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DEPARTEMENT VAN GESONDHEID.

No. R. 21.] [5 Januarie 1968.

REËLS EN MINIMUM LEERPLAN VIR DIE KOMMISSIE SE DIPLOMA IN FARMASIE.

Die Minister van Gesondheid het, kragtens artikel 94 (4) van die Wet op Geneeshere, Tandartse en Aptekers, 1928 (Wet No. 13 van 1928), sy goedkeuring geheg aan onderstaande reëls wat deur die Aptekerskommissie kragtens artikel 94 (2) van genoemde Wet gemaak is:—

A. Van 1 Januarie 1968 is die reëls wat by Goewermentskennisgewing No. R. 666 van 10 Mei 1963 gepubliseer is, soos gewysig by Goewermentskennisgewings No. R. 1077 van 23 Julie 1965, No. R. 985 van 24 Junie 1966 en No. R. 1238 van 18 Augustus 1967, van toepassing slegs op dié studente wat hulle vir die eksamens aanmeld wat deur die Kommissie afgeneem word en wat die voorgeskrewe studiekursus daarvoor by 'n opleidingsinrigting deur die Kommissie erken, voor genoemde datum begin het.

B. Die volgende nuwe reëls is van toepassing op alle ander studente wat hulle aanmeld vir eksamens wat deur die Kommissie afgeneem word:

1. Die eksamens wat deur die Kommissie afgeneem sal word vir sy Diploma in Farmasie, bestaan uit:—

A. Aptekerswese I.
B. Aptekerswese II.
C. Aptekerswese III.

Die eksamens word een maal per jaar in die laaste kwartaal van die jaar afgeneem op datums wat deur die Kommissie vasgestel word en by sentrums wat die Kommissie vasstel wanneer, na die Kommissie se mening, 'n voldoende aantal kandidate hulle vir die eksamen sal aanmeld en waar daar geskikte laboratoriumfasiliteite beskikbaar is; met dien verstande dat kandidate wat in een vak in die eksamen in Aptekerswese I of in een of twee vakke in die eksamen in Aptekerswese II met hoogstens 10% van die moontlike punte in die besondere vak of vakke gedruip het, hulle vir hereksamen in daardie vak of vakke kan aanmeld by 'n aanvullingseksamen wat elke

GOVERNMENT NOTICE.

DEPARTMENT OF HEALTH.

No. R. 21.] [5 January 1968.

RULES AND MINIMUM CURRICULUM FOR THE BOARD'S DIPLOMA IN PHARMACY.

The Minister of Health has, in terms of section 94 (4) of the Medical, Dental and Pharmacy Act (Act No. 13 of 1928), approved of the following rules made by the South African Pharmacy Board under section 94 (2) of the Act:—

A. As from 1 January 1968, the rules published under Government Notice No. R. 666 of 10 May 1963, as amended by Government Notices No. R. 1077 of 23 July 1965, No. R. 985 of 24 June 1966, and No. R. 1238 of 18 August 1967, shall be applicable only to those students presenting themselves for the examinations held by the Board who, before the said date, had entered upon the prescribed course of study at a training institution recognised by the Board.

B. The following new rules shall be applicable to all other students presenting themselves for examinations conducted by the Board:

1. The examinations to be held by the Board for its Diploma in Pharmacy shall consist of:—

A. Pharmacy I.
B. Pharmacy II.
C. Pharmacy III.

The examinations shall be held once a year in the last quarter of the year, on dates to be determined by the Board, at centres to be determined by the Board where, in the opinion of the Board sufficient numbers of candidates will present themselves for examination and suitable laboratory facilities are available; provided that candidates who have failed in one subject in the Pharmacy I examination or in one or two subjects in Pharmacy II examination by not more than 10 per cent of the possible marks in the particular subject or subjects may present themselves for re-examination in that subject or those subjects at a supplementary examination to be held not later than April of each year

jaar nie later nie as April gehou word by dié sentrum of sentrums wat die Kommissie vasstel, of wel by enige daaropvolgende eksamen wat deur die Kommissie afgeneem word. Die aanvullingseksamens kan, na goedvinde van die Kommissie, as mondelingse eksamens afgeneem word.

2. Die bestek van die eksamens moet in ooreenstemming wees met die leerplan wat in Aanhangsel A van hierdie reëls uiteengesit is, en kandidate moet in die volgende vakke eksamen afgelê:—

Eksamen in Aptekerswese I.

Plantkunde.—Teorie, vraestel van 3 uur. Prakties, vraestel van 3 uur.

Skeikunde.—Teorie, vraestel van 3 uur. Prakties, vraestel van 4 uur.

Fisika.—Teorie, vraestel van 3 uur. Prakties, vraestel van 3 uur.

Dierkunde.—Teorie, vraestel van 3 uur. Prakties, vraestel van 3 uur.

Eksamen in Aptekerswese II.

Farmakologie en Fisiologie.—Teorie, vraestel van 3 uur. Skriftelik/Prakties, vraestel van 2 uur.

Geregtelike Farmasie.—Vraestel van 3 uur.

Farmakognosie.—Teorie, vraestel van 3 uur. Prakties, vraestel van 3 uur.

Skeikunde en Farmaseutiese Skeikunde.—Teorie, twee vraestelle van 3 uur. Prakties, twee vraestelle van 3 uur.

Eksamen in Aptekerswese III.

Skeikunde en Farmaseutiese Skeikunde.—Teorie, twee vraestelle van 3 uur. Prakties, twee vraestelle van 6 uur.

Farmaseutika.—Teorie, twee vraestelle van 3 uur.

Farmaseutika.—Prakties, twee vraestelle van 6 uur.

Let wel.—Farmaseutika en Praktiese Farmaseutika word vir eksamendoeleindes as aparte onderwerpe behandel.

3. Die studiekursus vir die eksamens in Aptekerswese I, Aptekerswese II en Aptekerswese III is onderskeidelik een akademiese jaar van voltydse studie aan 'n erkende opleidingsinrigting.

4. Die eksamens en elke vak word deur minstens twee eksaminatore afgeneem, waarvan een nie aan die onderrig van kandidate in die vak deelgeneem het nie.

4 *bis*. Interne eksamens word minstens twee keer per jaar afgeneem deur 'n interne eksaminator of eksaminatore, wat deur die Kommissie aangestel is by die opleidingsinrigting waar die kandidaat sy studiekursus volg.

5. By die berekening van punte deur 'n kandidaat behaal, word die punte wat die kandidaat vir interne eksamens behaal het, ooreenkomstig reël 4 *bis supra* ingesluit by die finale punte aan die kandidaat toegeken. Die minimum punte wat deur 'n kandidaat behaal moet word om in 'n vak te slaag, is soos volg:—

(*a*) Eksamen in Aptekerswese I—Plantkunde, Skeikunde, Fisika, Dierkunde: 33⅓ persent van die moontlike punte in onderskeidelik die Kommissie se teoretiese en praktiese vraestelle, naamlik by 'n eksterne eksamen; met dien verstande dat nadat die kandidaat se punte wat in die eksterne eksamen behaal, met dié in die interne eksamen behaal, gekombineer is, die minimum vereiste slaagpunt 40 persent is.

(*b*) Eksamen in Aptekerswese II en Aptekerswese III—

(i) Skeikunde, Fisiologie en Farmakologie: 33⅓ persent van die moontlike punte in onderskeidelik die Kommissie se teoretiese en praktiese vraestelle; met dien verstande dat

at such centre or centres as the Board may determine, or at any subsequent examination conducted by the Board. The supplementary examinations may be conducted as oral examinations at the discretion of the Board.

2. The scope of the examinations shall be in accordance with the syllabus set out in Appendix A of these rules and candidates shall be examined in the following subjects:—

Pharmacy I Examination.

Botany.—Theory, 3-hour paper. Practical, 3-hour paper.

Chemistry.—Theory, 3-hour paper. Practical, 4-hour paper.

Physics.—Theory, 3-hour paper. Practical, 3-hour paper.

Zoology.—Theory, 3-hour paper. Practical, 3-hour paper.

Pharmacy II Examination.

Pharmacology and Physiology.—Theory, 3-hour paperr Written/Practical, 2-hour paper.

Forensic Pharmacy,—3-hour paper.

Pharmacognosy.—Theory, 3-hour paper. Practical 3-hour paper.

Chemistry and Pharmaceutical Chemistry.—Theory, 3-hour paper. Practical, 6-hour paper.

Pharmacy III Examination.

Chemistry and Pharmaceutical Chemistry.—Theory, two 3-hour papers. Practical, two 6-hour papers.

Pharmaceutics.—Theory, two 3-hour papers.

Pharmaceutics.—Practical, two 6-hour papers.

Note.—Pharmaceutics and Practical Pharmaceutics will be treated as separate subjects for examination purposes.

3. The course of study for the Pharmacy I, Pharmacy II and Pharmacy III examinations respectively shall be one academic year of full-time study at a recognised training institution.

4. The examinations shall be conducted in each subject by at least two examiners, one of whom shall not have taken part in the teaching of candidates in the subject.

4 *bis*. Internal examinations shall be held at least twice yearly by internal examiner or examiners appointed by the Board at the training institution at which the candidate is undergoing his course of study.

5. In computing the marks obtained by a candidate the internal examination marks obtained by the candidate in terms of rule 4 *bis supra* shall be included in the final marks awarded to the candidate. The minimum marks required to be obtained by a candidate for a pass in a subject shall be as follows:—

(*a*) Pharmacy I Examination.—Botany, Chemistry, Physics, Zoology: 33⅓ per cent of the possible marks in the Board's theory and practical papers respectively, namely at an external examination; provided that after combining the candidate's marks obtained at the external examinations with those obtained at the internal, the minimum required for a pass shall be 40 per cent.

(*b*) Pharmacy II and Pharmacy III Examinations:—

(i) Chemistry, Physiology and Pharmacology: 33⅓ per cent of the possible marks in the Board's theory and practical papers respectively; provided that after combining the

nadat die kandidaat se punte in die eksterne eksamen behaal met dié in die interne eksamen behaal, gekombineer is, die minimum vereiste slaagpunt 40 persent is.

(ii) Farmaseutika, Praktiese Farmaseutika, Geregtelike Farmasie: 50 persent van die moontlike punte in die vak, met inbegrip van die punte van die interne en eksterne eksamen.

(iii) Farmakognosie: 40 persent van die moontlike punte in onderskeidelik die Kommissie se teoretiese en praktiese vraestelle; met dien verstande dat nadat die kandidaat se punte in die eksterne eksamen behaal, met dié in die interne eksamen behaal, gekombineer is, die minimum vereiste slaagpunt 50 persent is.

Met dien verstande dat die interne eksamenpunte vir Praktiese Fisiologie en vir steriliteitstoetse in Praktiese Farmaseutika deur die Kommissie na goedvinde gebruik kan word as die finale punte wat aan 'n kandidaat in hierdie vakke toegeken moet word: Voorts met dien verstande dat vir sover dit die aanvullingseksamens aangaan, waarvoor voorsiening in Reël 1 supra gemaak word, interne eksamenpunte nie by die bepaling van die uitslae in aanmerking geneem word nie.

Eksamen in Aptekerswese I.

6. Geen kandidaat word tot die eksamen in Aptekerswese I toegelaat nie tensy hy in besit is van die Matrikulasiesertifikaat van die Gemeenskaplike Matrikulasieraad van Suid-Afrika, of 'n vrystellingsertifikaat ten opsigte van daardie eksamen, met bewys dat hy in eksamens van 'n Matrikulasiestandaard in Wiskunde en een van die wetenskapvakke, Plantkunde, Chemie, Fisika, Dierkunde, Biologie of Fisiese Wetenskap geslaag het.

7. Kandidate wat hulle vir die eksamen in Aptekerswese I wil laat inskryf, moet voor of op die eerste dag van September skriftelik by die Registrateur van die Kommissie by die Kommissie se kantoor in Pretoria aansoek doen om toelating tot die eksamen. Geen laat inskrywings word oorweeg nie. Die aansoek moet die volle naam en adres van die kandidaat meld asook die naam van die erkende opleidingsinrigting waar hy gestudeer het en die sentrum waar hy die eksamen wil aflê, en moet vergesel gaan van:—

(*a*) 'n sertifikaat van 'n erkende opleidingsinrigting met dié strekking dat die kandidaat minstens 80 persent van die klasse van 'n voltydse studiekursus wat oor een akademiese jaar strek, bygewoon het en die werk van daardie klasse bevredigend voltooi het;

(*b*) bewys van voldoening aan Reël 6;

(*c*) die eksamengeld van R25.

8. Die Kommissie kan vrystelling verleen van verdere eksamen in alle vakke of 'n bepaalde vak van die eksamen in Aptekerswese I aan die besitter van 'n graad, diploma of sertifikaat ten opsigte van sodanige vakke of 'n bepaalde vak wat ná 'n eksamen toegeken is deur 'n eksaminerende liggaam wat deur die Kommissie erken word, en wat na die mening van die Kommissie 'n standaard van opleiding in en kennis van sodanige vakke of bepaalde vak aandui wat nie laer is nie as dié wat deur die Kommissie van kandidate vir die eksamen in Aptekerswese I vereis word.

