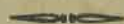


PHARMACY COUNCIL OF INDIA



EDUCATION REGULATIONS FOR THE DIPLOMA IN PHARMACY COURSE

(REGULATIONS UNDER SECTION 10 OF THE PHARMACY ACT, 1948)



GOVERNMENT OF INDIA

Ministry of Health

New Delhi, 11th July, 1953.

NOTIFICATION

In exercise of the powers conferred by section 10 of the Pharmacy Act, 1948, and in supersession of the Notification of the Government of India, Ministry of Health No. S. R. O. 883 dated the 4th June, 1951, the Pharmacy Council of India with approval of the Central Government, hereby makes the following Regulations to be called the 'Education Regulations' prescribing the minimum standard of education and examination required for qualification as a pharmacist :—

MINIMUM QUALIFICATION FOR ADMISSION TO THE COURSE :

1. Any person, who wishes to be admitted as a student to the course of training for Diploma in Pharmacy, shall produce to the Head of the Institution imparting the training in accordance with the Education Regulations, evidence of having passed :—

(a) Matriculation Examination or a High School Examination or a Secondary School Leaving Certificate Examination, with Science as one of the subjects, of a recognised Indian University or a duly constituted Board or

(b) Any other examination accepted by the Pharmacy Council of India as equivalent to any of the above examinations.

DURATION OF THE COURSE :

2. The course of academic training shall be of two years' duration, with a minimum of 180 working days of 5 hours each per year, including sessional examinations, followed by a practical training of not less than 750 hours covered in not less than three months.

COURSES OF STUDY :

3. The first year and the second year courses shall include the respective subjects as given in the Table below. The number of hours to be devoted to each subject for its teaching lecture and practical, shall be not less than that noted against it and the detailed Syllabus of each subject shall be at least as that given in Appendix A.

FIRST ACADEMIC YEAR :

Subjects to be taught		No. of hours of lecture	No. of hours of practical work
Inorganic and Physical Chemistry	...	100	250
Physics	...	50	100
Botany	...	50	100
Zoology	...	25	50
English	...	50	...
Anatomy, Physiology and Hygiene		50	30
		325	530

SECOND ACADEMIC YEAR :

Subjects to be taught	No. of hours of lecture	No. of hours of practical work
General Pharmacy ...	75	100
Dispensing Pharmacy ...	50	200
Forensic Pharmacy ...	25	...
Pharmaceutical Chemistry including General Organic Chemistry ...	100	100
Pharmacognosy ...	45	90
Pharmacology ...	25	30
	320	520

N. B.—Each lecture hour and practical hour shall consist of actual teaching or practical work extending over a period of not less than 50 minutes.

4. For the first five years from the date these Regulations take effect, pharmacists practising for not less than two years in hospitals, dispensaries and other institutions where regular dispensing of drugs is done, who possess Matriculation or other equivalent qualification, and are desirous of taking up the course of training for Diploma in Pharmacy shall be exempted from the practical training, and if they are otherwise eligible, shall be permitted to appear at the preliminary and the final examinations for Diploma in Pharmacy at intervals of six months only, if they have attended in substance the regular course in approved Institutions providing part-time tuitions or evening classes to the satisfaction of the Head of the Institution concerned.

PRACTICAL TRAINING :

5. After the completion of the regular course, the student shall undergo practical training in a recognized Institution Hospital—Pharmacy or Dispensary—for not less than 750 hours covered in not less than 3 months. During this course of training the student shall acquire

1. (a) thorough knowledge of the keeping of records required by the various Acts affecting the profession of pharmacy and
2. experience in
 - (a) the manipulation of pharmaceutical apparatus in common use,
 - (b) the recognition, by sensory characters, of chief crude drugs and chemical substances used in medicine,
 - (c) the reading, translation and copying of prescriptions, including the checking of doses,
 - (d) the dispensing of prescriptions illustrating the commoner methods of administering medicaments, and
 - (e) the storage of drugs and medicinal preparations,

APPROVAL OF TRAINING AUTHORITY :

6. The course of regular academic study given under regulation 3 shall be conducted by an Authority in a state in India, which shall be approved for the purpose by the Pharmacy Council of India under sub-section (1) of Section 12 of the Pharmacy Act, 1948, only if it provides adequate arrangements for teaching in regard to building accommodation, equipment and teaching staff as given under Appendix B.

APPROVAL OF INSTITUTIONS GIVING PRACTICAL TRAINING :

7. A Hospital, Pharmacy or Dispensary shall be recognised by the Pharmacy Council of India for purposes of practical training of the student pharmacists required under Regulation (5) only if it fulfils the conditions given under Appendix C.

EXAMINATIONS :

8. There shall be two examinations, the Preliminary Examination for Diploma in Pharmacy to examine students in the first year course and the Final Examination for Diploma in Pharmacy to examine students in the second-year course. Each may be held twice every year. The examinations shall be of a written, practical and oral nature as indicated in the tabular statements in paragraphs 9 and 10.

9. Only such students as produce certificates from the Head of the Institution concerned in proof of their having regularly followed the first year course of study by attending not less than 75 per cent classes-both lecture and practical separately of each subject-shall be eligible for appearing at the Preliminary Examination for Diploma in Pharmacy to be conducted in accordance with the scheme given in the following Table :—

PRELIMINARY EXAMINATION FOR DIPLOMA IN PHARMACY :

Subjects of Examination	Total marks for theory including sessional	Total marks for Practical Examination including sessional	Oral Exami- nation marks
Inorganic and Physical Chemistry	100	100	...
Physics	50	50	...
Botany } Biology	50	50	...
Zoology }	50	...	...
English	50	...	...
Anatomy, Physiology & Hygiene...	50	50	...
	300	250	

N. B.—All written examinations shall be of three hours' duration.

10. Only such students as produce certificates from the Head of the Institutions concerned in proof of their having regularly followed the second-year course of study by attending not less than 75 per cent classes, both lecture and practical separately of each subject, and having successfully passed the Preliminary Examination for Diploma in Pharmacy shall be eligible for appearing at the Final Examination for

Diploma in Pharmacy as given in the Table below. If, however, the candidate has completed the first year course, his failure to appear or to pass the preliminary examination shall not debar him from attending the second-year course.

Provided that a student who has passed the Intermediate Science Examination of a recognised University or Board shall be exempted from taking the prescribed courses and Examinations in those subjects in which he has passed the Intermediate Examination.

Provided further that such a student shall be permitted to join the second year course and shall be eligible for securing the Diploma in Pharmacy if he passes the Final Examination and also the Examinations in those subjects from which he has not been exempted.

