SENIOR CERTIFICATE EXAMINATION
SENIORSERTIFIKAAT-EKSAMEN

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AGRICULTURAL SCIENCE/
LANDBOUWETENSKAP

SG **802-2/0**

12 pages
12 *bladsye*

AGRICULTURAL SCIENCE SG

802 2 0 SG

GAUTENGSE DEPARTEMENT VAN ONDERWYS

SENIORSERTIFIKAAT-EKSAMEN

LANDBOUWETENSKAP SG

TYD: 3 uur

PUNTE: 300

BENODIGHEDE:

- 'n Goedgekeurde (nie-programeerbare) sakrekenaar. Kandidate moet hulle eie sakrekenaars verskaf.

INSTRUKSIES:

- Die eksamenvraestel bestaan uit TWEE afdelings.
- Beantwoord AL die vrae.
- Beantwoord Vraag 1A (Meervoudige Keusevrae) op die **antwoordblad** aan die **binnekant van die omslag** van jou **antwoordboek.**
- Skryf asseblief netjies en leesbaar.

AFDELING A

VRAAG 1A

Verskeie moontlikhede word as antwoorde op die volgende vrae voorgestel, waarvan slegs een korrek is. Dui die korrekte antwoord aan deur 'n kruis (**X**) oor die toepaslike letter te trek langs die vraagnommer op die **antwoordblad** aan die **binnekant van die omslag** van jou **antwoordboek**.

VOORBEELD:

A	B	C	D

Indien daar meer as een kruisie verskyn, sal <u>geen</u> punte toegeken word nie.

1.1 Die ensiem in die dunderm van diere wat vet opbreek, is _____ .

A. lipase
B. rennien
C. pepsien
D. amilase

1.2 Gal word geproduseer deur die _____ .

A. galblaas
B. maag
C. lewer
D. pankreas

GAUTENG DEPARTMENT OF EDUCATION

SENIOR CERTIFICATE EXAMINATION

AGRICULTURAL SCIENCE SG

TIME: 3 hours

MARKS: 300

REQUIREMENTS:

- An approved (non-programmable) pocket calculator. Candidates must supply their own calculators.

INSTRUCTIONS:

- The examination paper consists of TWO sections.
- Answer ALL the questions.
- Answer Question 1A (Multiple-choice questions) on the **answer sheet** on the **inside cover** of your **answer book.**
- Please write neatly and legibly.

SECTION A

QUESTION 1A

Various possibilities are suggested as answers to the following questions, only one of which is correct. Indicate the correct answer by making a cross (**X**) over the appropriate letter next to the question number on the **answer sheet** on the **inside cover** of your **answer book**.

EXAMPLE:

A	B	C	D

If more than one cross appears, no marks will be awarded.

1.1 The enzyme in the small intestine of animals that splits fat, is _____ .

A. lipase
B. rennin
C. pepsin
D. amylase

1.2 The production of bile is done by the _____.

A. gall bladder
B. stomach
C. liver
D. pancreas

1.3 Watter een is NIE 'n funksie van die tong NIE?

A. Help met die kouproses
B. Meng voedsel met slym
C. Skei speeksel af
D. Help met die slukproses

1.4 Watter een van die volgende is NIE deel van 'n hoender NIE?

A. Proventrikulus
B. Anus
C. Ventrikulus
D. Caeca

1.5 Watter faktor het nie 'n invloed op die suurheid van die grond nie?

A. Organiese sure
B. Bemesting
C. Natriumchloried
D. Koolstofdioksied

1.6 Die volgende is voorbeelde van ontoeganklike grondwater, behalwe _____ .

A. adhesie
B. dooie water
C. swelwater
D. kapillêre water

1.7 Die deursnee van baie fyn slik is _____ .

A. kleiner as 0,002 mm
B. 0,20 – 0,02 mm
C. 0,20 – 0,002 mm
D. 0,50 – 0,20 mm

1.8 Die grondprofiel van 'n nat grond is _____ .

A. A/B
B. B/C
C. B/G
D. O/G

1.9 Die aantal snytande in 'n koei se bo-kaak is _____ .

A. 8
B. 0
C. 4
D. 2

1.3 Which one is NOT a function of the tongue?

A. Helps with chewing
B. Mixes food with saliva
C. Secretes saliva
D. Helps with the swallowing process

1.4 Which one of the following organs does NOT belong to a fowl?

A. Proventriculus
B. Anus
C. Ventriculus
D. Caeca

1.5 Which factor does not have an effect on the acidity of soil?

A. Organic acids
B. Fertilization
C. Sodium chloride
D. Carbon dioxide

1.6 The following are examples of inaccessible soil water, except _____ .

A. adhesion
B. dead water
C. swelling water
D. capillary water

1.7 The diameter of extremely fine silt is _____ .

A. smaller than 0,002 mm
B. 0,20 – 0,02 mm
C. 0,20 – 0,002 mm
D. 0,50 – 0,20 mm

1.8 A soil profile of a wet soil is _____ .

A. A/B
B. B/C
C. D/G
D. O/G

1.9 The number of incisors in a cow's upper jaw is _____ .

A. 8
B. 0
C. 4
D. 2

1.10 Bloedarmoede word gewoonlik veroorsaak as gevolg van 'n tekort aan _____.

A. kobalt
B. jodium
C. yster
D. kalsium

1.11 'n Tekort aan jodium in die rantsoen lei tot _____ .