Die persoon aan wie dié algehele of gedeeltelike vrystelling verleen word, moet die volle eksamengelde betaal wat van kandidate vir die eksamen in Aptekerswese I vereis word; met dien verstande dat hierdie eksamengelde nie van toepassing is nie op sodanige vrystelling wat verleen is aan die besitters van sertifikate ten opsigte van vakke geslaag in die eerstejaarskursusse van 'n universiteit in die Republiek, wanneer die eksamengelde nl. R4 bedra.

candidate's marks obtained at the external examinations with those obtained at the internal, the minimum required for a pass shall be 40 per cent.

(ii) Pharmaceutics, Practical Pharmaceutics, Forensic Pharmacy: 50 per cent of the possible marks in the subject, inclusive of the internal and the external examinations.

(iii) Pharmacognosy: 40 per cent of the possible marks in the Board's theory and practical papers respectively; provided that after combining the candidate's marks obtained at the external examinations with those obtained at the internal, the minimum required for a pass shall be 50 per cent.

Provided that the internal examination marks for Practical Physiology and for tests of sterility in Practical Pharmaceutics may be utilised by the Board at its discretion as the final marks to be awarded to a candidate in these subjects.

Provided further that in respect of the supplementary examinations provided for in Rule 1 *supra* internal examination marks shall not be taken into account in determining the results.

Pharmacy I Examination.

6. No candidate shall be admitted to the Pharmacy I examination unless he is in possession of the Matriculation Certificate of the Joint Matriculation Board, or a certificate of exemption from that examination, with proof of having passed examinations of Matriculation standard in Mathematics and one of the Science subjects Botany, Chemistry, Physics, Zoology, Biology or Physical Science.

7. Candidates desiring to enter for the Pharmacy I examination shall apply in writing to the Registrar of the Board at the Board's office in Pretoria on or before the first day of September. No late entries will be considered. The application must state the full name and address of the candidate, the name of the recognised training institution at which he underwent his studies, and the centre at which he desires to be examined and must be accompanied by—

(*a*) a certificate from a recognised training institution that the candidate attended at least 80 per cent of the classes on a full-time course of study covering one academic year and satisfactorily completed the work of those classes;

(*b*) proof of compliance with rule 6;

(*c*) the examination fee of R25.

8. The Board may grant exemption from further examination in all subjects or any particular subject of the Pharmacy I examination to the holder of a degree, diploma or certificate relating to such subjects or particular subject granted after examination by an examining authority recognised by the Board, which in the opinion of the Board indicates a standard of training and knowledge in such subjects or particular subject not less than that required by the Board in the case of candidates for the Pharmacy I examination.

The person to whom such whole or partial exemption may be granted shall pay the full fee required to be paid by candidates for the Pharmacy I examination; provided that this fee shall not apply to such exemption granted to the holders of certificates who obtained credits in the first year courses of a university in the Republic, in which case the fee shall be R4.

9. 'n Kandidaat vir die eksamen in Aptekerswese I moet hom by die eerste toelating of (as hy in meer as een vak gedruip het) by aansoek om hereksamen, vir eksamen in alle vakke aanmeld, en in elke geval moet hy die volle eksamengelde betaal. As hy slegs in een vak druip, kan die Kommissie hom vir verdere studie in daardie vak alleen terugverwys, en in daardie geval bedra die hereksamengeld R7.50.

Eksamen in Aptekerswese II.

10. 'n Kandidaat wat hom vir die eksamen in Aptekerswese II vir die Diploma in Farmasie wil laat inskryf, moet voor of op die eerste dag van September skriftelik by die Registrateur van die Kommissie by die Kommissie se kantoor in Pretoria aansoek doen om toelating tot die eksamen. Geen laat inskrywings word oorweeg nie. Die volgende gegewens moet in die aansoek verstrek word:—

(*a*) Die kandidaat se volle naam en adres;

(*b*) die sentrum waar die kandidaat verlang om die eksamen af te lê;

(*c*) die naam en adres van die apteker by wie hy sy leertyd voltooi het;

(*d*) die datum waarop hy in die eksamen in Aptekerswese I geslaag het of die datum en verwysingsnommer van sy vrystellingsertifikaat ten opsigte van daardie eksamen.

Die aansoek moet vergesel gaan van die eksamengeld van R25 en 'n sertifikaat dat die kandidaat op bevredigende wyse minstens 80 persent van die klasse van die voorgeskrewe studiekursus soos in hierdie reëls uiteengesit, vir een akademiese jaar aan 'n erkende opleidingsinrigting bygewoon het nadat hy in die eksamen in Aptekerswese I geslaag het of daarvan vrygestel is; met dien verstande dat 'n student wat vir 'n aanvullingseksamen in een vak gekwalifiseer het, sy kursus in Aptekerswese II kan begin in afwagting van 'n slaagpunt in daardie eksamen.

11. Geen kandidaat word tot die eksamen in Aptekerswese II toegelaat nie, tensy hy 'n leertyd van minstens twee jaar tot tevredenheid van die Kommissie by 'n apteker voltooi het.

12. Geen kandidaat word tot die eksamen in Aptekerswese II toegelaat nie voordat hy in ál die vakke van die eksamen in Aptekerswese I geslaag het of daarvan vrygestel is.

12 *bis.* 'n Kandidaat vir die eksamen in Aptekerswese II moet hom vir eksamen in ál die vakke aanmeld en moet die volle eksamengeld betaal. Indien hy slegs in een of twee vakke druip, kan hy vir verdere studie in daardie vak of vakke terugverwys word en die gelde vir hereksamen bedra R8.00 vir een vak en R16.00 vir twee vakke.

Eksamen in Aptekerswese III.

13. 'n Kandidaat vir toelating tot die eksamen in Aptekerswese III vir die Diploma in Farmasie moet voor of op die eerste dag van September skriftelik by die Registrateur van die Kommissie by die Kommissie se kantoor in Pretoria aansoek doen om toelating tot die eksamen. Geen laat inskrywings word oorweeg nie. In die aansoek moet die volgende gegewens verstrek word:—

(1) Die kandidaat se volle naam en adres;

(2) die datum waarop hy in die eksamen in Aptekerswese II geslaag het;

(3) die sentrum waar hy verlang om die eksamen af te lê;

en die aansoek moet vergesel gaan van—

(*a*) 'n sertifikaat van 'n erkende opleidingsinrigting dat die kandidaat minstens 80 persent van die klasse van die voorgeskrewe studiekursus vir een akademiese jaar op bevredigende wyse bygewoon het nadat hy in die eksamen in Aptekerswese II geslaag het: Met dien

9. A candidate for the Pharmacy I examination shall, on first admission, or (in the event of failure in more than one subject) on application for re-examination, present himself for examination in all subjects, and, in each case, shall pay the full examination fee. Should he fail in one subject only, the Board may refer him for further study in that subject only, and in such case, the fee for re-examination shall be R7.50.

Pharmacy II Examination.

10. A candidate desiring to enter for Pharmacy II examination for the Diploma in Pharmacy, shall apply in writing to the Registrar of the Board, at the Board's office in Pretoria, on or before the first day of September for admission to the examination. No late entries will be considered. The application must state—

(*a*) the candidate's full name and address;

(*b*) the centre at which he wishes to be examined;

(*c*) the name and address of the Chemist and Druggist to whom he was apprenticed;

(*d*) the date on which he passed the Pharmacy Examination or the date and reference number of his certificate of exemption from that examination.

The application must be accompanied by the examination fee of R25, and a certificate of having satisfactorily attended at least 80 per cent of the classes of the prescribed course of study as set out in these rules covering one academic year at a recognised training institution after having passed the Pharmacy I examination or having been exempted therefrom: Provided that a student who has qualified for a supplementary examination in one subject may commence his Pharmacy II course in anticipation of his passing that examination.

11. No candidate will be admitted to the Pharmacy II examination, unless he has completed an apprenticeship of not less than two years to a chemist and druggist to the satisfaction of the Board.

12. No candidate will be admitted to the Pharmacy II examination, unless he has passed all of the subjects of the Pharmacy I examination or has been exempted therefrom.

12 *bis.* A candidate for Pharmacy II examination shall present himself for examination in all subjects and shall pay the full examination fee. Should he fail in one or in two subjects only he may be referred for further study in that subject or those subjects and the fees for re-examination shall be R8.00 for one subject and R16.00 for two subjects.

Pharmacy III Examination.

13. A candidate for admission to the Pharmacy III examination for the Diploma in Pharmacy shall apply in writing to the Registrar of the Board, at the Board's office in Pretoria, on or before the first day of September for admission for the examination. No later entries will be considered. The application must state—

(1) the candidate's full name and address;

(2) the date on which he passed the Pharmacy II examination;

(3) the centre at which he wishes to be examined;

and must be accompanied by—

(*a*) a certificate from a recognised training institution of having satisfactorily attended at least 80 per cent of the classes of the prescribed course of study, covering one academic year after having passed the Pharmacy II examination: Provided that a candidate who has qualified for a supplementary examination in the

verstande dat 'n kandidaat wat vir 'n aanvullingseksamen in die eksamen in Aptekerswese II gekwalifiseer het, die kursus in Aptekerswese III kan begin in afwagting van 'n slaagpunt in daardie eksamen;

(*b*) die eksamengeld, van nl. R30.00.

14. Indien 'n kandidaat in die eksamen in Aptekerswese III slaag voordat hy 21 jaar oud is, word sy diploma teruggehou totdat hy die ouderdom van 21 jaar bereik.

15. 'n Kandidaat vir die eksamen in Aptekerswese III vir die Diploma in Farmasie moet hom by eerste toelating of (as hy in meer as een vak gedruip het) by aansoek om hereksamen aanmeld vir eksamen in alle vakke, en moet in elke geval die volle eksamengelde betaal. Indien hy slegs in een vak druip, kan die Kommissie hom vir verdere studie in daardie vak alleen terugverwys, en in daardie geval bedra die hereksamengeld R15.00.

16. Die Kommissie kan vrystelling van verdere eksamen in enige vak van die eksamen in Aptekerswese II of Aptekerswese III verleen aan die besitter van 'n graad, diploma of sertifikaat wat toegeken is deur 'n eksaminerende liggaam wat deur die Kommissie erken word, en wat na die Kommissie se mening 'n standaard van opleiding in en kennis van daardie vak aandui wat nie laer is nie as dié wat deur die Kommissie van kandidate vir daardie deel van die Aptekerswese-eksamens vereis word.

Algemeen.

17. Alle eksamenkandidate moet skriftelik deur die Registrateur in kennis gestel word of hul aansoeke bevredigend is al dan nie, en, indien bevredigend, ontvang hulle 'n eksamenrooster wat aandui waar en wanneer die verskillende afdelings van die eksamens afgeneem word. 'n Aanvaarde kandidaat wat versuim om hom op die vermelde tye en plekke vir die eksamen aan te meld, verbeur die eksamengeld.

Indien 'n kandidaat se versuim om hom vir die eksamen aan te meld te wyte is aan siekte en hy nie later nie as sewe dae na die dag waarop hy weens vermelde siekte nie in staat was om hom aan te meld nie 'n doktersertifikaat aan die Kommissie voorlê, sal sy afwesigheid verskoon word en kan hy toegelaat word om die daaropvolgende eksamen af te lê behoudens die voorwaardes wat deur die Kommissie voorgeskryf word, sonder verdere betaling van eksamengeld.

18. 'n Applikant kan verwittig word dat sy aansoek bevredigend is mits hy aan sekere voorwaardes voldoen, en dat, tensy hy voor 'n vasgestelde datum aan sodanige voorwaardes voldoen, hy nie toegelaat sal word om hom vir die eksamen aan te meld nie.

19. Die volgende word erken as inrigtings waar studie- en opleidingskursusse vir die eksamen in Aptekerswese I, II en III gevolg kan word:—

Kaapse Tegniese Kollege, Kaapstad.
Natalse Tegniese Kollege, Durban.
Witwatersrandse Tegniese Kollege, Johannesburg.
Tegniese Kollege, Port Elizabeth.
Tegniese Kollege, Pretoria.

Die Kommissie behou hom die reg voor om, behoudens die goedkeuring van die Minister van Gesondheid, sy erkenning van enige inrigting terug te trek indien hy te eniger tyd daarvan oortuig is dat daar nie behoorlik aan sy vereistes ten opsigte van die studie- en opleidingskursusse voldoen word nie.

20. Daar kan van 'n kandidaat wat hom aangemeld het vir die eksamen in Aptekerswese I òf II òf III, of vir eksamen in 'n vak waarin hy terugverwys is, en wat nie in daardie eksamen slaag nie, vereis word dat hy 'n verdere studiekursus, soos deur die Kommissie bepaal, aan 'n erkende inrigting moet volg.

Pharmacy II examination may commence the course for Pharmacy III in anticipation of his passing that examination;

(*b*) the examination fee of R30.00.

14. If a candidate is successful in Pharmacy III examination and has not attained the age of 21 years his diploma shall be withheld until he has attained the age of 21 years.

15. A candidate for the Pharmacy III examination for the Diploma in Pharmacy shall, on first admission, or (in the event of failure in more than one subject) on application for re-examination, present himself for examination in all subjects and in each case shall pay the full examination fee. Should he fail in one subject only, the Board may refer him for further study in that subject only, and in such case, the fee for such re-examination shall be R15.00.

16. The Board may grant exemption from further examination in any one subject of the Pharmacy II or the Pharmacy III examination to the holder of a degree, diploma or certificate of an examining authority recognised by the Board, which in the opinion of the Board indicates a standard of training and knowledge in that subject not less than that required by the Board in the case of candidates for that part of the Pharmacy examinations.

General.