FINAL EXAMINATION FOR DIPLOMA IN PHARMACY :

Subjects of Examination		Total marks for theory including sessional	Total marks for Practical Examination including sessional
General Pharmacy	...	50	50
Dispensing Pharmacy	...	50	100
Forensic Pharmacy	...	50	...
Pharmaceutical Chemistry including General	...	100	100
Organic Chemistry	...	50	50
Pharmacognosy	...	50	...
Pharmacology	...	50	...
		350	300

N. B.— All written examinations shall be of three hours' duration.

11. (a) A regular record of both theoretical and practical class work and examinations conducted in an institution imparting training for this course shall be maintained for each student and 30 per cent of the total marks for each subject in theory and 40 per cent of the total marks for each subject in practical shall be allotted for these records.

The sessional marks shall be calculated on the basis of the average of the marks secured in the examinations held during the year, which shall not be less than three in number.

(b) A candidate shall not be declared to have passed the above examinations unless he secures at least 40 per cent marks in each subject separately in the written and practical tests (including sessional record) and 45 per cent marks in the aggregate of all subjects. Candidates securing 75 per cent marks or above in any subject or subjects shall be declared to have obtained distinction in that subject or those subjects, provided the candidate passes in all the subjects in the same examination.

(c) A candidate who appears in all the subjects but fails in not more than two subjects at the Preliminary Examination for Diploma in Pharmacy may, at his option, take the examination in parts in one or more subjects in which he has failed, or in whole ; provided, however, he passes in all the subjects prescribed for the examination in three consecutive examinations, or within a period of two years, including the examination at which he first appeared. If he does not pass the full examination within a period of two years as mentioned above he shall have to take the whole examination in all the subjects at the time, when he next appears at the Examination.

A candidate who fails in the Final Examination for Diploma in Pharmacy may, at his option, take the examination in parts, in one or more subjects in which he has failed, or in whole ; provided, however, he passes in all the subjects prescribed for the examination in three consecutive examinations, or within a period of two years, including the examination at which he first appeared. If he does not pass the full examination within a period of two years, as mentioned above, he shall have to take the whole examination in all the subjects at the time, when he next appears at the Examination.

APPROVAL OF EXAMINING AUTHORITY :

12. The Examinations mentioned in regulations 8 to 10 shall be held by an authority in a state in India approved for the purpose by the Pharmacy Council of India under Section 12, Sub-Section (2) of the Pharmacy Act, 1948, which approval shall be granted only if the Authority concerned fulfils the conditions given under Appendix D.

CERTIFICATE OF PASSING FINAL EXAMINATION FOR DIPLOMA IN PHARMACY :

13. A certificate for having passed the Final Examination for Diploma in Pharmacy shall be granted by the Examining Authority to a successful candidate only after he produces evidence of having duly completed not less than 750 hours practical training covered in not less than three months, in a recognized institution to the satisfaction of the Head of the Institution in which he has undergone his academic training.

MISCELLANEOUS :

14. (a) Any course of Pharmaceutical training, which does not cover in full the courses of study included in these regulations, shall not be considered for approval under section 12 of the Pharmacy Act.

(b) Persons who have passed a course of study in Pharmacy not covering in full the subjects contained in the Education Regulations prescribed by the Pharmacy Council of India, shall not be considered as having passed the Final Examination for Diploma in Pharmacy, unless they produce a certificate from an approved institution that they have passed an examination in such subjects as required by the Education Regulations.

15. The above regulations may, as needed from time to time be altered, amended or added to further regulations by the Pharmacy Council of India with the approval of Central Government.

APPENDIX A

*1. The books indicating the general scope of syllabus and the reference books recommended refer to the latest editions that are available in the market. Any reference given to the year of publication shall be deemed to be cancelled.

Inorganic and Physical Chemistry

The whole of the syllabus should be treated in an elementary manner supplemented by practical demonstrations.

The chief characteristics of chemical action, distinction between elements and compounds, structure of atoms and molecules, chemical and physical changes, the laws of chemical combination by weight and volume, equivalent weight, atomic weight, molecular weight, symbols, chemical formulae and nomenclature; equations; valency; the distinction between metals and non-metals; acids, bases and salts; neutralisation; acidimetry and alkalimetry; periodic classification of elements; Avogadro's hypothesis; kinetic theory of gases, effect of temperature and pressure on the volumes of gases; dilute solutions; ionisation; conductivity; strength of acids and bases; pH scale, Buffer solutions, indicators; hydrolysis of salts; catalysis; solubility curves; solubility product; osmotic pressure; chemical equilibrium and the law of mass action; endothermic and exothermic reactions; colloids; emulsions; adsorption.

The general characters of non-metals, the chief methods of preparation and the typical reactions of the following non-metallic elements and compounds:—

Hydrogen, Oxygen, Ozone, allotropic modifications of an element; Water; Hydrogen Peroxide; Acids, Bases, Salts; Halogens and their Hydracids; Nitrogen, Atmosphere, the Inert gases; Ammonia and its salts; Oxides of Nitrogen, Nitric Acid, Nitrates, Nitrites; Sulphur, Polymorphs of Sulphur; Sulphurated Hydrogen, Sulphurous and Sulphuric anhydrides and acids; Phosphorus; Oxides, Oxyacids and chlorides of phosphorus; Carbon, Coal and its chief products, Flame; Gaseous fuels, Oxides of Carbon; Silica; Boron; Boric Acid.

The general characters and classification of the metals and the general methods of their extraction. The general properties of the principal compounds of the following metals:—

Potassium, Sodium, Magnesium, Calcium, Barium, Aluminium, Tin, Lead, Copper, Silver, Zinc, Cadmium, Mercury, Arsenic, Antimony, Bismuth, Chromium, Manganese, Iron, Cobalt, Nickel and Gold.

PRACTICAL

1. The cutting and bending of glass tubing. The preparation of simple apparatus involving the use of corks and tubes, *e.g.* gas generating tubes and flasks wash bottles etc.

2. Preparation of simple gases, *e.g.* Hydrogen, Oxygen, Chlorine, Carbon dioxide, Hydrogen sulphide, Hydrochloric acid and Sulphur dioxide and study of their properties.

3. Qualitative analysis of simple salts.

* (1) Inserted vide Ministry of Healths' Notification No. F-7-110/58-D, dated 16-11-1959.

4. The use of standard solutions for acidimetry and alkalimetry. Simple exercises in permanganometry for iron.

5. Preparation of Distilled water B.P. and Hydrochloric acid B.P.

6. Simple exercises in gravimetric analysis ; Decomposition of Salts on heating ; qualitative and quantitative results of heating substances like magnesium carbonate, potassium chloride and hydrated barium chloride.

N. B.—The candidate is required to bring for inspection to the practical examination his original laboratory journal duly signed by a member of the teaching staff and certified at the end of the year by the head of the department.

