

**051106T4APB**

**APPLIED BIOLOGY LEVEL 6**

**APB/OS/AB/CR/04/6**

**Apply Herbarium, Museum, Aquarium and Vivarium Techniques**

**March/April 2026**



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

**WRITTEN ASSESSMENT**

**TIME: 2 HOURS**

**INSTRUCTIONS TO CANDIDATE**

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and **ANY THREE** (3) questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a separate answer booklet
5. Do not write on the question paper.

**This paper consists of THREE (3) printed pages**

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

**SECTION A (40 MARKS)**

*Answer ALL questions in this section*

1. Aquarium is a small ecosystem of aquatic organisms in the laboratory. State FOUR Significance of an aquarium. (4 Marks)
2. An aquarium is equipped with various accessories to enhance the survival of aquarium specimens. Highlight the importance of the following components of an aquarium.
  - i. Air Pump and Aerator. (1 Mark)
  - ii. Heater and Thermometer. (1 Mark)
  - iii. Lighting System. (1 Mark)
  - iv. Water. (1 Mark)
3. A vivarium is used to keep reptiles and amphibians for study, research or for beauty. Name FOUR examples of amphibians kept in a vivarium. (4 Marks)
4. Formaldehyde is a fixative substance used in museum. Give FOUR disadvantages of using formaldehyde. (4 Marks)
5. Students were asked to assemble apparatus for specimen collection. List FOUR cutting tools they assembled for collection of herbarium specimens. (4 Marks)
6. In fish farming, fingerlings can be sourced from two main sources. Outline the TWO sources of fingerlings. (4 Marks)
7. Artificial breeding is one of the mostly preferred breeding methods in fish farming. State and explain TWO methods of artificial breeding in fish farming. (4 Marks)
8. Poor management practices can lead to outbreak of diseases in ponds. Mention FOUR causes of diseases in a fish pond. (4 Marks)
9. Museum specimens are properly labelled for easy identification. List FOUR information included in the label of a museum specimen. (4 Marks)
10. Mounting ensures herbarium specimens remain scientifically viable for long-term storage. State FOUR different mounting techniques available for mounting a woody shrub branch with heavy fruit. (4 Marks)

## SECTION B (60 MARKS)

Answer any **THREE** questions in this section

11. To maintain a healthy aquatic environment, it is important to ensure there is adequate oxygen levels and proper fish diseases prevention.
  - a) Explain FIVE methods of incorporating oxygen into an aquarium. (10 Marks)
  - b) Describe FIVE ways you would use to prevent the aquarium diseases. (10 Marks)
12. A vivarium is an enclosed space designed to provide a controlled environment for the care and study of animals and plants.
  - a) Outline FIVE differences between the wet and dry vivarium. (10 Marks)
  - b) Five frogs in research facility died because their breeding area got infected. What FIVE things should the school do to stop the infection from spreading and prevent it from happening again? (10Marks)
13. A museum is a place where objects or materials that represent nature are assembled and conserved.
  - a) Discuss FIVE methods an applied biology student will use to collect museum specimens to carry out laboratory experiments. (10Marks)
  - b) Describe how preservation of bones is done in your biology laboratory for long term display. (10 Marks)
14. Herbarium entails techniques that are essential in herbarium specimen preservation.
  - a) Describe the process of drying plant specimen in herbarium. (10 Marks)
  - b) Explain the step-by-step procedure for constructing a plant presser for herbarium specimen preservation. (10 Marks)