17. All candidates for examination shall receive from the Registrar a written notice stating whether or not their applications are satisfactory and, if satisfactory, a timetable showing the times and places at which the various sections of the examinations will be held, and any accepted candidate who fails to attend for examination at the stated times and places shall forfeit the examination fee.

When failure to attend is due to illness and a medical certificate is furnished to the Board not later than seven days after the day on which the candidate was unable to attend on account of that illness, the candidate shall be excused his absence and may be permitted to sit for the next subsequent examination subject to conditions as laid down by the Board, without payment of a further fee.

18. An applicant may be informed that his application is satisfactory subject to certain conditions being fulfilled and unless such conditions are compiled with by a given date, he will not be permitted to present himself for examination.

19. The following shall be recognised as institutions where courses of training and study for the Pharmacy examinations may be taken:—

Cape Technical College, Cape Town.
Natal Technical College, Durban.
Witwatersrand Technical College, Johannesburg.
The Technical College, Port Elizabeth.
Pretoria Technical College.

The Board reserves to itself the right to withdraw recognition, subject to the approval of the Minister of Health from any institution if at any time it is satisfied that its requirements in regard to the courses of training and study are insufficiently met.

20. A candidate who, having presented himself for either the Pharmacy I, Pharmacy II or Pharmacy III examinations or for examination in a referred subject, fails to pass that examination, may be required to undergo a further course of study as directed by the Board at a recognised institution.

Aanhangsel A.

PLANTKUNDE.

A. TEORIE.

Biologie, die betekenis en omvang en die twee groot onderafdelings daarvan, naamlik plantkunde en dierkunde. die waarde daarvan as 'n kulturele en farmaseutiese vak; Die betekenis en omvang van die belangrikste onderafdelings van biologie; taksonomie, morfologie, anatomie, fisiologie, genetika, evolusie.

Die planteryk en die hoofonderafdelings daarvan met hul kenmerke: bakterieë, alge, swamme, korsinesse, briofiete, pteridofiete, gimnosperms en angiosperms as voorbeelde van die verskeidenheid van plantlewevorms en van evolusionêre geskiedenis en neigings.

Die plant as 'n lewende organisme; vorm en funksie van die wortels, stingel, blare, vrugte van 'n tipiese groen kruidagtige landplant en van 'n houtagtige meerjarige plant wat sekondêre diktegroei vertoon. Die invloed van die habitat (grond en lug) op plantorgane. Die aard van die wysigings van organe vir spesiale funksies. Die sel en seldeling. Die weefsels van tipiese angiosperms—hul bou, rangskikking en funksies kortliks. 'n Tipiese blom—bou en die funksies van die verskillende dele; die bou van die vrug en saad, verspreiding en ontkieming van saad.

Beginsels van plantfisiologie-waterverhoudings, fotosintese, voeding, groei, respirasie, vertering, tropismes met betrekking tot swaartekrag, lig, water, opberging van reserwes. Parasitisme, saprofitisme, epifitisme.

'n Kort vergelykende studie van die vorm, bou, lewensgeskiedenis en voortplanting van *Bacillus subtilis*, Tabakmosaïek-virus, *Chlamydomonas*, *Spirogyra*, *Diatome*, *Fucus*, *Rhizopus nigricans*, *Saccharomyces*, *Claviceps*, *Penicillium*, *Agaricus* (*Psalliota*), *Funaria*, *Dryopteris*, *Pinus*, 'n tipiese monokotiel, 'n tipiese dikotiel. Beginsel van taksonomie soos geïllustreer deur 'n kort studie van 'n verteenwoordigende voorbeeld van elk van die volgende families: Liliaceae, Gramineae, Ranunculaceae, Leguminosae, Solanaceae, Compositae, Labiatae, Scrophulariaceae.

B. PRAKTIES.

Die ondersoek, disseksie, makroskopiese en mikroskopiese ondersoek, beskrywing en teken van plantmateriaal verkry uit bostaande lys; demonstrasies van ekologiese en fisiologiese kenmerke moet gereël word. Die eksamen moet veral die bepaling van die waarnemingsvermoë van die kandidaat beoog, asook sy vermoë om wat hy gesien het noukeurig te beskryf en getrou te teken en sy vermoë om plantkundige verskynsels te interpreteer.

CHEMIE I.

AFDELING I: FISIESE CHEMIE.

1.1 Die atoomteorie.

1.2 Elektroniese teorie van atoomstruktuur, met spesiale verwysing na die toepassing daarvan op die valensteorie, ionisasie, verbastering en interpretasie van die periodieke klassifikasie, met spesiale verwysing na ionisasieënergie, elektronaffiniteit, kovalente grootte, ioniese grootte en elektronegatiwiteit.

1.3 Vorming van verbindings: ioniese en kovalente binding; koördinaat-kovalente bindings; waterstofbinding.

1.4 Fisiese en chemiese veranderings: elemente, verbindings, mengsels; die gravimetriese wette van chemiese verbinding.

1.5 Ekwivalente gewigte (of massas) van elemente en verbindings en bepalingsmetodes daarvan.

Appendix A.

BOTANY.

A. THEORY.

Biology, its meaning and scope, and its two great subdivisions, botany and zoology; its value as a cultural and as a pharmaceutical subject. Meaning and scope of the more important sub-divisions of biology; taxonomy, morphology, anatomy, physiology, genetics, evolution.

The plant kingdom and its main sub-divisions and their features: bacteria, algae, fungi, lichens, bryophytes, pteridophytes, gymnosperms and angiosperms as examples of the diversity of forms of plant life and of evolutionary history and tendencies.

The plant as a living organism; form, function of the roots, stem, leaves, flowers, fruit of a typical green herbaceous land plant, and of a woody perennial showing secondary thickening. The influence of the habitat (soil and aerial) on plant organs. Nature of the modifications of organs for special functions. The cell and cell divisions. The tissues of typical angiosperms—their structure, arrangement and functions in brief. A typical flower—its structure and the functions of the various parts; the fruit and seed-structure, dispersal, germination of seed. Elements of plant physiology—water—relations, photosynthesis, nutrition, growth, respiration, digestion, tropisms in relation to gravity, light, water, storage of reserves. Parasitism, saprophytism, epiphytism. A brief comparative study of the form, structure, life-history and reproduction of Bacillus subtilis, Tobacco Mosaic Virus, Chlamydomonas, Spirogyra, Diatoms, Fucus, Rhizopus nigricans, Saccharomyces, Claviceps, Penicillium, Agaricus (Psalliota), Funaria, Dryopteris, Pinus, a typical Monocotyledon, a typical Dicotyledon.

Principles of taxonomy as illustrated by a brief study of the representative of the following families: Liliaeae, Gramineae, Ranunculaceae, Leguminosae, Solanaceae, Compositae, Labiatae, Scrophulariaceae.

B. PRACTICAL.

The examination, dissection, macroscopic and microscopic examination, description and drawing of plant material drawn from the list given above; demonstrations of ecological and physiological features to be arranged. The examination should aim at determining the powers of observation of the candidate, his capacity for describing and drawing faithfully what he has seen, and his capacity for interpretation of botanical phenomena.

CHEMISTRY I.

SECTION 1: PHYSICAL CHEMISTRY.

1.1 The atomic theory.

1.2 Electronic theory of atomic structure with special reference to its applications to the theory of valency, ionisation, hybridisation and interpretation of the periodic classification, with special reference to ionisation energy, electron affinity, covalent size, ionic size and electronegativity.

1.3 Compound formation: ionic and covalent bonding; coordinate covalent bonds; hydrogen bonding.

1.4 Physical and chemical changes: elements, compounds, mixtures; the gravimetric laws of chemical combination.

1.5 Equivalent weight (or masses) of elements and compounds and methods for their determination.

1.6 Die kinetiese teorie en die gaswette (Boyle, Charles, Dalton, Gay-Lussac), Avogadro se wet, dampdigtheid. Bepaling van molekulêre formules (met inbegrip van organiese verbindings).
1.7 Oplossings: oplosbaarheid van vaste stowwe en gasse in water; Wet van Henry; bepaling van oplosbaarheid.
1.8 Metodes om konsentrasie uit te druk.
1.9 Die kolloïdale toestand.
1.10 Saambindende eienskappe en wet van Raoult. Kookpuntsverhoging en vriespuntsverlaging; osmose; osmotiese druk.
1.11 Elektrochemie: elektrolitiese en elektrochemiese selle. Wette van Faraday. Arrhenius se teorie van elektrolitiese dissosiasie en die toepassing daarvan op neutralisasie en presipitasie. Die elektrochemiese reeks.
1.12 Klassieke, Lowry-Brönsted- en Lewis-begrippe van sure en basisse.
1.13 Chemiese ewewig. Wet van massawerking, Le Chatelier. Ioonproduk van water. Waterstofioonkonsentrasie en pH. Hidrolise en bufferwerking. Oplosbaarheidsproduk.
1.14 Teorie van titrimetriese analise: neutralisasie; redokstitrasies; presipitasietitrasies.
1.15 Termochemie.
1.16 Faktore wat chemiese reaksies beïnvloed.

AFDELING 2: ANORGANIESE CHEMIE.

2.1 Chemiese reaksietipes: addisie, verplaging, eenvoudige ontbinding en dubbele omsetting, neutralisasie, redoks; omkeerbare reaksies.
2.2 Balansering van vergelykings.
2.3 Chemiese groepering: metale, semi-metale en niemetale; sure, basisse en soute; oksideer- en reduseermiddels; ioniese en kovalente verbindings.
2.4 Sistematiese beskrywende en vergelykende anorganiese chemie van bepaalde elemente.
2.5 Teorie van kwalitatiewe analise.

AFDELING 3: ORGANIESE CHEMIE.

3.1 Inleiding. Organiese formuletipes.
3.2 Homologie.
3.3 Isomerie.
3.4 Benaming van organiese verbindings.
3.5 Bereidingsmetodes en tipiese reaksies van die volgende groepe verbindings:
3.5.1 *Alifatiese verbindings.* — Alkane, alkene, alkyne, alkielhaliede, polihalogeenderivate van alkane, monohidriese alkohole, aldehiede, ketone, eters, primêre amiene, versadigde monokarboksielsure, suurchloriede, suuranhidriede, suuramiede, esters, alkielsianiede.
3.5.2 *Aromatiese verbindings.* — Benseen en die volgende derivate: tolueen, monochloorbenseen, fenol, bensaldehied, bensoësuur, benseensulfoonsuur, nitrobenseen, anilien.

AFDELING 4: PRAKTIESE CHEMIE.

4.1 Kwalitatiewe analise van bepaalde katione en anione.
4.2 *Volumetrisee analise.* Standaardisasies; die volgende neutralisasie-, redoks- en presipitasietitrasies: bepaling van:
suur/alkali,
permanganaat,
dichromaat,
jodium/tiosulfaat en
silwernitraat.

1.6 The kinetic theory and the gas laws (Boyle, Charles, Dalton, Gay-Lussac), Avogadro's Law, vapour density. Determination of molecular formulae (including organic compounds).
1.7 Solutions: solubility of solids and gases in water; Henry's law; determination of solubility.
1.8 Methods of expressing concentration.
1.9 The colloidal state.
1.10 Colligative properties and Raoult's law. Boiling point elevation and freezing point depression; osmosis; osmotic pressure.
1.11 Electrochemistry; electrolytic and electrochemical cells. Faraday's laws. Arrhenius' theory of electrolytic dissociation and its application to neutralisation and precipitation. The electrochemical series.
1.12 Classical, Lowry–Brönsted and Lewis concept of acids and bases.
1.13 Chemical equilibrium. Law of mass action. Le Chatelier. Ionic product for water. Hydrogen ion concentration and pH. Hydrolysis and buffer action. Solubility product.
1.14 Theory of titrimetric analysis: neutralisation; redox titrations; precipitation titrations.
1.15 Thermochemistry.
1.16 Factors influencing chemical reactions.

SECTION 2: INORGANIC CHEMISTRY.

2.1 Types of chemical reaction: addition, displacement, simple and double decomposition, neutralisation, oxidation and reduction; reversible reactions.
2.2 Balancing of equations.
2.3 Chemical classification: metals, semi-metals and non-metals; acids, bases and salts; oxidisers and reducers; ionic and covalent compounds.
2.4 Systematic descriptive and comparative inorganic chemistry of selected elements.
2.5 Theory of qualitative analysis.

SECTION 3: ORGANIC CHEMISTRY.

3.1 Introduction. Types of organic formulae.
3.2 Homology.
3.3 Isomerism.
3.4 Naming of organic compounds.
3.5 Methods of preparation and typical reactions of the following classes of compounds:—
3.5.1 *Aliphatic compounds.* — Alkanes, alkenes, alkynes, alkyl halides, polyhalogen derivatives of alkanes, monohydric alcohols, aldehydes, ketones, ethers, primary amines, saturated monocarboxylic acids, acid chlorides, acid anhydrides, acid amides, esters, alkyl cyanides.
3.5.2 *Aromatic compounds.*—Benzene and the following derivatives: toluene, monochlorobenzene, phenol, benzaldehyde, benzoic acid, benzene sulphonic acid, nitrobenzene, aniline.

SECTION 4: PRACTICAL CHEMISTRY.

4.1 Qualitative analysis of selected cations and anions.
4.2 *Volumetric analysis:* standardisations; the following neutralisation, redox and precipitation titrations:
acid/alkali,
permanganate,
dichromate,
iodine/thiosulphate and
silver nitrate determinations.