BOOK INDICATING THE GENERAL SCOPE OF SYLLABUS

Lyons.—Theoretical Pharmaceutical Chemistry

Reference Books

- | | | |
|-------------------------|-----|--|
| 1. Findlay | ... | Introduction to Physical Chemistry. |
| 2. Senter | ... | Text book of Physical Chemistry. |
| 3. Holmyard | ... | Inorganic Chemistry. |
| 4. Schroff | ... | Quantitative Pharmaceutical Analysis. |
| 5. Schroff & Srivastava | ... | Introduction to semi-micro qualitative Analysis. |
| 6. Pauling | ... | General Chemistry. |
| 7. Timm | ... | General Chemistry. |

PHYSICS

General.—The fundamental and derived units of length, mass and time ; measurement of length, area and volume ; vernier calipers, micrometer ; velocity, acceleration, mass, momentum, force, work, power, energy ; friction ; gravitation, centre of gravity, states of equilibrium ; simple machines, density of liquids, specific gravity ; pressure exerted by a fluid, principle of Archimedes, syphon, waterpump and press ; Boyle's Law, compression and exhaust pumps, atmospheric pressure, Barometers, surface tension, viscosity, osmosis.

Heat.—Temperature, Thermometry, Thermographs, expansions of solids, liquids and gases with alteration in temperature ; quantity of heat and unit of heat, specific heat, change of state, latent heat of liquefaction and vapourisation, different methods of cooling, melting and boiling points, their determinations and effect of pressure on them ; vapour pressure ; pygrometry, dew and its formation, clouds, rain and its measurement ; transference of heat, conduction, conductivity, Davy's safety lamp ; convection, how it takes place in liquids and gases, winds, land and sea breezes, ventilation use of chimney for lamps, radiation, its effect on polished and rough surfaces, vacuum flask ; elementary kinetic theory of gases, Graham's Law, Henry's Law, Dalton's Law, nature of heat, relation between heat and work, steam engine, oil engine, flywheel.

Light.—Nature of light, propagation of light ; illuminating power, photometry, Laws of reflection and refraction, formation of images by plane and spherical mirrors and lenses, reflectors, multiple images, eye as

an optical instrument, photographic camera, defects of vision and their correction by lenses ; action of prisms on light, dispersion spectrum ; ultraviolet and infra-red radiations, microscopes, spectroscope, telescope, cinematograph, phosphorescence and fluorescence, polarimeters.

Magnetism.—Loadstone, magnetic needle, Earth as a magnet, simple phenomena of magnetism, magnetic field, lines of force, laws of force, magnetic induction ; electromagnets, permanent and temporary magnets ; terrestrial magnetism.

Electricity.—Simple phenomena of static electricity ; Electroscope, attraction and repulsion, electricity on the surface, discharge through points, sparking ; potential, induction, conductors and non-conductors, machines, capacity, parallel plate condensers ; electric currents, magnetic, chemical and heating effects, primary and secondary cells, current strength, electromotive force, Ohm's law and current detector, ammeter, voltmeter, meter bridge, potentiometer, magnetic properties of a coil carrying a current, induced current ; simple dynamo ; electric bell, telephone ; effects of electric current ; incandescent lamp, arc lamp ; heating apparatus.

PRACTICAL

The candidate must be able to conduct simple exercises illustrating the above, including the following :—

The use of vernier calipers, screw-gauge, balance, hydrometer ; simple pendulum ; the determination of volumes by weighing in air and water, density of solids and liquids ; the verification of Boyle's Law.

The determination of melting points, boiling points, specific heats, latent heats of fusion, dew point.

Tracing the paths of rays, the determination of refractive indices of slab and prism ; focal lengths of mirrors and lenses.

Plotting the lines of magnetic force, and period of oscillation of magnets.

The comparison of electromotive forces and of resistances ; the use of galvanometer, ammeter and voltmeter.

N. B.—*The candidate is required to bring for inspection to the practical examination his original laboratory journal duly signed by a member of the teaching staff and certified at the end of the year by the Head of the Department.*

BOOKS INDICATING THE SCOPE OF SYLLABUS

- | | | |
|--------------------|-----|-------------------------|
| 1. Naik & Mahre | ... | A text book of Physics. |
| 2. Ablett | ... | A course of Physics. |
| 3. Millican & Gale | ... | A text book of Physics. |

Reference Books

- | | | |
|-------------------|-----|-------------------------|
| 1. J. A. Crowther | ... | A text book of Physics. |
| 2. Glazebrook | ... | A text book of Physics. |
| 3. Rajnikant De | ... | A text book of Physics. |

BOTANY

1. Relation of Botany to Pharmacy—The ~~board~~ divisions of the Plant Kingdom—Botanical Nomenclature

2. Elementary External Morphology of—

- (a) Roots
- (b) Rhizomes
- (c) Corms
- (d) Bulbs
- (e) Stems
- (f) Leaves
- (g) Flowers
- (h) Fruits]
- (i) Seeds and Spores and their Germination.

3. Elementary Structure and formation of—

- (a) Cells
- (b) Tissues and tissues systems.

4. Histological Structure of—

- (a) Roots—
 - (1) Young
 - (2) Old
- (b) Stems—
 - (1) Young
 - (2) Old
- (c) Leaves
- (d) Hairs and glands

5. Elementary Principles of Classification: —(a) Cryptogams, (b) Phanerogams with special reference to the following natural orders: Liliaceae, Solanaceae, Rosaceae, Umbelliferae, Compositae Leguminosae.

Elementary Plant Physiology illustrated by simple experiments—

- (i) Food materials of plants and their sources and form
- (ii) Absorption of water
- (iii) Movement of water and gases within the plant
- (iv) Transpiration
- (v) Nutrition and Metabolism
- (vi) Digestion and Respiration
- (vii) Growth and Reproduction—Sexual and asexual
- (viii) Reserve materials

PRACTICAL

1. Morphological description of the parts of plants
2. Histological characters of the parts of plants, viz. root, stem and leaf
3. Simple experiments on plant nutrition, transpiration, respiration and germination

ZOOLOGY

(a) The structure and properties of the cell and the general characters and functions of the tissues including the epithelia, blood, lymph and the nervous, muscular, connective and skeletal tissues.

(b) The general structure, life-history and physiology of (a) Paramoecium (b) Amoeba and (c) Trypanosoma as unicellular Organisms.

(c) The general structure, vital activities and life-history of Cockroach.

(d) The structure (excluding skeleton), life history (excluding embryology) and elementary physiology of Vertebrates as illustrated by Rana (frog) and mammalian [rabbit (or any other mamal)]*

PRACTICAL

The dissection, microscopical examination and description of specimens of parts of frog and rabbit.

BOOKS INDICATING THE GENERAL SCOPE OF SYLLABUS

1. A text-book of Intermediate Biology — B. C. Kundu and Chatterjee

Or

Biology for Pharmacy students—Moore

Reference Books

1. Zoology—Parker and Bhatia
2. Text Book of Botany for Medical and Pharmaceutical Students—Small

ENGLISH

There shall be only one paper of three hours' duration carrying 50 marks and consisting of two sections. The first section shall consist of questions of a general, non-detailed nature from a prescribed text-book of English Prose Selections tallying with the general standard prevailing for the Intermediate Examination of Science or Pharmacy in the regional university or Board. The second section shall be on composition consisting of questions on the correct use of the English idioms and construction and exercises on essay and precis writing. The aim of this section is to test the capacity of the students to write correct English.

