

2914/105  
ANIMAL HUSBANDRY, MUSEUM  
AND HERBARIUM TECHNIQUES  
Oct./Nov. 2022  
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN APPLIED BIOLOGY

MODULE I

ANIMAL HUSBANDRY, MUSEUM AND HERBARIUM TECHNIQUES

3 hours

#### INSTRUCTIONS TO CANDIDATES

*This paper consists of TWO sections; A and B.*

*Answer ALL questions in section A and any THREE questions from section B in the answer booklet provided.*

*Each question in section A carries 4 marks while each question in section B carries 20 marks.*

*Maximum marks for each part of a question are indicated.*

*Candidates should answer the questions in English.*

**This paper consists of 4 printed pages.**

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



SECTION A (40 marks)

Answer ALL questions in this section.

1. (a) Define the term 'quarantine'. (2 marks)  
(b) State two reasons why healthy newly received laboratory animals are subjected to quarantine. (2 marks)
2. Highlight the importance of ventilation and air quality in animal house. (4 marks)
3. (a) Define the term 'restraint' as used in handling of laboratory animals. (1 mark)  
(b) Explain the significance of restraint in animal husbandry. (3 marks)
4. (a) Describe ad libitum type of animal feeding in the laboratory. (1 mark)  
(b) State three manifestations of malnutrition in laboratory animals. (3 marks)
5. Highlight four behavioural characteristics of a hamster. (4 marks)
6. (a) Define the term 'museum zoological specimen'. (1 mark)  
(b) Give three uses of museum zoological specimen. (3 marks)
7. State one disadvantage of each of the following materials used for museum display cases:
  - (a) metal; (1 mark)
  - (b) wood; (1 mark)
  - (c) chlorinated rubber; (1 mark)
  - (d) wool. (1 mark)
8. (a) Define the term 'taxidermy'. (2 marks)  
(b) State the use of a wooden dowel in museum techniques. (2 marks)
9. (a) Outline the significance of a vasculum container in field work. (2 marks)  
(b) Describe the collection of each of the following specimen:
  - (i) herbaceous small plant specimen; (1 mark)
  - (ii) twig. (1 mark)



10. (a) Highlight the significance of maintaining tightness of the plant press in herbarium techniques. (2 marks)
- (b) State the effect of each of the following factors during pressing of a herbarium specimen:
- (i) rapid drying; (1 mark)
- (ii) high temperature. (1 mark)

**SECTION B (60 marks)**

*Answer any THREE questions from this section.*

11. (a) Distinguish between:
- (i) rendering and maceration processes of bone preparation; (2 marks)
- (ii) sex separation and culling. (2 marks)
- (b) State any four:
- (i) symptoms of salmonellosis in rabbits; (4 marks)
- (ii) control measures of salmonellosis. (4 marks)
- (c) Describe the preservation of frogs and tadpoles in the museum. (8 marks)
12. (a) Explain the humane killing of rodents by use of carbon dioxide. (16 marks)
- (b) State the observations made in the confirmation of death of laboratory animals. (4 marks)
13. (a) (i) State any three reasons why collected plant specimen are pressed and dried within 24 hours. (3 marks)
- (ii) Outline the initial preparations prior to setting out for collection of herbarium specimen. (5 marks)
- (b) Explain the mounting of herbarium specimen. (12 marks)



14. (a) Describe the measures undertaken to ensure sterility in the animal house. (6 marks)
- (b) Explain the significance of laboratory hamsters in research. <sup>diagnose</sup> <sup>toxicological</sup> <sup>pharmacological</sup> <sup>physiological study</sup> <sup>for study</sup> (14 marks)
15. (a) Highlight the guidelines observed in preparing a label for an entomological museum specimen. (14 marks)
- (b) On 10<sup>th</sup> December 1990, Safari Jack Musomi collected a hymenoptera species specimen in Kenya, Central Business District of Nairobi County, four kilometres East of Uhuru Park that lies on 34° North, 117° West at an elevation of 900 meters. Prepare a label for the hymenoptera museum specimen. (6 marks)

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