4.3 *Organiese analise:*

4.3.1 Kwalitatiewe bepaling van stikstof, swawel en halogeen in organiese verbindings.

4.3.2 Identifikasie van die volgende: metielalkohol, etielalkohol, asetoon, formate, asetate, bensoate, fenol, anilien, aspirien.

FISIKA, TEORIE.

1. *Meganika.*

1.1 Eenhede van lengte, massa, tyd in die volgende stelsels: M.K.S., C.G.S. en V.P.S.
1.2 Snelheid, spoed, versnelling en vergelykings van eenvormig-versnelde beweging.
1.3 Momentum.
1.4 Bewegingswette van Newton; swaartekrag.
1.5 Krag, massa en gewig.
1.6 Samestelling en oplossing van kragte.
1.7 Momente, swaartepunt.
1.8 Arbeid en energie: potensiële en kinetiese energie.
1.9 Arbeidsvermoë.

2. *Hidrostatika en eienskappe van materie.*

2.1 Soortlike gewig en digtheid.
2.2 Standaardmetodes om soortlike gewig en digheid te bepaal.
2.3 Kragte in vloeistowwe.
2.4 Atomosferiese druk en barometers.
2.5 Wet van Boyle.
2.6 Kinetiese teorie van gasse.
2.7 Elastisiteit en wet van Hooks.
2.8 Oppervlakspanning en kapillariteit.
2.9 Viskositeit.
2.10 Diffusiewet van Graham.

3. *Warmte.*

3.1 Temperatuur en die meting daarvan met behulp van termometers; vaste punte; gradering van termometers; vloeistof-in-glas- en ander termometers.
3.2 Temperatuurskale: Fahrenheit, Celsius, absolute (Kelvin); algemene definisie van 'n temperatuurskaal.
3.3 Uitsetting van vaste stowwe, vloeistowwe en gasse; uitsettingskoëffisiënte van vaste stowwe, vloeistowwe en gasse.
3.4 Wet van Charles en die absolute temperatuurskaal.
3.5 Drukkoëffisiënt van 'n gas; die konstant drukgastermometer.
3.6 Konstante volume-gastermometer.
3.7 Kalorimetrie.
3.8 Waterwaarde.
3.9 Soortlike warmte van vaste stowwe en vloeistowwe.
3.10 Verandering van toestand; smelting en verdamping.
3.11 Latente warmtes van smelting van ys en verdamping van stoom.
3.12 Effek van druk op smeltpunt.
3.13 Vriesmengsels.
3.14 Dampdruk; versadigde en onversadigde dampe; kookpunt.
3.15 Wet van Dalton vir gedeeltelike drukke.
3.16 Atmosferiese vogtigheid; doupunt; higrometers.
3.17 Stroming, geleiding en straling.
3.18 Meganiese warmteëkwivalent.

4. *Optika.*

4.1 Reglynige voortplanting van lig; teorieë aangaande die aard van lig; skaduwees en verduisterings. Verligting van 'n oppervlak; omgekeerde kwadraatwet.
4.2 Fotometrie; fotometers en ligmeters.

4.3 *Organic analysis:*

4.3.1 Qualitative determination of nitrogen, sulphur and halogen in organic compounds.
4.3.2 Identification of the following: methyl alcohol, ethyl alcohol, acetone, formates, acetates, benzoates, phenol, aniline, aspirin.

PHYSICS THEORY.

1. *Mechanics.*

1.1 Units of length, mass, time in M.K.S., C.G.S., and F.P.S. systems.
1.2 Velocity, speed, acceleration and equations of uniformly accelerated motion.
1.3 Momentum.
1.4 Newton's Laws of Motion; force of gravity.
1.5 Force, mass and weight.
1.6 Composition and resolution of forces.
1.7 Moments, centre of gravity.
1.8 Work and Energy: potential and kinetic energy.
1.9 Power.

2. *Hydrostatics and properties of matter.*

2.1 Specific gravity and density.
2.2 Standard methods of determining specific gravity and density.
2.3 Forces in fluids.
2.4 Atmospheric pressure and barometers.
2.5 Boyle's Law.
2.6 The Kinetic Theory of Gases.
2.7 Elasticity and Hooke's Law.
2.8 Surface Tension and capillarity.
2.9 Viscosity.
2.10 Graham's Law of Diffusion.

3. *Heat.*

3.1 Temperature and its measurement by thermometers; fixed points; graduation of thermometers; liquid in glass and other thermometers.
3.2 Scales of temperature; Fahrenheit, Celsius, absolute (Kelvin); general definition of a temperature scale.
3.3 Expansion of solids, liquids and gases; coefficients of expansion of solids, liquids and gases.
3.4 Charles' Law and the absolute scale of temperature.
3.5 Pressure coefficient of a gas; the constant pressure gas thermometer.
3.6 Constant volume gas thermometer.
3.7 Calorimetry.
3.8 Water equivalent.
3.9 Specific heats of solids and liquids.
3.10 Change of state; melting and vaporisation.
3.11 Latent heats of fusion of ice and of vaporisation of steam.
3.12 Effect of pressure on melting point.
3.13 Freezing mixtures.
3.14 Vapour pressure; saturated and unsaturated vapours; boiling point.
3.15 Dalton's Law of Partial Pressures.
3.16 Atmospheric humidity; dew point; hygrometers.
3.17 Convection, conduction and radiation.
3.18 Mechanical equivalent of heat.

4. *Optics.*

4.1 Rectilinear propagation of light; theories on nature of light; shadows and eclipses. Illumination of a surface; inverse square law.
4.2 Photometry; photometers and light meters.

4.3 Ligweerkaatsing.

4.3.1 Wette. Beelde gevorm deur vlakspieëls; deur ewewydige spieëls; deur hellende spieëls.

4.3.2 Weerkaatsing van lig deur sferiese spieëls. Konkawe en konvekse sferiese spieëls; formules wat voorwerpafstand, beeldafstand en brandpuntafstand koppel; tekenreël. Vergroting. Beelde.

4.4 Ligbreking. Wette. Breking by plat oppervlakke. Golfteorie van Huygens. Brekingsindeks. Breking deur vlakke ewewydig aan mekaar, en prismas. Totale weerkaatsing en kritiese hoek.

4.5 Breking deur dun lense. Beeldvorming deur bekonvekse en bikonkawe lense. Standaardformules soortgelyk aan dié vir bostaande sferiese spieëls. Sterkte van 'n lens. Twee dun lense in kontak met mekaar.

4.6 Die oog en optiese instrumente. Beginsels vir die verhelping van oogdefekte met behulp van lense.

4.7 Deviasie en dispersie. Spektra: suiwer, solêr, sommige eenvoudige standaardgasspektra. Spektrometers, Fraunhöferlyne. Chromatiese aberrasie; dispersievermoë; achromatiese prismasamestellings.

4.8 Polarisasie van lig deur die Nicol-prisma, deur weerkaatsing, deur ploaroïed. Polarimeters.

5. *Magnetisme.*

5.1 Behandeling gebaseer op die M.K.S.-stelsel van eenhede. Eenvoudige eienskappe van magnete; magnetiese velde; magnetiese stowwe; magnetiese induksie.

5.2 Aardmagnetisme.

5.3 Moderne teorie van magnetisme.

5.4 Diamagnetisme, paramagnetisme en ferromagnetisme; die gebiedsteorie van ferromagnetisme.

6. *Elektrostatika.*

6.1 Elektrifikasie deur wrywing en induksie.

6.2 Geleiers en isolators.

6.3 Bladgoudelektroskoop.

6.4 Laai deur induksie.

6.5 Verspreiding van lading.

6.6 Elektriese masjiene.

7. *Elektromagnetisme.*

7.1 Magnetiese effek van 'n elektriese stroom: ten gevolge van 'n reguit stroomdraende draad; ten gevolge van 'n sirkelspoel wat 'n stroom dra; ten gevolge van 'n solenoïed.

7.2 Elektromagnete; eenvoudige elektriese klokkie.

8. *Stroomelektrisiteit.*

8.1 Behandeling gebaseer op die M.K.S.-eenheidstelsel.

8.2 Elektriese groothede, stroomsterkte, elektromotoriese krag, potensiaalverskil en weerstand. Wet van Ohm.

8.3 Weerstande in serie en parallel.

8.4 Soortlike weerstand.

8.5 Verandering van weerstand met temperatuur.

8.6 Omtakke.

8.7 Selle in serie en parallel geskakel.

8.8 Meting van stroomsterkte, elektromotoriese krag, potensiaalverskille; bewegende spoel-galvanometer; ammeters; voltmeters; die potensiometer; die Wheatstone-brug.

8.9 Warmte-effekte van 'n elektriese stroom.

8.10 Elektriese eenhede.

4.3 Reflection of light.

4.3.1 Laws. Images formed by plane mirrors; by parallel mirrors; by inclined mirrors.

4.3.2 Reflection of light at spherical mirrors. Concave and convex spherical mirrors; formulae connecting object distance, image distance and foca length; sign convention. Magnification. Images.

4.4 Refraction of light. Laws. Refraction at plane surfaces. Huygen's wave-theory. Refractive index. Refraction through parallel-sided plates, and prisms. Total reflection and critical angle.

4.5 Refraction through thin lenses. Formation of images by bi-convex and bi-concave lenses. Standard formulae as for spherical mirrors above. Power of a lens. Two thin lenses in contact.

4.6 The eye and optical instruments. Principles of correction of errors of vision by lenses.

4.7 Deviation and dispersion. Spectra; pure, solar, some simple standard gas spectra. Spectrometers, Fraunhöfer lines. Chromatic aberration; dispersive power; achromatic prism combinations.

4.8 Polarisation of light by Nicol's prism, by reflection, by polaroid Polarimeters.

5. *Magnetism.*

5.1 Treatment based on M.K.S. system of units. Simple properties of magnets; magnetic fields; magnetic substances; magnetic induction.

5.2 Terrestial magnetism.

5.3 The modern theory of magnetism.

5.4 Diamagnetism, para-magnetism and ferromagnetism; the Domain theory of ferro-magnetism.

6. *Electrostatics.*

6.1 Electrification by friction and induction.

6.2 Conductors and insulators.

6.3 Gold-leaf electroscope.

6.4 Charging by induction.

6.5 Distribution of charge.

6.6 Electrical machines.

7. *Electromagnetism.*

7.1 Magnetic effect of an electric current; due to a straight current-carrying wire; due to a circular coil carrying a current; due to a solenoid.

7.2 Electro-magnetics; simple electric bell.

8. *Current Electricity.*

8.1 Treatment based on M.K.S. system of units.

8.2 Quantity of electricity, current, electro-motive force, potential difference and resistance. Ohm's Law.

8.3 Resistances in series and in parallel.

8.4 Resistivity (or specific resistance).

8.5 Variation of resistance with temperature.

8.6 Shunts.

8.7 Cells connected in series and in parallel.

8.8 Measurement of current, electro-motive force, potential differences; moving coil galvanometer; ammeters; voltmeters; the potentiometer; the Wheatstone bridge.

8.9 Heating effects of an electric current.

8.10 Electrical units.

8.11 Elektromagnetiese induksie. Wet van Faraday; Wet van Lenz; wedersydse induksie; selfinduksie. Eenvoudige dinamo (wisselstroom en gelykstroom); eenvoudige transformator; eenvoudige gelykstroommotor.
8.12 Chemiese effekte van 'n elektriese stroom. Elektrolise. Teorie van elektrolitiese dissosiasie. Faraday se wette vir elektrolise. Elektrochemiese ekwivalente. Polarisasie van elektrodes.
8.13 Primêre, sekondêre en konsentrasieselle.
8.14 Elektroniese fisika: geleiding van elektrisiteit deur gasse; katode- en anodestrale; die katodestraalbuis; die fotoëlektriese sel; fluoressensie.
8.15 Radioaktiwiteit: alfa-, beta- en gammastrale.
8.16 X-strale.

PRAKTIESE FISIKA.

1. *Algemene Fisika.*

1.1 Gebruik van die balans.
1.2 Vernierskuifpasser.
1.3 Skroefmikrometer.
1.4 Digtheid.
1.5 Soortlike gewig.
1.6 Beginsel van Archimedes.
1.7 Fortinbarometer.
1.8 Wet van Boyle.
1.9 Hare se apparaat.
1.10 Enkelvoudige slinger.

2. *Warmte.*

2.1 Lineêre uitsetting van metale.
2.2 Kubieke uitsetting van vloeistowwe.
2.3 Barometerkorreksie.
2.4 Termometerkorreksie en vaste punte.
2.5 Soortlike warmte.
2.6 Latente warmte.
2.7 Konstante volume-lugtermometer.

3. *Lig.*

3.1 Wette van weerkaatsing en breking.
3.2 Sferiese spieëls.
3.3 Lense.

4. *Elektrisiteit.*

4.1 Ohm se Wet.
4.2 Wheatstone-brug.
4.3 Poskantoorbrug.
4.4 Soortlike weerstand.
4.5 Potensiometer; interne weerstand van 'n sel.
4.6 Elektrochemiese ekwivalent van koper.
4.7 Elektriese verwarming.

DIERKUNDE.

A. TEORIE.

1. Klein soogdier (bv. rot, konyn, marmot of kat) — uitwendige kenmerke, vel en aanverwante strukture. Spysverteringstelsel — hoofdele van die spysverteringskanaal en aanverwante strukture.

Ensieme en hormone — oorsig van hul funksies by vertering. Peristalsis.

