. The chemistry of the commoner elements and their more important compounds.

2. ORGANIC CHEMISTRY

The analyses of organic compounds. The determination of empirical molecular and constitutional formulae. Homologous series, substitution, isomerism.

The chemistry of the following compounds and groups of compounds: the paraffins and their derivatives; alcohols, aldehydes, ketones, fatty acids, acid chlorides, amides, amines, urea, nitriles; cyanogen, ferrocyanides, ferricyanides; the unsaturated hydrocarbons and their simpler derivatives; glycol, glycerol; lactic acid, dibasic acids including oxalic acid and succinic acid, citric acid and tartaric acid.

The occurrence and general properties of fats, carbohydrates and proteins. Aromatic hydrocarbons and their more important derivatives, Phenol, benzoic acid, salicylic acid, aniline, nitro-benzene, aromatic aldehydes and ketones.

3. PRACTICAL CHEMISTRY

Preparation and identification of the commoner substance mentioned in the above syllabus. Qualitative analysis of easy inorganic mixtures. Simple gravimetric and volumetric analysis, the latter to include the use of acids and alkalis, silver nitrate, potassium permanganate, potassium dichromate, iodine and sodium thiosulphate.

NOTE-Candidates will be required to bring their practical chemistry note books to the examination for inspection by the examiner.

B.-APPLIED MATHEMATICS AND PHYSICS

(Two papers and a practical examination)

1. Measurements of lengths and areas-units.
2. Dynamics.-Velocity. Acceleration. Newton's laws. Work, energy and power. Composition and resolution of velocities. Motion down inclined planes. Circular motion. Simple harmonic motion. Moments of inertia.
3. Statics.-Composition and resolution of forces. The wheel and axle. Lever, pulley and systems of pulleys. Centre of gravity. Balance.
4. Hydrostatics.-The principle of Archimedes. Hydrometers. Fluid pressure and its application. Atmospheric pressure.
5. General properties of matter.-Density and specific gravity Boyle's law. Friction. Elasticity. Torsion. Rigidity. Surface tension. Viscosity. Osmosis.
6. Heat. Thermometry. Expansion, Calorimetry. Change of state. Liquefaction and solidification. Vaporization and condensation. Properties of vapours. Hygrometry. Transmission of heat. Radiation. Kinetic theory of gases. Mechanical equivalent of heat. The second law of thermodynamics.
7. Light.- Rectilinear propagation of light. Photometry. Reflection and refraction at plane and spherical surfaces. Prisms and lenses; determination of their optical

constants. Dispersion Simple optical instruments. The refractometer. Spectrum analysis. Polarization.

8. Electricity and Magnetism.- Electrification. Electrostatic induction. Potential and capacity. Condensers.

Fundamental phenomena of Magnetism. Simple measurements. Introduction to terrestrial magnetism.

Current electricity. Various forms of cells and their action. General effects of currents. Magnetic effects of currents. Galvanometers, Ohm's law. Coupling of cells. Chemical effects of current. Electrolysis. Electromagnetic, induction. Introduction to thermo-electricity. Introduction to electric theory of matter. Construction and working of dynamo and motor. Other practical applications.

9. Sound.-Propagation of sound in various media.

PRACTICAL EXAMINATION

Elementary measurements to illustrate the above Syllabus.

C.-GENERAL ELEMENTARY BIOLOGY

(One paper and a practical examination)

1. The morphology, reproduction and general characters of the following groups – angiosperms, gymnosperms, pteridophyta, bryophyta, algae, fungi.

2. Elementary physiology of plants, comprising the nature of plants food and the mode of absorption by the organism, the absorption of water, aeration and respiration. Photosynthesis, growth, irritability. Elementary aspects of evolution and genetics.

3. The principal fungoid diseases affecting the sugar cane and the general treatment of fungoid maladies of plants,

PRACTICAL EXAMINATION

Dissection and examination of plants or parts of plants with reference to the above syllabus.

ZOOLOGY

(One paper and a practical examination)

1. Theoretical.-General classification and characteristics of the animal kingdom exemplified by Amoeba, Lumbricus, Periplaneta, Rana, Columba and Lepus.

2. Elementary Physiology.- Reproduction in animals.
3. The skeleton and alimentary tract of the horse, cow, sheep and pigs. The structure of the mammary system of the cow.
4. The structure and life-history of insects and the general treatment of insect pests.