A. skildkliervergroting
B. glukogeen
C. oesteomalasia
D. lamkruis

1.12 Een van die volgende dra NIE by tot gronderosie in Suid-Afrika NIE.

A. Verkeerde bewerking
B. Temperatuur
C. Helling van die land
D. Veldbrande

1.13 'n Primêre natuurlike bron is _____ .

A. arbeiders
B. grond
C. kapitaal
D. bome

1.14 Die arbeiders wat deel van hul lone *in natura* ontvang, is _____ .

A. stukwerkers
B. seisoenale werkers
C. permanente werkers
D. los werkers

1.15 Een van die volgende is nie 'n vorm van kapitaal nie:

A. Vaste kapitaal
B. Bewerkingskapitaal
C. Beweeglike kapitaal
D. Produksiekapitaal

1.16 'n Voorbeeld van 'n partenokarpiese vrug is 'n _____ .

A. peer
B. navellemoen
C. vy
D. papaja

1.10 Anaemia is usually caused by a deficiency of _____ .

A. cobalt
B. iodine
C. iron
D. calcium

1.11 A shortage of iodine in the ration leads to _____ .

A. goitre
B. glucagons
C. osteomalacia
D. swayback

1.12 One of the following parts does NOT contribute to soil erosion in the RSA.

A. Incorrect cultivation
B. Temperature
C. Slope of the land
D. Veld fires

1.13 _____ is/are an example of a primary natural resource.

A. Labourers
B. Soil
C. Capital
D. Trees

1.14 The labourers who receive part of their wages *in natura* are _____ .

A. piece workers
B. seasonal workers
C. permanent workers
D. casual workers

1.15 One of the following is not a form of capital:

A. Fixed capital
B. Working capital
C. Movable capital
D. Product capital

1.16 An example of parthenocarpic fruit is a _____ .

A. pear
B. naval orange
C. fig
D. paw-paw

1.17 'n Kunsmismengsel 3:1:5 (38) bevat _____ % stikstof.

A. 12,7
B. 4,2
C. 10
D. 15

1.18 Fisiologiese onvrugbaarheid by koeie word veroorsaak deur _____ .

A. koors
B. prolaps van vagina
C. sub-estrus
D. infeksie van geslagsorgane

1.19 Die endokrienklier verantwoordelik vir die produksie van testosteroon staan bekend as _____ .

A. Leydig-selle
B. Cowper klier
C. Sertoli-selle
D. vesikulêre klier

1.20 'n Koei behoort geïnsemineer te word _____ .

A. veertien uur na estrus
B. in die aand
C. gedurende estrus
D. in die oggend

20x2= **(40)**

VRAAG 1B

Verskaf die korrekte term/woord vir elk van die volgende beskrywings.

1.21 Koolhidrate wat gestoor word in die lewer en spiere van diere.

1.22 Die proses waardeur voedsel deur die spysverteringskanaal beweeg.

1.23 Die proses as 'n ryp ovum in die infundibulum vrygestel word.

1.24 Die verweringsproses as 'n mineraal met water reageer om 'n nuwe sagter en maklik verweerbare mineraal te vorm.

1.25 Die verlies van water deur verdamping vanaf die blaaroppervlaktes.

1.26 Die koudste helling in Suid-Afrika.

1.27 'n Vertikale snit deur die grond wat die verskillende horisonte aandui.

1.28 Die struktuur van 'n blom wat bestaan uit die stempel, styl en vrugbeginsel.

1.17 A fertilizer mixture 3:1:5 (38) contains _____% nitrogen.

A. 12,7
B. 4,2
C. 10
D. 15

1.18 Physiological infertility among cows is caused by _____ .

A. fever
B. prolapse of vagina
C. sub-oestrus
D. infection of sex organs

1.19 The endocrine gland responsible for the production of testosterone, is known as _____ .

A. Leydig cells
B. Cowper's gland
C. Sertoli cells
D. vesicular glands

1.20 A cow should be inseminated _____ .

A. fourteen hours after oestrus
B. in the evening
C. during oestrus
D. in the morning

20x2= **(40)**

QUESTION 1B

Supply the correct term for each of the following descriptions.

