INSTRUCTIONS TO CANDIDATES

- Write your name and Index number in the spaces provided.
- Answer ALL the questions in the spaces provided.

For Examiner’s Use Only.

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This paper consists of 12 printed pages. Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing.
1. a) Other than through sexual intercourse state two other ways one can contract HIV and AIDS.
   
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   b) State one control measure that can be taken to reduce the spread of HIV/AIDS (1mk)
   
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2. Explain why blood clotting does not occur inside the blood vessels. (1mk)

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3. Why is wilting important to plants on a hot sunny afternoon. (2mks)

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4. The equation below represents a metabolic process that occurs in a mammalian liver.

   Amino acids \[ \xrightarrow{\text{Enzyme}} \text{Organic compounds} \] + Urea

   a) Name the process represented by the equation above (1mk)
   
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   b) What is the importance of the above process in mammals? (2mks)
   
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   c) What is the source of amino acids in this process? (1mk)
   
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5. The diagram below represents an organism that commonly grows on damp rotting matter.

   ![Diagram of an organism](image)

   a) Identify the part labeled A. (1 mark)

   b) Give two functions of the part labelled B. (2 marks)

6. Explain why plants growing in low attitude areas grow faster than those in high attitudes. (2 marks)

7. A student set up an experiment as shown in the figure below.

   ![Experiment setup with Pyrogallic acid, NaOH, soaked seeds, moist cotton wool, etc.](image)

   The set-up was left at room temperature for six days.
a) What was the aim of the experiment? (1mk)

b) Explain the expected results after six days. (3mks)

8. a) What are:
   i) mutations? (1mk)
   ii) mutagens? (1mk)

b) Name two disorders of human blood caused by mutations. (2mks)

9. State two ways in which tracheoles in insects are adapted to their functions. (2mks)

10. The diagram below represents a mature fruit
a) To what group of fruits does the specimen drawn above belong? (1mk)
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b) With a reason name the agent of dispersal. (2mks)
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11. A certain plant was found to have 22 chromosomes in its calyx cells. State the number of chromosomes present in the plants.

a) Ovule
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b) Endosperm (2mks)
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12. Name the organelles that performs the following functions.

a) synthesis of RNA.
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b) Formation of spindle fibres.
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c) Synthesis of lysosomes
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(3mks)
13. Below is a diagrammatic representation of various processes in animals.

![Diagram of glucose and sucrose processes](image)

i) Name substance P

ii) Name processes X and Y

iii) Name the enzyme involved in process X.

14. Name the organism that causes:
   a) malaria
   b) cholera.

15. a) State the origin of corpus luteum.
b) Name the hormone produced by the structure in (a) above and state its role during pregnancy.  

Hormone

Role

16. Explain four ways in which the skin is adapted to its protective functions.  

17. a) Distinguish between respiration and gaseous exchange.  

b) The oxidation of a certain fat is represented by the chemical equation shown below.  

\[ C_{57}H_{104}O_6 + 81 \, O_2 \rightarrow 57 \, C \, O_2 + 5 \, H_2 \, O + \text{Energy}. \]

i) Calculate the respiratory quotient (RQ) of the fat molecule above.  

18. Name the hormones that promote growth and maturation during

a) Moulting in insects
b) Metamorphosis in frog tadpoles. (2mks)

b) state the importance of the joint named in (a) above (1 mk)

20. a) state two adaptations of a RBC to it’s function. (2mks)

b) Name two ways in which carbon (iv) oxide is transported in a human’s blood. (2mks)

21. a) Differentiate between the following terms.

i) Plasmolysis

ii) Haemolysis. (2mks)

b) state one role of osmosis in living organisms (1mk)
22. a) Define placentation. (1mk)

b) Name the type of placentation shown in the diagram below. (1mk)

23. Distinguish between
a) Ecology and ecosystem. (2mks)

b) Habitat and niche. (2mks)

24. a) List two differences between simple and conditioned reflex actions. (2mks)

b) Give one example of a simple reflex action. (1mk)
25. The following is a human pedigree showing the transmission of haemophilia. Study the diagram and answer the questions that follow. Let H represents normal conditions and h allele for haemophilia.

\[ \text{KEY} \]

- Normal male
- Haemophiliac male
- Normal female
- Haemophiliac female

a) Write the genotypes of
   i) Parents 1 and 2
   ii) Grand child member 9
   iii) Child number 5
26. The diagram below shows a certain plant. Study it and answer the questions that follow.

\[ \text{Diagram of a plant} \]

a) i) Name the kingdom to which the plant belongs. (1 mk)

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ii) Give one reason for your answer in (a) (i) above. (1 mk)

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b) Name the part labelled A. (1 mk)

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27. Explain comparative embryology as evidence of evolution. (2 mk)

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