BUITENGEWONE

OFFISIËLE KOERANT

VAN SUIDWES-AFRIKA.

OFFICIAL GAZETTE

EXTRAORDINARY

OF SOUTH WEST AFRICA.

UITGAWE OP GESAG. PUBLISHED BY AUTHORITY.

1/- Vrydag, 11 Maart 1955. WINDHOEK Friday, 11th March, 1955. No. 1885.

GOEWERMENTSKENNISGEWING.

Onderstaande Goewermentskennisgewing word vir algemene inligting gepubliseer:—

J. NESER,
Sekretaris van Suidwes-Afrika.

Kantoor van die Administrateur,
Windhoek.

DEPARTEMENT VAN GESONDHEID.

* No. 437—Unie.] [11 Maart 1955.

DIE SUID-AFRIKAANSE APTEKERSKOMMISSIE.—REËLS EN MINIMUM LEERPLAN VIR DIE KOMMISSIE SE DIPLOMA IN FARMASIE.

Die Minister van Gesondheid het in die uitoefening van die bevoegdheid hom verleen by subartikel (4) van artikel *vier-en-negentig* van die Wet op Geneeshere, Tandartse en Aptekers, 1928 (Wet No. 13 van 1928), sy goedkeuring geheg aan die volgende reëls wat deur die Suid-Afrikaanse Aptekerskommissie ingevolge subartikel (2) van genoemde artikel van die Wet opgestel is:—

A. Met ingang van 1 Januarie 1955 is die reëls gepubliseer by Goewermentskennisgewing No. 2643 van 1947, soos tot dusver gewysig, slegs van toepassing op daardie studente wat hulle aanmeld vir die eksamens wat deur die Kommissie afgeneem word, en wat voor genoemde datum deur die Kommissie geregistreer is as leerlinge kragtens 'n kontrak van drie jaar, soos voorgeskryf ingevolge artikel *sewe-en-twintig* van die Wet, en/of reeds met die voorgeskrewe studiekursus begin het aan 'n opleidingsinrigting wat toe deur die Kommissie erken is; met dien verstande dat hierdie bepaling met ingang van 31 Desember 1959 nie langer van krag sal wees nie en dat genoemde Goewermentskennisgewing No. 2643 van 1947 op daardie datum as in sy geheel herroep beskou sal word.

B. Die volgende nuwe reëls is van toepassing op alle ander studente wat hulle aanmeld vir eksamens wat deur die Kommissie afgeneem word, en op daardie studente in reël 1 hiervan genoem, wat geregtig is om hulle aan te meld vir eksamen kragtens die reëls gepubliseer by Goewermentskennisgewing No. 2643 van 1947, soos gewysig, en wat nog nie op 31 Desember 1959 in sodanige eksamen geslaag het nie:—

1. Die studietydperk tussen die datum van die registrasie deur die Kommissie van 'n farmasiestudent en die datum van sy toelating tot die eindeksamen vir die Kommissie se Diploma in Farmasie is 'n totale tydperk van gesertifiseerde studie van minstens drie akademiese jare, met uitsluiting van die leertydperk.

2. Geen student mag as 'n farmasiestudent aan 'n erkende opleidingsinrigting ingeskryf word nie alvorens hy 'n sertifikaat van registrasie as 'n farmasiestudent, uitgereik deur die Kommissie, besit.

3. Geen student mag tot die studiekursus vir die Kwalifiserende Eksamen toegelaat word nie, tensy hy in al die vakke van die Intermediêre Eksamen geslaag het, of tensy hy toegelaat is om in slegs een vak 'n aanvullingseksamen te doen.

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

A. Die Intermediêre Eksamen.
B. Die Kwalifiserende Eksamen, Deel I.
C. Die Kwalifiserende Eksamen, Deel II.

GOVERNMENT NOTICE.

The following Government Notice is published for general information:—

J. NESER,
Secretary for South West Africa.

Administrator's Office,
Windhoek.

DEPARTMENT OF HEALTH.

* No. 437—Union.] [11 March 1955.

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

The Minister of Health, in exercise of the powers conferred on him by sub-section (4) of section *ninety-four* of the Medical, Dental and Pharmacy Act, 1928 (Act No. 13 of 1928), has approved of the following rules made by the South African Pharmacy Board under sub-section (2) of the said section of the Act:—

A. As from the 1st January, 1955, the rules published under Government Notice No. 2643 of 1947, as hitherto amended, shall be applicable only to those students presenting themselves for the examinations held by the Board who, before the said date had been registered by the Board as apprentices under a three-year contract prescribed under section *twenty-seven* of the Act and/or had entered upon the prescribed course of study at a training institution then recognised by the Board; provided that this provision shall cease to operate as from the 31st December, 1959, on which date the said Government Notice No. 2643 of 1947 shall be regarded as cancelled *in toto*.

B. The following new rules shall be applicable to all other students presenting themselves for examinations conducted by the Board, and to those students referred to in rule 1 hereof who, having been eligible to present themselves for examination in terms of the rules published under Government Notice No. 2643 of 1947, as amended, fail to pass such examination by the 31st December, 1959:—

1. The period of study between the date of registration by the Board as a pharmacy student and the date of admission to the final examination for the Board's Diploma in Pharmacy shall be a total period of certified study of not less than three academic years excluding the period of apprenticeship.

2. No student shall be enrolled as a pharmacy student at a recognised training institution until he is in possession of a certificate of registration as a pharmacy student given by the Board.

3. No student shall be admitted to the course of study for the Qualifying Examination unless he has passed the examinations in all of the subjects of the Intermediate Examination or has been allowed a supplementary examintaion in one subject only.

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

A. The Intermediate Examination.
B. The Qualifying Examination, Part I.
C. The Qualifying Examination, Part II.

Hierdie eksamens word eenmaal per jaar in die laaste kwartaal van die jaar afgeneem op datums wat deur die Kommissie vasgestel word en op sentrums wat die Kommissie vasstel, wanneer 'n voldoende aantal kandidate na die Raad se mening hulle vir die eksamen sal aanmeld en waar daar geskikte laboratoriumfasiliteite bestaan; met dien verstande dat kandidate wat slegs in een vak in die Intermediêre Eksamen of in Deel I van die Kwalifiserende Eksamen gedruip het, hulle vir hereksamen in daardie vak kan aanmeld by 'n aanvullingseksamen wat elke jaar in April gehou word op die sentrum of sentrums wat die Kommissie vasstel, of by enige daaropvolgende eksamen wat deur die Kommissie afgeneem word.

5 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 doen:—

INTERMEDIÊRE EKSAMEN.

Plantkunde—Teorie—Vraestel van 3 uur.
Plantkunde—Prakties—Vraestel van 3 uur.
Skeikunde I—Teorie—Vraestel van 3 uur.
Skeikunde I—Prakties—Vraestel van 4 uur.
Fisika—Teorie—Vraestel van 3 uur.
Fisika—Prakties—Vraestel van 3 uur.
Dierkunde—Teorie—Vraestel van 3 uur.
Dierkunde—Prakties—Vraestel van 3 uur.

KWALIFISERENDE EKSAMEN, DEEL I.

Fisiologie—Teorie—Vraestel van 3 uur.
Fisiologie—Prakties—Skriftelik—Vraestel van 2 uur.
Geregtelike Farmasie—Vraestel van 3 uur.
Farmakognosie—Teorie—Vraestel van 3 uur.
Farmakognosie—Prakties—Vraestel van 3 uur.

KWALIFISERENDE EKSAMEN, DEEL II.

Skeikunde—Teorie—Twee vraestelle van 3 uur.
Skeikunde—Prakties—Twee vraestelle van 6 uur.
Farmasie—Twee vraestelle van 6 uur.
Praktiese Farmasie en Reseptuur—Twee vraestelle van 6 uur.

6. Die studiekurses vir die Intermediêre Eksamen, Deel I van die Kwalifiserende Eksamen en Deel II van die Kwalifiserende Eksamen, is onderskeidelik een akademiese jaar van voltydse studie aan 'n erkende opleidingsinrigting.

7. Die eksamens in elke vak word deur minstens twee eksaminatore afgeneem, en een van hulle kan aan die onderrig van kandidate in die vak deelgeneem het.

8. Geen kandidaat word geag in 'n eksamen in enige vak te geslaag het nie tensy hy minstens 40 persent in sowel die praktiese as in die skriftelike vraestelle en 'n gemiddelde van minstens 50 persent vir albei vraestelle in die vak behaal het. In farmasie en reseptuur moet hy minstens 60 persent in die praktiese en 50 persent in die skriftelike vraestel behaal het.

INTERMEDIÊRE EKSAMEN.

9. Geen kandidaat word tot die Intermediêre Eksamen toegelaat nie tensy hy geregistreer is as 'n leerling kragtens 'n kontrak deur die Kommissie geregistreer kragtens die reëls wat betrekking het op leerlinge gepubliseer ingevolge artikel *vier-en-negentig* (2) (i) van die Wet op Geneeshere, Tandartse en Aptekers, No. 13 van 1928.

10. 'n Kandidaat wat hom vir die Intermediêre Eksamen wil laat inskryf, moet voor of op die eerste dag van Oktober skriftelik by die Registrateur van die Kommissie by die Kommissie se kantoor in Pretoria aansoek doen om toelating tot die eksamens en hy moet minstens 4 weke voor die datum waarop die eksamens 'n aanvang neem, as leerling geregistreer wees.

(OPMERKING.—Leerlingkontrakte kan vooruit geregistreer word, met die inwerkingtredingsdatum van die kontrak 'n week later as dié van die eksamens).

Such 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 oft he 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 only either in the Intermediate Examination or Part I of the Qualifying Examination may present themselves for re-examination in that subject at a supplementary examination to be held in April of each year at such centre or centres as the Board may determine, or at any subsequent examination conducted by the Board.

5. 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:—

INTERMEDIATE EXAMINATION.

Botany—Theory—3 hour paper.
Botany—Practical—3 hour paper.
Chemistry I—Theory—3 hour paper.
Chemistry I—Practical—4 hour paper.
Physics—Theory—3 hour paper.
Physics—Practical—3 hour paper.
Zoology—Theory—3 hour paper.
Zoology—Practical—3 hour paper.

QUALIFYING EXAMINATION, PART I.

Physiology—Theory—3 hour paper.
Physiology—Written practical—2 hour paper.
Forensic Pharmacy—3 hour paper.
Pharmacognosy—Theory—3 hour paper.
Pharmacognosy—Practical—3 hour paper.

QUALIFYING EXAMINATION, PART II.

Chemistry—Theory—Two 3 hour papers.
Chemistry—Practical—Two 6 hour papers.
Pharmacy—Two 6 hour papers.
Practical Pharmacy and Dispensing—Two 6 hour papers.

6. The course of sudy for the Intermiated Examination, Part I, of the Qualifying Examination and Part II of the Qualifying Examination respectively shall be one academic year of full-time study at a recognised training institution.

