231/1
BIOLOGY
PAPER 1
(THEORY)
JULY/AUGUST, 2015
TIME: 2 HOURS

KAHURO /KIHARU DISTRICT JOINT EXAMINATION - 2015

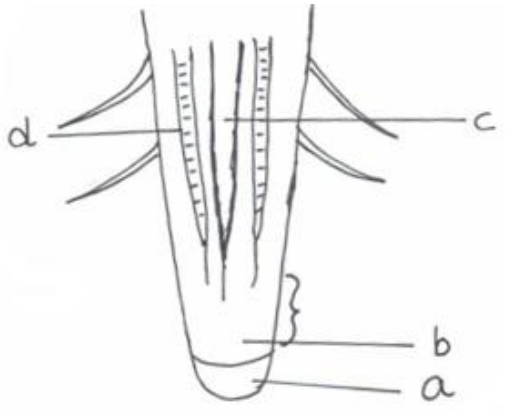
1. Name the branch of Biology that deals with the study of
   (i) Microscopic organisms. (1 mark)
   (ii) Fungi. (1 mark)
2. (a) Name the kingdom into which the prokaryotes are placed. (1 mark)
   (b) State two characteristics used to classify arthropods in classes. (2 marks)

   (c) A certain plant had the following characteristics:
   - Presence of roots, stem and leaves.
   - Found with sori on the under surface.
   - Life cycle in sporophyte and gametophyte generations.
   - Sporophyte generation being dominant.

   Name the division to which the plant belongs. (1 mark)
3. (a) Name **two** structures for gaseous exchange in aquatic plants. (2 marks)
   (b) Explain why guards cells have thicker inner walls and thinner outer walls. (1 mark)
4. (a) Distinguish between homozygote and heterozygote. (2 marks)
   (b) State **two** causes of variations. (2 marks)

5. State the functions of the following cell organelles.
   (i) Nucleolus. (1 mark)
   (ii) Centriole. (1 mark)

6. Name the causative agent of the following diseases. (2 marks)
   (i) Cholera.
   (ii) Candidiasis.
7. Define each of the following terms.
   (a) Speciation. (1 mark)
   (b) Natural selection. (2 marks)
   (c) Divergent evolution. (1 mark)
8. (a) Study the diagram below and answer the questions that follow. (3 marks)



(i) Label parts:

a _____

b _____

c _____

(ii) State function of part labelled **d**. (1 mark)

9. State **three** distinguishing features of mammalian rib bone. (3 marks)
10. Give **three** factors that determine the amount of energy a human being require in a day. (3 marks)
11. Name the antigens that determine human blood groups. (2 marks)
12. State the adaptation that enable red blood cell to move in blood capillaries. (1 mark)
13. (a) Give a reason why lumbar vertebrae have long and broad transverse processes. (1 mark

(b) Which type of joint is found at articulation of pelvic girdle and femur? (1 mark)

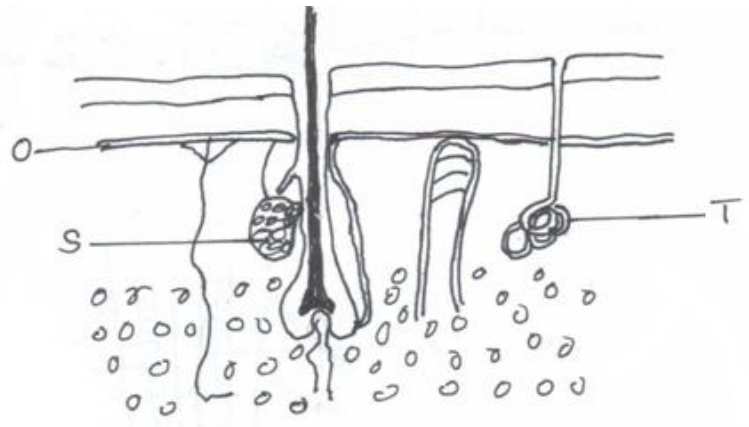
14. Why is oxygen important in the process of active transport, (1 mark)
15. Study the reaction below.