1.21 Carbohydrates stored in the liver and muscles of animals.

1.22 The process by which food is moved through the alimentary canal.

1.23 The process by which the ripe ovum is released into the infundibulum.

1.24 The weathering process where a mineral reacts with water to form a new softer and more erosive mineral.

1.25 The loss of water through evaporation from leaf surfaces.

1.26 The coldest slope in South Africa.

1.27 A vertical section through soil showing different soil horizons.

1.28 The structure which consists of stigma, style and ovary of a flower.

1.29 Die veldtipe waarvan gras die dominante plantsoort is.

1.30 Die oordra van 'n ryp stuifmeelkorrel van die helmknop na die ryp, ontvanklike stempel van 'n ander blom van dieselfde plant. 10x2= **(20)**

VRAAG 1C

Vul die ontbrekende woorde in.

1.31 Die _____ is die hoogste prys vir produkte wat op 'n beheerde mark verkoop word.

1.32 'n _____ is die resultaat van die interaksie tussen kopers en verkopers op 'n mark.

1.33 Die Karoo kan geklassifiseer word as _____ .

1.34 In die stuifmeelkorrel gee die generatiewe kern oorsprong tot die _____ .

1.35 _____ is as een of beide testis in die abdominale holte agterbly. **(5)**

VRAAG 1D

Watter metode sal aangewend word om die volgende in 'n rantsoen aan te vul?

1.36 Vitamiene. (1)

1.37 Nie-proteïen stikstof. (1)

1.38 Groeistimulante. (1)

1.39 Minerale. (2)

(5)

TOTAAL VIR AFDELING A: [70]

1.29 The veld type with grass as the dominant plant type.

1.30 The transfer of ripe pollen from the anther to the ripe receptive stigma of another flower on the same plant.

10x2= **(20)**

QUESTION 1C

Fill in the missing words.

1.31 The _____ is the highest price for products which are sold on a controlled market.

1.32 A _____ is the result of the interaction of buyers and sellers on a market.

1.33 The Karoo can be classified as _____ .

1.34 In the pollen grain, the generative nucleus gives rise to _____ .

1.35 _____ is when one or both testis remains in the abdominal cavity. **(5)**

QUESTION 1D

What method will be used to supplement the following in a ration?

1.36 Vitamins (1)

1.37 Non-protein nitrogen (1)

1.38 Growth stimulants (1)

1.39 Minerals (2)
(5)

TOTAL FOR SECTION A: [70]

AFDELING B

VRAAG 2

2.1 Brak kom dikwels voor in grond. Teken die onderstaande tabel in jou antwoordboek oor en voltooi dit.

2.1.1	(1)		(1)
2.1.2	(2)		(2)

2.1.1 Voorsien 'n ander naam vir beide tipes brak. (2)

2.1.2 Gee die ione wat deur beide braksoorte in Vraag 2.1.1 geabsorbeer word. (4)

2.1.3 Beskryf die herwinning van swartbrak. (6)

2.2 Noem die faktore wat gunstig is vir die ontbinding van organiese materiaal. (5)

2.3 Noem VYF faktore wat bydra tot die ontwikkeling van grondstruktuur. (5)

2.4 Noem die vorm van waterverlies wat voorkom word deur die volgende maatreëls:

2.4.1 Kontoerwalle

2.4.2 Uitroei van onkruid

2.4.3 'n Oppervlakbedekking

2.4.4 Gekontroleerde besproeiing

2.4.5 Kultivars met 'n klein blaaroppervlakte in verhouding met 'n groot wortelstelsel (5)

2.5 Kies die orgaan uit die **spysverteringskanaal** van 'n koei in **Kolom B** wat pas by die **stelling** in **Kolom A** deur slegs die **alfabetletter** regoor die **vraagnommer** in jou **antwoordboek** te skryf.

KOLOM A STELLING		KOLOM B SPYSVERTERINGSKANAAL	
2.5.1	Dermvlokkies kom daar voor	A.	Retikulum
2.5.2	Die kleinste kompartement van die herkouer se maag	B.	Omasum
		C.	Rumen
2.5.3	Fermentasie vind daar plaas	D.	Abomasum
2.5.4	Het 'n pH laer as 3	E.	Duodenum
2.5.5	Werklike verteringsproses vind daar optimaal plaas		
2.5.6	Pankreassap kom daar voor		

(6)

SECTION B

QUESTION 2

2.1 Brack often occurs in soil. Copy the table below in your answer book and complete it.

2.1.1	(1)		(1)
2.1.2	(2)		(2)

2.1.1 Provide another name for both types of brack. (2)
2.1.2 Name the ions which are absorbed by both types of brack in Question 2.1.1. (4)
2.1.3 Describe reclamation of black brack. (6)

