THE SUCCESS PATH MOCK EXAMINATIONS COUNCIL

Paving the Way to Kenya Certificate of Secondary Education Success

231/1 - BIOLOGY - Paper 1

(Theory)

March 2024 - 2 hours

PRE-MOCK FORM 4

Name ..... **Admission Number**.....

School ..... **Candidate's signature**.....

Date ..... **Stream** .....

Instructions to Candidates

(a) Write your name and admission number in the spaces provided above.
(b) Write the name of your school and sign in the spaces provided above.
(c) Answer ***all*** questions in this question paper.
(d) All answers must be written in the spaces provided in the question paper.
(e) This paper consists of 12 printed pages.
(f) Do not remove any pages from this booklet.
(g) Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.
(h) Candidates should answer the questions in English.

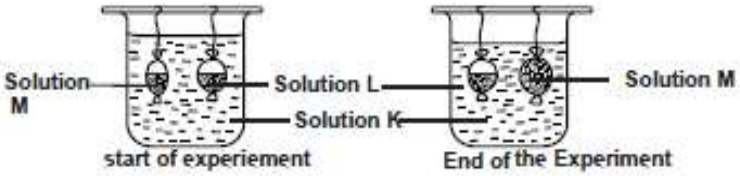
FOR EXAMINER'S USE ONLY

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

17	18	19	20	21	22	23	24	25

Grand Total

1. State the importance of the following processes to living organisms.
   (a) Locomotion. (1 mark)
   .....
   .....
   (b) Irritability. (1 mark)
   .....
   .....
2. In an experiment, two equal volumes of solutions L and M were placed into visking tubings. The two viskig tubings were suspended as shown below.



   Explain the results that were obtained in the visking tubings at the end of the experiment. (4 marks)
   .....
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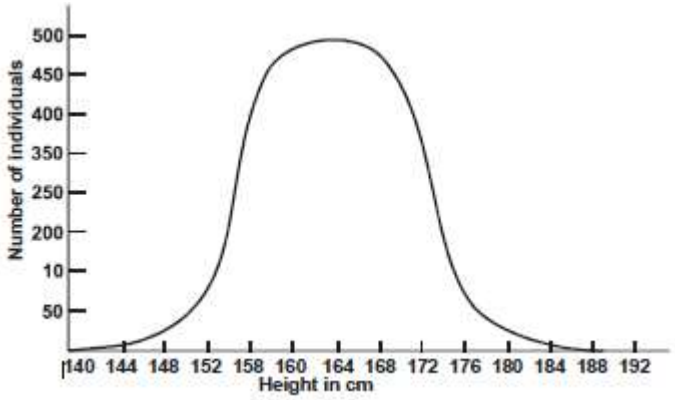
3. In an experiment to observe some variations in lengths of leaves of Jacaranda, the following curve was obtained.



   (a) Identify the type of variation illustrated by the curve. (1 mark)
   .....
   .....
   (b) Explain the cause of the variation you have named in (i) above. (1 mark)
   .....
   .....
4. State **three** sites of gaseous exchange in mesophytes. (3 marks)
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   .....

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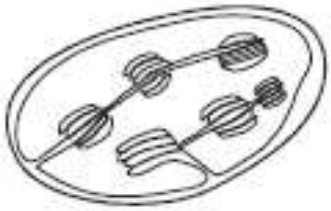
5. Distinguish between;
   (a) Single and double circulatory system. (2 marks)
   .....
   .....
   .....
   (b) Blood plasma and serum. (2 marks)
   .....
   .....
   .....

6. Below is a diagram of an organelle.



   (a) State the function of the organelle drawn above. (1 mark)
   .....
   .....
   (b) Name the parts of the organelle where:
   (i) Oxygen gas is produced as a by-product. (1 mark)
   .....
   .....
   (ii) Carbon (IV) oxide is utilized. (1 mark)
   .....
   .....

7. (a) Distinguish between analogous and homologous structures. (2 marks)
   .....
   .....
   .....
   (c) What is adaptive radiation? (2 marks)
   .....
   .....
   .....

8. Describe the physiological process that help in regulation of the body temperature in man on a hot day. (3 marks)
   .....
   .....
   .....
   .....

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9. (a) What is polysepalous flower. (1 mark)

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.....

(b) How is a sugarcane flower adapted to wind pollination? (2 marks)

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10. (a) State **two** functions of tongue during digestion in the mouth of man. (2 marks)

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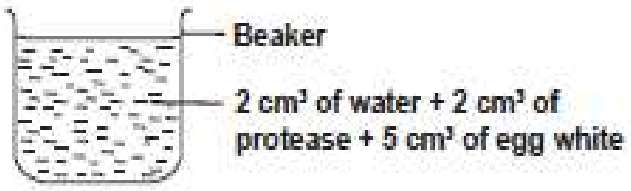
(b) The following experiment was set up to investigate the action of protease on egg white.



After 15 minutes, the contents of the beaker became clear, explain this observation. (2 marks)

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.....

11. Form three students during the field study collected the specimen below as they were directed by their biology teacher. Study the specimen and answer the questions that follow.

(a) To which phylum does specimen belong to. (1 mark)

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.....

(b) Name the class to which the specimen belongs to. (1 mark)

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.....

(c) Give **two** important economic roles of the specimen. (2 marks)

.....

.....

.....