Hydrogen peroxide $\xrightarrow{X}$ water and oxygen.

(a) Name enzyme X. (1 mark)

(b) Explain the importance of the above reaction in tissue of living organisms. (2 marks)

16. Give a reason why staining is important when preparing specimen for observation by use of light microscope. (1 mark)
17. The diagram shows across section of mammalian skin.



(a) Name parts (2 marks)

(i) **T**

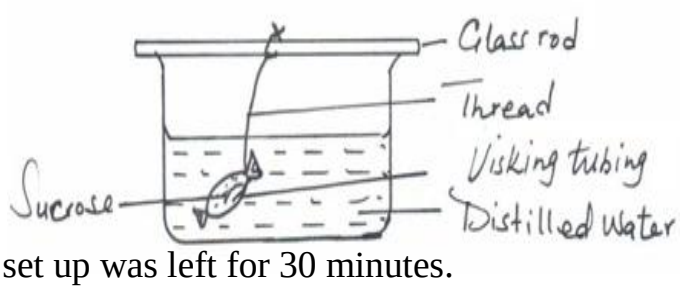
_____

(ii) **S** _____

(b) State the function of part labelled **S**. (1 mark)

18. State **two** processes that occur during anaphase of mitosis. (2 marks)
19. What is the significance of meiosis? (2 marks)

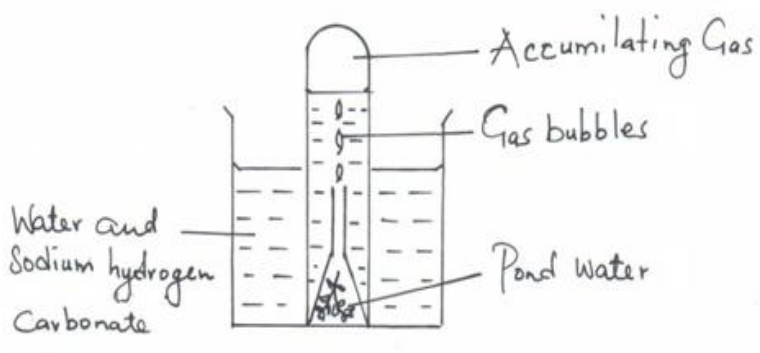
20. State the site of production of progesterone. (1 mark)
21. An experiment was set up as shown below.



The set up was left for 30 minutes.

(a) State the expected results. (2 marks)
(b) Explain the observation above. (2 marks)

22. How are leaves of submerged plants adapted for photosynthesis? (2 marks)
23. (a) The action of ptyalin stops at stomach explain. (1 mark)
(b) State **two** factor that denatures enzymes. (2 marks)
(c) Name the features that increase the surface area of small intestine. (2 marks)
24. The apparatus below are used to investigate an aspect of photosynthesis.



(a) Name the aspect of photosynthesis being investigated. (1 mark)
(b) How can one verify the identity of the gas that accumulates in test tube? (1 mark)
(c) State the role of sodium hydrogen carbonate. (1 mark)
(d) What environmental factor are required in order to give positive results? (1 mark)

25. (a) Name **two** forms in which carbon (IV) oxide is transported in blood. (2 marks)
(b) What is tissue fluid? (1 mark)
26. How are the mitochondria adapted to their function? (2 marks)
27. State **three** structural differences between arteries and veins. (3 marks)
28. Name the hormone secreted by:-
(i) Thyroid glands. (1 mark)
(ii) Adrenal glands. (1 mark)
29. State the functions of the following parts of the ear.
(a) Eustachian tube. (1 mark)
(b) Cochlea. (1 mark)
(c) Ossicles. (1 mark)
(d) Semi circular canals. (1 mark)
30. Other than using quadrat method give two methods of estimating population of grass. (2 marks)