2.2 Name factors favourable for the decomposition of organic matter. (5)

2.3 List FIVE factors that contribute to the development of soil structure. (5)

2.4 Name the form of water loss that is prevented by the following measures:

2.4.1 Contour walls

2.4.2 Eradicate weeds

2.4.3 A surface cover

2.4.4 Controlled irrigation

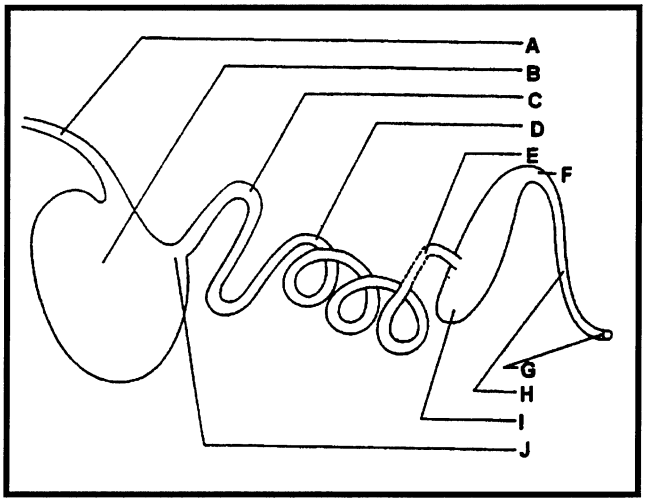
2.4.5 Cultivars with small leaf surface in comparison to a large root system (5)

2.5 Choose the organ from the **digestive system** of a cow in **Column B** that fits each **statement** in **Column A** by writing only the **alphabet letter** next to the correct **question number** in your **answer book**.

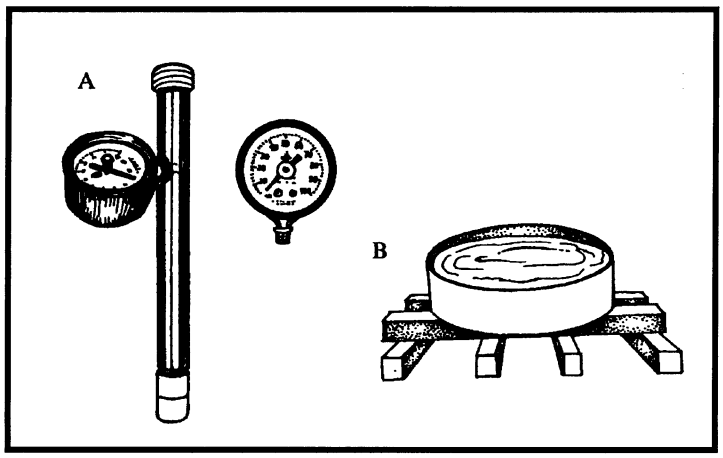
COLUMN A STATEMENT		COLUMN B DIGESTIVE SYSTEM	
2.5.1	Villi occurs there	A.	Reticulum
2.5.2	Smallest compartment of ruminant's stomach	B.	Omasum
2.5.3	Fermentation occurs here	C.	Rumen
2.5.4	Has a pH lower than 3	D.	Abomasum
2.5.5	Real digestive process takes place optimally	E.	Duodenum
2.5.6	Pancreatic juice appears here		

(6)

2.6 Benoem die volgende skets van **A** tot **J**. (10)



2.7 Bestudeer die onderstaande diagram en beantwoord die volgende vrae.



2.7.1 Identifiseer apparaat **A** en **B**. (2)
2.7.2 Wat word bedoel met **geskeduleerde besproeiing**? (2)
2.7.3 Verduidelik wat die letters in die formule $Et = E_oXF$ verteenwoordig. (3)
[50]

