



**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

**AGRICULTURAL SCIENCES
CONTROLLED TEST
SEPTEMBER 2026**

MARKS: 100

TIME: 2 hours

This question paper consists of 11 pages

INSTRUCTIONS AND INFORMATION

1. This question paper consist of TWO sections, namely SECTION A and SECTION B
2. Answer ALL the questions in the answer book
3. Start each question from SECTION B on a NEW page.
4. Study the questions carefully and make sure you answer what is required.
5. Number your answers correctly according to the numbering system used in this question paper.
6. Non-programmable calculator may be used.
7. Show all calculations, including formulae, where applicable
8. Write neatly and legibly.

SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the correct answer and write the correct letter (A – D) next to the question number (1.1.1 – 1.1.10) in the ANSWER BOOK. NO marks will be awarded if more than one letter appears for an answer.

1.1.1 A catabolic process where carbohydrates are broken down and energy is released.

- A Mineralization
- B Photosynthesis
- C Anabolism
- D Respiration

1.1.2 The leaf pigment responsible for the orange Colour in plants is/are ...

- A Carotenoids.
- B Xanthophylls
- C Carotene.
- D Chlorophyll

1.1.3 The splitting of water molecules into hydrogen and oxygen atoms in the presence of light.

- A Photophosphorylation
- B Respiration
- C Photosynthesis
- D Photolysis

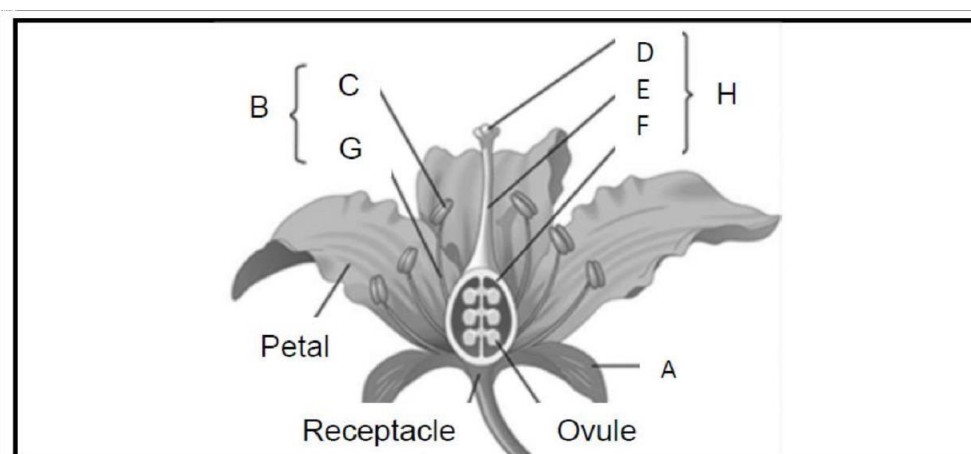
1.1.4 The following methods can be used by farmers to increase the rate of photosynthesis.

- (i) Growing crops in green houses
- (ii) Trellising plants
- (iii) Intercropping

(iv) Using optimum plant density

- A (i), (ii) and (iii)
- B (i), (iii) and (iv)
- C (i), (ii) and (iv)
- D (ii), (iii) and (iv)

1.1.5 The letter **H** in the diagram below represents the ...



- A Stamen.
- B Stigma.
- C Pistil.
- D Androecium

1.1.6 A scientific test conducted by some learners in a stream revealed that there was a very high level of fertilizer in the water.

The situation could be described as ...

- A Eutrophication.
- B Leaching.
- C Ammonification.
- D Immobilization

1.1.7 A plant part modified for the transportation of water and dissolved minerals from roots to the leaves of plants.

- A Phloem
- B Stalk
- C Xylem
- D Cuticle

1.1.8 An example of a micro-element.

- A Molybdenum
- B Nitrogen
- C Potassium
- D Sulphur

1.1.9 The is a non-sexual part of a flower.

- A Stamen
- B Pistil
- C Calyx
- D Stigma

1.1.10 A farmer buys a fertilizer with the inscription 3:2:1 (28) on it.
This means the fertilizer contains...

- A 28% N.
- B 14% N.
- C 50% N.
- D 9,3% N.