Mond — slym, ptialien. Maag — pepsien, HCl, rennien.

Pankreas — tripsinogeen, steapsien, amilopsien.

Dunderm — erepsien, enterokinase, lipase. Lewer — galpigmente en -soute.

Rektum — absorpsie van water, uitwerping van onverteerde voedsel, uitskeiding vanuit die bloedvate van die wande.

Bloedvatstelsel — hart, belangrikste bloedvate.

8.11 Electro-magnetic induction. Faraday's Law; Lenz's Law; mutual induction; self-induction. Simple dynamo (A.C. and D.C.); simple transformer; simple D.C. motor.
8.12 Chemical effects of an electric current. Electrolysis. Theory of electrolytic dissociation. Faraday's Laws of Electrolysis. Electro-chemical equivalents. Polarisation of electrodes.
8.13 Primary, secondary and concentration cells.
8.14 Electronic Physics: conduction of electricity through gases; cathode and anode rays; the cathode ray tube; the photo-electric cell; fluorescence.
8.15 Radio-activity: alpha, beta and gamma rays.
8.16 X-Rays.

PRACTICAL PHYSICS.

1. *General Physics.*

1.1 Use of the balance.
1.2 Vernier sliding callipers.
1.3 Micrometer screw gauge.
1.4 Density.
1.5 Specific gravity.
1.6 Archimedes Principle.
1.7 Fortin barometer.
1.8 Boyle's Law.
1.9 Hare's apparatus.
1.10 Simple pendulum.

2. *Heat.*

2.1 Linear expansion of metals.
2.2 Cubical expansion of fluids.
2.3 Barometer correction.
2.4 Thermometer correction and fixed points.
2.5 Specific heat.
2.6 Latent heat.
2.7 Constant volume air thermometer.

3. *Light.*

3.1 Laws of Reflection and Refraction.
3.2 Spherical Mirrors.
3.3 Lenses.

4. *Electricity.*

4.1 Ohm's Law.
4.2 Wheatstone Bridge.
4.3 Post Office Box.
4.4 Resistivity.
4.5 Potentiometer; internal resistance of a cell.
4.6 Electro-Chemical Equivalent of copper.
4.7 Electric Heating.

ZOOLOGY.

A. THEORY.

1. Small Mammal (e.g. rat, rabbit, guinea pig or cat)—External features, skin and derivatives. Digestive system—Main parts of the alimentary canal and its derivatives.

Enzymes and Hormones—An outline of their function in digestion. Peristalsis.

Mouth—Mucus, ptyalin. Stomach—pepsin, HCl, rennin.

Pancreas—trypsinogen, steapsin, amylopsin. Intestine—erepsin, enterokinase, lipase. Liver—bile pigments and salts.

Rectum—absorption of water, ejection of undigested food, excretion from vascular supply of walls.

Vascular system—Heart, principal blood vessels.

Aard van arterieë, venas, poortare, haarvaatjies.

Funksies van bloedvervoer, beskerming (fagositose, stolling, agglutinasie). Handhawing van konstante temperatuur.

Respiratoriese stelsel.

Senustelsel — rugmurg en senuwees: brein en kopsenuwees.

Simpatiese stelsel — refleksboog. Funksies van dele in die algemeen.

Skeletstelsel — werwelkolom, skedel, ledemateskelet.

Name van bene — funksies — aanhegting van spiere, ondersteuning, beskerming.

Urogenitale stelsel — niere, geslagskliere, buise en aanverwante kliere.

Plasenta.

Endokrienestelsel — belangrikste kliere en hul funksies in die algemeen.

2. Mikroskopiese anatomie van soogdier—struktuur en fisiologie.

Dierselle—struktuur en vermenigvuldiging. Mitose. Meiose.

Epiteelweefsel—trachea, esofagus, maag, ingewande, vel, lewer, pankreas, nier.

Bindweefsel—areolêre, elastiese, veselagtige, been-, kraakbeen-, vet-, pigment-, bloed- (met inbegrip van stolling), limf-, long-.

Spierweefsel—gestreepte, hart- en gladde.

Senuweeweefsel—ganglia en sinapse, neuroglia.

Sensoriese organe en weefsels—smaakknoppies, eindknoppies, liggaampies van Paccini, eindplate, spierspoele, vry senu-uiteindes, reukepiteel, oog, oor.

Geslagsorgane—testis, ovarium, gametogenese, geslagsbepaling.

3. Klassifikasie in hooftrekke—basiese beginsels van klassifikasie; samevatting van diere in spesies, geslagte, families, klasse, stamme.

4. Algemene studie van die volgende invertebrata:

Protozoa—Amoeba, Entamoeba, Trichomonas, Trypanosoma, Plasmodium, Babesia.

Platyhelminthes—Schistosoma, Fasciola, Taenia, Echinococcus.

Nemathelminthes—Trichocephalus (Trichuris), Strongyloides, Ancylostoma, Enterobius, Ascaris.

Arthropoda—kreef of kakkerlak of sprinkaan (algemene morfologie). Weeluis, muskiet, vlooi, tsetsevlieg, huisvlieg, luis en kewer (alleenlik eksterne bou, monddele en lewensloop).

Arachnida—bosluise en myte (eksterne bou, lewensloop en gashere).

5. Parasitisme.

6. Oorerwing—Mendelse oorerwing soos geïllustreer deur die oorerwing van eenvoudige en geslagsgebonde kenmerke.

7. Embriologie van die padda.

B. PRAKTIES.

Die volledige disseksie van die stelsels (uitgesonderd die spierstelsel) van 'n klein soogdier, kreef of kakkerlak of sprinkaan.

Uitkenning van die bene van die skelet en van skyfies wat die makroskopiese struktuur toon van diere of dele van diere wat in die teoretiese leerplan genoem word.

CHEMIE II.

AFDELING I: FISIESE CHEMIE.

1.1 Gasse, vloeistowwe en vaste stowwe.
1.2 Atoomteorie.
1.3 Molekulêre teorie en chemiese binding.
1.4 Termochemie.

Nature of arteries, veins, portal veins, capillaries. Functions of blood-transport, protection (phagocytosis, clotting, agglutination). Maintenance of constant temperature. Respiratory system.

Nervous System—Spinal cord and nerves: Brain and cranial nerve.

Sympathetic System—Reflex arc. Function of parts in general.

Skeletal System—Vertebral column, skull, appendicular skeleton.

Name of Bones—Functions—attachment of muscles, support, protection.

Urinogenital System—Kidney, gonads, ducts and associated glands.

Placenta.

Endocrine System—Principal glands and their function in general.

2. Microscopic Anatomy of Mammal—structure and physiology.

Animal Cells—Structure and multiplication. Mitosis. Meiosis.

Epithelial Tissue—Trachea, oesophagus, stomach, intestine, skin, liver, pancreas, kidney.

Connective Tissue—Areolar, elastic, fibrous, bone, cartilage adipose, pigment, blood (including clotting) lymph, lung.

Muscular Tissue—Striated, cardiac and smooth.

Nervous Tissue—Ganglia and synapses, neuroglia.

Sensory Organs and Tissues—Taste buds, end bulbs, Paccinian corpuscles, end plates, muscle spindles, free nerve endings, olfactory epithelium, eye, ear.

Sex Organs—Testis, ovary, gametogenesis, sex determination.

3. Outline of Classification—Basic principles of classification; aggregation of animals into species, genera, families, classes, phyla.

4. General Study of the following Invertebrates:

Protozoa—Amoeba, Entamoeba, Trichomonas, Trypanosoma, Plasmodium, Babesia.

Platyhelminthes—Schistosoma, Fasciola, Taenia, Echinococcus.

Nemathelminthes—Trichocephalus (Trichuris), Strongyloides, Hookworm, Enterobius, Ascaris.

Arthropoda—crayfish or cockroach or locust (general morphology).

Bug, mosquito, flea, tsetse fly, housefly, louse and beetle (external structure, mouth parts and life history only).

Arachnida—Ticks and mites (the external structure, life history and hosts).

5. Parasitism.

6. Heredity—Mendelian heredity as illustrated by the inheritance of simple and sex linked characters.

7. Embryology of the frog.

B. PRACTICAL.

The complete dissection of the systems (other than muscular) of the small mammal, crayfish or cockroach or locust.

Recognition of the bones of the skeleton, and of slides showing the macroscopic structure of animals or parts of animals mentioned in the theory syllabus.

CHEMISTRY II.

SECTION I: PHYSICAL CHEMISTRY.

1.1 Gases, liquids and solids.
1.2 Atomic theory.
1.3 Molecular theory and chemical bonding.
1.4 Thermochemistry.

1·5 Ioniese ewewig.
1.6 Aktiwiteit en die Debye-Hückel-teorie.
1.7 Elektrochemie.
1.8 Chemiese reaksiesnelhede. Orde en molekulariteit van reaksie.

AFDELING 2: ANALITIESE CHEMIE.

2.1 Teorie van kwalitatiewe analise.
2.2 Teorie van volumetriese analise.
2.3 Instrumentele analise (inleidend).

AFDELING 3: ANORGANIESE CHEMIE.

3.1 Sistematiese beskrywende en vergelykende anorganiese chemie van bepaalde elemente.
3.2 Koördinasieverbindings. Chelaatverbindings.

AFDELING 4: ORGANIESE CHEMIE.

4.1 Elektroniese teorieë van organiese chemie.
4.2 Meganistiese vertolking van organiese reaksies.
4.3 Metodes vir suiwering en bepaling van fisiese konstantes.
4.4 Metodes van analise.
4.5 Eenvoudige probleme wat handel oor die bepaling van struktuurformules.
4.6 Posisie-isomerie.
4.7 Geometriese isomerie.
4.8 Optiese isomerie.
4.9 Toutomerie en sekere uitgesoekte molekulêre herrangskikkings.
4.10 'n Algemene kennis van die chemie van die volgende, met besondere verwysing na stowwe wat dikwels in aptekerswese gebruik word:
Versadigde en onversadigde alifatiese koolwaterstowwe.
Benseen en sy meer eenvoudige homoloë.
Halogeenderivate van bogenoemde.
Monohidriese en polihidriese alkohole.
Tioalkohole.
Eters.
Tioëters.
Aldehiede en ketone.
Karboksielsure en die soute daarvan.
Asielhaliede.
Suuranhidriede.
Suuramiede.
Esters van organiese en anorganiese sure.
Hidroksi- en aminosure.
Laktone.
Uretaan en ureum.
Tioüreum.
Nitriele.
Sulfoonsure.
Nitroverbindings.
Amiene en kwaternêre ammoniumverbindings.
Diasoverbindings.
Fenole, met inbegrip van di- en trihidriese fenole.
Kinone.
Olies, vette en wasse.
Koolhidrate en glikosiede.
Die algemene chemie van bepaalde voorbeelde, met inbegrip van stereochemie.
Alisikliese verbindings.
Hierdie deel moet prakties geïllustreer word waar moontlik.

AFDELING 5: PRAKTIESE CHEMIE.

5.1 Kwalitatiewe analise: sistematiese semi-mikroïdentifikasie van die ione genoem in die praktiese leerplan vir Aptekerswese I, met bepaalde byvoegings.
5.2 Volumetriese analise: standaardisasie, neutralisasie presipitasie, redoks, kompleksometriese en adsorpsietitrasies.
5.3 Instrumentele analise.

1.5 Ionic equilibrium.
1.6 Activity and the Debye-Hückel theory.
1.7 Electrochemistry.
1.8 Rates of chemical reaction. Order and molecularity of reaction.

SECTION 2: ANALYTICAL CHEMISTRY.

2.1 Theory of the qualitative analysis.
2.2 Theory of the volumetric analysis.
2.3 Instrumental analysis (introductory).

SECTION 3: INORGANIC CHEMISTRY.

3.1 Systematic description and comparative inorganic chemistry of selected elements.
3.2 Co-ordination compounds. Chelate compounds.

SECTION 4: ORGANIC CHEMISTRY.

4.1 Electronic theories of organic chemistry.
4.2 Mechanistic interpretation of oraganic reactions.
4.3 Methods of purification and determination of physical constants.
4.4 Methods of analysis.
4.5 Simple problems dealing with the determination of constitutional formulae.
4.6 Position isomerism.
4.7 Geometrical isomerism.
4.8 Optical isomerism.
4.9 Tautomerism and certain selected molecular rearrangements.
4.10 A general knowledge of the chemistry of the following, with particular reference to substances in frequent use in pharmacy:—
Saturated and unsaturated aliphatic hydrocarbons.
Benzene and its simpler homologues.
Halogen derivatives of the above.
Monohydric and polyhydric alcohols.
Thioalcohols.
Ethers.
Thioethers.
Aldehydes and ketones.
Carboxylic acids and their salts.
Acyl halides.
Acid anhydrides.
Acid amides.
Esters of organic and inorganic acids.
Hydroxy and amino acids.
Lactones.
Urethane and urea.
Thourea.
Nitriles.
Sulphonic acids.
Nitro compounds.
Amines and quaternary ammonium compounds.
Diazo compounds.
Phenols including di- and trihydric phenols.
Quinones.
Oils, fats and waxes.
Carbohydrates and glycosides.
The general chemistry of selected examples excluding stereochemistry. Alicyclic compounds.
This section should be illustrated practically where possible.

SECTION 5: PRACTICAL CHEMISTRY.