7. The examinations shall be conducted in each subject by at least two examiners, one of whom may have taken part in the teaching of candidates in the subject.

8. No candidate shall be considered as having passed an examination in any subject, unless he has obtained at least 40 per cent in both the practical and the written papers and an aggregate of at least 50 per cent for both papers in the subject. In the case of pharmacy and dispensing he must have obtained at least 60 per cent in the practical paper and 50 per cent in the written paper.

INTERMEDIATE EXAMINATION.

9. No candidate shall be admitted to the Intermediate Examination unless he has been registered as an apprentice under a contract registered by the Board in terms of the rules relating to apprentices published in terms of section *ninety-four* (2) (*i*) of the Medical, Dental and Pharmacy Act, No. 13 of 1928.

10. A candidate desiring to enter for the Intermediate 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 October for admission to the examinations and must be registered as an apprentice at least 4 weeks before the date on which the examinatoin is to begin.

(NOTE.—Apprenticship contracts may be registered in advance with the commencing date of the contract a date later than that of the examinations.)

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 dat die kandidaat minstens 80 persent van die klasse van 'n voltydse studiekursus wat oor een akademiese jaar strek, geloop het;

(*b*) 'n verklaring wat die nommer verstrek van sy registrasiesertifikaat as 'n farmasiestudent of die bewys dat hy van sodanige registrasie vrygestel is;

(*c*) die eksamengeld, nl. £6. 6s.

Indien 'n kandidaat sy leertyd buite die Unie uitgedien het, soos in paragraaf (*b*) van subartikel (1) van artikel *sewe-en-twintig* van die Wet op Geneeshere, Tandartse en Aptekers beskryf, moet hy die bewys daarvan tot tevredenheid van die Registrateur voorlê.

11. Die Kommissie kan vrystelling verleen van verdere eksamen in alle vakke of 'n bepaalde vak van die Intermediêre Eksamen aan die besitter van 'n graad, diploma of sertifikaat ten opsigte van sodanige vakke of bepaalde vak wat na '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 Intermediêre Eksamen vereis word.

Die persoon aan wie dié algehele of gedeeltelike vrystelling verleen word, moet die volle eksamengelde betaal wat van kandidate vir die Intermediêre Eksamen vereis word.

12. 'n Kandidaat vir die Intermediêre Eksamen 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 is die hereksamengeld £3. 3s.

KWALIFISERENDE EKSAMEN VIR DIE SUID-AFRIKAANSE APTEKERSKOMMISSIE SE DIPLOMA N FARMASIE.

Deel I.

13. 'n Kandidaat wat hom vir Deel I van die Kwalifiserende Eksamen vir die Diploma in Farmasie wil laat inskryf, moet voor of op die eerste dag van Oktober skriftelik by die Registrateur van die Kommissie by die Kommissie se kantoor in Pretoria aansoek doen om toelating tot die eksamen. Die volgende gegewens moet in die aansoek verstrek word:—

(*a*) Kandidaat se volle naam en adres.

(*b*) Die datum waarop hy in die Voorlopige Wetenskaplike of Intermediêre Eksamen geslaag het. (Indien daar aan die kandidaat vrystelling van een van hierdie eksamens verleen is, moet hy die bewys daarvan voorlê).

(*c*) Die naam van die apteker by wie hy in die Unie in die leer was. Indien hy sy leertyd buite die Unie uitgedien het ooreenkomstig die bepalings van subartikel (1) (*b*) van artikel *sewe-en-twintig* van Wet No. 13 van 1928, moet hy bevredigende dokumentêre bewys daarvan voorlê, tesame met sy geboortesertifikaat of ander dokumentêre bewys van sy geboortedatum en sy juiste name.

(*d*) Die sentrum waar die kandidaat eksamen wil doen.

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 of a full-time course of study covering one academic year;

(*b*) a statement giving the number of his certificate of registration as a pharmacy student or proof of having been exempted from such registration;

(*c*) the examination fee of £6. 6s

If a candidate served his apprenticeship outside the Union as described in paragraph (*b*) of sub-section (1) of section *twenty-seven* of the Medical, Dental and Pharmacy Act, he shall produce proof thereof to the satisfaction of the Registrar

11. The Board may grant exemption from further examination in all subjects or any particular subject of the Intermediate 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 Intermediate 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 Intermediate Examination

12. A candidate for the Intermediate 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 £3. 3s

QUALIFYING EXAMINATION FOR THE THE SOUTH AFRICAN PHARMACY BOARD DIPLOMA IN PHARMACY.

Part I.

13. A candidate desiring to enter for Part I of the Qualifying 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 October for admission to the examination. The application must state—

(*a*) full name and address of candidate;

(*b*) date on which he passed Preliminary Scientific or Intermediate Examination. (If the candidate has been granted exemption from writing either of those examinations, he must produce proof thereof.)

(*c*) The name of the chemist and druggist to whom he was apprenticed in the Union. If he served his apprenticeship outside the Union in accordance with the provisions of sub-section (1) (*b*) of section *twenty-seven* of Act No. 13 of 1928, he must produce satisfactory documentary proof thereof, and his birth certificate or other documentary proof of his date of birth and his correct names.

(*d*) The centre at which the candidate desires to write the examination.

Die aansoek moet vergesel gaan van—

(i) 'n sertifikaat dat die kandidaat op bevredigende wyse minstens 80 persent van die klasse van die voorgeskrewe studiekursus aan 'n erkende opleidingsinrigting gedurende een akademiese jaar geloop het;
(ii) die eksamengeld, nl. £6. 6s.

14. Geen kandidaat word tot die Kwalifiserende Eksamen toegelaat nie alvorens hy tot tevredenheid van die Kommissie 'n leertyd van minstens twee jaar kragtens 'n kontrak wat deur die Kommissie geregistreer is, uitgedien het.

15. Geen kandidaat word tot Deel I van die Kwalifiserende Eksamen toegelaat nie alvorens hy in al die vakke van die Intermediêre Eksamen geslaag het.

KWALIFISERENDE EKSAMEN VIR DIE SUID-AFRIKAANSE APTEKERSKOMMISSIE SE DIPLOMA IN FARMASIE.

DEEL II.

16. 'n Kandidaat vir toelating tot Deel II van die Kwalifiserende Eksamen vir die Diploma in Farmasie moet voor of op die eerste dag van Oktober skriftelik by die Registrateur van die Kommissie by die Kommissie se kantoor in Pretoria aansoek doen om toelating tot die eksamen. In die aansoek moet die volgende gegewens verstrek word: —

(1) Die kandidaat se volle naam en adres.
(2) Die datum waarop hy in Deel I van die Diploma-eksamen geslaag het.
(3) Die sentrum waar hy eksamen wil doen

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 gedurende een akademiese jaar op bevredigende wyse geloop het;
(*b*) die eksamengeld, nl. £10.

17. Geen kandidaat word tot Deel II van die Kwalifiserende Eksamen toegelaat nie tensy hy in al die vakke van Deel I van die Kwalifiserende Eksamen geslaag het.

18. Indien 'n kandidaat in Deel II van die Kwalifiserende Eksamen slaag voordat hy 21 jaar oud is, word sy diploma teruggehou totdat hy die ouderdom van 21 jaar bereik.

19. 'n Kandidaat vir Deel I of Deel II van die Kwalifiserende Eksamen 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 is die hereksamengeld £6. 6s.

20. Die Kommissie kan vrystelling van verdere eksamen in enige vak van Deel I of Deel II van die Kwalifiserende Eksamen 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 Kwalifiserende Eksamen vereis word.

ALGEMEEN.

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

The application must be accompanied by—

(i) a certificate of having satisfactorily attended at least 80 per cent of the classes of the prescribed course of study at a recognised training institution covering one academic year;
(ii) the examination fee of £6. 6s.

14. No candidate shall be admitted to the Qualifying Examinaton until he has completed to the satisfaction of the Board an apprenticeship of not less than two years under a contract registered by the Board.

15. No candidate shall be admitted to Part I of the Qualifying Examination until he has passed the examinations in all of the subjects of the Intermediate Examination.

QUALIFYING EXAMINATIONS FOR THE SOUTH AFRICAN PHARMACY BOARD'S DIPLOMA IN PHARMACY.

PART II.

16. A candidate for admission to Part II of the Qualifying 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 October for admission to the examination.

The application must state—

(1) the candidate's full name and address;
(2) the date on which he passed Part I of the Diploma 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;
(*b*) the examination fee of £10.

17. No candidate shall be admitted to Part II of the Qualifying Examination until he has passed in all of the examination subjects of Part I of the Qualifying Examination.

18. If a candidate is successful in Part II of the Qualifying Examination and has not attained the age of 21 years his diploma shall be withheld until he has attained the age of 21 years.

19. A candidate for Part I or Part II of the Qualifying Examniation 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 re-examination shall be £6. 6s.

20. The Board may grant exemption from further examination in any one subject of Part I or Part II of the Qualifying 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 Qualifying Examination.

GENERAL.

21. All candidates for examination shall receive from the Registrar a written notice stating whether or not their applications are satisfactory and, if satisfactory, a time-table showing the times and places at whicch 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.

Indien 'n kandidaat se versuim om hom vir die eksamen aan te meld te wyte is aan siekte en hy 'n doktersertifikaat aan die Kommissie voorlê nie later as 7 dae na die dag waarop hy weens vermelde siekte nie in staat was om hom aan te meld nie, sal sy afwesigheid verskoon word en kan hy toegelaat word om die volgende eksamen te doen op die voorwaardes wat deur die Kommissie vasgestel word, sonder betaling van verdere eksamengeld.

22. 'n Applikant kan verwitting 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 togelaat sal word om hom vir die eksamen aan te meld nie.

23. Die volgende word erken as inrigtings waar studie- en opleidingskursusse vir die Intermediêre en Kwalifiserende Eksamen gevolg kan word:—

Kaapse Tegniese Kollege, Kaapstad.
Natalse Tegniese Kollege, Durban.
Witwatersrandse Tegniese Kollege, Johannesburg.
Tegniese Kollege, Port Elizabeth.
Universiteit van Potchefstroom, Potchefstroom.

Die Kommissie behou hom die reg voor om, behoudens die goedkeuring van die Minister van Gesondheid, sy erkenning van enige inrigting te onttrek 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.

24. Daar kan van 'n kandidaat wat hom aangemeld het vir die Intermediêre of vir die Kwalifiserende Eksamen, 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.

AANHANGSEL „A".

INTERMEDIÊRE EKSAMEN.

SKEIKUNDE.

A. *Teoretiese Gedeelte.*

(1) *Fisiese Skeikunde.*

(*a*) Fisiese en chemiese veranderings; elemente; verbindings; oplossings en mengsels; die gravimetriese wette van chemiese verbinding. Die atoomteorie. 'n Eenvoudige behandeling van die elektronteorie van atoomstruktuur met spesiale verwysing na die toepassings daarvan op die teorie van valensie, ionisasie en vertolking van die periodieke klassifikasie. Ekwiwalente gewig van elemente en verbindings, atoom- en formule- (empiriese) gewigte; metodes vir die bepaling daarvan.