(10X2) (20)

- 1.2. Choose a concept from COLUMN B that matches a description in COLUMN A. Write only the letter next to the question number (1.2.1 – 1.2.5) on the ANSWER BOOK,

COLUMN A	COLUMN B
1.2.1. The movement of materials from leaves to other tissues throughout the plant.	A. Calcitic lime
1.2.2. Contains a small percentage of magnesium carbonate.	B. Parthenocarp
1.2.3. Plant tissue that transports water from the roots to the other parts of the plant.	C. Stigma
1.2.4. The production of fruit without fertilisation of ovules.	D. Xylem
1.2.5. Receives pollens during pollination.	E. Dolomitic lime
	F. Transpiration
	G. Translocation
	H. Phloem

(5x2)

10

- 1.3 Give the correct terminology for each of the following definitions/description. Write the answer next to the question number in your answer book.

- 1.3.1 The fusion of male gamete with female gamete to form a zygote.
- 1.3.2 Application of fertilisers through irrigation water.
- 1.3.3 The upward pulling force exerted on the water column in plants when water is lost during transpiration.
- 1.3.4 The process to determine suitability soil for Agricultural purpose and nonagricultural purpose.
- 1.3.5 A substance applied to the soil to correct acidity.

(5x2)

10

1.4 Change the underlined word(s) in each of the following statements to make them TRUE.
Write only the answer next to the question number in the ANSWER BOOK.

1.4.1 The development of fruit without the stimulus is simulative
Parthenocarp

1.4.2 The movement of water molecules from a region of higher concentration
to lower concentration is diffusion.

1.4.3 Farm Yard Manure is a well-rotted organic residue often prepared in
heaps.

1.4.4 Necrosis is the yellowing of plant leaves due to the non-production of
chlorophyll in plants.

1.4.5 Micro-elements are plant nutrients required in large quantities.

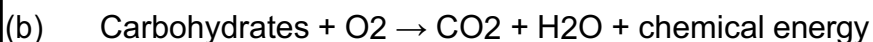
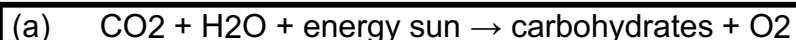
(5x1) 5

TOTAL SECTION A 45

SECTION B

QUESTION 2: PLANT NUTRITION

- 2.1 Two schematic representations of two chemical processes that take place in plants are indicated as follows:



- 2.1.1 Identify the processes (a) and (b) in QUESTION 2.1. (2)

Comment on the differences between the two chemical processes

- 2.1.2 under the following:

a Energy

(2)

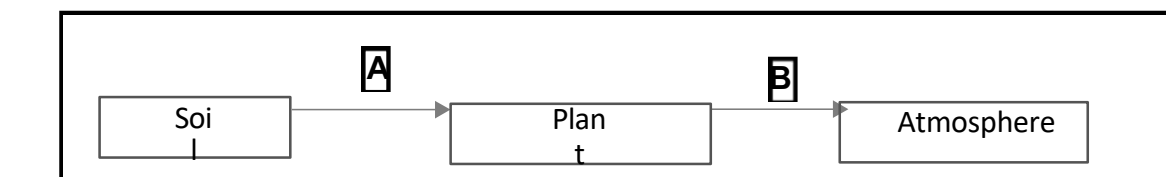
b Food

(2)

- 2.1.3 List TWO storage organs in which excess starch, sugars, lipids or protein are stored in plants. (2)

(8)

- 2.2 The flow chart diagram below shows how water moves in plants.



- 2.2.1. Identify the processes **A** and **B**. (2)

- 2.2.2. Name ONE force that can affect the upward movement of water in plants. (1)

- 2.2.3. Describe TWO ways in which plants reduce water movement in direction **B**. (2)

(5)

- 2.3 Two ion-uptake mechanisms have been indicated below. Match the ion-uptake mechanisms to the statements in QUESTIONS 2.3.1, 2.3.2 and 2.3.3.

Passive ion uptake; Active ion uptake

- 2.3.1. Movement of molecules from an area of low concentration to an area of high concentration (1)

- 2.3.2. Requires energy and the use of carrier proteins to move nutrients (1)

- 2.3.3. Mineral nutrient ions cross cell membrane without requiring energy (1)

- 2.4 The picture below shows an example of a bag of inorganic fertiliser.