* Inst. vide Ministry of Health Notification No. F. 7-22/55-D dated the 16th April, 1955.

BOOKS RECOMMENDED FOR THE SECOND SECTION

1. "A Guide to English Composition" by Bartley and Banerji (Humphrey Milford, Oxford University Press)
2. "The English Way" by B. L. K. Henderson (Macdonald and Evans, London)

ANATOMY, PHYSIOLOGY AND HYGIENE

Anatomy and Physiology

I.—Elementary knowledge of human anatomy

- (1) Human skeleton
- (2) Important muscles of the body
- (3) Heart and the important blood vessels in the body
- (4) Lungs
- (5) Digestive system of liver
- (6) Kidneys and skin
- (7) Glands of internal secretion
- (8) Brain, spinal cord and their coverings ; cranial nerves and spinal nerves ; autonomic nervous system
- (9) Organs of special senses

II.—Elementary knowledge of Physiology of different systems

- (1) Physiology of blood—Structural, physical and chemical composition of blood ; Functions of blood ; Functions of spleen
- (2) Physiology of heart and circulation—Blood pressure and how it is maintained and its importance ; coronary circulation
- (3) Physiology of alimentary system—Digestive juices and their effect on food stuffs ; Functions of Liver
- (4) Composition of common food stuffs—rice, bread, fish, meat, eggs, milk, ghee, edible oils, vegetable, Nutrition, Vitamins, Deficiency diseases, Balanced diet
- (5) Physiology of respiration—Transport of Oxygen and Carbon dioxide
- (6) Physiology of kidneys—Glomerular and tubular infiltration ; Composition of urine
- (7) Physiology of muscles—The properties of skeletal, visceral and cardiac muscles
- (8) Physiology of the endocrine system—Functions of the active principles of the various endocrine glands
- (9) Physiology of nervous system—Functions of the cerebrum, cerebellum, midbrain parts, medulla and the spinal cord. Functions of the cranial and the spinal nerves. Functions of the autonomic nervous system. Functions of the organs of special senses

PRACTICAL

Identification of various charts, models and microscopic slides illustrative of the theory work of Human Anatomy and Physiology, Blood counting, and qualitative analysis of urine and stool

HYGIENE

- (1) Air: ventilation of houses and factories, schools and public places
- (2) Water; purification of water, water supply
- (3) Disposal of Sewage
- (4) Drainage
- (5) Food: requisites of a balanced diet; impurities of food
- (6) Infectious diseases; their prevention
- (7) Personal hygiene
- (8) Disinfectants
- (9) Mode of infection in blood and intestines by parasites
- (10) Life history of mosquitoes and flies.
- (11) Spread of disease: contact diseases, venereal diseases, leprosy, droplet's infections: water-borne diseases; air-borne diseases: diseases carried by insects

BOOKS INDICATING THE GENERAL SCOPE OF SYLLABUS

1. **Human Physiology**—Fournier.

Or

Living Bodies—Banting and Best.

Reference books

1. **Handbook of Physiology and Biochemistry**—W. D. Halliburton & R. J. S. McDowall, London
2. **A Handbook of modern Physiology**—R. K. Pal and A. Chakravarti—Calcutta
3. **Text Book of Anatomy and Physiology**—D. C. Kimber & E. Gray, 1948 Macmillan & Co., New York
4. **A treatise on Hygiene and Public Health**—Birendra Nath Ghosh, Hilton & Co., Calcutta
5. **Manual of Hygiene and Public Health**—Jahar Lal Das, Calcutta

GENERAL PHARMACY

(a) **Principles of Pharmacy** :—

Metrolgy—Measurement of weight and Volume and Appliances used therefor.

Heat—Sources and uses of Heat in Pharmacy ;

Heat Processes—Fusion, Ignition, Calcination, Drying, Desiccation, Exsiccation, Evaporation, Distillation and Sublimation ;

Refrigeration—Principles and use of Refrigerators, Cold Storage and Freeze drying ;

Solids—Precipitation, Crystalization, Granulating and Scaling ;

Solutions—Types, Solubility, Solvents, Properties of Solutions, like Osmosis, Viscosity, Surface-tension, Absorption, Ionization and pH ;

Colloidal state.—Colloids, suspensoids & emulsoids.

Mechanical separation—Decantation, Filtration, Colation, Centrifugal separation and other means of clarification ;

Drugs of Vegetable and Animal Origin.—Collection, Drying and Storage, Enzyme action in drugs ;

Mechanical Sub-Division of Drugs and Chemicals.—Comminution, Trituration, Mixing and Sifting ;

Extraction Processes.—Expression, Infusion, Decoction, Maceration, Percolation, Dialcation and Diffusion ;

Apparatus and Aids Involved—in the above processes.

(b) Galenical Pharmacy :—

General Methods of Preparation of Official Galenicals—Aguas, Infusion, Spirits, Tinctures, Extracts, Liniments, Liquors, Plasters, Poultices, Syrups, Glycerines, Elixirs, Confections, Juices, Powders, Mucilages and Tablets.

Preservation and Storage of Pharmaceutical Products.

General Composition of Official Galenicals.

Surgical Dressings.—Ligatures and Sutures and their Standards.

(c) Biological Pharmacy :—

Elementary knowledge of Bacteriology and Immunity as applied to Sera, Vaccines, Toxins, Antitoxins and Antibiotics, Vitamins, Hormones, Dried Serum, Extract of Liver, Extract of Pituitary (Post. Lobe) and Protein Hydrolysates.

(d) Ethics in Pharmacy :—

Pharmaceutical Profession and its Responsibilities ; Institution of Pharmacy in relation to Society ; Pharmacists in relation to Doctors, Nurses, Patients, Customers, the Public, Wholesale Dealers, Employers, and Employees ; Codes of Conduct in Dispensing and Advertising of Drugs and Medicines with special reference to Poisons, Narcotics, Abortifacients and Contraceptives ; Rules of Receiving, Dispensing, Checking and Delivery of Prescriptions ; Fair Pricing and Fair Service.

(e) Pharmaceutical Economics :—

Elements of double-entry Book-keeping and Accountancy ; Drug Store Organization ; Business Correspondence ; Filing ; Advertising ; Location and Management of Drug Stores and Dispensaries ; Prescription Pricing.