(*b*) *Molekulêre teorie.*—Elementêre behandeling van die kinetiese teorie; algemene gasvergelyking; Dalton se Wet van gedeeltelike druk; Avogadro se Hipotese; relatiewe digthede en molekulêre gewigte; Gay Lussac se Wet van verbindingsvolumes. Formules en vergelykings.

(*c*) *Oplossings.*—Oplosbaarheid van gasse en vaste stowwe in water; Henry se Wet; metodes om oplosbaarheid en konsentrasie uit te druk; bepaling van oplosbaarheid. Saambindende eienskappe soos die verlaging van die vriespunt, verhoging van die kookpunt, osmose en osmotiese druk. Elektrolise en die toepassing daarvan op die bereiding van elemente; Faraday se Wet en die toepassing daarvan op die bepaling van ekwiwalente gewig. Arrhenius se teorie van elektrolitiese dissosiasie en die toepassing daarvan op neutralisasie en presipitasie. Bronsted se begrip van sure en basisse.

(*d*) *Termochemie.*—Endotermiese en eksotermiese reaksies; warmtes van reaksie en van oplossing; Hess se Wet; termochemiese vergelykings.

(*e*) *Faktore wat chemiese reaksies beïnvloed.*—Temperatuur, druk, konsentrasie (Wet van Massawerking), katalise, verandering van toestand. Toepassing van bostaande op omkeerbare reaksies.

(2) *Anorganiese Skeikunde.*

(*a*) *Tipes chemiese reaksies.*—Addisie-substitusie, eenvoudige en dubbele omsetting, neutralisasie, oksidasie en reduksie.

When failure to attend is due to illness and a medical certificates is furnished to the Board not later than 7 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.

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

23. The following shall be recognised as institutions where courses of training and study for the Intermediate and Qualifying Examinations may be taken:—

Cape Technical College, Cape Town.
Natal Technical College, Durban.
Witwatersrand Technical College, Johannesburg.
The Technical College, Port Elizabeth.
The University of Potchefstroom, Potchefstroom.

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.

24. A candidate who, having presented himself for either the Intermediate or Qualifying 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.

APPENDIX "A".

INTERMEDIATE EXAMINATION.

CHEMISTRY.

A. *Theoretical.*

(1) *Physical Chemistry.*

(*a*) Physical and chemical changes; elements; compounds; solutions and mixtures; the gravimetric laws of chemical combination. The atomic theory. A simple treatment of the electronic theory of atomic structure with special reference to its applications to the theory of valency, ionisation, and interpretation of the periodic classification. Equivalent weight of elements and compounds, atomic and formula (empiric) weights; methods for their determination.

(*b*) Molecular theory. Elementary treatment of the kinetic theory; general gas equation; Dalton's Law of partial pressure; Avogadro's Hypothesis. Relative densities and molecular weights; Gay Lussac's Law of combining volumes. Formulae and equations.

(*c*) Solutions. Solubility of gases and solids in water; Henry's Law; methods of expressing solubility and concentration; determination of solubility. Colligative properties such as the lowering of the freezing point, raising of the boiling point, osmosis and osmotic pressure. Electrolysis and its application to the preparation of elements; Faraday's Laws and its application to the determination of equivalent weight. Arrhenius' theory of electrolytic dissociation and its application to neutralisation and precipitation. Bronsted concept of acids and bases.

(*d*) Thermochemistry; endothermic and exothermic reactions; heats of reaction and of solution; Hess's Law; thermachemical equations.

(*e*) Factors influencing chemical reactions; temperature, pressure, concentration (Law of Mass Action), Catalysis, change of state. Application of above to reversible reactions.

(2) *Inorganic Chemistry.*

(*a*) Types of chemical reactions—addition, substitution, simple and double decomposition, neutralisation, oxidation and reduction.

(*b*) *Klassifikasie van die elemente.*—(i) Metale en niemetale, (ii) periodieke klassifikasie van die elemente.

(*c*) Algemene reaksies van tipiese elemente van groep I-VII, soos geïllustreer deur waterstof, natrium, magnesium, kalsium, boor, aluminium, koolstof, silikon, lood, stikstof, fosfor, arseen, antimoon, bismut, suurstof, swael en halogene. Daar moet spesiaal verwys word na hul waterstofverbindings, oksiede en chloriede.

(*d*) Algemene metodes van bereiding en reaksies van sure, basisse en soute.

Van die kandidaat word verwag dat hy eenvoudige vraagstukke kan oplos met betrekking tot die gewig en volume in verskillende toestande van temperatuur en druk van elemente en verbindings in skeikundige reaksies, met inbegrip van empiriese en molekulêre formules en ekwiwalente, atoom- en molekulêre gewigte. Eenvoudige berekenings kan gestel word oor volumetriese ontleding van die praktiese leerplan.

OPMERKING.—Bostaande leerplan moet op elementêre wyse en sover moontlik eksperimenteel behandel word.

(3) *Organiese Skeikunde.*

Die algemene beginsels van organiese skeikunde:—

(*a*) Homologie; isomerie met inbegrip van ketting- en stelling- en metamerie.

(*b*) Bereidingsmetodes en tipiese reaksies van die volgende klasse verbindings (eksperimentbesonderhede word nie verlang nie):—

(i) *Alifatiese verbindings.* — Koolwaterstowwe (paraffiene, olefiene en asetilene). Alkielhalogeniede; eenwaardige alkohole; primêre amiene; monokarboksielsure; amiede; suurchloriede; sianiede; aldehiede en ketone.

(ii) *Aromatiese verbindings.*—Benseen en die volgende derivate: Tolueen, monochloorbenseen; nitrobenseen; benseensulfoonsuur; anilien; fenol; bensaldehied; bensoësuur

B. *Praktiese Gedeelte.*

'n Kort elementêre kursus wat die skeikundige en eksperimentele beginsels in die teorieleerplan illustreer.

Die volgende word van die kandidaat verwag:—

(*a*) Om die volgende katione en anione deur skeikundige toetse te identifiseer: Lood, silwer, kwik (merkuro-), kwik (merkuri-), koper, bismut, arseen, antimoon, yster, aluminium, sink, kalsium, barium, natrium, kalium, ammonium, karbonaat, sulfaat, chloried, bromied, jodied, nitraat.

(*b*) Om 'n skeikundige stof sistematies te ontleed wat nie meer as een katioon en een anioon uit bostaande lys bevat nie, waarvan die verbinding 'n oplossing vorm nadat dit met waterverdunde soutsuur of verdunde salpetersuur behandel is.

(*c*) Om 'n kennis aan die dag te lê van die beginsels van volumetriese ontleding wat beperk is tot asidimetriese en alkalimetriese metodes.

(*d*) Om die elemente stikstof, swael en chloor in 'n organiese verbinding, en die smeltpunt van 'n suiwer organiese verbinding te bepaal.

(*e*) Om die volgende organiese verbindings te identifiseer: Metielalkohol, etielalkohol, formiaat, asetaat, bensoaat.

FISIKA.

(*a*) Eenhede: lengte, massa, tyd. Krag, gewig, moment van 'n krag. Die weegskaal; skeikundige en aptekerskaal. Arbeid en energie. Algemene eienskappe van materie; onderskeiding tussen vaste stowwe, vloeistowwe en gasse; digtheid en soortlike gewig; elastisiteit en Hooke se Wet. Hidrostatiese eienskappe van vloeistowwe; druk in 'n vloeistof; transmissie van druk in 'n vloeistof; Archimedes se Beginsel; opwaartse druk; drywende liggame; hidrometers; gasdruk; Boyle se Wet; lugdruk; barometers; hewel.

(*b*) Warmte en temperatuur. Termometrie en temperatuurskale; maksimum, minimum en kliniese termometers. Uitsetting en uitsettingskoëffisiënte van vaste stowwe en vloeistowwe; uitsetting van gasse en Joule Thompson se effek. Verandering van digtheid en verandering van gas-

(*b*) Classification of the elements: (i) metals and non-metals, (ii) periodic classification of the elements.

(*c*) General reactions of typical elements of group I-VII as illustrated by hydrogen, sodium, magnesium, calcium, boron, aluminium, carbon, silicon, lead, nitrogen, phosphorus, arsenic, antimony, bismuth, oxygen, sulphur and halogens. Special reference to be given to their hydrogen compounds, oxides and chlorides.

(*d*) General methods of preparation and reactions of acids, bases and salts.

The candidate will be expected to solve simple problems relating to the weight and volume under different conditions of temperature and pressure of elements and compounds concerned in chemical reactions, including empirical and molecular formulae and equivalents, atomic and molecular weights. Simple calculations may be set on volumetric analysis of practical syllabus.

NOTE.—The above syllabus is to be treated in an elementary manner and as far as possible experimentally.

(3) *Organic Chemistry.*

The general principles of organic chemistry:—

(*a*) Homology; isomerism, including chain, position and metamerism.

(*b*) The methods of preparation and typical reactions of the following classes of compounds (experimental details will not be required):—

(i) *Aliphatic Compounds.*—Hydrocarbons (paraffins, olefines and acetylenes). Alkyl halides; monohydric alcohols; primary amines; monocarboxylic acids; amides; acid chlorides; cyanides; aldehydes and ketones.

(ii) *Aromatic Compounds.*—Benzene and the following derivatives: Toluene; mono-chlorobenzene; nitrobenezene; benzene sulphonic acid; aniline; phenol; benzaldehyde; benzoic acid.

B. *Practical.*

A brief elementary course illustrating the chemical and experimental principles in the theoretical syllabus.

The candidate will be required—

(*a*) to identify by chemical tests the following cations and anions: Lead, silver, mercury(ous), mercury(ic), copper, bismuth, arsenic, antimony, iron, aluminium, zinc, calcium, barium, sodium, potassium, ammonium, carbonate, sulphate, chloride, bromide, iodide, nitrate;

(*b*) to analyse systematically a chemical containing not more than one cation and one anion from the above list, the compound forming a solution on treatment with water dilute hydrochloric acid or dilute nitric acid;

(*c*) to show a knowledge of the principles of volumetric analysis restricted to acidimetric and alkalimetric procedures;

(*d*) to determine the elements nitrogen, sulphur and chlorine in an organic compound and the melting point of a pure organic compound;

(*e*) to identify the following organic compounds: Methyl alcohol, ethyl alcohol, formate, acetate, benzoate.

PHYSICS.

(*a*) Units: Length; mass; time. Force; weight; moment of a force. The balance; chemical and dispensing balance. Work and energy. General properties of matter; distinction between solids, liquids and gases; density and specific gravity; elasticity and Hooke's Law. Hydrostatic properties of fluids; pressure in a liquid; transmission of liquid pressure; Archimedes principle; bouyancy; floating bodies; hydrometers; gaseous pressure; Boyle's Law; atmospheric pressure; barometers; siphon.