5.1 Qualitative analysis: systematic semi-micro identification of the ions enumerated in the Chemistry I practical syllabus with selected additions.
5.2 Volumetric analysis: Standardization, neutralisation, precipitation, redox, complexometric and adsorption titrations.
5.3 Instrumental analysis.

FARMAKOLOGIE.

TEORIE.

1. Omvang en historiese ontwikkeling van farmakologie. Teorieë betreffende die werking van geneesmiddels en faktore wat dit beïnvloed.
2. Elementêre kennis van kwantitatiewe metodes in farmakologie. Dosisreaksiekurwes. Dosiskunde. Waardebepaling van nuwe geneesmiddels. Bepaling van toksisiteit en L.D. 50.
3. Die algemene beginsels en metodes waarop die biologiese bepalings van die Britse Farmakopee berus, met uitsluiting van die bepalings van serologiese en bakteriologiese produkte.
4. Geneesmiddels werksaam op strukture geïnnerveer deur die outenome senustelsel en die somatiese senuwees.
5. Antihistamiene.
6. Middels gebruik as depressiva en stimulantia van die sentrale senustelsel. Antipyretica-analgetica. Plaaslike en algemene anaesthetica. Bedaarmiddels.
7. Gewoontevorming by die gebruik van geneesmiddels.
8. Middels met 'n werking op die hart.
9. Middels met 'n werking op die bloed en bloedvormende stelsel.
10. Diuretika.
11. Middels met 'n werking op die spysverteringskanaal.
12. Middels met 'n werking op die asemhalingstelsel.
13. Middels gebruik by infeksies.
14. Middels met 'n effek op die werking van natuurlik gesekreteerde hormone.
15. Die toepassing van farmakologiese beginsels by die behandeling van vergiftiging.

PRAKTIES.

1. Die werking van middels op die paddahart (in situ).
2. Die werking van middels op die geïsoleerde, deurspoelde konynderm.
3. Die effek en plek van werking van kurare op die senuweespier-preparaat van die padda (N. ischiadicus—M. gastrocnemius).
4. Die effek van middels op die uterus.
5. Die werking van die verskillende middels op die bloedvate van die padda.
6. Waarneming van die effekte van stimulantia en depressiva van die sentrale senustelsel by paddas.

FISIOLOGIE.

Van die kandidaat word verwag on 'n elementêre kennis van die basiese feite in die vertakkings van Fisiologie en Farmakologie soos hieronder aangedui, te besit.

FISIOLOGIE.

Algemeen.

Die eienskappe en behoer van skelet-, gladde- en hartspier.

Die vorming, eienskappe, funksies en omloop van die bloed en limf. Liggaamsvloeistowwe.

Die meganisme en beheer van longventilasie; gaswisseling in die longe en weefsels. Kunsmatige asemhaling.

Vervoer van respiratoriese gasse.

Die spysverteringskanaal. Vertering en absorpsie van voedsel. Die funksie en bou van die lewer.

Basiese metabolisme en liggaamswarmte.

Die beginsels betrokke by die samestelling van 'n gebalanseerde dieet; vitamiene.

Die niere en urienweë. Vorming van urien.

Die sentrale en perifere senustelsels, met inbegrip van die outonome senuwees.

Die spesiale sintuie van gesig, gehoor, smaak en reuk.

PHARMACOLOGY.

THEORY.

1. Scope and historical development of pharmacology. Theories of and factors affecting drug action.
2. Elementary knowledge of quantitative methods in pharmacology. Dose response curves. Posology. Evaluation of new drugs. Determination of toxicity and L.D. 50.
3. The general principles and methods underlying the biological assays of the British Pharmacopoeia, excluding the assays of serological and bacteriological products.
4. Drugs affecting structures innervated by the autonomic nervous system and by the somatic nerves.
5. Antihistamines.
6. Drugs used as central nervous depressants and stimulants. Antipyretics—analgesics. Local and general anaesthetics. Tranquillizers.
7. Habit formation in the use of drugs.
8. Drugs affecting the heart.
9. Drugs acting on the blood and haemopoietic system.
10. Diuretics.
11. Drugs acting on the alimentary system.
12. Drugs acting on the respiratory system.
13. Drugs used in infections.
14. Drugs which affect the actions of naturally secreted hormones.
15. The application of pharmacological principles in the treatment of poisoning.

PRACTICAL.

1. The Action of Drugs on the Frog's Heart (in situ).
2. The Action of Drugs on the isolated, perfused Rabbit Intestine.
3. The Effect and Site of Action of Curare on the Frog Sciatic nerve—Gastrocnemius Muscle Preparation.
4. The Effect of Drugs on the Uterus.
5. The Action of the various drugs on the Blood Vessels of the Frog.
6. Observation of The Effects of Stimulants and Depressants of the Central Nervous System in Frogs.

PHYSIOLOGY.

The candidate will be expected to possess an elementary knowledge of the basic facts in the branches of Physiology and Pharmacology listed below.

PHYSIOLOGY.

General.

The properties and control of skeletal, visceral and cardiac muscle.

The formation, properties, functions and circulation of the blood and lymph.

Body fluids.

The mechanism and control of pulmonary ventilation; gaseous interchange at the lungs and tissues. Artificial respiration. Transport of respiratory gases.

The alimentary tract.

Digestion and absorption of foods.

The function and structure of the liver.

Basal metabolism and body heat.

The principles involved in constructing a balanced diet; vitamins.

The kidneys and urinary tract. Formation of urine.

The central and peripheral nervous systems, including the autonomic nerves.

The special senses of sight, hearing, taste and smell.

Die bou en funksies van die endokriene kliere, met inbegrip van—

(*a*) hipofise, (*b*) skildklier en byskildkliere, (*c*) pankreas, (*d*) byniere, (*e*) testes en ovariums.

Die beginsels van voortplanting by die mens.

HISTOLOGIE.

Die kandidaat moet 'n elementêre kennis besit van die mikroskopiese struktuur van die volgende: Spier en senuwee, hart, bloedvate en bloed, longe, spysverteringskliere, maag en ingewande, lewer, niere, vel, endokrienekliere en die voortplantingsorgane, met inbegrip van die melkklier en die plasenta.

BIOCHEMIE.

Die algemene aard en eienskappe van ensieme.

Metabolisme van koolhidrate, vette, proteïene en cholesterol.

Die samestelling en funksies van speeksel, maagsap, gal, pankreassap en dundermsappe.

Die samestelling en voedingswaarde van algemene voedingstowwe.

Die chemie van spierkontraksie.

Die samestelling van bloed, limf en serebrospinale vloeistof.

Normale en abnormale bestanddele van urien.

PRAKTIES.

Die uitwerking van die volgende faktore op die hartklop:

1. Temperatuur.
2. Stannius-afsnoerings.
3. K^+- en Ca^{++}-ione.

Refraktêre periode en kompensatoriese pouse.

Die effek van die volgende faktore op die N. ischiadicus (heupsenu) van die padda. — M. gastrocnemius-spierpreparaat.

1. Prikkelsoorte.
2. Temperatuur.
3. Summasie.
4. Tetanus.
5. Voortplantingsnelheid van 'n senu-impuls.
6. Na- en voorbelading.
7. Spiervermoeienis.
   Bloeddrukmeting by die mens.

Bloed:

1. Bepaling van volume van gepakte selle.
2. Bepaling van hemoglobienkonsentrasie.
3. Rooibloedseltelling.
4. Berekening van absolute indekse: G.Rbs.H., G.Rbs.V. en G.Rbs.H.K.
5. Rooibloedsel-sedimentasietempo.
6. Rooibloedsel-breekbaarheidstoets.
7. Effek van hemolitiese middels.
8. Bepaling van ABO- en Rhesusbloedgroepe.
9. Witbloedseltelling en differensiële witbloedseltelling.

Urien:

1. Chemiese en mikroskopiese ondersoek van urien vir belangrike normale en abnormale bestanddele.
2. Kwantitatiewe bepaling van totale proteïen en reduserende suikers.

Speelksel:

Bepaling van amilase.

The structure and functions of the glands of interna secretion (including)—

(*a*) pituitary body, (*b*) thyroid and parathyroids, (*c*) pancreas, (*d*) suprarenals, (*e*) testes and ovary.

The elements of reproduction in man.

HISTOLOGY.

The candidate must possess an elementary knowledge of the microscopical structure of the following: Muscle and nerve; the heart, blood vessel and blood; lungs; the digestive glands; stomach and intestines; liver; kidneys; skin; the endocrine glands and the reproductive organs, including the mammary gland and the placenta.

BIOCHEMISTRY.

The general nature and properties of enzymes.

The metabolism of carbohydrates, fats, proteins and cholesterol.

The composition and functions of the salivary, gastric, biliary, pancreatic and intestinal secretions.

The composition and nutritional value of common foodstuffs.

The chemistry of muscular contraction.

The composition of blood, lymph and cerebrospinal fluid. Normal and abnormal constituents of urine.

PRACTICAL.

Effect of the following on the heart beat:—

1. Temperature.
2. Stannius ligatures.
3. K^+ and Ca^{++} ions.

Refractory period and compensatory pause.

Effect of the following on the Frog Sciatic Nerve—Gastrocnemius muscle preparation:—

1. Effect of stimuli.
2. Temperature.
3. Summation.
4. Tetanus.
5. Velocity of propagation of a nerve impulse.
6. After and preloading.
7. Muscle fatigue.
   Measurement of blood pressure in man.

Blood:

1. Determination of packed cell volume.
2. Determination of haemoglobin concentration.
3. Enumeration of red cells.
4. Calculation of absolute indices: M.C.H., M.C.V. and M.C.H.C.
5. Erythrocyte sedimentation rate.
6. Erythrocyte fragility test.
7. Effect of haemolytics.
8. Determination of A B O and Rhesus blood groups.
9. Enumeration of white cells and differential white cell count.

Urine:

1. Chemical and microscopic examination of urine for important normal and abnormal constituents.
2. Quantitative estimation of total protein and reducing sugars.

Saliva:

Estimation of amylase.

GEREGTELIKE FARMASIE.

Kandidate se kennis sal getoets word met betrekking tot die volgende wetgewing vir sover dit betrekking het op die aptekerswese en die verkoop van artsenye, vergifte en giftige stowwe:

(*a*) Wet op Geneeshere, Tandartse en Aptekers (No. 13 van 1928), soos gewysig, veral met betrekking tot die volgende:

Hoofstuk 1, artikel *twee*.

Hoofstuk 2, artikels *vyftien, sestien, sewentien* en *agtien*.

Hoofstuk 3, artikel *sewe-en-dertig*.—Handelinge wat op die beroep van 'n apteker betrekking het.

Hoofstuk 4, artikels *een-en-veertig, twee-en-veertig, drie-en-veertig, vyf-en-veertig* en *sewe-en-veertig*.

Hoofstuk 5, alle artikels.—Die aanhou, verkoop en resepteer van vergifte.

Bylae IV. — Vergifte, Afdeling I en Afdeling 2.

Hoofstuk 6, alle artikels. — Invoer, verkoop en resepteer van gewoontevormende medisyne en moontlik nadelige medisyne en die metode om die register van gewoontevormende medisyne by te hou.

Bylae V.—Gewoontevormende medisyne.

Bylae VI.—Moontlik nadelige medisyne.

Preparate wat vrygestel is van die bepalings van hoofstukke 5 en 6.

Regulasies uitgevaardig vir die uitvoering van die bepalings van hoofstukke 5 en 6.

Hoofstuk 7, artikel *vyf-en-sewentig*.—Misbruik van titels deur vereniging van persone.

Hoofstuk 7, artikel *ses-en-sewentig*.—Bepalings in verband met regspersone wat as aptekers handel dryf.

Hoofstuk 7, artikel *ses-en-sewentig bis*.—Handelstitels.

Hoofstuk 7, artikel *sewe-en-sewentig*.—Beheer van apteke.

Hoofstuk 7, artikel *agt-en-sewentig*.—Bevoegdhede van eksekuteurs, ens.

Hoofstuk 7, artikel *tatig*.—Buitensporige vorderings.

Hoofstuk 7, artikel *een-en-tagtig*.—Onbekwame persone.

Hoofstuk 7, artikel *twee-en-tagtig*.—Etikettering en verpakking van giftige stowwe.

Hoofstuk 7, artikel *agt-en-tagtig*.—Kommissie op perskripsies.

Hoofstuk 7, artikel *nege-en-tagtig*.—Magtiging van veeartse.

Hoofstuk 7, artikel *vyf-en-negentig*.—Verandering van tweede bylae — jaargelde.

Hoofstuk 7, artikel *ses-en-negentig*.—Woordbepaling.

Die beginsels van Etiek, met insluiting van die Etiese Reëls in verband met gedrag waarvan die Suid-Afrikaanse Aptekerskommissie kennis mag neem.

(*b*) Volksgezondheidswet, No. 36 van 1919, artikel *vyf-en-sestig*.—Die uitwerking daarvan op die bestuur van die aptekersbesigheid. Artikel *eenhonderd nege-en-dertig*.

(*c*) Die Drankwet, No. 30 van 1928, artikels *vyf, eenhonderd-en-dertig, eenhonderd een-en-dertig, eenhonderd-en-veertig*.—Bepalings in verband met die verkoop van reukwerk, geparfumeerde spiritualieë en medisyne wat sterk drank bevat. Die verkoop van brandspiritus en sekere Hollandse medisyne. Regulasies wat daaruit voortvloei. Artikel *eenhonderd vyf-en-sewentig*.—Definisie van bedwelmende drank.

