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081105T4SAR

SUSTAINABLE AGRICULTURE FOR RURAL DEVELOPMENT LEVEL 5

Demonstrate Understanding for SARD

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AGR/OS/SARD/CC/01/5

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November/December 2025

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TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

WRITTEN ASSESSMENT

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Time: 3 HOURS

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INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections: **A** and **B**.

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2. Answer **two** questions in section **A** and **ANY THREE (3) questions in section B**.

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3. Marks for each question are indicated in the **brackets**.

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4. Candidates are provided with a separate **answer booklet**.

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5. Do not write on the question paper.

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This paper consists of FOUR (4) printed pages

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Read and check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A (40 MARKS)

Attempt ALL the questions in this section.

1. **Biology** is such a branch, is divided into two broad branches. Define the TWO

branches. Date: 19.11.2025 11:29 AM

(4 Marks)

a. Botany

b. Zoology

2. During a biology lesson, students discussed how materials move in and out of the cell. In relation to this discussion, Define the following physiological processes

a. Osmosis

b. Active Transport

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(2 Marks)

(2 Marks)

3. Photosynthesis is the process by which green plants make their own food. Write the overall balanced chemical or word equation for this process. (4 Marks)

4. Magnification brings the invisible into view, enabling observation, analysis, and discovery in science and medicine. Calculate the total magnification of a microscope, given that the objective lens has a power of x40 and the eyepiece lens has a power of x10. (4 Marks)

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5. Cells are the basic structural, functional, and biological units of all living organisms. Outline FOUR structural differences between a plant cell and an animal cell. (4 Marks)

6. Cells vary in shape, type and size depending on their function. Differentiate between eukaryotic and prokaryotic cells. (4 Marks)

7. In an experiment, learners compared rates of photosynthesis in various environments. State FOUR environmental factors that may reduce the rate of photosynthesis. (4 Marks)

8. The endoplasmic reticulum (ER) is an essential organelle involved in various cellular functions. It exists as rough and smooth ER, each playing specific roles in the cell's

operations. List FOUR functions of this organelle. (4 Marks)

9. All organisms are made of matter. Give FOUR properties of matter found in all organisms.

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(4 Marks)

10. Genetics is the branch of biology that deals with the study of heredity and variation in living organisms. Define; (4 Marks)

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SECTION B. (60 MARKS)

Attempt Any THREE Questions in This Section

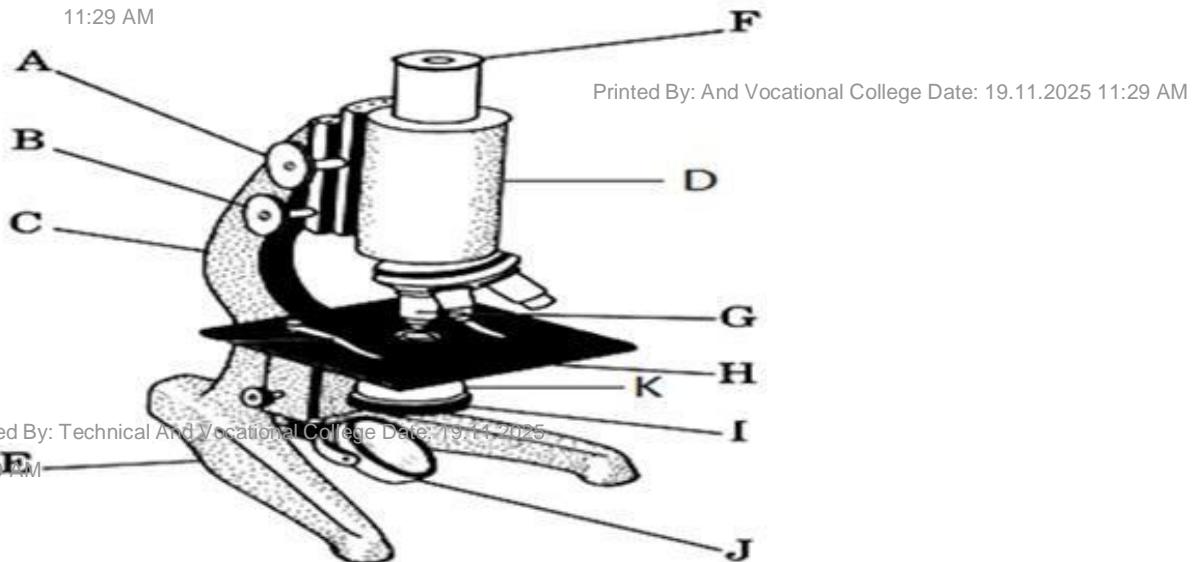
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a. During a lab session, learners were instructed to draw a sketch of a light microscope and came up with the following diagram. Using the diagram label parts A – J, stating the function of each part identified. (10 Marks)

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b. Enzymes are biological catalysts made of proteins. Describe FIVE properties of enzymes. (10 Marks)

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12.

a. Living things are able to breathe and reproduce young ones of the same kind.

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Date: 19.11.2025 Explain other FIVE features exhibited by living things. (10 Marks)

b. Knowledge of genetics can be used to increase animal productivity and income.

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Discuss FIVE roles of genetics in livestock breeding. (10 Marks)

13. Cellular transport is essential for survival because it allows the cell to take in nutrients,

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remove waste, and maintain balance. In relation to the above;

a. Distinguish between diffusion and active transport, using the criteria provided in the table below. (10 Marks)

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Criteria	Diffusion	Active Transport
Definition		
Concentration Gradient		
Specificity		
Transport Mechanism		

Explain FIVE factors that affect the rate of diffusion, explaining how each factor influences the movement of molecules across membranes. (10 Marks)

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14. During a science lesson, students were learning about the physical world and its composition. The teacher introduced the concept of matter.

- Define matter. (1 Mark)
- Differentiate between the three states of matter: solids, liquids, and gases, based on their structural properties, molecular arrangement, and behavior under different conditions. (9 Marks)

State	Structure	Molecular Arrangement	Behavior
Solid			
Liquid			
Gas			

- Describe FIVE properties of matter. (10 Marks)

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