- 2.4.1 Calculate the percentage of nitrogen in the bag of fertiliser. (3)
- 2.4.2 List TWO fertiliser application methods. (2)

2.5

Some Grade 11 learners tested the effect of different nutrient elements on the formation of buds in a rose plant for six months. Their findings were recorded in a table as follows:

Nutrient element	Number of buds formed after three months
zinc	8
cobalt	5
nitrogen	20
boron	25
potassium	15

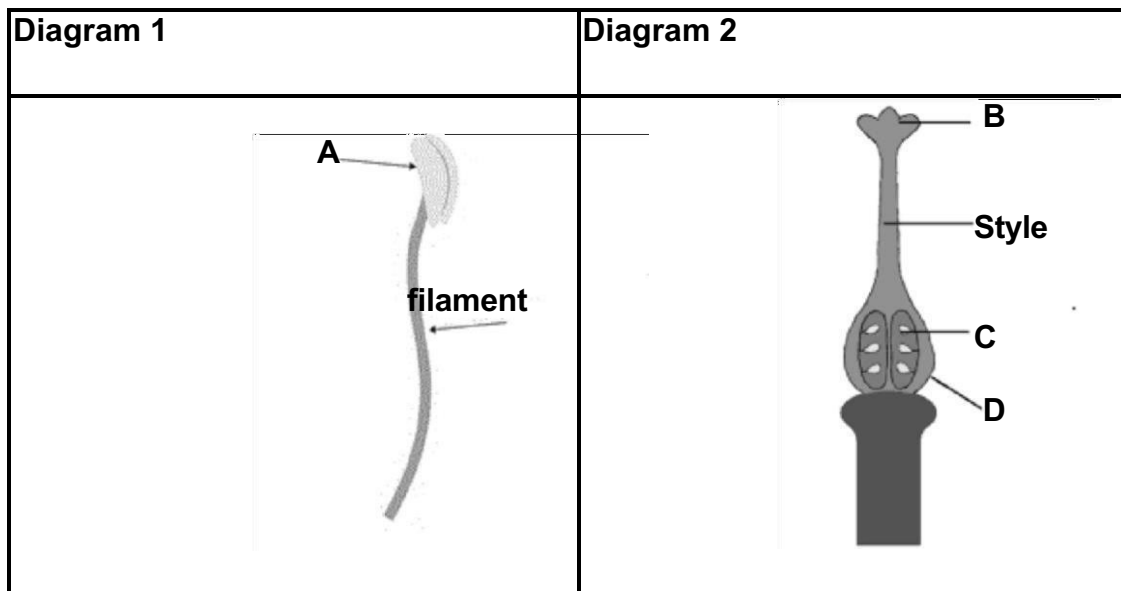
- 2.5.1 Draw their findings using a bar graph and give an appropriate heading to the graph. (5)
- 2.5.2 Tabulate the nutrient elements used for the trials into micro and macro nutrients elements (4)

2.6 Farm manure is rich in fibre that improves the soil structure and its water retention properties. It is a rich source of nitrogen to organic farming. Notwithstanding its importance in farming, several factors may affect the composition of farm manure. Where farmers identify their soils to be acidic; they apply agricultural lime to neutralise the soil acidity.

- 2.6.1 Identify ONE advantages of farm manure from the scenario above. (1)
- 2.6.2 Predict TWO factors that could affect the composition of farm manure. (2)
- 2.6.3 State any other TWO examples of organic fertilisers other than the one on the passage above. (2)
- (35)

QUESTION 3: PLANT REPRODUCTION (SEXUAL)

3.1 The diagram below shows part of a flower.



- 3.1.1 Provide captions for diagrams 1 and 2 above. (2)
- 3.1.2 Describe the function of part C in diagram 2. (1)

- 3.1.3 Identify flower parts B and D. (2)
- 3.1.4 Name the process during which pollen grains are transferred from part Of- diagram 1 to part B of diagram 2. (1)
- 3.1.5 Give TWO examples of agents for the process described in QUESTION 3.1.4. (2)
- 3.1.6 Define the concept 'double fertilization' (2)
- 3.1.7 Give the letter of the parts that will turn into: (1)
- a fruit (1)
- b seed (1)

12

3.2

Process A	Process B
The production of fruit without the fertilisation of ovules, resulting in production of seedless fruit.	When fruit tree drops many young flowers and fruit to reduce the amount of fruit set within the first ten days.

- 3.2.1 Identify the processes A and B described above. (2)
- 3.2.2 State the TWO types of process A. (2)
- 3.2.3 Give TWO climatic factors affecting process B (2)
- (6)

3.3 Resting period in which a seed failing to germinate even if conditions are favourable is regarded as Seed Dormancy.

- 3.3.1 Name TWO conditions that are required for successful seed germination (2)
- TOTAL: 20**
- GRAND TOTAL: 100**