PRACTICAL

A scheme of 100 hours to include preparation of Simple Pharmaceutical Products such as :—

Aqua Anethi, B.P.
Aqua Pudinae Dest., I.P.L.
Aqua Chloroformi B.P.
Liq. Ext. of Belladonna, B.P.
Ext. of Cascara, B.P.
Ext. of Glycyrrhiza, B.P.
Ext. of Bel. I.P.L.
Ext. of Kurchi I.P.L.
Ext. of Malt I.P.L.
Glycerine of Boric Acid, B.P.
Glycerine of Phenol, B.P.
Ammoniated Mercury, B.P.
Mercury with Chalk, B.P.
Aromatic Powder of Chalk, B.P.
Comp. Powder of Glycyrrhiza
Hard Soap
Soft Soap
Spirit of Nitrous Ether, B.P.
Aromatic Spirit of Amonia, B.P.
Simple Syrup, B.P.
Syrup of Orange, B.P.
Syrup of Wild Cherry, B.P.
Syrup of Ferrous Iodide, B.P.
Syrup of Vasaka, I.P.L.

Infusion of Orange Conc., B.P.
Fresh Inf. of Quassia, B.P.
Conc. Inf. of Senega, B.P.
Liniment of Soap, B.P.
Lint. of Turpentine, B.P.
Strong Sol. of Ammon. Acet., B.P.
Arsenical Solution, B.P.
Sol. of Cresol with Soap (Lysol).
Sol. of Ferric Chloride, B.P.
Weak Sol. of Iodine, B.P.
Str. Sol. of Lead Subacet, B.P.
Surg. Sol. of Chlorinated Soda.
Sol. of Strychnine Hydrochlor.
Mixture of Magnesium Hydrox. B.P.
Sodamint Tablets (Formula to be made up).
Influenza Tablets.
Quinine Tablets.
Calcium Lactate Tablets.
Comp. Tinct. of Benzoin, B.P.
Comp. Tinct. of Cardamon, B.P.
Tincture of Lemon, B.P.
Comp. Tinct. of Chirata, I.P.L.

BOOK INDICATING THE GENERAL SCOPE OF SYLLABUS

Burlage et al, Fundamental Principles and Processes of Pharmacy (McGraw Hill)

Reference Books

Bennett and Cocking, Vol. I, Principles and Practice of Pharmacy. The British Pharmacopoeia, 1948

Indian Pharmacopoeial List, Govt. of India Publication.

The British Pharmaceutical Codex, 1949

Cook and Martin, Remington's Practice of Pharmacy, Mack Publishing Co

Arny and Fischelis, Principles of Pharmacy, W. B. Saunders Co.

Caspari & Kelly, A Treatise on Pharmacy, Lea and Febiger,
Cooper, Tutorial Pharmacy, Pitman

Peterson's "Pharmaceutical Selling, Detailing and Sales Training",
Mc-Graw Hill

Nolon and Maynard "Drugstore Management" McGraw Hill

DISPENSING PHARMACY

(a) Principles of Dispensing :

PRESCRIPTION, Definition, Significance and Handling ;

ACCURACY and care in Dispensing ; FORM OF ADMINISTERING MEDICINES ; LABELLING AND PACKING of and CONTAINERS for Dispensed Medicines ; and a thorough study of the following :

MIXTURES.—Definition, Classification, Mixtures containing Insoluble (Diffusible and Indiffusible) Solids, Immiscible and Precipitating Liquids etc. ; **EMULSIONS.**—Theory, Natural and Synthetic Emulgents, Stability, Types-Gum, Soap, Protein, Starch, Natural and Synthetic Wax and Wool Alcohol Emulsions, O/W and W/O. Emulsions, Emulsifiers, **INCOMPATIBLE PRESCRIPTIONS.** Pharmaceutical and Chemical (Inorganic and Organic) Incompatibility, Intentional and Unintentional and Adjusted Incompatibility, Handling of Incompatible Prescriptions, **POWDERS.**—Trituration Simple, Compound, and Efferevescent Powders, Compressed Powders-Tablet Triturates, Powders enclosed in Cachets and Capsules, Powders containing Liquids and those for External Use ; **PILLS.**—Excipients, Coating and Varnishing, Enteric Pills ; Pills containing small doses, Oxidising Substances, Camphor and Camphoraceous and Oily Substances, Pill Machines ; **TABLETS.**—Granulation and its importance, Diluents, Granulating Agents, Adhesives, Disintegrants, Lubricants in Tablet making, Compression and Tablet Machine, Sugar Coating and Polishing of Tablets ; **LOTIONS AND LINIMENTS ; OINTMENTS AND CREAMS.**—Ointment Bases and their choice, Emulsified Ointments and Creams, Penicillin Ointments and Creams ; **PASTES.**—Gelatine, Starch, Tragacanth, Soap and Cellulose Ether Pastes ; **SUPPOSITORIES.**—Forms, Shapes and Sizes, Suppository Bases, Suppository. Moulds, Displacement Value of Medicaments, Glycerine, Cocobutter, Gelatine and Soap-Glycerine Suppositories, containing various types of medicines ; **SOLUTIONS.**—Inhalations, Nasal Sprays, Throat Paints and Gargles, Eye and Ear Preparations ; **PASTILLES AND LOZENGES ; PLASTERS ; DENTAL PREPARATIONS.**—Various Dentifrices and Mouth Washes ; **DERMATOLOGICAL PREPARATIONS ; STERILIZED PREPARATIONS.**—ROUTES OF Parenteral Administration of Medicines and Importance of Sterilization, Isotonic Solutions, Apyrogenic Water, Containers for Sterilized Preparations, Limit of alkalinity of Glass, Transfusion Sets, Sterilization by Heating and Filtration, Chemicals used in Sterilization, Bactericides, Disinfectants, Bacteriostatics and Antiseptics and their use, Phenol Coefficient, Rideal Walker (R.W.) and Chick Martin Tests, Sterilization of Surgical Dressings and Appliances, Autoclaves, Bacteria-proof Filters, Tests of Sterility of Medicaments and dressings, Precautions for Asepsis. **APPARATUS AND EQUIPMENTS REQUIRED FOR DISPENSING MEDICINES.**

(b) Posology :

Detection of overdoses in prescriptions.

(c) Pharmaceutical Latin :

LATIN as required in interpretation of prescriptions and their translation into English.

(d) Pharmaceutical Arithmetic :

Different Systems of Weights and Measures ; Calculations of Doses ; Reducing and Enlarging of Recipes ; Percentage Solutions ; Alligation ; Isotonic Solutions ; Specific Gravity ; Specific Volume Thermometric Scales ; Proof Spirit ; Dilution and Concentration of Solutions.

PRACTICAL

A Scheme of 200 hours of Practical Work including the following :-

- (a) Dispensing not less than 200 prescriptions covering a wide range of medicinal preparations including all the classes listed under "DISPENSING PHARMACY" maintaining complete record of each.
- (b) Differentiation of Bacteria, Yeasts and moulds ; Examination of Bacterial Slides, Preparation of Culture Media, Tests of Sterility of different kinds of medicaments and surgical dressings, Ligatures and sutures.