(*d*) Wet op Voedingsmiddels, Medisyne en Ontsmettingsmiddels, No. 13 van 1929, en regulasies, vir sover dit die apteker raak.

(*e*) Wet op Misstowwe, Veevoedsel en Middels, No. 36 van 1947, vir sover dit die Aptekerswese raak.

FORENSIC PHARMACY.

Candidates will be examined in their knowledge of the following enactments, in so far as they have a bearing on the practice of pharmacy and the sale of drugs, poisons and poisonous substances:—

(*a*) Medical, Dental and Pharmacy Act, No. 13 of 1928, as amended, in particular the following:—

Chapter 1, section *two*.

Chapter 2, sections *fifteen, sixteen, seventeen* and *eighteen*.

Chapter 3, section *thirty-seven*.—Acts pertaining to the calling of a chemist and druggist.

Chapter 4, sections *forty-one, forty-two, forty-three, forty-five* and *forty-seven*.

Chapter 5, all sections.—Keeping, sale and dispensing of poisons.

Schedule IV.—Poisons, Division 1 and Division 2.

Chapter 6, all sections.—Importation, sale and dispensing of habit-forming drugs and potentially harmful drugs and method of keeping habit-forming drugs register.

Schedule V.—Habit-forming drugs.

Schedule VI.—Potentially harmful drugs.

Preparations exempted from the provisions of Chapters 5 and 6.

Regulations promulgated for the carrying out of the provisions of Chapters 5 and 6.

Chapter 7, section *seventy-five*.—Plurality of titles.

Chapter 7, section *seventy-six*.—Provisions regarding bodies corporate, trading as chemists and druggists.

Chapter 7, section *seventy-six bis*.—Trading titles.

Chapter 7, section *seventy-seven*.—Control of pharmacies.

Chapter 7, section *seventy-eight*.—Powers of Executors, etc.

Chapter 7, section *eighty*.—Excessive charges.

Chapter 7, section *eighty-one*.—Disabled persons.

Chapter 7, section *eighty-two*.—Labelling and packing of poisonous substances.

Chapter 7, section *eighty-seven*.—Liability for acts of employees.

Chapter 7, section *eighty-eight*.—Commission on prescriptions.

Chapter 7, section *eighty-nine*.—Authorisation of veterinarians.

Chapter 7, section *ninety-five*.—Alteration of Second Schedule: Annual fees.

Chapter 7, section *ninety-six*.—Interpretation of terms.

A brief outline on Ethics including the Ethical Rules regarding conduct of which the South African Pharmacy Board may take cognisance.

(*b*) Public Health Act, No. 36 of 1919, section *sixty-five*.—Its effect on the conduct of the business of a chemist and druggist. Section *one hundred and thirty-nine*.

(*c*) The Liquor Act, No. 30 of 1928, sections *five, one hundred and thirty, one hundred and thirty-one* and *one hundred and forty*.—Provisions regarding the sale of perfumery, perfumed spirits and medicines containing "liquor". Sale of methylated spirits and certain Dutch medicines, regulations arising therefrom.

Section *one hundred and seventy-five*.—Definition of intoxicating liquor.

(*d*) The Food, Drugs and Disinfectants Act No. 13 of 1929, and regulations in so far as they affect the chemist and druggist.

(*e*) Fertilizers, Farm Feeds and Remedies Act, No. 36 of 1947, in so far as it affects the practice of pharmacy.

Kandidate moet ook 'n kennis hê van die Engelse en Afrikaanse name van vergifte wat in bylaes IV en V voorkom, en van die giftige stowwe wat in artikel *twee-en-tagtig* van die Wet op Geneeshere, Tandartse en Aptekers voorkom.

(*f*) Die Wet op Medisynebeheer, No. 101 van 1965.

(*g*) Die Regulasies op Terapeutiese Stowwe, vir sover dit die aptekerswese raak.

Nota.—Bogenoemde kennis is van toepassing op enige wysiging van die bepaalde artikels of bylaes en op enige reëls of regulasies wat daarop betrekking het of wysigings daarvan wat op of voor 30 April van die lopende jaar gepubliseer word.

FARMAKOGNOSIE.

Van die kandidaat word verwag om oor 'n algemene maar kritiese kennis van die volgende aspekte van die vak te beskik:

Afdeling I.—Die geskiedenis, ontwikkeling, bestek en verband van Farmakognosie ten opsigte van ander wetenskappe.

Afdeling II (*a*).—Die metodes vir klassifikasie van ru-artsenymiddels. Die relatiewe voor- en nadele van sodanige metodes ten opsigte van hul praktiese gebruike in hierdie vak.

Afdeling II (*b*).—Die geografiese verspreiding van die herkoms van ru-artsenymiddels.

Afdeling III.—Die bestanddele van ru-artsenymiddels, met spesiale inagneming van die korrekte bewerking van ru-artsenymiddels in Farmaseutika en die betekenis van ru-artsenymiddels in Farmakologie.

Afdeling IV.—Die metodes van beskrywing van dié eienskappe van ru-artsenymiddels wat bydra tot hul identifikasie en tot hul toepaslike gebruik in Farmaseutika.

Afdeling V.—Die kweek en versameling van ru-artsenymiddels en die voorbereiding daarvan vir die mark.

Afdeling VI.—Die standaarde en waardebepaling van ru-artsenymiddels, met inbegrip van 'n studie van vervalsing, vervalsmiddels en kommersiële variëteite.

Afdeling VII.—Die behoud van stabiliteit van ru-artsenymiddels gedurende bewaring, voorbereiding vir die mark en ekstrakering. Faktore wat geneig is om bederf te bevorder.

Verder word van die kandidaat verwag om 'n meer bepaalde farmakognostiese kennis te besit van dié ru-artsenymiddels wat beskou word om tans belangrike toepassing in Geneeskunde en Aptekerswese te hê. Sodanige artsenymiddels word vervat in die jongste uitgawes van die Britse Farmakopee en die Britse Farmaseutiese Kodeks, en enige byvoeging of weglating geskied na goeddunke van die Suid-Afrikaanse Aptekerskommissie.

Van die kandidaat word ook verwag om oor kennis van die waardebepaling van dié chirurgiese verbande wat nie medisinaal behandel is nie, te beskik, asook van die herkoms, voorbereiding, chemie en identifikasie van die vesels wat algemeen tydens die vervaardiging daarvan gebruik word.

PRAKTIESE EKSAMEN.

In die praktiese eksamen word van die kandidaat verwag om toetse en bepalings met betrekking tot die identifikasie en waardebepaling van ru-artsenymiddels en chururgiese verbandvesels uit te voer en om 'n beskrywende verslag daaroor te lewer, ooreenkomstig die volgende bepalings:

(*a*) Die identifikasie van ru-artsenymiddels, hetsy heel, verpoeier of vervals, deur sistematiese ondersoek van die sensoriese, makro- en mikroskopiese eienskappe en/of

English and Afrikaans names of poisons included in Schedules IV and V of and poisonous substances included in section *eighty-two* of the Medical, Dental and Pharmacy Act.

(*f*) The Drug Control Act No. 101 of 1965.

(*g*) The Therapeutic Substances Regulations in so far as they affect the practice of retail pharmacy.

Note.—The above knowledge will extend to any amendments to the specified sections or schedules and to any rules or regulations thereanent or amendments thereof published on or before April 30 of the current year.

PHARMACOGNOSY.

The candidates will be expected to have a general but critical knowledge of the following aspects of the subject:—

Section I.—The history, development, scope and relation of Pharmacognosy to other sciences.

Section II (*a*).—The methods of classification of crude drugs. The relative merits and demerits of such methods in regard to their practical use in this subject.

Section II (*b*).—The geographical distribution of the sources of crude drugs.

Section III.—The constituents of crude drugs with special regard to the intelligent manipulation of crude drugs in Pharmaceutics and to the significance of crude drugs in Pharmacology.

Section IV.—The methods of description of such characters of crude drugs which contribute to their identification and to their proper use in Pharmaceutics.

Section V.—The cultivation, collection and preparation for the market of crude drugs.

Section VI.—The standards and evaluation of crude drugs, including a study of adulteration, adulterants and commercial varieties.

Section VII.—The maintenance of stability of crude drugs during storage, preparation for the market and extraction. Agencies likely to promote deterioration.

Furthermore, the candidates will be expected to have a more specific pharmacognostical knowledge of those crude drugs considered to be of serious application in Medicine and Pharmacy today. Such drugs are as included in the current British Pharmacopoeia and British Pharmaceutical Codex, and any additions or deletions thereto will be at the discretion of the South African Pharmacy Board.

The candidate will be expected, also, to have a knowledge of the evaluation of unmedicated surgical dressings and of the sources, preparation, chemistry and identification of the fibres commonly used in their manufacture.

PRACTICAL EXAMINATION.

In the practical examination the candidate will be expected to carry out exercises on identification and evaluation of crude drugs and of surgical dressing fibres as follows and to give a descriptive report thereon:—

(*a*) The identification of crude drugs whether entire or powdered or adulterated, by systematic examination of the sensory, macro- and microscopical characters and/or

kwalitatiewe chemiese en/of fisiese toetse. Vervolgens die herkenning van vervalsing by sulke artsenymiddels en die vasstelling, by benadering, van die graad van sodanige vervalsing.

(*b*) Die bepaling van B.P.- of B.P.C.-standaarde vir ru-artsenymiddels, met uitsluiting van kwantitatiewe chemiese bepalings, chemiese en fisiese konstantes.

(*c*) Die herkenning, deur uitwendige en sensoriese eienskappe, van ru-artsenymiddels in die heel vorm soos wat dit in die handel voorkom.

(*d*) Die identifikasie van die vesels wat algemeen in chirurgiese verbande gebruik word, hetsy in verbande verwerk of nie, deur sistematiese mikroskopiese en kwalitatiewe chemiese ondersoek.

Nota.—Die kandidaat word toegelaat om gedurende die praktiese eksamen in Farmakognosie van die B.P. en B.P.C. gebruik te maak.

CHEMIE III.

AFDELING 1: ANALITIESE CHEMIE.

1.1 Volumetriese analise: bepaalde onderwerpe.
1.2 Instrumentele analise: bepaalde onderwerpe.

AFDELING 2: FARMASEUTIESE CHEMIE—ANORGANIES EN ORGANIES.

2.1 Die anorganiese verbindings van die Britse Farmakopee: die bereiding, eienskappe, identifikasie, suiwerheidstoetse en bepaling daarvan.

2.2 Die organiese verbindings van die Britse Farmakopee: die bereiding, eienskappe, sistematiese benaming, identifikasie, suiwerheidstoetse en bepaling van bepaalde organiese verbindings van die Britse Farmakopee verkry van die klasse verbindings genoem in paragraaf 4.10 van die Aptekerswese II-leerplan en paragrawe 2.4, 2.5 en 2.6 van hierdie leerplan.

2.3 Sistematiese benaming van organiese verbindings van geneeskundige belang.

2.4 Kennis van die belangrikste aspekte van die chemie van die volgende, en algemene kennis van derivate daarvan wat in die Britse Farmakopee voorkom: difenieletaan, trifenielmetaan, naftaleen, antraseen, naftaseen, fenantreen, pirasool, imidasool, tiasool, imidasolien, imidasolidien, piridien, pirimidien, kinolien, isokonolien, fenotiasien, piperasien, piperidien, akridien.

2.5 'n Kennis van die belangrikste aspekte van die chemie van:

2.5.1 Geneeskundige organiese verbindings van kwik, arseen, antimoon en jodium.
2.5.2 Barbiturate, sulfoonamiede, plaaslike anestetika, antibiotika, mondelinge hipoglisemika.

2.6 'n Elementêre behandeling van die geneeskundig belangrike lede van die volgende klasse natuurlike verbindings:

2.6.1 Koolhidrate } Meer gevorderde behandeling.
2.6.2 Glikosiede }
2.6.3 Terpene en verwante verbindings.
2.6.4 Puriene.
2.6.5 Alkaloïede.
2.6.6 Proteïene (algemene eienskappe en klassifikasie) met insluiting van virusse en ensieme.
2.6.7 Steroide.
2.6.8 Vitamiene.
2.6.9 Hormone.
2.6.10 Lipiede.
2.6.11 Porfiriene.

qualitative chemical and/or physical tests. The consequent detection of, and approximate assessment of degree of, adulteration in such drugs.

(*b*) The determination of B.P. or B.P.C. standards for crude drugs excluding quantitative chemical assays, chemical and physical constants.

(*c*) The recognition, by external and sensory characters, of crude drugs in the entire form in which they appear in commerce.

(*d*) The identification of the fibres commonly used in surgical dressings, by systematic microscopical and qualitative chemical examination, whether or not processed into dressings.

Note.—The candidate will be permitted to refer to the B.P. and B.P.C. during the practical examinations in Pharmacognosy.

CHEMISTRY III.

SECTION 1: ANALYTICAL CHEMISTRY.

1.1 Volumetric analysis: selected topics.
1.2 Instrumental analysis: selected topics.

SECTION 2: PHARMACEUTICAL CHEMISTRY—INORGANIC AND ORGANIC.

2.1 The inorganic substances of the British Pharmacopoeia: their preparation, properties, indentification, purity tests and assay.

2.2 The organic substances of the British Pharmacopoeia. The preparation, properties, systematic naming, identification, purity tests and assay of selected organic substances from the British Pharmacopoeia derived from the classes of compounds enumerated in paragraph 4.10 of the Qualifying Examination Part 1 syllabus and paragraphs 2.4, 2.5 and 2.6 of this syllabus.

