

NAME..... INDEX NO.....

231/1
BIOLOGY
PAPER 1
(THEORY)
TIME: 2 HOURS

CANDIDATE'S SIGN.....

DATE.....

CENTRAL KENYA NATIONAL SCHOOLS JOINT EXAM – 2015

Kenya Certificate of Secondary Education
BIOLOGY
PAPER 1
(THEORY)
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Write your **Name**, **Index Number** and **School** in the spaces provided above.
2. **Sign** and write the **date** of examination in the spaces provided above.
3. Answer **all** the questions in the spaces provided.
4. Answers must be written in the spaces provided in the question paper.
5. Additional pages **must not** be inserted.

FOR EXAMINER'S USE ONLY:

Question	Maximum Score	Candidate's Score
1 – 25	80	

organisms.

(1 mark)

(b) Define each of the following terminologies.

(i) Microbiology.

(1 mark)

(ii) Anatomy.

(1 mark)

2. Name the specific causative agent of the following diseases in man.

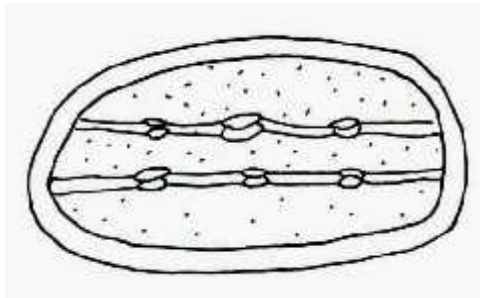
(a) Ascariasis.

(1 mark)

(b) Syphilis.

(1 mark)

3. The diagram below is of an organelle found in plant cells.



(a) Name the plant cell that has large number of the organelle above.

(1 mark)

(b) Name the cellular organelle that would be abundant in;

(a) Castor oil seeds.

(1 mark)

(b) Nectaries of the moon flower.

(1 mark)

4. (a) How do temperature affects the rate of active transport?

(2 marks)

Diffusion gradient.

(1 mark)

5. State the importance of the following substances in nutrition;

(a) Roughage.

(1 mark)

(b) Water.

(2 marks)

(c) Name the substances stored in animal's body which is similar to starch in plants. (1 mark)

6. (a) Haemoglobin is enveloped by the plasma membrane of erythrocytes. Give two possible reasons for phenomenon. (2 marks)

(b) What is the function of the piliferous layer in rock?

(1 mark)

7. (a) Name **two** structures of gaseous exchange in aquatic plants. (2 marks)

(b) State **two** adaptive characteristics of respiratory surfaces common to the gills of a fish and the trachea system of insects. (2 marks)

8. A certain substance has a molecular formula $C_{57}H_{110}O_6$

(i) Write a balanced equation to represent its complete oxidation to carbon (IV) oxide and water. (1 mark)

(ii) Calculate the respiratory quotient of the complete oxidation. (2 marks)

(iii) From the RQ in (ii) above, what is the substance being metabolized. (1 mark)

9. (a) State the main inorganic substance in the liver. (1 mark)

(b) State **three** adaptations of desert animals to reduce loss of water. (3 marks)

10. A student collected an organism with;

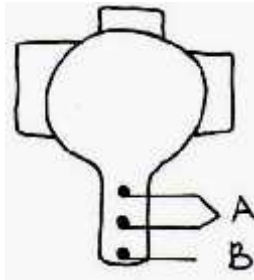
- 2 body parts.
- 4 pairs of limb.
- No antennae.

(a) Identity the class the organism belong. (1 mark)

(b) State salient characteristics of kingdom monera. (2 marks)

11. Explain the reason why the carrying capacity of wild animals is higher than that of sheep in any given piece of land. (3 marks)

12. The diagram below shows a pollen tube as it develops down the style.



(a) Name the part labelled A and B. (2 marks)

A _____

B _____

(b) State the function of the part labelled A. (2 marks)

13. (a) Explain the importance of fertilisation taking place in the fallopian tubes and not in the uterus in human females. (3 marks)

14. (a) Name **two** tissues in plant stem are responsible for secondary growth. (2 marks)

(b) Define the term parthenogenesis. (1 mark)

15. Define the following terms. (4 marks)

(i) Genetic engineering.

(ii) Gene mapping.

(iii) Heterosis.