BOOKS INDICATING THE GENERAL SCOPE OF SYLLABUS

1. Dispensing for Pharmaceutical Students, Cooper and Gunn, 1948 (Pitman)
2. Schroff & Srivastava, Pharmaceutical Arithmetic (Pindars' Ltd., Calcutta-20)
3. Schroff & Srivastava, Pharmaceutical Latin & Prescription Reading (Pindars Ltd., Calcutta-20)

Reference Books

1. Cook and Martin, Remington's Practice of Pharmacy-Mack Publishing Co.
2. United States Pharmacopoeia XIV
3. British Pharmaceutical Codex, 1949
4. Lyman et al, American Pharmacy, Vols. I & II, Lippincot
5. Scoville, Art of Compounding
6. Husa, Pharmaceutical Dispensing, Mack Printing Co
7. The British Pharmacopoeia, 1948
8. The Indian Pharmacopoeial List, 1946

FORENSIC PHARMACY

Study of Dangerous Drugs Act of 1930 ; Opium Act ; Poisons Act, Drugs Act of 1940 ; Drugs Rules of 1945 ; Pharmacy Act of 1948 ; the Excise Act ; and such other State Acts as materially effect the Pharmaceutical profession.

PHARMACEUTICAL CHEMISTRY INCLUDING GENERAL ORGANIC CHEMISTRY

An elementary study of the inorganic and organic substances described in the British Pharmacopoeia and the Indian Pharmacopoeial List, with special reference to the following :--

1. INORGANIC

(a) *Oxygen and its Compounds :*

Oxygen, Carbon dioxide, Nitrous Oxide, Distilled water, Hydrogen Peroxide

(b) *Halogens, Sulphur and their compounds :*

Chlorine :—

Chlorinated Lime, Surgical Solution of Chlorinated Soda, Hydrochloric Acid

Bromine :—

Hydrobromic Acid

Iodine :—

Iodine, Iodine Solutions, Iodised Oil, Hydrogen Iodide

Sulphur :—

Sulphur, Sulphuric Acid

(c) *Compounds of Nitrogen and Phosphorus :*

Nitrogen :—

Ammonia, Ammonium Bicarbonate, Ammonium Carbonate, Aromatic Spirit of Ammonia, Aromatic Solution of Ammonia, Ammonium chloride, Ammonium Acetate, Nitric Acid

Phosphorus :—

Hydrophosphorous Acid, Phosphoric Acid

(d) *Compounds of Boron and Silicon :—*

Boron :—

Boric Acid, Borax

Silicon :—

Kaolin, Magnesium Trisilicate

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Krupanidhi College of Pharmacy

BANGALORE - 560 034.

*(e) Compounds of Sodium and Potassium :—**Sodium :—*

Sodium Hydroxide, Sodium Carbonate, Sodium Bicarbonate, Sodium Chloride, Sodium Bromide, Sodium Iodide, Sodium Sulphate, Sodium Thiosulphate, Sodium Nitrite, Sodium Phosphate, Sodium Acid Phosphate

Potassium :—

Potassium Hydroxide, Potassium Carbonate, Potassium Bicarbonate, Potassium Bromide, Potassium Iodide, Potassium Nitrate, Potassium Chloride, Potassium Permanganate, Potassium Sulphate

*(f) Compounds of Copper and Silver :**Copper ;—*

Copper Sulphate, Copper Oxide

Silver :—

Silver Nitrate, Toughened Silver Nitrate

*(g) Compounds of Calcium and Barium :**Calcium :*

Calcium Hydroxide, Calcium Carbonate, Chalk, Calcium Chloride, Calcium Phosphate

Barium :—

Barium Sulphate

*(h) Compounds of Magnesium, Zinc, Mercury and Lead :**Magnesium :—*

Magnesium Oxide, Mixture of Magnesium Hydroxide, Magnesium Carbonate, Magnesium Sulphate

Zinc :—

Zinc Oxide, Zinc Chloride, Zinc Sulphate

Mercury :—

Mercury, Mercury with Chalk, Yellow Mercuric Oxide, Mercuric Oxycyanide, Mercuric Chloride, Ammoniated Mercury, Red Mercuric Iodide, Mercurous Chloride, Black Mercurial Lotion

Lead :—

Lead Monoxide, Lead Subacetate

*(i) Compounds of Arsenic, Antimony and Bismuth :**Arsenic :*

Arsenic Trioxide, Arsenic Triiodide, Solution of Arsenous and Mercuric Iodides

Antimony :—

Potassium antimony Tartrate

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Bismuth :—

Precipitated Bismuth, Bismuth Oxychloride

(j) *Compounds of Iron, Aluminium and Chromium :*

Iron :—

Reduced Iron, Ferrous Sulphate, Citrated Ferrous Chloride, Ferric Chloride, Saccharated Iron Carbonate, Syrup of Ferrous Iodide

Compound syrup of Ferrous Phosphate with Strychnine, Iron Ammonium Citrate, Iron and Quinine Citrate

Aluminium :—

Alum

Chromium :—

Chromium Trioxide

II. ORGANIC

This part will include also the study of General Organic Chemistry, that is, the definition of organic compounds; purification, criteria of purity; elementary analysis of organic compounds; empirical and molecular formula; constitution and classification; homology, isomerism and polymerism; elementary study of the chemical and physical properties of the different groups of organic substances with special reference to the following :—

(a) *Aliphatic Compounds :—*

Hydrocarbons (saturated and unsaturated) :—

Paraffins, Ethylene

Halogen Derivatives of Hydrocarbons :—

Ethyl Chloride, Chloroform, Iodoform, Carbon Tetrachloride

Monohydric Alcohols :

Methyl alcohol, Ethyl Alcohol, Industrial Methylated Spirit, Chlorbutol

Ethers :—

Ethyl Ether

Thio-alcohols and Thioethers :—

Sulphonal, Methyl Sulphonal

Aldehydes and Ketones :—

Formaldehyde, Hexamine, Paraldehyde, Chloral Hydrate, Acetone

Monobasic Carboxylic Acids and their derivatives :—

Formic Acid, Acetic Acid, Lead Acetate, Potassium Acetate, Trichloroacetic Acid, Calcium Lactate, Lead Oleate, Oleated Mercury; Zinc Stearate, Soaps

Esters :—

Ethyl Nitrate, Spirit of Nitrous Ether, Amyl Nitrite, Polyhydric Alcohols and their esters

Glycerin, Glyceryl Trinitrate, Erythrityl Tetranitrate

Polybasic carboxylic Acids :—

Lactic Acid, Tartaric Acid, Potassium Antimonyltartrate, Sodium Antimonyltartrate, Potassium Acid Tartrate, Sodium Bismuthyltartrate, Citric Acid, Sodium Citrate, Potassium Citrate, Iron Ammonium Citrate

Carbohydrates :—

Dextrose, Liquid Glucose, Sucrose, Laevulose, Lactose

Cyanogen Compounds :—

Hydrocyanic Acid, Urea, Urethane

Carbocyclic Compounds :—

Soluble Saccharine and Chloramines. Acetanilide, Amphetamine, Sulphanilamide, Phenol, Phenazetin, Trinitro-phenol, Cresol, Thymol, Creosote, Resorcinol, Adrenaline; Phenolphthalein, Benzoic Acid, Sodium Benzoate, Benzyl Benzoate, Benzocaine, Procaine, Orthocaine, Amylocaine, Salicylic Acid, Methyl Salicylate, Sodium Salicylate, Bismuth salicylate, Acetyl Salicylic Acid, Mandelic Acid, Salol, Tannic Acid

Control of purity of official Pharmacopoeial substances.