PRACTICAL EXAMINATION

Dissection of types given above. Examination of skeleton of farm animals given above. Elementary histology of vertebrate tissues.

II-FINAL EXAMINATION

A.-AGRICULTURAL CHEMISTRY

(Three papers and a practical examination)

1. Soils-Origin and composition, chemical and physical properties of soils. Methods for mechanical and chemical analysis of soils. The soil as a medium for plant and bacterial life. The biological processes occurring in the soil.
2. Manures.-Farmyard manure. Composition and bacterial changes in farmyard manure. Green manuring. Composition and properties of the chief fertilizers, their sources and mode of action. Methods of analysis of manures and fertilizers. Valuation of manures. Compounding of manures.
3. Feeding Stuffs.-Constituents of the animal body, constituents of food and their functions in nutrition. The metabolism of food in the animal requirements. Construction of rations. Albuminoid ratio. Starch equivalent. Digestibility. Construction of rations. Albuminoid ratio. Starch equivalent. Digestibility.

The analysis of feeding stuffs and interpretation of results. Adulterations.
4. Waters.- The analysis of water for portability, irrigation and industrial
5. Milk and dairy products, the composition and analysis of milk, butter and cheese. Adulteration of milk'
6. Insecticides and fungicides. The composition and analysis of the principal insecticides and fungicides.
7. Agricultural products, the chemical characteristics and methods of analysis of the following:-tea, coffee, cacao, tobacco, fibres, oils, fats and waxes, rubber, tanning materials, essential oils.

8. The identification of the principal starches and lubricants used for industrial purposes.

9. The analysis of liquid and solid fuels and lubricants used for industrial purposes.

10. Methods of sampling agricultural products and precautions to be observed in so doing; the making out of certificates of examination and reports on analytical

11. Chemical jurisprudence and the law in relation to analysis of foods and agricultural products in Mauritius.

B.-SUGAR TECHNOLOGY

(Three papers and a practical examination)

1. An elementary general knowledge of the agriculture of the sugar cane, including-preparation of the land, planting, irrigating, manuring, cultivation and weeding. Harvesting. Ratooning.

2. Selection of varieties. Production and selection of cuttings. Seedlings. Sports.

3. Comparison of methods of cane cultivation as practised in Mauritius with those employed in other leading cane sugar producing countries.

4. The occurrence of sucrose, glucose, fructose in plants. The chemistry of these sugars, their nature and behaviour under the influence of heat, acids, alkalis and ferments.

5. The anatomy and composition of the sugar cane in connection with the extraction of sugar. Constituents of the sugar cane and their behaviour during the manufacture of sugar from the plant.

6. Extraction of juice. Milling. Diffusion.

7. Clarification of the juice. Defecation and carbonation processes. Use of sulphurous and phosphoric acids. Kieselghur. Colloids, etc. Filtration.

8. Concentration of the juice. Entrainment in evaporation. Scale formation.

9. Crystallisation of the sugar. Methods of boiling. Crystallisation in motion.

10. Curing the masse-cuite. Washing, packing and warehousing. Molasses, its extraction and utilisation. Deterioration of sugars.

11. Plantation white sugar manufacture. Advantages and disadvantages of the different processes.

12. Steam economy in cane sugar manufacture. Thermal values of bagasse, coal, oils and wood. Furnaces burning these fuels, their design and operation. Types of boilers. Steam consumption. Sources of heat losses and their reduction.

13. The employment of steam engines, gas engines, oil engines, water power. Electricity in sugar factories.

14. Principles underlying the construction and use of machinery and apparatus used in cane sugar manufacture. Design and capacity of plant used in sugar factories.

15. Sugar analysis. determination of sucrose, reducing sugar, dry substance, fibre and ash in the sugar cane, its products and bye products in the cane sugar industry.

16. Theory and practice underlying the construction and employment of refractometers, polariscopes, polarimeters and saccharimeters in the sugar factory.

17. Chemical Control in sugar factories, sugar house calculations. Analytical examination of materials used in the manufacture of sugar. Lubricators; fuels; waste waters; scales.

18. The chemistry and biology of fermentation and the manufacture of rum from sugar house residues.

SCHEDULE II

FORM OF CERTIFICATE

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..... is hereby certified to be
adequately equipped to allow analyses to be made under
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This certificate is valid for the period commencing on.....

And ending onand may, with the consent of the Director of
Agriculture, be renewed from year to year, as from the date of expiry thereof.