

1408/314
BIOLOGY TECHNIQUES
Oct./Nov. 2017
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
SCIENCE LABORATORY TECHNOLOGY CRAFT

BIOLOGY TECHNIQUES

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Non-programmable scientific calculator.

This paper consists of TWO sections; A and B.

Answer ALL the questions in section A and any TWO questions from section B.

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 question paper consists of 3 printed pages.

Candidates must check the question paper to ascertain that all the pages are printed and that no questions are missing.

SECTION A (60 marks)

Answer ALL the questions in this section.

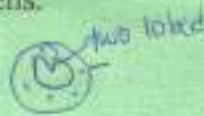
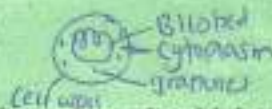
Maths	5
Chem	6
Liberal	6
Art	5
Physical	5
Music	3

1. (a) State the functions of the following parts of a light microscope:
 - (i) draw tube; it help to show the image in the microscope
 - (ii) iris diaphragm. it transmits light direct (2 marks)
- (b) Explain the use of immersion oil in a light microscope. (2 marks)
 increase the refraction index
2. Distinguish between Smooth Endoplasmic Reticulum (SER) and Rough Endoplasmic Reticulum (RER): (4 marks)
 SER: isolate and transport steroids
 RER: isolate and transport protein
 - the cavity is not lined with ribosome
 - it have both only nucleus
 The cavity is lined with ribosome
 it have both plasma membrane and nucleus
3. A plasmolysed living plant cell is placed in a large volume of pure water. Explain the process that will take place. (4 marks)
4. Explain how the concentration of ascorbic acid in an unknown sample is determined. (4 marks)
 vitamin B
 in the food substance one sample -
 To the d.c.pip and 2ml of food substance the blue colour disappear there is presence of ascorbic acid
5. (a) Name any four techniques of tissue isolation in histological techniques. (2 marks)
 Bleeding, Peeling, Strapping, sectioning
- (b) Explain the theory behind the appearance of a cloudy white suspension during lipid testing using the emulsion test. (2 marks)
 Fat
6. Explain the preparation of the amino acid mixture in chromatographic analysis of proteins. (4 marks)
7. Compare and contrast prophase in mitosis and meiosis. (4 marks)
 animal
8. (a) Differentiate between defined and complex media. (2 marks)
- (b) Explain the sterilization of cleaned glass petri-dishes in the laboratory. (2 marks)
 The glass should be washed with warm water and a detergent the is rinsed with the water when the water drain dropulse the gap is not
9. Describe the two types of pasteurization. (4 marks)
 Flash, holder
10. Explain the following methods of preservation in museum techniques:
 - (a) dry skins; place them in Seves and avoid being eaten by termites (2 marks)
 - (b) stuffed skin. The stuffed skin place them in the 70% alcohol so that it cannot decay (2 marks)
11. Explain the maintenance of population equilibrium for species with:
 - (a) high survival rate; (2 marks)
 - (b) low survival rate. (2 marks)

3

12. Draw labelled diagrams of the following cells:

- (a) eosinophil;
(b) neutrophil.



(4 marks)

13. State four mechanisms through which atmospheric nitrogen is fixed to the usable form by plants. (4 marks)

14. Name any four classes of fixatives used in histological techniques. (4 marks)

15. Describe intravenous injection procedure on a rabbit. (4 marks)

Take a rabbit hold it. Scratch the tip of the tail or the earlobe. The vein veins will be seen. Inject the vein and remove the required blood collection.

SECTION B (40 marks)

Answer any TWO questions from this section.

16. (a) Explain the factors which must be taken into consideration to get maximum resolution from a lens system of a compound microscope. (12 marks)

(b) Outline the precautions taken into consideration before returning a microscope into the store after use in the laboratory. (8 marks)

17. (a) (i) Describe the structure and function of a pitfall trap used in collection of organisms for museum purpose. (10 marks)

(ii) Name two methods used in collection of flying insects. (2 marks)

(b) Explain how deforestation increases atmospheric carbon dioxide. (8 marks)

18. (a) Describe the characteristics of enzymes. (10 marks)

(b) Draw a labelled diagram of a generalized plant cell as seen under an electron microscope. (10 marks)

19. (a) Outline the characteristics of an ideal fixative. (10 marks)

(b) Describe, with the aid of an illustrational curve the typical growth characteristics of a bacteria grown in a fluid media. (10 marks)

enzyme broken down in
enzyme reaction catalyzed are reversible

THIS IS THE LAST PRINTED PAGE.

Reaction
enz