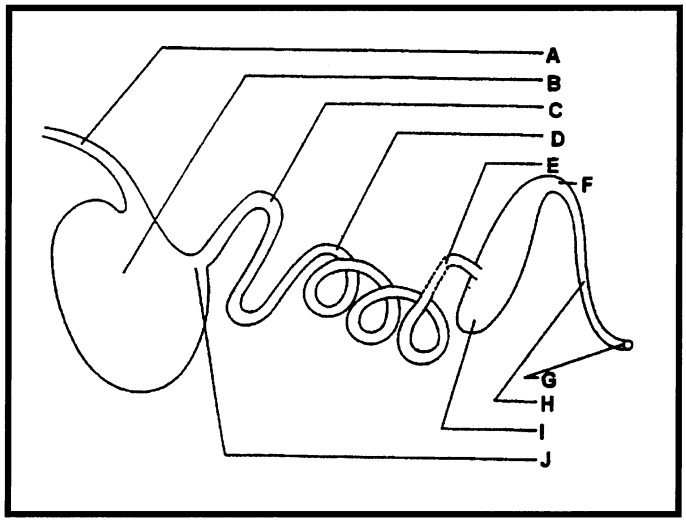
VRAAG 3

3.1 Dreinering is baie belangrik vir suksesvolle gewasverbouing. Beantwoord die volgende vrae:

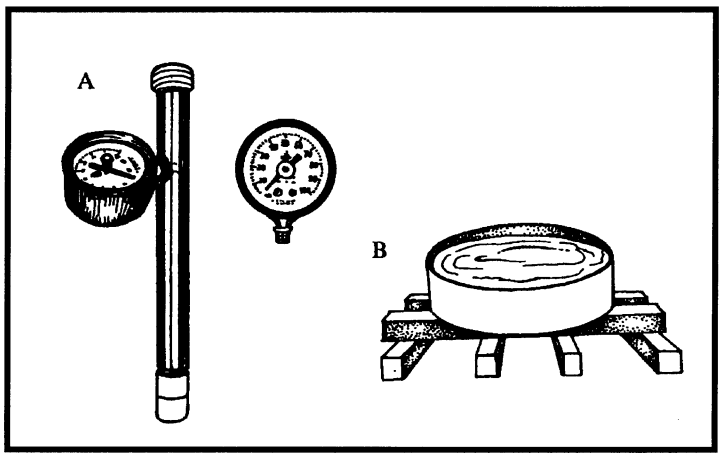
3.1.1 Verduidelik wat bedoel word met **dreinering van grond**. (2)

3.1.2 Bespreek die faktore wat 'n boer in gedagte moet hou by die beplanning van 'n dreineringstelsel. (6)

2.6 Label the following diagram from **A** to **J**. (10)



2.7 Study the diagram below and answer the questions that follow.



2.7.1 Identify apparatus **A** and **B**. (2)
2.7.2 What is means by **scheduled irrigation**? (2)
2.7.3 Explain what the letters in the formula Et = E_oXF represent. (3)
[50]

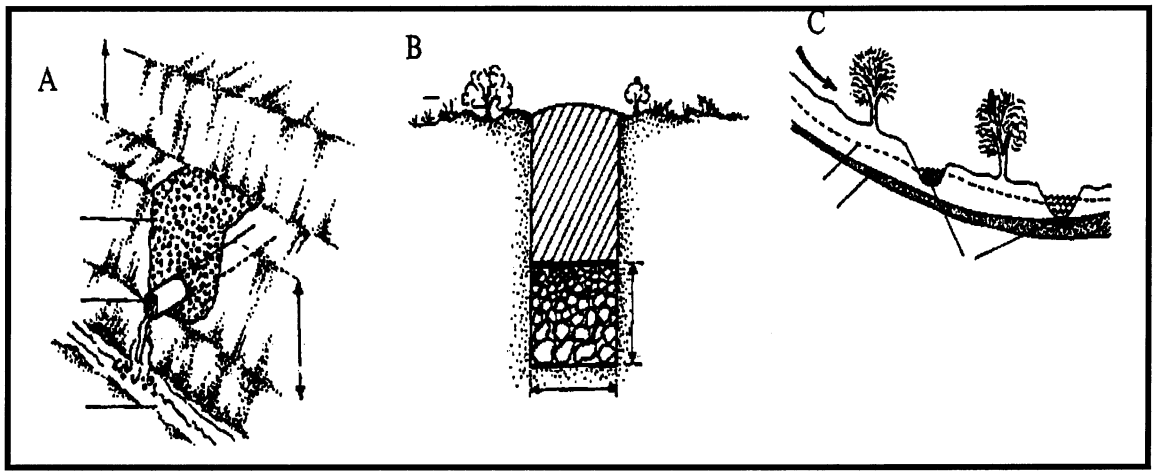
QUESTION 3

3.1 Drainage is important for successful crop cultivation. Answer the following questions:

3.1.1 Explain what is meant by **drainage of soil**. (2)

3.1.2 Discuss factors the farmer has to take into account when planning a drainage system. (6)

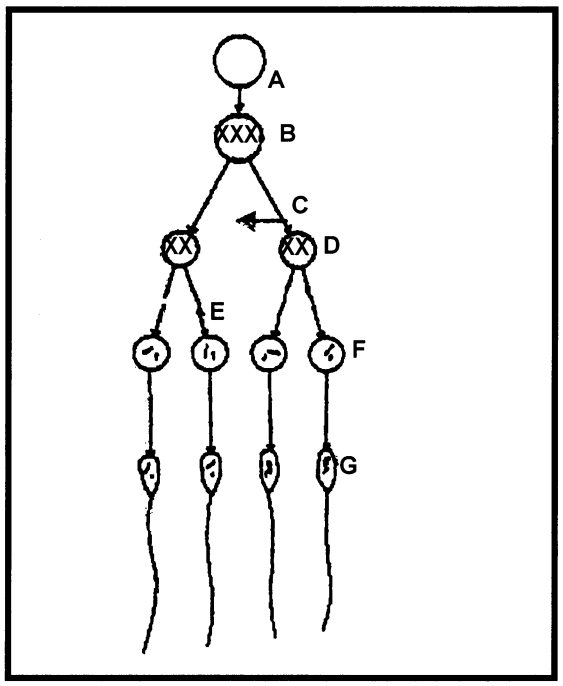
3.1.3 Identifiseer die DRIE tipes dreinering, genommer **A** tot **C**. (3)



3.2 As 'n voer 'n TVV-inhoud van 80% en 'n verteerbare proteïeninhoud van 8% het, bereken die voedingsverhouding van die voer. (6)