(*b*) Heat and temperature. Thermometry and scales of temperature; maximum, minimum and clinical thermometers. Expansion and co-efficients of expansion of solids and liquids; expansion of gases and Joule Thompson effect. Change of density and change of gaseous pressure

druk met die temperatuur; toestandsverandering; smeltpunt; kookpunt; distillasie, kondensasie, sublimasie. Versadigde en onversadigde dampe; dampdruk. Higrometrie. Kalorimetrie; kalorie; waterekwivalent; termiese kapasiteit; soortlike warmte; latente warmte; geleiding; konveksie en radiasie. Aard van warmte; omsetting van meganiese energie in warmte; meganiese warmte-ekwivalent; Joule se Wet.

(*c*) Reglynige voortplanting van lig: gaatjiekamera. Wette van ligweerkaatsing en ligbreking; brekingsindeks; beelde; eienskappe van vlakspieël; sferiese spieëls, prismas en dun sferiese lense. Twee dun lense in kontak. Die oog; fotografiese kamera; vergrootglas; saamgestelde mikroskoop. Beginsels van die korreksie van gesigsfoute deur middel van lense. Fotometrie; intensiteit van beligting; ligsterkte; wet van die omgekeerde kwadraat; fotometers; aard van ligdispersie van 'n suiwer spektrum en elementêre eienskappe van gepolariseerde lig; elementêre begrippe van ultra-violetradiasie.

(*d*) Eenvoudige eienskappe van magnete. Magneetvelde. Defleksiemagnetometer. Eenvoudige verskynsels van statiese elektrisiteit. Kondensators; potensiaal, vermoë en diëlektriese konstante. Diamagnetisme en paramagnetisme. Primêre en sekondêre elemente. Potensiaalverskille; elektromotoriese krag; Ohm se Wet, potensiometer en Wheatstone se Brug. Reluktansie; soortlike reluktansie van vaste stowwe en oplossings. Reluktansie, serie- en parallel-; neweskakelings. Magneetvelde toe te skryf aan reguit- en sirkelstrome; solenoïed. Tangensgalvanometer; galvanometers met bewegende klos; ammeter; voltmeter. Verwarmingsuitwerking van elektrisiteit. Elektriese eenhede, ampère-coulomb; volt; ohm; watt; kilowattuur. Elektriese ontladings deur gasse; Röntgenstrale.

PRAKTIESE FISIKA.

(*a*) Stel en gebruik van die weegskaal. Bepaling van die sensitiwiteit van 'n weegskaal en kalibrering van gewigte. Gebruik van die soortlike gewigfles vir vloeistowwe en klein vaste stowwe. Relatiewe digtheid van vloeistowwe deur balanserende kolomme; gebruik van Wesfaalse weegskaal; Nicholson-hidrometer, Sike-hidrometer en gewone hidrometers. Gebruik van apparaat vir Boyle se Wet; aflees van barometers.

(*b*) Kalibrering van termometer. Bepaling van smeltpunte en kookpunte, van uitsettingskoëffisiënte van metaalbuise en -stawe, van uitsettingskoëffisiënte van vloeistowwe deur middel van die pieknometer, van die koëffisiënt van lugdrukvermeerdering by konstante volume, van die soortlike warmtes van vaste stowwe en van vloeistowwe, van die latente smeltwarmte van ys, van die latente warmte van stoom, van die doupunt en relatiewe humiditeit.

(*c*) Verifikasie van die weerkaatsings- en ligbrekingswette; ligbrekingsindeks deur die werklike en skynbare diepte en grenshoek deur middel van optiese speldmetodes; krommingstraal en brandpuntafstand van sferiese konkawe en konvekse spieëls; brandpuntafstand en sterkte van konvergerende en divergerende sferiese dun lense.

(*d*) Vergelyking van die elektromotoriese kragte van elemente; die potensiometer. Meet van weerstand deur middel van die volgende metodes:—

(i) Voltmeter en ammeter;
(ii) substitusie;
(iii) potensiaalval;
(iv) Wheatstone se Brug.

Bepaling van soortlike weerstand.
Gebruik van die elektriese kalorimeter.

PLANTKUNDE.

Biologie, die omvang en betekenis 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, ekologie, genetika, evolusie.

Die planteryk en die hoofonderafdelings daarvan met hulle kenmerke: bakterieë, alge, swamme, korsmosse, briofiete, pteridofiete, gimnosperme en angeosperme as voorbelde van die verskeidenheid van vorme van plantlewe en van evolusionêre geskiedenis en neigings.

with temperature; change of state; melting point, boiling point; distillation, condensation, sublimation. Saturated and unsaturated vapours; vapour pressure. Hygrometry. Calorimetry; calorie; water equivalent; thermal capacity; specific heat; latent heat; conduction convection; radiation. Nature of heat; conversion of mechanical energy into heat; mechanical equivalent of heat; Joule's Law.

(*c*) Rectilinear propagation: Pinhole camera. Laws of reflection and of refraction of light. Refractive index; images; properties of plane mirror; spherical mirrors, prisms and thin spherical lenses. Two thin lenses in contact. The eye; photographic camera; magnifying glass; compound microscope. The principles of correction of errors of vision by means of lenses. Photometry; intensity of illumination; illuminating power; inverse square law; photometers; nature of light dispersion of pure spectrum and elementary properties of polarised light; the elementary concepts of ultra violet radiation.

(*d*) Simple properties of magnets. Magnetic fields. Deflection magnetometer. Simple phenomena of static electricity. Condensers; potential, capacity and dielectric constant. Diamagnetism and paramagnetism. Primary and secondary cells. Potential differences; electromotive force; Ohm's Law; potentiometer and Wheatstone Bridge. Resistance, specific resistance of solids and solutions. Resistance in series and in parallel; shunts. Magnetic fields due to straight and circular currents; the solenoid. Tangent galvanometers; moving coil galvanometers; ammeter; voltmeter. Heating effects of electricity. Electrical units; ampere coulomb; volt; ohm; watt; kilowatt hour. Electrical discharges through gases; X-rays.

PRACTICAL PHYSICS.

(*a*) Adjustment and use of the balance. Determination of sensitivity of a balance and calibration of weights. Use of specific gravity bottle for liquids and small solids. Relative density of liquids by balancing columns; use of Westphal balance; Nicholson's, Sikes hydrometer and common hydrometers. Use of Boyle's Law apparatus; reading of barometers.

(*b*) Calibration of thermometer. Determinations of melting points and of boiling points; of co-efficients of expansion of metal tubes and rods; of co-efficients of expansion of liquids by means of pyknometer; or co-efficient of increase of pressure of air at constant volume; of specific heats of solids and of liquids; of latent heat of fusion of ice; of latent heat of steam; of dew point and relative humidity.

(*c*) Verification of laws of reflection and of refraction; refractive index by real and apparent depth and critical angle by pinoptic methods; radius of curvature and focal length of spherical concave and convex mirrors; focal length and power of converging and diverging spherical thin lenses.

(*d*) Comparison of electromotive forces of cells; the potentiometer. Measure of resistance by—

(i) voltmeter and ammeter;
(ii) the method of substitution;
(iii) the fall of potential method;
(iv) the Wheatstone bridge method.

Determination of specific resistance.
Use of the electrical calorimeter.

BOTANY.

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, ecology, genetics, evolution.

The plant kingdom and its main subdivisions and their features: Bacteria, algae, fungi, lichens, byrophytes, pteridophytes, gymnosperms and angiosperms as examples of the diversity of forms of plant life and as examples of evolutionary history and tendencies.

Die plant as 'n lewende organisme; vorm, funksie van die wortels, stam, blare, blomme, vrug van 'n tipiese groen kruidagtige veldplant, en van 'n houtagtige, meerjarige plant wat sekondêre verdikking vertoon. Die invloed van die habitat (grond en lug) op plantorgane. Aard van die veranderings van organe vir spesiale funksies. Die sel en selverdelings. Die weefsel van tipiese angiosperme—die bou, rangskikking en funksies daarvan kortliks. 'n Tipiese blom—die bou en die funksies van die verskillende dele daarvan, die vrug en saad—bou, verspreiding en ontkieming van saad. Beginsels van plantfisiologie—waterverhoudings, fotosintese, voeding, groei, asemhaling, 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*, Chlamydomonas, Spirogyra, Fucus, Claviceps, Penicillium, Agaricus, Funaria, Pteridium, Pinus, 'n tipiese eensaadlobbige en 'n tipiese tweesaadlobbige plant.

Beginsels van die taksonomie soos geïllustreer deur 'n beknopte studie van die verteenwoordigers van die volgende families: Liliaceae, Ranunculaceae, Leguminoseae, Salonaceae, Compositae.

Elementêre ekologie; habitat (grond en lug); plantegemeenskap, planteopvolging.

PRAKTIESE PLANTKUNDE.

Die ondersoek, disseksie, makroskopiese en mikroskopiese ondersoek, beskrywing en tekening 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.

DIERKUNDE.

Padda (enige tipe). Uitwendige kenmerke.

Spysverteringstelsel.—Hoofdele van die spysverteringskanaal en die derivate daarvan. Ensieme en hormone; en 'n oorsig van die rol wat hulle in die spysvertering speel. Mond—slym. Maag—pepsien, soutsuur. Alvleisklier—tripsien, steapsien. Ingewand—erepsien, succus entericus. Lewer—galkleurstowwe, galsoute. Rektum—herabsorbering van water; uitwerping van onverteerde voedsel; uitskeiding uit die vate van wande. Cloaca.

Vatstelsel.—Vernaamste bloedvate. Aard van slagare, are, poortare, haarvate. Funksies van bloed. Vervoer. Beskerming (fagosities en stolling).

Asemhalingstelsel: Senuweestelsel.—Rugmurg en rugmurgsenuwees, harsings en harsingsenuwees. Simpatiese stelsel. Funksie van dele in die algemeen.

Skeletstelsel.—Ruggraat, skedel, ledemategeraamte. Name van bene. Funksies ten opsigte van spieraanhegting, ondersteuning en beskerming.

Urogenitale stelsel.—Nier. Teelkliere. Urogenitale buise.

Klein soogdier (bv. rot, konyn, marmotjie of kat) veral met betrekking tot die verskille en ooreenkoms tussen sy morfologie en fisiologie en dié van 'n padda.

Uitwendige kenmerke.—Vel en derivate.

Spysverteringstelsel (*van bek tot anus*).—Spesiale aandag aan kouing, ptialien, maagbewegings, amilopsien, peristaltiek, blindederm.

Asemhalingstelsel: Vatstelsel.—Vernaamste bloedvate. Behoud van konstante temperatuur.

Senuweestelsel.—Rugmurg en rugmurgsenuwees, harsings en harsingsenuwees. Outonomiese stelsel. Refleksboog.