2.3 Systematic naming of organic compounds of medicinal importance.

2.4 A knowledge of the more important aspects of the chemistry of the following and a general knowledge of such of their derivatives as are in the British Pharmacopoeia:
Diphenyl ethane, triphenyl methane, naphthalene, anthracene, naphtacene, phenanthrene, pyrazole, imidazole, thizole, imidazoline, imidazolidine, pyridine, pyrimidine, quinoline, isoquinoline, phenothiazine, piperazine, piperidine, acridine.

2.5 A knowledge of the more important aspects of the chemistry of:

2.5.1 Medicinal organic compounds of mercury, arsenic, antimony and iodine.
2.5.2 Barbiturates, sulphonamides, local anaesthetics, antibiotics, oral hypoglycaemics.

2.6 Simple treatment of the medicinally important members of the following groups of natural products:

2.6.1 Carbohydrates } More advanced treatment.
2.6.2 Glycosidies }
2.6.3 Terpenes and related compounds.
2.6.4 Purines.
2.6.5 Alkaloids.
2.6.6 Proteins (general characteristics and classification) including viruses and enzymes.
2.6.7 Steroids.
2.6.8 Vitamins.
2.6.9 Hormones.
2.6.10 Lipids.
2.6.11 Porphyrins.

AFDELING 3: PRAKTIESE CHEMIE.

3.1 Volumetrie en gravimetrie: uitgesoekte gevorderde volumetriese en gravimetriese bepalings: titrasies in nie-waterige mediums.

3.2 Instrumentele analise: uitgesoekte onderwerpe.

3.3 Farmaseutiese analise:

3.3.1 Die identifikasie en uitvoering van suiwerheidstoetse ten opsigte van die anorganiese verbindings wat vervat word in monografieë van die Britse Farmakopee.

3.3.2 Die identifikasie van bepaalde organiese sure en soute algemeen in gebruik in die farmasie.

3.3.3 Die identifikasie van die elemente en bepaalde, eenvoudige funksionele groepe van organiese verbindings wat vervat word in monografieë van die Britse Farmakopee.

3.3.4 Die identifikasie, met behulp van sistematiese analise, van die meer eenvoudige organiese verbindings wat vervat word in monografieë van die Britse Farmakopee.

3.3.5 Die bepaling van die anorganiese en organiese verbindings, algemeen in gebruik in farmasie, wat vervat word in monografieë van die Britse Farmakopee: verteenwoordigende voorbeelde van elke van die volgende prosesse word ingesluit:
(1) asidimetrie en alkalimetrie (direk en indirek).
(2) redoks.
(3) bromosubstitusie.
(4) presipiteringsprosedures.
(5) gravimetriese prosedures.
(6) kompleksometriese titrasies.
(7) titrasies in nie-waterige mediums.

3.3.6 Die uitvoering van kwantitatiewe grenstoetse vir onsuiwerhede.

3.3.7 Die uitvoering van die kwantitatiewe bepaling van 'n alkaloïed in suur- of alkoholiese oplossing.

3.3.8 Die uitvoering van die Kjeldahl-metode vir die bepaling van stikstof.

3.3.9 Die bepaling van die konsentrasies van alkoholwatermengsels en die kwalitatiewe en kwantitatiewe bepaling van die alkoholkonsentrasie in enige preparaat.

3.3.10 Die bepaling van suurwaarde, esterwaarde, versepingswaarde, jodiumgetal en asetielwaarde.

3.3.11 Die bepaling van vry alkohole en aldehiede in vlugtige olies.

Let wel.—Die toepaslike metodes in paragrawe 3.3.6 tot 3.3.11 is dié van die Britse Farmakopee.

FARMASEUTIKA.

Teorie.

Deel I.—Van die kandidaat word kennis van die volgende verwag:—

Fisiese Farmasie: Fisies-chemiese beginsels, tesame met hul toepassings, wat betrekking het op farmaseutiese prosesse en die bereiding en formulering van medisinale stowwe—toestandsverandering, die eienskappe van oplossings en dispersies, vloei-eienskappe en vloeistowwe en oppervlakverskynsels.

SECTION 3: PRACTICAL CHEMISTRY.

3.1 Volumetric and gravimetric: selected advanced volumetric and gravimetric determinations: non-acqueous titrations.

3.2 Instrumental analysis: selected topics.

3.3 Pharmaceutical analysis:

3.3.1 To identify and carry out tests for purity on the inorganic substances which are the subject of monographs in the British Pharmacopoeia.

3.3.2 To identify selected organic acids and salts in common use in pharmacy.

3.3.3 To identify the elements and selected, simple, functional groups of organic compounds which are the subject of monographs in the British Pharmacopoeia.

3.3.4 To identify by systematic analysis simpler organic compounds which are the subject of monographs in the British Pharmacopoeia.

3.3.5 To assay the inorganic substances and the commoner organic substances in use in pharmacy which are the subject of monographs in the British Pharmacopoeia, representatives being chosen from each of the following types of process:
(1) acidimetry and alkalimetry (direct and indirect),
(2) oxidation-reduction,
(3) bromo-substitution,
(4) precipitation procedures,
(5) gravimetric procedures,
(6) complexometric titrations,
(7) non-aqueous titrations.

3.3.6 To carry out the quantitative limit tests for impurities.

3.3.7 To carry out the quantitative determination of an alkaloid in acid or alcoholic solution.

3.3.8 To carry out the Kjeldahl method for the determination of nitrogen.

3.3.9 To determine the concentration of alcohol-water mixtures and to detect and determine the amount of alcohol in any preparation.

3.3.10 To carry out the determination of acid value, ester value, saponification value, iodine value and acetyl value.

3.3.11 To carry out the determination of free alcohols and aldehydes in volatile oils.

Note.—The methods used in paragraphs 3.3.6 to 3.3.11 are those of the British Pharmacopoeia.

PHARMACEUTICS.

Theory.

Part I.—The candidate will be required to have a knowledge of:—

Physical Pharmacy: Physico-chemical princples involved in and their application to pharmaceutical operations and the preparation and formulation of medicinal substances—change of state, the properties of solutions and dispersions, flow properties of fluids, and surface phenomena.

Deel II.—Van die kandidaat word kennis van die volgende verwag:

Farmaseutiese Tegnologie: Die prosesse wat te doen het met die bereiding van farmaseutiese produkte in die laboratorium en met vervaardiging op groot skaal; die standaardisasie, aanbieding en verpakking van farmaseutiese preparate. Die beginsels van formulering van medisyne met die oog op optimum stabiliteit en terapeutiese werking is die onderskeie doseringsvorme wat tans in gebruik is. Veranderinge in die werkingsduur van medisyne.

Die produkte van die Britse Farmakopee en Britse Farmaseutiese Kodeks wat gebruik word om bostaande te illustreer.

Die aard en eienskappe van materiale wat gebruik word in die konstruksie van farmaseutiese apparaat en vervaardigingstoerusting.

Die teoretiese beginsels waarop die werk berus wat in die praktiese leerplan uitgevoer word.

Deel III.—Van die kandidaat word kennis van die volgende verwag:

'n Algemene inleiding tot Mikrobiologie, met insluiting van die studie van bakterië, rickettsiae, virusse en fungi in die besonder.

Infeksie en immunologie, met spesiale verwysing na die bereiding, eienskappe, standaarde en bewaringstoestande van die immunologiese en diagnostiese middels wat in die Britse Farmakopee en Regulasies op Terapeutiese Stowwe uiteengesit word.

Mikrobiologie en toepaslike aspekte daarvan wat ter sake is, naamlik sterilisasie, disinfeksie en die bereiding van steriele medisyne.

Asepsis en sy toepassings op die bereiding van steriele produkte met insluiting van steriliteitstoetsing.

Die dinamika van disinfeksie—bakterisiede, bakteriostatikums, fungisiede, fungistatikums, met insluiting van hul eienskappe en waardebepaling.

Offisiële steriele produkte, met spesiale verwysing na bloedprodukte, heg- en afbindmateriaal.

Prakties.

Die kandidaat moet vertroud wees met die apparaat en die organisasie van die resepteerafdeling, en moet in staat wees om die volgende farmaseutiese handelinge uit te voer:

Die reseptering van voorskrifte en die bereiding van preparate ingesluit in die Britse Farmakopee en Britse Farmaseutiese Kodeks.

Die formulering van medisyne volgens beginsels wat in die teorieleerplan genoem word.

Die uitvoering van oefeninge waarby 'n studie van die beginsels van fisiese farmasie betrek word, soos toegepas op formulering; die ondersoek en toetsing van farmaseutiese produkte.

Die bereiding en reseptering van steriele medisyne en materiale, en die toetsing van sodanige produkte vir steriliteit.

No. R. 23.] [5 Januarie 1968.

SUID-AFRIKAANSE APTEKERSKOMMISSIE.

REËLS EN MINIMUM LEERPLAN VIR DIE KOMMISSIE SE DIPLOMA IN FARMASIE.

Die Minister van Gesondheid het, kragtens artikel 94 (4) van die Wet op Geneeshere, Tandartse en Aptekers, 1928 (Wet No. 13 van 1928), sy goedkeuring geheg aan die volgende wysiging van die reëls wat deur die Suid-Afrikaanse

Part II.—The candidate will be required to have a knowledge of:—

Pharmaceutical Technology. The processes involved in in the preparation of pharmaceutical products in the laboratory and on the manufacturing scale; the standardisation, presentation and packaging of pharmaceuticals. The principles of formulation of drugs for optimum stability and therapeutic action in the various dosage-forms in current use.

Modification of the duration of action of drugs.

The products of the British Pharmacopoeia and British Pharmaceutical Codex to be used to illustrate the above.

The nature and properties of materials used in the construction of pharmaceutical apparatus and manufacturing equipment.

The theoretical principles underlying the work carried out in the practical syllabus.

Part III.—The candidate will be required to have a knowledge of:

A general introduction to Microbiology, including a study in particular of Bacteria, Rickettsiae, Viruses and Fungi.

Infection and immunology with special reference to the preparation, properties, standards and storage conditions of the immunological and diagnostic agents detailed in the British Pharmacopoeia and Therapeutic Substances Regulations.

Microbiology and the relevance of its applied aspects, i.e. sterilisation, disinfection and the preparation of sterile medicaments.

Asepsis and its applications to the preparation of sterile products including an evaluation for their sterility.

The dynamics of disinfection—bactericides, bacteriostats, fungicides, fungistats, including their properties and evaluation.

Official sterile products with particular reference to blood products, sutures and ligatures.

Practical.

The candidate must be familiar with the equipment and organisation of the dispensary, and must be able to carry out the following pharmaceutical operations:—

The dispensing of prescriptions, and the making of preparations included in the British Pharmacopoeia and the British Pharmaceutical Codex.

The formulation of drugs in accordance with the principles referred to in the theory syllabus.

The carrying out of exercises involving a study of the principles of physical pharmacy as applied to formulation; the examining and testing of pharmaceutical products. The preparation and dispensing of sterile medicaments and materials, and the testing of such products for sterility.

No. R. 23.] [5 January 1968.

SOUTH AFRICAN PHARMACY BOARD.

RULES AND MINIMUM CURRICULUM FOR THE BOARD'S DIPLOMA IN PHARMACY.

The Minister of Health has, in terms of Section 94 (4) of the Medical, Dental and Pharmacy Act, 1928 (Act No. 13 of 1928), approved the amendment of the rules made by the South African Pharmacy Board under section

Aptekerskommissie kragtens artikel 94 (2) van die Wet opgestel is en wat by Goewermentskennisgewing No. R. 666 van 10 Mei 1963 afgekondig is, soos gewysig by Goewermentskennisgewings No. R. 1077 van 23 Julie 1965, No. R. 985 van 24 Junie 1966 en No. R. 1238 van 18 Augustus 1967:

Reël 1.—Deur ná die woorde " vakke in Deel 1 van die Kwalifiserende Eksamen " die volgende woorde in te voeg:

" met hoogstens 10% van die moontlike punte in die besondere vak of vakke ".

Reël 4 *bis*.—Deur ná die woorde " Interne eksamens sal " die woord " minstens " in te voeg.

Reël 5.—Deur die laaste voorbehoudsbepaling deur die volgende te vervang:

" met dien verstande dat vir sover dit die aanvullingseksamens aangaan waarvoor in Reël 1 *supra* voorsiening gemaak word, interne eksamenpunte nie by die vasstelling van die uitslae in aanmerking geneem word nie ".

94 (2) of the Act and published under Government Notice No. R. 666 of 10 May 1963, as amended by Government Notices No. R. 1077 of 23 July 1965, No. R. 985 of 24 June 1966, and No. R. 1238 of 18 August 1967, as follows:—

Rule 1.—By the insertion after the words " subjects in Part I of the Qualifying Examination " of the following words:—

" by not more than 10 per cent of the possible marks in the particular subject or subjects ".

Rule 4 *bis*.—By the insertion after the words " shall be held " of the words " at least ".

Rule 5.—By the substitution for the final proviso of the following:—

" Provided that in respect of the supplementary examinations provided for in Rule 1 *supra* internal examination marks shall not be taken into account in determining the results ".

INHOUD.

Departement van Gesondheid.

GOEWERMENTSKENNISGEWING.

CONTENTS.

Department of Health.

GOVERNMENT NOTICE.