(d) With reasons identify **two** modes of locomotion of the specimen. (2 marks)

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12. (a) Two species in an ecosystem cannot occupy the same niche. Explain. (1 mark)

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.....

(d) The reaction represented by the equation below occurs in the body.

Hydrogen peroxide $\xrightarrow{\textbf{Enzyme Y}}$ oxygen + water

(i) Name enzyme Y. (1 mark)

.....

.....

(ii) Name an organ in the body where the reaction occurs. (1 mark)

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.....

13. Which organelle would be numerous in the following cells; (2 marks)

(a) Liver cell;

.....

.....

(b) Palisade.

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.....

(c) Sperm cell.

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14. The ovaries of an expectant woman can be removed after the first four months of pregnancy without terminating the pregnancy. Explain. (2 marks)

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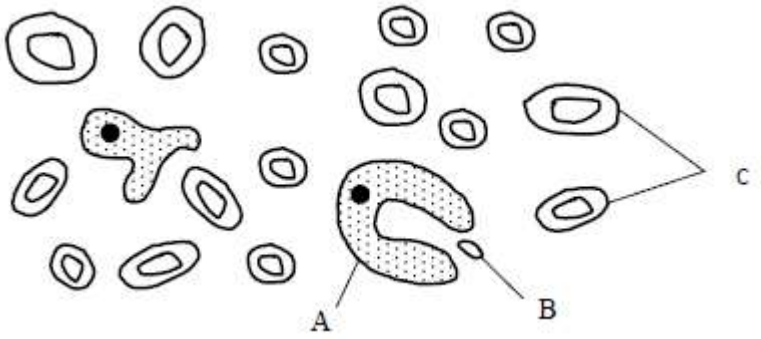
.....

.....

15. Name the causative agent for the following diseases;
    (a) Typhoid; (1 mark)
    .....
    .....
    (b) Syphilis. (1 mark)
    .....
    .....

16. The diagram below represents a blood smear on a glass slide.



    (a) State the importance of structure C being large numbers in the blood smear. (1 mark)
    .....
    .....
    (b) Give a reason why structure C would be found in large numbers in high altitude than in low altitude. (1 mark)
    .....
    .....
    (c) Name the process by which structure A would engulf structure B. (1 mark)
    .....
    .....

17. There are at least 205 known sex-linked recessive disorders.
    (a) What is meant by term sex-linkage? (2 marks)
    .....
    .....
    .....
    (b) Name **two** sex-linked traits in humans. (2 marks)
    .....
    .....
    .....

18. A biological washing detergent contains enzymes which remove stains like mucus and oils from clothes which are soaked in water with the detergent.
    (a) Name the **two** groups of enzymes that are present in the detergent. (2 marks)
    .....
    .....
    .....

(b) Why would the stains be removed faster with the detergent in water at 35^0C rather than at 15^0C? (2 marks)

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19. Define the following terms in reference to fish locomotion. (3marks)

(a) Pitching

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(b) Rolling

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.....

(c) Yawing

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20. The figure below shows wings of different organisms, study them and answer the questions that follow.

Wing of a bat

wings of an insect

(a) Identify the type of evolution illustrated in the figure above. (1 mark)

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.....

(b) Give another example that illustrate this type of evolution. (1 mark)

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.....

(c) Outline **two** differences between the two types of wings. (2 mark)

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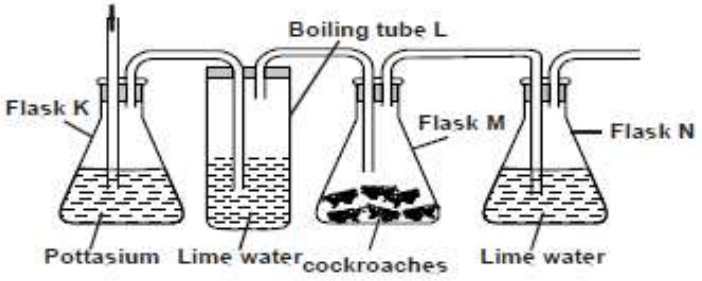
21. Identify the structure of the cell that perform the following functions:
    (a) Synthesize ribosomes. (1 mark)
    .....
    .....
    (b) Regulate exchange of substance in and out of the nuclear. (1 mark)
    .....
    .....
    (c) Division of cells to form new ones. (1 mark)
    .....
    .....
22. (a) Differentiate between the following terms.
    (i) Dominant gene and recessive gene. (1 mark)
    .....
    .....
    .....
    (ii) Continuous variation and discontinuous variation. (1 mark)
    .....
    .....
    .....
    (b) What would be expected results from a test cross? (2 marks)
    .....
    .....
    .....
23. Give reasons for carrying out the following procedures when preparing temporary wet mounts of plant tissues.
    (a) Making this plant sections. (1 mark)
    .....
    .....
    (b) Adding water on the plant section. (1 mark)
    .....
    .....
    (c) Placing cover slip over the plant section. (1 mark)
    .....
    .....

24. The diagram below represents a set-up that a students used in an investigation.



(a) Name the physiological process that was being investigated. (1 mark)

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(b) State the role of potassium hydroxide in a flask K. (1 mark)

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(c) Account for the observation in boiling tube L and flask N. (2 marks)

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25. State **two** ways in which meiosis is important during sexual reproduction. (2 marks)

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