3.3 Noem SEWE faktore wat die voedingswaarde sowel as die verteerbaarheid van hooi bepaal. (7)

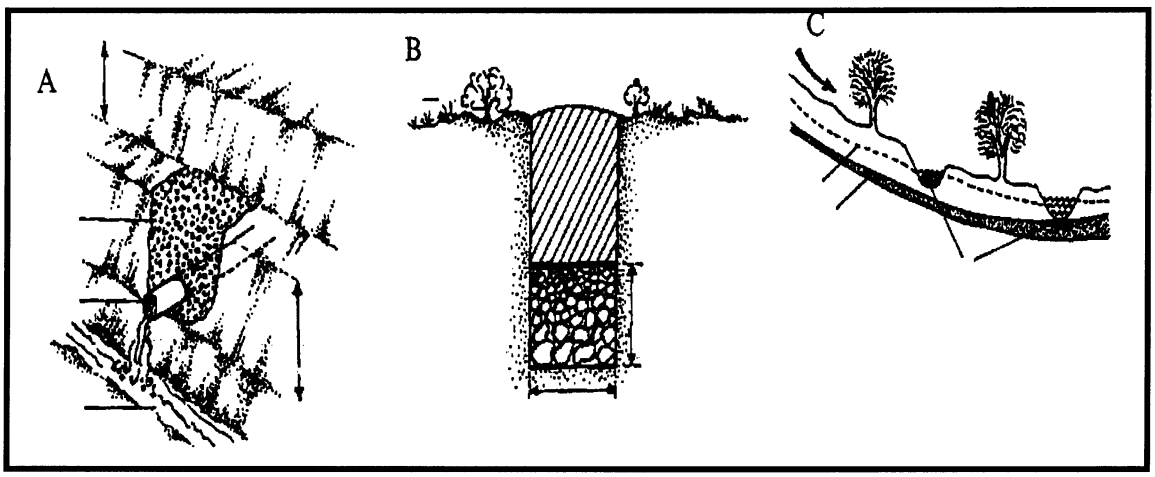
3.4 Bestudeer die onderstaande diagram en voorsien byskrifte vir dele **A** tot **G**. (7)



3.5 'n Boer wil raad hê oor sy bul wat normaal voorkom, maar **geensins belangstel in die koeie wat in estrus is nie**. Verduidelik VYF moontlike oorsake vir die bul se gedrag. (10)

3.6 Noem VIER voordele van opgradering. (4)
[45]

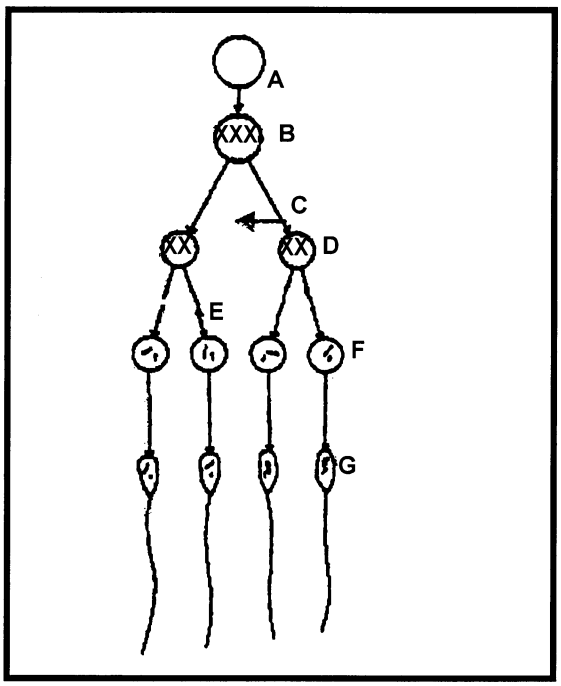
3.1.3 Identify the THREE types of drains labelled **A** to **C**. (3)



3.2 If a feed has a TDN content of 80% and a DP digestible protein content of 8%, calculate the nutritive ratio of the feed. (6)

3.3 Name SEVEN factors that determine the nutritive value as well as the digestibility of hay. (7)

3.4 Study the diagram below and label parts **A** to **G**. (7)



3.5 A farmer wants advice with regard to his bull that seems normal but **takes no interest in the cows which are in oestrus**. Explain FIVE possible causes for the bull's reaction. (10)

3.6 List FOUR advantages of upgrading. (4)

[45]