An elementary study of proteins, fats, alkaloids and glucosides, purines, vitamins, hormones and enzymes.

PRACTICAL

The candidates must be able to conduct simple chemical operations as applied to substances in frequent use in pharmacy, including the following :—

1. Identification of pure official inorganic compounds.
2. Assay of important drugs using simple volumetric methods and estimation of Sulphate by gravimetric methods.
3. The performance of limit tests for the presence of As, Pb, Cl, Fe, SO_4 .
4. Purification of solids and liquids; preparation of simple organic substances—ethyl acetate or benzoate, acetanilide, acetamide, iodofrm; hydrolysis of ethyl benzoate or methyl salicylate; reactions of typical groups of compounds; tests for elements; Identification of simple organic substances studied in the theory by a study of their properties and reactions.

5. Tests for alkaloids, proteins, carbohydrates, glucosides and Tannins.

N.B —The candidate is required to bring for inspection to the practical examination his original laboratory journal duly signed by a member of the teaching staff and certified at the end of the year by the head of the department.

BOOK INDICATING THE GENERAL SCOPE OF SYLLABUS

1. *Lyons* :—Theoretical Pharmaceutical Chemistry
2. *Schroff* :—Impurities in Pharmaceutical Substances
3. *Cohen* :—Class Book of Organic Chemistry

Reference Books

1. *Bentley and Driver* :—Text Book of Pharmaceutical Chemistry
2. *Lyons and Appleyard* :—Practical Pharmaceutical Chemistry
3. *Rogers* :—Inorganic Pharmaceutical Chemistry
4. *D.C. Garrat* :—[Quantitative Analysis of Drugs]¹
5. *Durrant* :—Organic Chemistry

PHARMACOGNOSY

Systematic Scheme of study for drugs included in the Primary List :—

- (i) Official titles, names and synonyms
- (ii) Scientific names-genus, species, variety and family
- (iii) Part of the plant used
- (iv) Geographical sources
- (v) Plant habit
- (vi) Cultivation
- (vii) Collection
- (viii) Preparation for the market
- (ix) Description :
 - (a) *Macroscopic (including diagramatic transverse section whenever possible)*
 - (b) *Microscopic (Starch, Calcium Oxalate and Trichomes only).*
- (x) Varieties, substitutes and adulterants
- (xi) Constituents, active or otherwise
- (xii) Chemical tests
- (xiii) Storage
- (xiv) Pharmacological and Pharmaceutical use

¹ Subs. vide Ministry of Health Notification No. F. 7—110/58—D, dated the 15th November, 1959.

Primary List**Organised :**

Wood	Quassia
Bark.....	Cinnamon, Cinchona
Leaves.....	Senna, Digitalis
Flowers.....	Cloves
Seeds.....	Nux Vomica, Ispaghul
Fruits.....	Fennel, Cardamom
Entire organisms.....	Ergot, Ephedra, Stramonium
Underground organs..	Liquorice, Ginger

Unorganised :

Dried juices and Extracts :	Opium, Aloe and Agar
Carbohydrates, Gums and Saccharine substances :	Starch, Acacia and Honey
Resins, Gum Resins, and oleo-resins :	Colophony, Asafoetida Balsam of Tolu
Fixed oils and waxes :	Castor Oil, Shark-Liver Oil, Bees wax

Systematic scheme of study for drugs included in the Secondary List :—

- (i) Official titles and synonyms
- (ii) Parts of the plants or animals used
- (iii) Active Constituents
- (iv) Pharmacological and Pharmaceutical use

Secondary List

Aconitum	Capsicum	Ipecacuanha	Prunus serotina
Anethum	Carum	Ipomoea	Quillaia
Arjuna	Cascara sagrada	Jalapa	Rheum
Aurantii Cortex	Catechu	Kaladana	Scilla.
Benzoinum	Cocoa	Kurchi	Senega
Buchu	Colchichi cormus	Kuth	Sennae fructus
Balsamum	Colchichi semen	Limonis Cortex.	Strophanthus
peruvianum			
Bel	Colocynthis	Linum	Styrax
Bellodonnae	Copaiba	Lobelia	Tamarindus
folium			
Belladonnae	Coriandrum	Myristica	Tragacanth
radix			
Calumba	Gelatinum	Mel	Valerian
Cannabis Indica	Gentiana	Myrrha	Vasaka
Cantharis	Hyoscyamus	Podophyllum indicum	

PRACTICAL

The Candidate must be prepared to :—

- (1) Record the macroscopical characters (including Diagramatic transverse section) of a drug whether included in the syllabus or not
- (2) Identify drugs listed in the Primary List in bulk or in crushed (not powdered) condition

- (3) Identify drugs mentioned in the Secondary list in bulk

Note : The candidate will be required to bring for inspection to the Practical Examination his original laboratory note books duly signed by the teacher.

BOOK INDICATING THE GENERAL SCOPE OF SYLLABUS

A Text book of Pharmacognosy by T. C. Denston

Reference Books

- | | | |
|----------------------------------|-----|-------------|
| (1) A Text book of Pharmacognosy | ... | By Wallis |
| (2) A Text book of Pharmacognosy | ... | By Trease |
| (3) A Text book of Pharmacognosy | ... | By Youngken |

ELEMENTARY PHARMACOLOGY

I. GENERAL

- (1) Definitions
- (2) The chemical characters of drugs
- (3) Mode of actions of drugs
- (4) Conditions modifying the effects of drugs
- (5) Methods of administration of drugs
- (6) The pharmacopoeias and pharmacopoeial preparations
- (7) Biological assay.

II. Classification of drugs acting on different systems, seat of action of different groups of drugs. Elementary knowledge of the actions and uses of the commonly used remedies with their doses and methods of administration.