Urogenitale stelsel.—Nier, teelkliere en urogenitale buise. Eierproduksie en ouerlike sorg.

Endokriene stelsel.—Vernaamste buislose kliere en hul funksies in die algemeen.

Mikroskopiese anatomie.—'n Dierlike sel, die bou en vermenigvuldiging daarvan. Mitose. Meiose.

Epiteel.—Verskille in bou en funksie. Die bou en funksie daarvan in die maag, ingewand, vel, lewer, alvleisklier, nier en long van die padda, en die vel van 'n soogdier.

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 angiosperm, their structure, arrangement and functions in brief. A typical flower—its structure and the functions of the various parts thereof; 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*, Chlamydonomas, Spirogyra, Fucus, Claviceps, Penicillium Agaricus, Funaria, Pteridium, Pinus, a typical Monocotyledon, a typical Dicotyledon.

Principles of taxonomy as illustrated by a brief study of the representative of the following families: Liliaceae, ranunculaceae, leguminoseae, solanaceae, compositae.

Elementary ecology; the habitat (soil, aerial); the plant community, plant succession.

PRACTICAL BOTANY.

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.

ZOOLOGY.

Frog (any type). External features.

Digestive System.—Main parts of the alimentary canal and its derivatives. Enzymes and hormones; and an outline of their function in digestion. Mouth—mucin. Stomach—pepsin, hydrochloric acid. Pancreas—trypsin, steapsin. Intestine—erepsin, succus entericus. Liver—bile pigments, bile salts. Rectum—reabsorption of water, ejection of undigested food, excretion from vascular supply of walls. Cloaca.

Vascular System.—Principal blood vessels. Nature of arteries, veins, portal veins, capillaries. Functions of blood. Transport. Protection (phagocytic and clotting).

Respiratory System: Nervous System.—Spinal cord and spinal nerves, brain and cranial nerves. Sympathetic system. Function of parts in general.

Skeletal System.—Vertebral column, skull, appendicular skeleton. Names of bones. Functions in respect of attachment of muscles, support and protection.

Urinogenital System.—Kidney. Gonads. Urinogenital ducts.

Small Mammal (e.g. rat, rabbit, guinea pig or cat), with special reference to differences and resemblances between morphology and physiology, and those of a frog.

External Features.—Skin and derivatives.

Digestive System (*from mouth to anus*).—Special attention to mastication, ptyalin, gastric movements, amylopsin, peristalsis, caecum.

Respiratory System: Vascular System.—Principal blood vessels. Maintenance of constant temperature.

Nervous System.—Spinal cord and nerves, brain and cranial nerves. Autonomic system. Reflex arc.

Urinogential System.—Kidney, gonads, and uringenital ducts. Egg production and parental care.

Endocrine System.—Principal endocrine glands and their functions in general.

Microscopic Anatomy.—Animal cells, its structure and multiplication. Mitosis. Meiosis.

Epithelia.—Variations in structure and function. Its structure and function in stomach, intestine, skin, liver, pancrease, kidney and lung of the frog, and skin of mammal.

Bindweefsels.—Verskille in bou en funksie—areolêr, elasties, vesel-, been-, kraakbeen-, vet-, pigment-, bloed- (ook stollings), limf-.

Spiere.—Bou van gestreepte, hart-, en gladde spiere.

Senuwees.—Bou. Senuweeknope en sinapse.

Sintuie.—Bou en funksionering van smaakknoppies, endknoppe, Paccini se liggaampies, ruikepiteel, oog, oor.

Vereenvoudigde studie van voortplanting en vroeë ontwikkeling van die padda-eier tot by die vorming van die stomodeum en proktodeum.

Skets van indeling soos in die geval van— werweldiere (padda en klein soogdier); ongewerwelde diere wat in die leerplan voorkom.

Algemene studie (behalwe waar anders vermeld) van die volgende ongewerwelde diere, hul lewensgeskiedenis en parasitisme, met inbegrip van die kenmerke van bestudeerde stamme:—

Protosoë.—Amebe (met verwysing na parasitiese vorme). Plasmodium. Tripanosoom.

Platihelminte.—Fasciola. Schistosoma. Taenia. Hymenolepsis. Dipylidium.

Nemathelminte.—Ascaris. Oxyuris. Haakwurm.

Artropode.—Insekte—kakkerlak of sprinkaan: algemene morfologie. Weeluis, muskiet, vlooi, vlieg, luis. (Uitwendige bou, alleen monddele en lewensgeskiedenis).

Arachnida.—Bosluise en myte (uitwendige bou, lewensgeskiedenis en gashere).

PRAKTIESE DIERKUNDE.

Algehele disseksie van die stelsels, uitgesonderd die spierstelsels, van die padda, klein soogdier, en kakkerlak (of sprinkaan).

Herkenning van die geraamtebene en voorwerpglase waarop die mikroskopiese strukture van diere of dele van diere aangetoon word wat in die teorieleerplan voorkom.

KWALIFISERENDE EKSAMEN.

SKEIKUNDE EN FARMASEUTIESE SKEIKUNDE.

Van die kandidaat word 'n kennis van die skeikunde van die Intermediêre Kursus verwag.

1. ORGANIES.

Metodes van suiwering en ontleding; eenvoudige vraagstukke oor die bepalings van konstitusionele formules. Optiese en geometriese isomerie, toutomerie. 'n Algemene kennis van die skeikunde van die volgende, met besondere verwysing na stowwe wat dikwels in die apteekwese gebruik word: versadigde en onversadigde alifatiese koolwaterstowwe; benseen en die eenvoudige homoloë daarvan; halogeenderivate van bostaande; monohidriese en polihidriese alkohole; eters; aldehiede en ketone; karboksielsure en die soute daarvan; asielhalogeniede; anhidriede; suuramiede; esters van organiese en anorganiese sure, hidroksi- en aminosure; laktone; laktiede; uretaan en ureum; nitriele; sulfoonsure; nitroverbindings; amiene; diasoniumverbindings; fenols (met inbegrip van di- en trihidriese fenols), chinone.

Kennis van die struktuur, nomenklatuur en skeikundige eienskappe van farmaseutiese belang van die volgende en dié derivate daarvan wat in die British Pharmacopoeia voorkom: Difenieletaan, furaan, pirrool, tiasool, pirasool, imidasool, piridien, chinolien, isochinolien, akridien.

Skeikundige sintese deur middel van die belangrikste reagense met inbegrip van Grignard-reagense, asetielasynsuurester, maloonester, Friedel-Craft.

Kennis van die belangrikste aspekte van die skeikunde van die volgende groepe geneeskundige organiese verbindings: Sulfoonamiede, barbiturate, arseenverbindings, plaaslike verdowingsmiddels.

Die algemene konstitusie en eienskappe van die vaste olies, vette en wasse van die British Pharmacopoeia.

Die beginsels betrokke by die waardebepaling van die geöksigeneerde bestanddele van eteriese olies. Die struktuurformules en eenvoudige eienskappe van terpineol, limoneen, karvoon, mentol en kamfer.

Connective Tissues.—Variations in structure and functionareolar, elastic, fibrous, bone, cartilage, adipose, pigment, blood (including clotting), lymph.

Muscles.—Structure of striated, cardiac and smooth.

Nerves.—Structure. Ganglia and synapses.

Sense Organs.—Structure and functioning of taste buds, end bulbs, Paccinian corpuscles, olfactory epithelium, eye, ear.

Simplified study of reproduction and early development of the frog egg up to the formation of the stomodeum and proctodeum.

Outline of classification as exemplified by vertebrates (frog and small mammal). Invertebrates enumerated in the syllabus.

General study (except where otherwise stated) *of the following invertebrates, their life histories and parasitism,* including characteristics of the phyla studied:—

Protozoa.—Amoeba (with reference to parasitic forms). Plasmodium. Trypanosoma.

Platyhelminthes.—Fasciola. Schistosoma. Taenia. Hymenolepsis. Dipylidium.

Nemathelminthes.—Ascaris. Oxyuris. Hookworm.

Arthropoda.—Insecta—cockroach or locust, general morphology. Bug, mosquito, flea, fly, louse (external structure, mouth parts and life history only).

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

PRACTICAL ZOOLOGY.

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

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

QUALIFYING EXAMINATION.

CHEMISTRY AND PHARMACEUTICAL CHEMISTRY.

The candidate will be required to have a knowledge of the chemistry of the Intermediate Course.

1. ORGANIC.

Methods of purification and analysis; simple problems dealing with the determination of constitutional formulae. Optical and geometrical isomerism, tautomerism. A general knowledge of the chemistry of the following, with particular referece 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; ethers; aldehydes and ketones; carboxylic acids and their salts; acylhalides; anhydrides; acid amides; esters of organic and inorganic acids, hydroxy and amino acids; lactones; lactides; urethane and urea; nitriles; sulphonic acids; nitro compounds; amines; diazonium compounds; phenols (including di- and tri-hydric phenols), quinones.

A knowledge of the structure, nomenclature and chemical properties of pharmaceutical importance of the following and such of their derivatives as are in the British Pharmacopoeia: Diphenyl ethane, triphenyl methane, naphthalene, anthracene, phenanthrene, furan, pyrrole, thiazole, pyrazole, imidazole, pyridine, quinoline, isoquinoline, acridine.

Chemical synthesis by means of the more important reagents, including Grignard reagents, acetoacetic ester, malonic ester, Friedel-Craft.

A knowledge of the more important aspects of the chemistry of the following groups of medicinal organic compounds: Sulphonamides, barbiturates, arsenical compounds, local anaesthetics.

The general constitution and properties of the fixed oils, fats and waxes of the British Pharmacopoeia.

The principles involved in the estimation of the oxygenated constituents of essential oils. The structural formulae and simple properties of terpineol, limonene, carvone, menthol and camphor.

Die klassifikasie, algemene eienskappe, algemene ekstraheermetodes en die beginsels van die toetsingsmetodes van die alkaloïede.

Die struktuurformule van kokaïen.

Die struktuurformules en algemene eienskappe van uriensuur, kafeïen, teobromien en teofillien.

Die algemene skeikunde van glukose en fruktose met 'n kennis van die struktuur daarvan; algemene skeikunde, uitgesonderd stereochemiese oorwegings, van sukrose, laktose, stysel, dekstriene, gomme en askorbiensuur.

Die algemene strukture, eienskappe en klassifikasie van die glukosiede.

'n Elementêre kennis van die klassifikasie en algemene kenmerke van die proteïene, van essensiële aminosure en hul verband met proteïene.

2. ANORGANIES.

Kandidate moet vertroud wees met die chemiese en fisiese beginsels betrokke by 'n begrip van die monografieë oor die amptelike anorganiese stowwe in die British Pharmacopoeia.

3. FISIES.

(*a*) Eienskappe van vloeistowwe, byvoorbeeld oppervlakspanning.

(*b*) Fasestudies:—

(i) Fasereël en die toepassing daarvan op water.