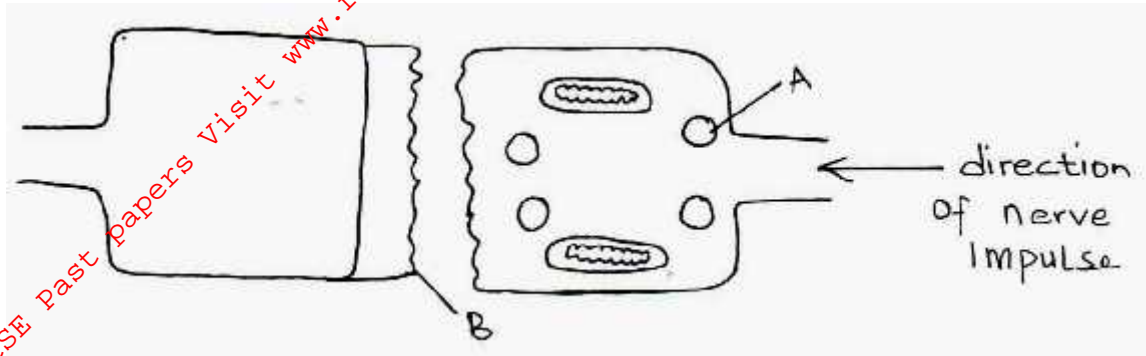
(iv) Gene sequencing.

16. (a) What type of variation is exhibited by human beings having blood group A, B, AB or O. (1 mark)

(b) The paddles of whales and fins of fish adapt these two organisms to aquatic habitats; Name the evolutionary process that may have given rise to such similar structures.

- (c) What name is given to such structures? (1 mark)

17. The diagram below shows two adjacent synaptic knobs.



- (a) Name the structures labelled A and B. (2 marks)

A _____

B _____

- (b) Name the substance in the structure labelled A that facilitates impulse transmission. (1 mark)

- (c) State **two** features of nerves which increases the speed of nerve impulse transmission along them. (2 marks)

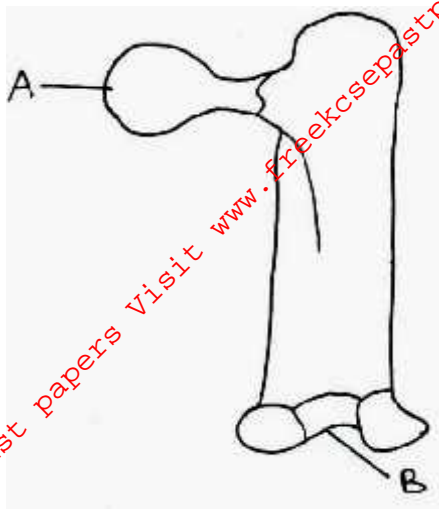
18. (a) Give **two** structural differences between skeletal muscles and smooth muscles. (2 marks)

- (b) Name **one** support tissue in plants that is;

- (a) Thickened with lignin. (1 mark)

- (b) Thickened with cellulose and pectin. (1 mark)

19. The diagram below represents a mammalian bone.



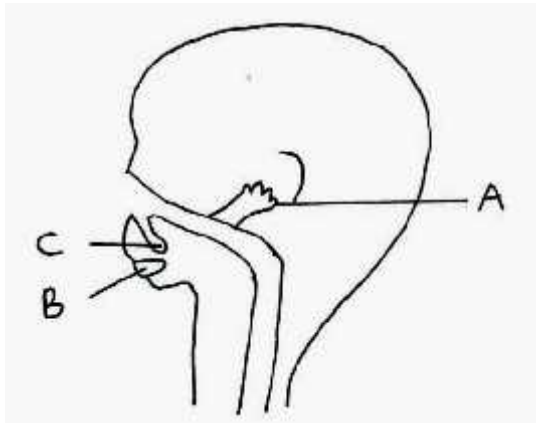
(a) Identify the bone. (1 mark)

(b) Name the type of joint formed by the bone at its anterior end and the adjacent bone. (1 mark)

20. (a) Differentiate between an enzyme and a hormone. (2 marks)

(b) Name the hormones involved in osmoregulation. (2 marks)

21. The diagram below shows the mouth and the salivary glands.



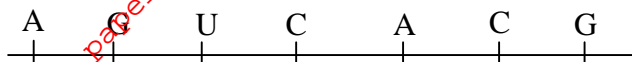
(a) Name the glands labelled **A** and **B**. (2 marks)

A _____

B _____

(b) Give **two** digestive functions of saliva. (2 marks)

22. Below is a nucleic acid stand.



(a) Name the nucleic acid. (1 mark)

(b) Give a reason for your answer in (a) above. (1 mark)

23. (a) Name the organism found in the root nodules of leguminous plant. (1 mark)

(b) What is the role of the organism named above? (1 mark)

24. (a) Name the process that occurs when carbon (IV) oxide combines with hydrogen atoms from light stage. (1 mark)

(b) What is the main product of dark stage of photosynthesis? (1 mark)

25. (a) State the function of the following. (2 marks)

(i) Tendon.

(ii) Ligament.