VRAAG 4

4.1 Noem VYF belangrike funksies van water in plante. (5)

4.2 Noem die voedingselement waaraan daar waarskynlik 'n tekort is as elk van die volgende simptome waargeneem word:

4.2.1 Kleinblaarsiekte

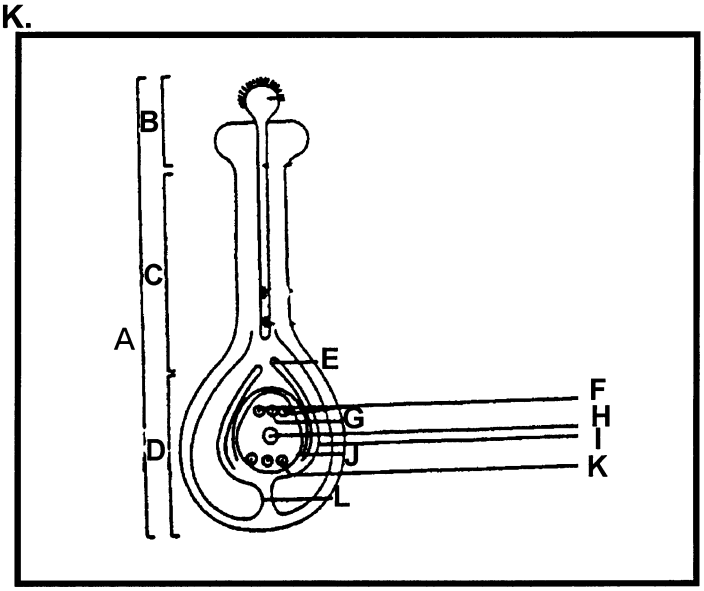
4.2.2 Pieringblaar

4.2.3 Interne verkurking in appels

4.2.4 Chlorose van die jonger blare (4)

4.3 Ureum is die mees gekonsentreerde stikstofkunsmis wat in Suid-Afrika beskikbaar is. Noem VIER van sy gebruike. (4)

4.4 4.4.1 Bestudeer die onderstaande diagram en verskaf byskrifte vir dele **A** tot **K.** (12)



4.4.2 Verduidelik die funksies van genommerde dele.

a) G
b) H
c) F
d) E (8)

4.5 Verduidelik die begrip **dubbel bevrugting**. (4)

4.6 Wat verstaan jy onder die volgende terme met betrekking tot vegetatiewe voortplanting?

4.6.1 Risoom (wortelstok)
4.6.2 'n Bol
4.6.3 Steggie
4.6.4 Uitloper (8)

[45]

QUESTION 4

4.1 List FIVE important functions of water in plants. (5)

4.2 Name the nutrient element which must be deficient for each of the following symptoms to be exhibited:

4.2.1 Small leaf disease

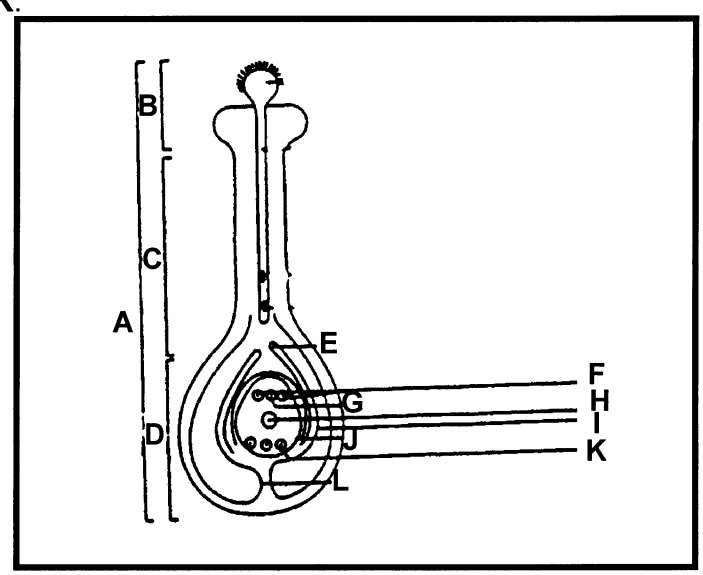
4.2.2 Saucer leaf phenomenon

4.2.3 Internal corking in apples

4.2.4 Chlorosis of younger leaves occurs (4)

4.3 Urea is a most concentrated nitrogen fertilizer available in South Africa. State FOUR of its uses. (4)

4.4 4.4.1 Study the diagram below and provide the labels for parts numbered **A** to **K**. (12)



4.4.2 Explain the functions of the following numbered parts:

a) G
b) H
c) F
d) E (8)

4.5 Explain the meaning of **double fertilization**. (4)

4.6 What do you understand by the following terms with reference to vegetative propagation?

4.6.1 Rhizome
4.6.2 A bulb
4.6.3 Runner
4.6.4 Tuber (8)

[45]