(ii) Verspreidingswet; verdelingschromatografie; stoomdistillasie.

(iii) Kolloïede en oppervlakverskynsels: algemene aard van kolloïede, kolloïdale stelsels; eienskappe van kolloïdale stelsels.

Adsorpsie, adsorpsiechromatografie, oppervlakvliese, soorte vliese, oriëntering van molekules in vliese, emulsies.

(*c*) *Oplossings.*—Distillering van aseotropemengsels; osmotiese druk en die farmaseutiese toepassings daarvan.

(*d*) *Ione-ewewigte.*—Ionisasiegraad; Ostwald se verdunningswet; waterstofioonkonsentrasie en pH; bepaling van waterstofioonkonsentrasie; ionisasie van water; hidrolise van soute; gewone iooneffek; oplosbaarheidsproduk; bufferoplossings; teorie van indikators en die toepassing daarvan op titrasies van sure en basisse.

PRAKTIES.

Die volgende word van die kandidaat verwag:—

(*a*) Om mengsels wat nie meer as twee katione en twee anione bevat, stelselmatig te ontleed. Die radikale sluit dié in wat in die Intermediêre praktiese skeikundeleerplan genoem word, met die volgende byvoegings:—

Sulfiet, sulfied, fluoried, nitriet, boraat, arseniet, arsenaat, fosfaat, sianied, oksalaat, tartraat, sitraat, salisilaat.

(*b*) Om die volgende te identifiseer: Formiate, asetate, oksalate, tartrate, sitrate, bensoate, salisilate (en hul sure), glukose, laktose, sukrose, stysel, metielalkohol, etielalkohol, asetoon, aspirien, fenasetien, barbitoon, fenobarbitoon, anilien en sy soute, asetanilied, fenol, resorsinol, pirogallol, chloraalhidraat, gliserol, chloorkresol, chloorxilenol, asetamied, bensamied, ureum.

(*c*) Om die kwantitatiewe grenstoets uit te voer vir lood, chloried, sulfaat, yster en arseen volgens die metodes wat in die British Pharmacopoeia beskryf word.

(*d*) Om die kwantitatiewe bepaling van 'n alkaloïed in 'n suur of alkoholoplossing uit te voer.

(*e*) Om die nitrometer vir die waardebepaling van organiese nitriete te gebruik.

(*f*) Om die Kjeldahlmetode vir die waardebepaling van stikstof uit te voer.

(*g*) Om die konsentrasie van alkohol-watermengsels te bepaal en om die aanwesigheid van alkohol en die hoeveelheid daarvan in enige preparaat vas te stel.

(*h*) Om die bepaling van suurwaarde, esterwaarde, verseepingswaarde, jodiumwaarde en asetielwaarde uit te voer.

(*i*) Om die bepaling van vrye alkohole en aldehiede in vlugtige olies uit te voer.

The classification, general properties, general methods of extraction and the principles of the methods of assay, of the alkaloids.

The structural formula of cocaine.

The structural formulae and general properties of uric acid, caffeine, theobromine and theophylline.

The general chemistry of glucose and fructose with a knowledge of their structure; general chemistry excluding stereo-chemical considerations of sucrose, lactose, starch, dextrins, cellulose, gums and ascorbic acid.

The general structure, properties and classification of the glucosides.

An elementary knowledge of the classification and general characteristics of the proteins, of essential amino acids and their relationship to proteins.

2. INORGANIC.

Candidates will be required to be conversant with the chemical and physical principles involved in an understanding of the monographs on the official inorganic substances in the British Pharmacopoeia.

3. PHYSICAL.

(*a*) Properties of liquids, e.g. surface tension.

(*b*) Phase studies:

(i) Phase rule and its application to water.

(ii) Distribution law; partition chromatography; steam distillation.

(iii) Colloids and surface phenomena: General nature of colloids, colloidal systems; properties of coloidal systems. Adsorption, adsorption chromatography, surface films, types of films, orientation of molecules in films, emulsions.

(*c*) *Solutions.*—Distillation of azeotropic mixtures; osmotic pressure and its pharmaceutical applications.

(*d*) *Ionic Equilibria.*—Degree of ionisation; Ostwalds dilution law; hydrogen ion concentration and pH; determination of hydrogen ion concentration; ionisation of water; hydrolysis of salts; common ion effect; solubility product; buffer solutions; theory of indicators and its application to titrations of acids and bases.

PRACTICAL.

The candidate will be required—

(*a*) to analyse systematically mixtures containing not more than two cations and two anions. The radicals shall include those enumerated in the Intermediate practical chemistry syllabus with the following additions:—

Sulphite, sulphide, fluoride, nitrite, borate, arsenite, arsenate, phosphate, cyanide, oxalate, tartrate, citrate, salicylate;

(*b*) to identify: Formates, acetates, oxalates, tartrates, citrates, benzoates, salicylates (and their acids), glucose, lactose, sucrose, starch, methyl alcohol, acetone, aspirin, phenacetin, barbitone, phenobarbitone, aniline and its salts, acetanilide, phenol, resorcinol, pyrogallol, chloral hydrate, glycerol, chlorocresol, chloroxylenol, acetamide, benzamide, urea;

(*c*) to carry out the quantitative limit tests for lead, chloride, sulphate, iron and arsenic according to the methods described in the British Pharmacopoeia;

(*d*) the quantitative determination of an alkaloid in acid or alcoholic solution;

(*e*) to use the nitrometer for the estimation of organic nitrites;

(*f*) to carry out the Kjeldahl method of the estimation of nitrogen;

(*g*) to determine the concentration of alcohol-water mixtures and to detect and determine the amount of alcohol in any preparation;

(*h*) to carry out the determination of acid value, ester value, saponification value, iodine value and acetyl value;

(*i*) to carry out the determination of free alcohols and aldehydes in volatile oils;

(*j*) Om 'n praktiese kennis te hê van die bepaling van pH, smeltpunte, kookpunte, viskositeit, ligbrekingsindeks, soortlike draaivermoë en oppervlakspanning deur middel van metodes wat in die Aanhangsels van die British Pharmacopoeia geskets word.

(*k*) Om 'n kennis aan die dag te lê van die beginsels van volumetriese ontleding en om oplossings van die volgende te berei, te standaardiseer en te gebruik: Sure en alkalië, kaliumpermanganaat, jodium, natriumtiosulfaat, kaliumjodaat, silwernitraat, ammoniumtiosianaat, met besondere verwysing na die amptelike toetsmetodes waarby hierdie oplossings gebruik word.

(*l*) Om oefeninge in gravimetriese ontleding uit te voer.

Die kandidaat sal toegelaat word om sy aantekeninge en boeke gedurende die eksamen te raadpleeg.

GEREGTELIKE FARMASIE.

Kandidate se kennis sal getoets word van die volgende wetgewing vir sover dit betrekking het op die praktyk van die apteekwese 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 2.
Hoofstuk 2, artikels 15, 16, 17 en 18.
Hoofstuk 3, artikel 37.—Handelinge wat op die beroep van 'n apteker betrekking het.
Hoofstuk 4, artikels 41, 42, 43, 45 en 47.
Hoofstuk 5, alle artikels.—Die aanhou, verkoop en resepteer van vergifte.
Bylae IV.—Vergifte, Afdeling 1 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 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 75.—„Misbruik van titels deur vereniging van persone."
Hoofstuk 7, artikel 76.—Bepalings in verband met regspersone wat as aptekers handel dryf.
Hoofstuk 7, artikel 76 *bis*.—Handelstitels.
Hoofstuk 7, artikel 77.—Beheer van apteke.
Hoofstuk 7, artikel 78.—Bevoegdhede van Eksekuteure, ensovoorts.
Hoofstuk 7, artikel 80.—Buitensporige koste.
Hoofstuk 7, artikel 81.—Gebreklike persone.
Hoofstuk 7, artikel 82.—Etikettering en verpakking van giftige stowwe.
Hoofstuk 7, artikel 87.—Aanspreeklikheid vir dade van werknemers.
Hoofstuk 7, artikel 88.—Kommissie op resepte.
Hoofstuk 7, artikel 89.—Magtiging van veeartse.
Hoofstuk 7, artikel 95.—Verandering van Tweede Bylae—Jaargelde.
Hoofstuk 7, artikel 96.—Woordbepaling.
Etiese reëls.—Reëls in verband met gedrag waarvan die Suid-Afrikaanse Aptekerskommissie kennis mag neem.
Regulasies in verband met terapeutiese stowwe vir sover dit die apteker raak.

(*b*) Volksgezondheidswet, No. 36 van 1919, artikel 65.—Die uitwerking daarvan op die dryf van die aptekersbesigheid.

(*c*) Die Drankwet, No. 30 van 1928, artikels 5, 123, 130 en 131.—Bepalings in verband met die verkoop van reukwerk, geparfumeerde spiritualieë en drankhoudende medisyne. Die verkoop van gis en mout aan Naturelle, die verkoop van brandspiritus en sekere Hollandse medisyne. Regulasies wat daaruit voortvloei.

(*j*) to have a practical acquaintance with the determination of pH, melting points, boiling points, viscosity, refractive index, specific rotation and surface tension by methods outlined in the Appendices of the British Pharmacopoeia;

(*k*) to show a knowledge of the principles of volumetric analysis, and to prepare, standardise and use solutions of acids and alkalies, potassium permanganate, iodine, sodium thiosulphate, potassium iodate, silver nitrate, ammonium thiocyanate; with particular reference to the official methods of assay using these solutions;

(*l*) to carry out exercises in gravimetric analysis.

The candidate will be allowed the use of notes and books during the examination.

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 2.
Chapter 2, sections 15, 16, 17 and 18.
Chapter 3, section 37.—Acts pertaining to the calling of a chemist and druggist.
Chapter 4, sections 41, 42, 43, 45 and 47.
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 75.—Plurality of titles.
Chapter 7, section 76.—Provisions regarding bodies corporate, trading as chemists and druggists.
Chapter 7, section 76 *bis*.—Trading titles.
Chapter 7, section 77.—Control of pharmacies.
Chapter 7, section 78.—Powers of Executors, etc.
Chapter 7, section 80.—Excessive charges.
Chapter 7, section 81.—Disabled persons.
Chapter 7, section 82.—Labelling and packing of poisonous substances.
Chapter 7, section 87.—Liability for acts of employees.
Chapter 7, section 88.—Commission on prescriptions.
Chapter 7, section 89.—Authorisation of veterinarians.
Chapter 7, section 95.—Alteration of Second Schedule: Annual fees.
Chapter 7, section 96.—Interpretation of terms.
Ethical Rules.—Rules regarding conduct of which the South African Pharmacy Board may take cognisance.
The Therapeutic Substances Regulations, in so far as they affect the chemist and druggist.

(*b*) Public Health Act, No. 36 of 1919, section 65.—Its effect on the conduct of the business of a chemist and druggist.

