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052106T4ENS

ENVIRONMENTAL SCIENCE LEVEL 6

ENV/OS/SCI/CR/03/6

Apply Principles of Plant and Animal Taxonomy

November/December 2025

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

CANDIDATE WRITTEN

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TIME: 3 HOURS

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INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section **A**.
3. Answer question **ELEVEN (11)** and any other **TWO (2)** questions in section **B**.
4. Marks for each question are indicated in the brackets.
5. Candidates are provided with a separate answer booklet
6. **DO NOT** write on the question paper

This paper consists of FOUR (4) printed pages.

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Candidates should 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 questions in this section***

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1. Classification involves the placing of organisms into similar categories namely kingdom, phylum, class, order, family, genus and species, i.e. the Linnaeus Classification System. List FOUR importance of Classification (4 Marks)
 2. Animal specimen preservation involves the ethical killing of animals, fixing them using formalin and ethanol solutions. Give FOUR advantages of preserving an animal specimen in a solution (4 Marks)
 3. Plant taxonomy plays a crucial role in identifying, classifying, and naming plants based on their morphological, genetic, and ecological characteristics. State FOUR reasons why the Mango tree should be placed in kingdom plantae (4 Marks)
 4. In taxonomic studies, collecting and preserving specimens requires a careful and systematic approach, which is documented in a comprehensive specimen report. Outline any FOUR components of a specimen report (4 Marks)
 5. Kenya is known for its rich biodiversity and unique ecosystems. The country has been exploring biodiversity banking as part of the conservation and sustainability efforts. State FOUR functions of biodiversity banks (4 Marks)
 6. Local community describes people who live and work in a particular area and ecosystem. List FOUR reasons for involving the community in species conservation (4 Marks)
 7. A plant press is a crucial equipment used by botanists to flatten and dry plant specimen so that they can easily be stored. Identify FOUR components of a plant press (4 Marks)
 8. Kenya's environmental policies and laws are founded on the 2010 Constitution, which grants a right to a clean environment and a responsibility to protect it. List FOUR environmental policies or Acts that would support biodiversity and species conservation efforts in Kenya (4 Marks)
 9. An invasive species is a non-native plant or animal organism that is alien to a particular ecosystem and ecosystem services. Outline FOUR reasons why invasive species are a major concern (4 Marks)
 10. Invasive species often adapt to a new environment due to their unique characteristics. Outline FOUR adaptations of invasive species that enable them to be so successful in their new environment (4 Marks)

SECTION B (60 MARKS)***(Answer question 11 (compulsory) and any other TWO)***

11. Maasai Mara National Reserve is the most important wildlife based tourist attraction in Kenya. The Mara Ecosystem in Narok County is closely intertwined with Serengeti ecosystem in Tanzania. Wildlife management has been part of the cultural heritage of the Maa Community. However, land use changes driven by anthropogenic pressures around Mara ecosystem represent a serious threat to sustainable management of wildlife in the region. Rapid population growth, increased sedentary settlement, land subdivision, and introduction of other land uses, have increased human-wildlife conflict in the region. Consequently, the future of wildlife conservation is increasingly becoming uncertain.

Given the strategic importance of wildlife conservation to the County and National Economy, not to mention the national heritage and biodiversity, the County and community around the Mara Ecosystem came up with a 10-year Mara ecosystem management plan. The main objective of the plan is to put in place and restore migration corridors.

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The seasonal migration of the white-bearded wildebeest and zebra from the Serengeti Plains in Tanzania to Maasai Mara in Kenya is called the southern migration. The northern migration involves seasonal movements of wildebeest, zebra, and Thomson's gazelle between the Loita Plains and Masai Mara National Reserve within the Narok County of Kenya. The wildebeest involved in the northern migration form the bulk of the Mara population.

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- a) Explain FIVE significance of wildlife corridors in conservation and ecosystem management (10Marks)
- b) Describe FIVE challenges facing the establishment and maintenance of wildlife corridors in Kenya (10Marks)

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12. As a taxonomy expert, you have been contracted by the Kenya Forestry Research Institute

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(KEFRI) to collect, identify and catalogue plant specimens within the Mau forest ecosystem.

- a) Explain FIVE significances of safely disposing unwanted plant specimens (10Marks)
- b) Describe FIVE importance of appropriately labelling a specimen (10 Marks)

13. Kenya's conservation policies generally advocate for species recovery and population management through various strategies like species reintroduction. Reintroduction is the intentional movement and release of an organism inside its indigenous range from which it has disappeared.

- a) Explain FIVE reasons for species reintroduction (10 Marks)
- b) Describe FIVE challenges facing enforcement of conservation policies in Kenya (10Marks)

14. In Kenya, efficient farming maximizes agricultural output while minimizing resource waste and costs. It also involves adopting effective pest control strategies.

- a) Explain FIVE benefits of controlling pests and diseases in species and ecosystem management (10Marks)
- b) Describe FIVE efficient farming methods that can be used as a strategy for species management. (10Marks)

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