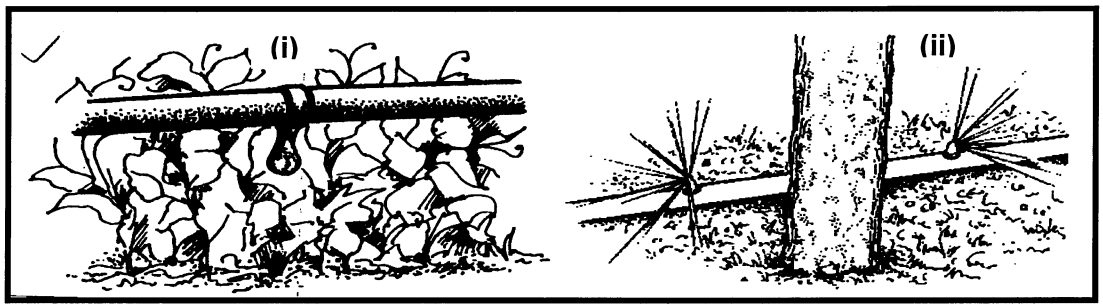
VRAAG 5

5.1 Bespreek die funksies van grond as 'n belangrike landboukundige hulpbron. (10)

5.2 Dui stap-vir-stap die prosedure aan wat gevolg word om inligting te versamel om jou in staat te stel om grond effektief te benut. (6)

5.3 Noem die VYF hooftipes veld in Suid-Afrika. (5)

5.4 Bestudeer die illustrasie(s) en beantwoord die vrae wat volg.



5.4.1 Identifiseer (i) en (ii). (2)

5.4.2 Noem DRIE voordele van (ii). (3)

5.4.3 Noem VYF nadele van of (ii). (5)

5.5 Beantwoord die volgende vrae oor wisselbou.

5.5.1 Wat word bedoel met **wisselbou?** (1)

5.5.2 Noem AGT redes hoekom wisselbou toegepas moet word. (8)

5.6 Noem VYF vereistes vir fotosintese. (5)
[45]

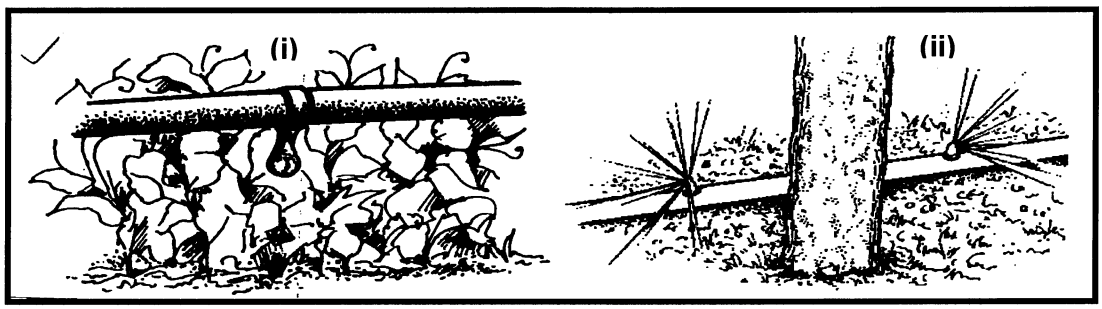
QUESTION 5

5.1 Describe the functions of soil as an agricultural resource of great importance. (10)

5.2 Indicate, step by step, the procedure used to gather information which will enable you to utilize soil effectively. (6)

5.3 State the FIVE main types of veld in South Africa. (5)

5.4 Study the illustrations and answer the questions that follow.



5.4.1 Identify (i) and (ii). (2)

5.4.2 Provide THREE advantages of (ii). (3)

5.4.3 Provide FIVE disadvantages of (ii). (5)

5.5 Answer the following questions on crop rotation:

5.5.1 What is meant by **crop rotation**? (1)

5.5.2 List EIGHT reasons why crop rotation should be practised. (8)

5.6 List FIVE requirements for photosynthesis. (5)
[45]

VRAAG 6

6.1 Noem SES boerdery-aktiwiteite wat kan lei tot besoedeling. (6)

6.2 Noem SEWE ekonomiese kenmerke van grond. (7)

6.3 Bespreek kortliks VYF probleme met arbeid op plase in Suid-Afrika. (10)

6.4 Sit uiteen oor watter vaardighede 'n boer moet beskik om 'n plaas effektief te bestuur. (6)

6.5 Noem die VYF bestuursbeginsels. (5)

6.6 Beantwoord die volgende vrae oor korporatiewe bemarking:

6.6.1 Noem TWEE tipes koöperasies en dui die verskil daartussen aan. (4)

6.6.2 Noem die VYF doelwitte van gekontroleerde bemarking. (5)

6.6.3 Definieer die begrip **vrye bemarking**. (2)
[45]

TOTAAL VIR AFDELING B: [230]

TOTAAL: 300

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QUESTION 6

6.1 Name SIX farming activities that can lead to pollution. (6)

6.2 Name SEVEN economical characteristics of soil. (7)

6.3 Briefly discuss FIVE problems associated with farm labour in South Africa. (10)

6.4 Outline the skills a farmer should possess in order to manage a farm efficiently. (6)

6.5 Name FIVE managerial principles. (5)

6.6 Answer the following questions on co-operative marketing:

6.6.1 Name TWO groups of co-operatives and indicate the difference between them. (4)

6.6.2 State the FIVE aims of controlled marketing. (5)

6.6.3 Define the concept **free marketing**. (2)
[45]

TOTAL FOR SECTION B: [230]

TOTAL: 300

END