(*c*) The Liquor Act, No. 30 of 1928, sections 5, 123, 130 and 131.—Provisions regarding the sale of perfumery, perfumed spirits and medicines containing "liquor". Sale of yeast and malt to Natives, sale of methylated spirits and certain Dutch medicines, regulations arising therefrom.

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

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

Berekenings.—Van kandidate word 'n kennis verwag van farmaseutiese berekenings waarby die metrieke, die imperiale en die aptekerstelsel van mate en gewigte gebruik word, en hul vermoë om die berekenings te maak wat die uitvoering van farmaseutiese werksaamhede meebring, sal getoets word.

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 82 van die Wet op Geneeshere, Tandartse en Aptekers voorkom.

OPMERKING.—Bovermelde kennis moet enige wysigings van die gespesifiseerde artikels of bylaes omvat, asook van enige reëls of regulasies in verband daarmee of wysigings daarvan wat minstens ses maande voor die eksamendatum gepubliseer is.

Doseerkunde.—Kennis van dié giftige alkaloïede en glukosiede wat in die British Pharmacopoeia of toevoegsels daarby voorkom, van alle andere stowwe en preparate wat in die Vierde Bylae van die Wet op Geneeshere, Tandartse en Aptekers voorkom, en van kragtige stowwe en preparate wat in die British Pharmacopoeia of toevoegsels daarby voorkom, waarvan die maksimum amptelike dosis 0·3 milliliter, 300 milligram of minder is.

FARMASIE.

(Die eksamen in hierdie vak bestaan uit twee skriftelike toetse van drie uur elk en twee praktiese toetse van ses uur elk.)

Van die kandidaat word kennis van die volgende verwag:—

Die toepassing van fisiese verskynsels op farmaseutiese werksaamhede—verandering van toestand; stelsels van twee of meer bestanddele—oplossings, dispersies.

Farmaseutiese prosesse en produkte—bereiding van materiaal; oplosmiddels; ekstraksie; toetsing en standaardisering, suiwering en filtrering, met inbegrip van die verwydering van vet, proteïene, gomme, pektiene, tanniene; ultrafiltrering; stabilisering: behoud van stabiliteit gedurende bewaring; ensieme.

Die produkte van die British Pharmacopoeia en die British Pharmaceutical Codex moet gebruik word om bostaande te illustreer. Die aard en eienskappe van materiale wat gebruik word by die bou van farmaseutiese apparaat.

Mikrobiologie vir sover dit betrekking het op sterilisasie en die bereiding van immunologiese produkte. Sterilisasie en die bereiding van steriele geneesmiddels en materiale.

Ontsmettings- en antiseptiese middels: bakteriostatika en fungistatika; metodes om die waarde van ontsmettingsmiddels te bepaal.

Asepsis by die bereiding van steriele produkte; bronne van besoedeling; aseptiese voorsorgsmaatreëls. Die bereiding, eienskappe en bewaringstoestande van immunologiese en diagnostiese middels van die British Pharmacopoeia; algemene beginsels waarop die standaardisasie daarvan berus.

Reseptuur: Die preskripsie, doel, opmaak en samestelling van medisyne; houers; uitrusting en organisasie van die apteek.

Van die kandidaat word soveel kennis van albei amptelike tale verwag as wat hom in staat sal stel om sinne in verband met die inhoud van preskripsies in die ander amptelike taal te vertaal.

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

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

Calculations.—Candidates will be required to have a knowledge of pharmaceutical calculations involving the metric, imperial and apothecaries systems of weights and measures, and will be examined on their ability to make such calculations as may be involved in the carrying out of pharmaceutical operations.

English and Afrikaans names of poisons included in Schedules IV and V and of poisonous substances included in section 82 of the Medical, Dental and Pharmacy Act.

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 not less than six months before the date of the examination.

Psology.—A knowledge of such poisonous alkaloids and glucosides as appear in the British Pharmacopoeia or addenda thereto, of all other substances and preparations appearing in the Fourth Schedule to the Medical, Dental and Pharmacy Act, and of potent substances and preparations appearing in the British Pharmacopoeia or addenda thereto, the maximum official dose of which is 0·3 millilitre, 300 milligrams or less.

PHARMACEUTICS.

(The examination in this subject comprises two written sessions each of three hours duration and two practical sessions each of six hours duration.)

The candidate will be required to have a knowledge of the following:—

The application of physical phenomena to pharmaceutical operations—change of state; systems of two or more components—solutions, dispersions.

Pharmeceutical processes and products—preparation of material; solvents; extraction; assay and standardisation clarification and filtration including removal of fat, proteins, gums, pectins, tannins; ultrafiltration; stabilisation—maintenance of stability during storage; enzymes.

The products of the British Pharmeeopoeia and the British Pharmaceutical Codex to be used to illustrate the above. The nature and properties of materials used in the construction of pharmaceutical apparatus.

Microbiology in so far as it concerns sterilisation and the preparation of immunological products.

Sterilisation and the preparation of sterile medicaments and materials.

Disinfectants and antiseptics—Bacteriostatics and fungistatics—methods of evaluation of disinfectants.

Asepsis in the preparation of sterile products—sources of contamination; aseptic precautions.

The preparation, properties and storage conditions or immunological and diagnostic agents of the British Pharmacopoeia; the general principles underlying their standardisation.

Dispensing practice—the prescription—purpose, dispensing and compounding of medicines; containers; equipment and organisation of the pharmacy.

The candidate will be required to have such a knowledge of both the official languages as will enable him to translate into the other official language passages relating to the subject matter of prescriptions.

PRAKTIESE FARMASIE.

Die student moet bereid wees om gewone farmaseutiese werksaamhede uit te voer, met inbegrip van die maak van preparate wat voorkom in die British Pharmacopoeia en die British Pharmaceutical Codex, die opmaak van preskripsies, die bereiding en opmaak van steriele geneesmiddels en stowwe, die bewerking van buitengewone dosisse en die klaarmaak van preparate op bevredigende wyse met besondere verwysing na daardie vorms van geneesmiddels wat in alledaagse gebruik is.

In die praktiese eksamen sal die kandidaat die geleentheid hê om die British Pharmacopoeia en die British Pharmaceutical Codex te raadpleeg.

FARMAKOGNOSIE.

Van die kandidaat word 'n kennis van die volgende verwag:—

(1) Die metodes wat toegepas word om ru-artsenye, taksonomies, morfologies, skeikundig en farmakologies te klassifiseer.

(2) Die struktuureienskappe wat die morfologiese groeperings wat in die lys van artsenye gebruik word, bepaal.

(3) Die verbouing, versameling en bereiding vir die mark van en die handel in ru-artsenye, soos geïllustreer deur dié wat met 'n sterretjie in die lys aangedui is.

(4) Die droging, bewaring, en veranderings wat plaasvind gedurende die vergruising van ru-artsenye; die moontlike veranderings wat gedurende bewaring en droging plaasvind, die besmetting deur swamme, insekte, myte, ensovoorts, en die voorkoming daarvan.

(5) Die metodes wat toegepas word by die ondersoek van ru-artsenye, met inbegrip van die afsondering en identifikasie van weefsels en selle; en die mikrochemiese toetse vir selwande en selinhoud.

(6) Die makroskopiese en gevoelseienskappe, biologiese en geografiese bronne, handelsvariëteite, gewone vervalsingsmengstowwe en bestanddele van die artsenye wat in die lys voorkom.

(7) Die mikroskopiese eienskappe van die morfologiese groepe van artsenye soos geïllustreer deur die histologie van die volgende, in die heel, gebreekte of poeiervorm: kaskara, naeltjie, kardamomvrug, vinkel, belladonnakruid, gemmer, soethout, ipecacuanha.

(8) Die mikroskopiese eienskappe van agar, kryt, kieselgoer, talk, asbes en mielie-, artappelrys- en koringstysel.

(9) Die belangrikste groepe van die bestanddele van artsenye, en die algemene kenmerke daarvan wat van belang is in die farmasie.

(10) Diagnostiese kwalitatiewe skeikundige toetse vir die identifisering of die vasstelling van die aanwesigheid van vervalsingsmengstowwe in die artsenye wat in die lys voorkom.

(11) Tipes en betekenis van standaarde vir ru-artsenye wat in die B.P. en die B.P.C. opgeneem is, en van die waardebepalings van ru-artsenye deur die vasstelling van die aswaardes, ekstrakwaardes, voggehalte, vlugtige olie-gehalte en van vreemde organiese stof.

(12) Bronne, bereidingseienskappe, kwalitatiewe skeikundige toetse en bestanddele van die volgende vesels wat gebruik word by die vervaardiging van heelkundige verbande: sellulosewatte, katoen, jute, sy, rayon, wol. Die belangrikste heelkundige verbande en die standaarde daarvan.

(13) Die gebruik van die mikroskopie van kalsiumoksalaatkristalle by die identifisering van: belladonnakruid, kaskara, hiossiamus, rabarber, seneblare, stramonium.

(14) Die mikroskopie van epidermiese trichrome in belladonnakruid, digitalis, hiossiamus, lobelia, nux vomica, seneblaar, stramonium en strofantus.

PRACTICAL PHARMACEUTICS.

The student must be prepared to carry out ordinary pharmaceutical operations including the making of preparations included in the British Pharmecopoeia and the British Pharmaceutical Codex, the dispensing of prescriptions; the preparation and dispensing of sterile medicaments and materials, the detection of unusual doses and the completion of preparations in a proper manner with particular reference to those forms of medication in common use.

In the practical examination the candidate will have the opportunity of consulting the British Pharmacopoeia and the British Pharmaceutical Codex.

PHARMACOGNOSY.

The candidate will be expected:—

(1) to have a knowledge of the methods used to classify crude drugs, taxonomic, morphological, chemical and pharmacological;

(2) to have a knowledge of the structural characters which determine the morphological groupings used in the Schedule of drugs;

(3) to have a knowledge of the cultivation, collection, preparation for the market and commerce of crude drugs as illustrated by those drugs marked with an asterisk in the Schedule;

(4) to have a knowledge of the drying, storage and changes occurring during the comminution of crude drugs; the possible changes which occur during storage and drying, the infestation by fungi, insects, mites, etc., and the prevention of these;

(5) to have a knowledge of the methods used in the examination of crude drugs, including the isolation and identification of tissues and cells; and of the microchemical tests for cell walls and cell contents;

(6) to have a knowledge of the macroscopical and sensory characters, biological and geographical sources, commercial varieties, common adulterants and constituents of the drugs named in the schedule of drugs;

(7) to have a knowledge of the microscopical characters of the morphological groups of drugs as illustrated by the histology of the following, in the whole, broken or powdered condition: Cascara, clove, cardamon fruit, fennel, belladonna herb, ginger, liquorice, ipecacuanha.