PRACTICAL

Practical demonstrations in Experimental Pharmacology illustrating action of drug on different systems

BOOKS INDICATING THE GENERAL SCOPE OF SYLLABUS

- (1) A Concise Pharmacology : 2nd Ed. F. G. Hebert and G. Melton, Leonard Hill Ltd., London, 1944

Or

Lecture Notes on Pharmacology : J. H. Burn, Blackwell Scientific Publications, Oxford, 1948

Reference Books

- (1) Pharmacology—J. H. Gaddum, Third Edition : Oxford University Press, 1949
- (2) Pharmacology, Materia Medica & Therapeutics, 1949—Birendra Nath Ghosh : Hilton and Co., Calcutta

APPENDIX B

(Regulation 6)

CONDITIONS TO BE FULFILLED BY ACADEMIC TRAINING INSTITUTIONS

Any Authority in a Province in India applying to the Pharmacy Council of India for approval of courses of study for pharmacists under sub-section (1) of Sec. 12 of the Pharmacy Act, 1948, shall provide :

1. adequate building space at an average rate of 50 sq. ft. of floor area per student including among other spatial requirements one lecture room, two laboratories fitted with working benches (3' x 2' per student), gas and water taps, one room for balances and other physical apparatus, one room for miscellaneous machineries and apparatus, and one room for staff members :—

The approximate details are given below for guidance :

A. One laboratory approximately 45' x 27' provided with

- (a) 4 working benches, each 21' x 4½' fitted with three sinks, and having 12 cupboards on each side, each 1½' wide 2' deep x 3' high and usual gas and water fittings and shelves.
- (b) a side table 27' long, 2½' wide x 3' high and provided with 2 fume cupboards with usual gas and water fittings and shelves.

B. One Biological (Pharmacognosy) laboratory approx. 25' x 27' equipped with usual gas and water fittings and provided with four working benches approx. One 27' x 2' and three 21' x 2'.

C. One lecture room, approx. 45' x 27'.

D. Balance Room and Physical Apparatus Room 10' x 12'.

E. Miscellaneous apparatus room 10' x 15'.

F. Store Room 10' x 27'

G. Staff Room 15' x 15'.

H. Head of the institution room 15' x 12'.

N. B. :—In science colleges, except for [the pharmacy]¹ laboratory, all other laboratories and rooms may be shared with other departments, if available and adequate.

1. There shall be at least three members of the teaching staff for two classes consisting of 40 students in each class. Out of the three members of the teaching staff, there shall be at least one who shall hold a professional degree in Pharmacy. The remaining two also shall, preferably, be holders of a professional degree in Pharmacy or of a post-graduate degree in Science. In practicals, one teacher will be in charge of not more than 20 students.

2. In case the course is offered by a Science college having departments of Chemistry, Physics, Botany, Zoology etc., the minimum number

¹ Word "the pharmacy" substituted for word "pharmacognosy" vide Ministry of Health Notification No. F-7-110/58-D dated 16.11.1959.

of staff may be restricted to two, a teacher of Pharmacy and a teacher of Pharmacognosy, one of whom shall hold a professional degree in Pharmacy. Provided that the teaching of first-aid, Pharmacology, Physiology, Anatomy and Hygiene may be carried out by part-time teachers.

3. The following equipment in adequate number and quantity in addition to general apparatus and chemicals and other laboratory outfits and equipments generally needed for the teaching of Physics, Chemistry and Biology to Inter Science students should also be provided :—

List A (Compulsory for all Institutions)

- 10 Conical Percolators of Copper & glass
- 1 Medium size Tincture Press
- 1 Hand Grinding Mill
- 1 Tablet Machine
- 2 Platform balance
- 1 Emulsifier
- 2 Head Centrifuge
- 2 Sets of Sieves of various Nos
- 8 Dispensing Scales
- [Capsule]² filling machine
- 2 Pill making machine (Hand)
- 3 Suppository Moulds
- 1 Ampoule Filling and Sealing Machine
- 1 Collapsible-tube filling Machine
- 3 Ointment slab and Spatulas
- 20 Dispensing Mortars and Pestles
- 1 Set Granulating Sieves
- 1 Refrigerator
- 1 Pill coating and Polishing Pan : Containers for different medicaments q. s.
- 1 Westphal Balance
- 1 Autoclave
- 1 Incubator
- 1 Seitz Filter
- 2 Bacteria-proof Filters-Candles

List B

- 6 Chemical Balances
- 10 Dissecting Microscopes
- 1 Microscope
- [2 Cachet filling machine]¹
- Biological Charts & Models
- Biological Slides
- Anatomical and Physiological Charts and Models
- Bacteriological Charts and slides
- Bacteriological Microscope (Recording drum-Equipment for simple Pharmacological demonstrations.)

Every institution shall maintain a museum of crude drugs specified in the course, preferably, also a herbarium of the same.

N. B. :—If classes in pharmacognosy, Pharmaceutical Chemistry and Physiology are held in the same laboratories as are used by Departments of Chemistry, Botany, Zoology in a science college, the list B may not be separately required.

APPENDIX C
(Regulation 7)

CONDITIONS TO BE FULFILLED BY INSTITUTIONS
GIVING PRACTICAL TRAINING

1. The Institutions, where practical training is given to student-pharmacists, shall from time to time, if required, furnish such information as may be needed by the Pharmacy Council of India about the staff,

¹ Insert by Health Ministry Notification No. F. 7-110/58-D dated 16.11.59.

² Word "Capsule" substituted for word " 2 cachet " vide *ibid.*

accommodation and equipment of the institutions concerned and its working.

2. The Institution shall permit the Inspector of the Pharmacy Council to inspect the premises at any reasonable time while the work is proceeding therein.

3. The Institution shall entrust some member or members of its staff, who shall be registered pharmacist, to look after the work of the student pharmacists. Such members of the staff shall be responsible in this behalf to the Head of the Institution concerned.

4. The Institution shall provide such opportunity, accommodation, apparatus, materials and books of reference as shall be required to enable the student pharmacist to undergo the practical training properly.

5. The number of student pharmacists that may be employed in any pharmacy or dispensary shall not exceed two where there is one registered Pharmacist engaged in the work in which the student pharmacist is undergoing practical training ; where there is more than one registered pharmacist similarly engaged, the number shall not exceed one for each additional such registered pharmacist.

6. In the event of any question arising as to the interpretation or observance of these conditions the decision of the Pharmacy Council of India shall be final.

APPENDIX D

(Regulation 12)

CONDITIONS TO BE FULFILLED BY THE EXAMINING AUTHORITY

- 1 ["1. The Examining Authority shall be either a statutory Indian University or a body constituted by the Central or State Government. It shall see that all ordinary rules of discipline and decorum of examinations are strictly observed at the examination centres.
2. It shall permit the Inspector or Inspectors of the Pharmacy Council to visit and inspect the examinations.
3. It shall provide :—
 - (a) adequate rooms with necessary furniture for holding written examinations.
 - (b) well-equipped laboratories for holding practical examinations ;
 - (c) an adequate number of qualified and responsible examiners and staff to conduct and invigilate the examinations, and
 - (d) such other facilities as may be necessary for efficient and proper conduct of examinations."]

(No. F. 7-12/53-DS)

P. S. RAMACHANDRAN,
Secretary,

S. DEVANATH,
Under Secretary.

Pharmacy Council of India.

¹ Subs. vide Ministry of Health Notification No. F. 7-11/D-58 dated 16.11.59.