(8) to have a knowledge of the microscopical characters of agar, chalk, kieselguhr, talc, asbestos and maize, potato, rice and wheat starches;

(9) to have a knowledge of the more important groups of drug constituents and their general characters of significance in pharmacy;

(10) to have a knowledge of diagnostic qualitative chemical tests for the identification of, or the detection of adulterants in, the drugs named in the List of Drugs;

(11) to have a knowledge of the types and significance of standards for crude drugs included in the B.P. and B.P.C., and of the evaluation of crude drugs by the determination of ash values, extractive values, moisture content, volatile oil content and of foreign organic matter;

(12) to have a knowledge of the sources, preparation characters, qualitative chemical tests and constituents of the following fibres used in the manufacture of surgical dressings;—cellulose wadding, cotton, jute, silk, rayon, wool; and to have a knowledge of the more important surgical dressings and their standards;

(13) to have a knowledge of the use of the microscopy of calcium oxalate crystals in identifying belladonna herb, cascara, hyoscyamus, rhubarb, senna leaves, stramonium;

(14) to have a knowledge of the microscopy of epidermal trichromes in: belladonna herb, digitalis, hyoscyamus, lobelia, nux vomica, senna leaf, stramonium and strophanthus.

PRAKTIESE FARMAKOGNOSIE.

Die kandidaat moet bereid wees—

(1) om die makroskopiese kenmerke van ru-artsenye, die algemene verspreiding van weefsels, die aard van selwande en selinhoud te ondersoek en te beskryf en om die ru-artsenye in hul morfologiese groepe te plaas;

(2) om die artsenye in die lys uit normale handelsmonsters wat verskaf word, te ondersoek, te identifiseer en te beskryf en om dié inligting daaromtrent te verstrek wat in artikel 6 van die teorieleerplan vereis word;

(3) om die suiwerheid van handelsmonsters van die artsenye in die lys te ondersoek en daaroor verslag te doen;

(4) om volgens mikroskopiese metodes die artsenye wat in artikels 7, 8, 13 en 14 hierbo genoem word, afsonderlik of met 'n ander een gemeng te ondersoek, te identifiseer en te beskryf;

(5) om die vesels en verbande wat in artikel 12 van die leerplan genoem word, te ondersoek en daaroor verslag te doen.

LYS VAN ARTSENYE.

Hout.—Kwassiehout.
Bas.—Kaskara*, Kaneel*, Kwillaia, Wilde Kersie, Kinabas, Kosillana.
Blomme.—Naeltjie*, Piretrum.
Vrugte.—Rissie, Karwy, Kardamom, Chenopodium, Kolokwint, Koljander, Dille, Vinkel, Suurlemoenskil, Bitterlemoenskil, Senepeul*
Saad.—Areka, Kolchikum, Neutmuskaat*, Nux Vomica, Strofantus, Lynsaad.
Blare en bolle.—Boegoe*, Koka, Digitalis*, Hamamelis, Sene*, Ajuin.
Kruie en hele organismes.—Belladonna*, Spaansvlieg*, Cochenille*, Ergot, Efedra, Hiossiamus, Galneute, Lobelia, Stramonium, Gis.
Risome en stingelvoete.—Kolchikum, Derris, Gemmer*, Podofillum, soethout*, Mannetjievaring, Rabarber*, Valeriaan*.
Wortels.—Belladonna*, Gentiaan*, Ipomoea, Krameria, Senega.
Stysel.—Mielie*, Aartappel*, Rys*, Koring*, Dekstrien, Oplosbare Stysel.
Minerale.—Kryt, Talk, Asbes, Kaolien*, Kieselgoer.
Ongeklassifiseerde artsenye.—Akasia*, Agar*, Aalwyne*, Aloien, Duiwelsdrek, Peru-balsem, Tolu-balsem, Byewas*, Bensoïen*, Kasterolie*, Katesjoe, Setaseum, Chrisarobien, Lewertraan*, Harpuis*, Kopiva, Gelatien*, Heuning*, Ipomoeahars, Ichthammol, Varkvet*, Mirre, Pikolie, Naeltjiesolie*, Sitroenolie*, Pepermentolie, Teobroomolie, Terpentynolie*, Olyfolie*, Opium*, Podofillumhars, Storaks, Koolteer, Houtteer, Tragakant*, Houtalkohole, Wolvet*.

FISIOLOGIE EN FARMAKOLOGIE.

Van die kandidaat word 'n *elementêre* kennis van die basiese feite in die takke van Fisiologie en Farmakologie hieronder aangegee, verwag.

FISIOLOGIE.

Algemeen.

Die eienskappe en beheer van die skelet-, ingewands-, en hartspier.

Die formasie, eienskappe, funksies en omloop van die bloed en limf.

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

Die spysverteringskanaal.

Basale metabolisme en liggaamswarmte.

Die beginsels waarvolgens 'n gebalanseerde dieet saamgestel word; vitamiene.

Die niere en die urienkanaal.

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

PRACTICAL PHARMACOGNOSY.

The candidate must be prepared:—

(1) to examine and describe the macroscopical characters of crude drugs, the general distribution of tissues, the nature of cell walls and cell contents and to refer the crude drug to their morphological groups;

(2) to examine, identify, and describe the drugs in the schedule, being presented with normal commercial samples thereof and to give such information about them as is required by section (6) of the theory syllabus;

(3) to examine and report upon the purity or otherwise of commercial samples of the drugs in the schedule;

(4) to examine, identify and describe by microscopical methods the drugs named in sections 7 and 8, 13 and 14 above, either alone or mixed with one other;

(5) to examine and report on the fibres and dressings named in section (12) of the syllabus.

SCHEDULE OF DRUGS.

Woods.—Quassia.
Barks.—Cascara*, Cinnamon*, Quillaia, Wild Cherry, Cinchona, Cocillana.
Flowers.—Clove*, Pyrethrum.
Fruits.—Capsicum, Caraway, Cardamom, Chenopodium, Colocynth Coriander, Dill, Fennel, Lemon Peel, Bitter Orange Peel, Senna Pod*.
Seeds.—Areca, Colchicum, Nutmeg*, Nux Vomica, Strophanthus, Linseed.
Leaves and Bulbs.—Buchu*, Coca, Digitalis*, Hamamelis, Senna*, Squill.
Herbs and Entire Organisms.—Belladonna*, Cantharis*, Cochineal*, Ergot, Ephedra, Hyoscyamus, Galls, Lobelia, Stramonium, Yeast.
Rhizomes and Corms.—Colchicum, Derris, Ginger*, Podophyllum, Liquorice*, Male Fern, Rhubarb*, Valerian*.
Roots.—Belladonna*, Gentian*, Ipomoea, Krameria, Senega.
Starches.—Maize*, Potato*, Rice*, Wheat*, Dextrin, Soluble Starch.
Minerals.—Chalk, Talc, Asbestos, Kaolin*, Kieselguhr.
Unorganised Drugs.—Acacia* Agar*, Aloes*, Aloin, Asafoetida, Balsam of Peru, Balsam of Tolu, Beeswax*, Benzoin*, Castor Oil*, Catechu, Cetaceum, Chrysarobin, Cod Liver Oil*, Colophony*, Copaiba, Gelatin*, Honey*, Ipomoea Resin, Ichthammol, Lard*, Myrrh, Oil of Cade, Oil of Clove*, Oil of Lemon*, Oil of Pepperment, Oil of Theobroma, Oil of Turpentine*, Olive Oil*, Opium*, Podophyllum Resin, Storax, Coal Tar, Wood Tar, Tragacanth*, Wool Alcohols, Wool Fat*

PHYSIOLOGY AND PHARMACOLOGY.

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.

The mechanism and control of pulmonary ventilation; gaseous intercharge at the lungs and tissues. Artificial respiration.

The alimentary tract.

Basal metabolism and body heat.

The principles involved in constructing a balanced diet; vitamins.

The kidneys and urinary tract.

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

Die spesiale sintuie van gesig, smaak en reuk.

Die struktuur en funksies van die kliere van interne afskeiding met inbegrip van (*a*) hipofise, (*b*) skildklier en byskildkliere, (*c*) alvleisklier, (*d*) byniere, (*e*) testes en ovaria.

Die elemente van voortplanting by die mens.

Histologie.

Die kandidaat moet 'n *elementêre* kennis hê van die mikroskopiese strukteuur van die volgende: spier en senuwee, hart, bloedvate en bloed; longe; spysverteringskliere; maag en ingewande; lewer; niere; vel; buislose kliere en voortplantingsorgane, met inbegrip van die melkklier en die plasenta.

Biochemie.

Metabolisme van koolhidrate, vette en proteïne.

Die samestelling en funksies van speeksel-, maag-, gal-, alvleis-, en ingewandsafskeidings.

Die samestelling en voedingswaarde van gewone voedingstowwe.

Die skeikunde van spiersametrekking.

Die samestelling van bloed, limf en harsingrugmurgvog.

Normale en abnormale bestanddele van urien.

FARMAKOLOGIE.

Omvang van die farmakologie. Teorieë van die werking van artsenye en die faktore wat dit beïnvloed.

Elementêre kennis van die kwantitatiewe metodes in die farmakologie. Dosis-reaksiekurwes.

Die algemene beginsels en metodes waarop die biologiese toetse van die British Pharmacopoeia berus, uitgesonderd die toetse van serums, entstowwe en bakteriese derivate. Spesiale aandag moet gegee word aan die vasstelling van toksisiteit en LD50.

Artsenye wat die strukture beïnvloed wat deur die outonome senuwestelsel en die somatiese motoriese senuwees geïnnerveer word.

Artsenye wat gebruik word as sedatiewe en stimuleermiddels van die sentrale senuwees. Koorsweermiddels.

Plaaslike verdowingsmiddels.

Braakmiddels; teensure; purgeermiddels; adstringeermiddels; diuretika (urienafdrywende middels).

Ontsmettingsmiddels, bakteriedodende middels en bakteriostatika met inbegrip van antibiotiese middels.

Die toepassing van farmakologiese beginsels by die behandeling van vergiftiging.

The special senses of sight, taste and smell.

The structure and functions of the glands of internal secretion, including (*a*) pituitary body, (*b*) thyroid and parathyroids, (*c*) pancreas, (*d*) suprarenals, (*e*) testes and ovaries.

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 vessels 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 metabolism of carbohydrates, fats and proteins.

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

The composition and nutritional value of common food stuffs.

The chemistry of muscular contraction.

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

PHARMACOLOGY.

Scope of Pharmacology. Theories of and factors affecting drug action.

Elementary knowledge of quantitative methods in pharmacology. Dose-response curves.

The general principles and methods underlying the biological assays of the British Pharmacopoeia, excluding the assays of sera, vaccines and bacterial derivatives. Special attention should be given to the determination of toxicity and LD50.

Drugs affecting structures innervated by the autonomic nervous system and by the somatic motor nerves.

Drugs used as central nervous depressants and stimulants. Antipyretics. Local anaesthetics.

Emetics; antacids; purgatives; astringents; diuretics.

Disinfectants, bactericides and bacteriostatics including antibiotics.

The application of pharmacological principles in treatment of poisoning.