Name: ………………………………………………………… Index No: ……………………..…………….............

School: ........................................................................................... Candidate’s Signature:…………………………….

Date: ……………….…………..…

231/1

**BIOLOGY**

Paper 1

October /November 2017

**Time: 2 Hours**

***Kenya Certificate of Secondary Education (K.C.S.E)***

***Form Three***

**BIOLOGY**

Paper 1

**INSTRUCTIONS TO CANDIDATES:**

* *This paper consist of twenty six(26) questions.*
* *Answer* ***all*** *the questions*
* *All answers* ***must*** *be written in the spaces provided in this booklet.*
* *Write your name and Admission number in the spaces provided.*
* *Additional pages* ***must******not*** *be inserted*

**EXAMINER’S USE ONLY**

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| --- | --- | --- |
| **Question**  |  **Maximum score** |  **Candidates Score**  |
| **1 - 26** |  **80** |  |

*This paper consists of 7 printed pages. Candidates should check to ascertain that all papers are printed as indicated and that no questions are*

*missing.*

1. (a) Explain how the following adaptations minimize the rate of transpiration.

 (i) Sunken stomata (1mrk)

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 (ii) Leaf drooping (1mrk)

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2. An animal was found to have a large glomeruli and a short loop of henle. Account for the presence

 of ;

 (i) Large glomeruli (1mrk)

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 (ii) Short loop of henle (1mrk)

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 (iii) State the possible habitat for the organism. (1mrk)

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3. State **two** features of a petal that enhances insect pollination. (2mrks)

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4. Give **two** adaptations of halophytes to survival in their habitats. (2mrks)

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5. Name the hormone involved in

 (i) Conversion of glycogen to glucose (1mrk)

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 (ii) Regulation of the amount of water in blood. (1mrk)

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6. A person was found to pass out large volumes of dilute urine frequently.

 (a) Name the disease the person was suffering from. (1mrk)

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 (b) Which hormone was likely to be deficient in the body? (1mrk)

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 (c) Name the gland that releases the hormone normal in **(b)** above. (1mrk)

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7. State the function of the following cell organelles. (3mrks)

 (i) Mitochondrion

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 (ii) Ribosomes

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 (iii) Lysosomes

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8. The figure below represents **two** phases during cell division.



**M**

**N**

 (a) Identify the phase in (2mrks)

 (i) **M** .......................................................................

 (ii) **N** ........................................................................

 (b) At what stage of cell division do crossing over take place? (1mrk)

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 (c) Explain the importance of the process in **(b)** above / crossing over. (2mrks)

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9. (i) State **two** ways in which aerenchyma tissues in aquatic plants are adapted to their function. (2mrks)

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 (ii) Name the structure used by plants growing in waterlogged soils for gaseous exchange. (1mrk)

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10. (i) Distinguish between nitrification and denitrification. (2mrks)

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 (ii) Name **two** micro organisms involved in nitrogen fixation. (2mrks)

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11. State the role of each of the following components of the skin. (3mrks)

 (i) Melanin

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 (ii) Adipose fat deposit

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 (iii) Sebum

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12. In a blood test, a drop of Anti-A serum were added to two samples of blood. No agglutination occurred. What were the blood groups of the two samples? (2mrks)

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13. Below is a diagram showing results of what happens when a plant cell is placed in a certain solution.



**A**

**B**

**X**

 (a) (i) Name the force represented by the arrows labeled **X.** (1mrk)

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 (ii) Name the cell structure labeled **A** and **B**. (2mrks)

 **A** ..................................................................................................

 **B** .................................................................................................

 (ii) In one word, name the nature of the solution in which the cell was placed. (1mrk)

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 (b) Name the chemical compound that prevents the cell from osmotic bursting. (1mrk)

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14. Outline **three** physiological changes that occur in human skin that reduces heat loss. (3mrks)

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15. (a) Name a fat soluble vitamin that is manufactured by the human body. (1mrk)

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 (b) (i) What is the function of the vitamin name in (a) above? (1mrk)

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 (ii) Name the deficiency disease that results from insufficiency of the vitamin named in (a) above. (1mrk)

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16. (a) State **two** roles ofsodium hydrogen carbonate as a constituent of pancreatic juice.(2mrks)

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 (b) What is the role of lacteal in nutrition? (1mrk)

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17. Name **two** protozoan diseases in man and give the causative agent of each (4mrks)

 Diseases Causative agent

 (i)

(ii)

18. The figure below represents a plant.



**A**

**B**

 (a) State the division the plant belongs to (1mrk)

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 (b) Name the parts labeled **A** and **B.** (2mrks)

 **A** ...................................................................................................

 **B** ...................................................................................................

19. Give an economic importance of; (2mrks)

 (i) Tannin

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 (ii) Colchicine

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20. (a) Why is seed dormancy important? (2mrks)

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(b) State **two** roles of water during seed germination. (2mrks)

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21. Joseph mounted a specimen on a slide onto the stage of a microscope but failed to see anything through the eye piece, suggest two possible reasons for this. (2mrks)

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22. Name **three** effects of dumping untreated sewage into a river. (3mrks)

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23. State **three** ways by which human body naturally prevent entry of pathogens into it. (3mrks)

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24. The scientific name for a domestic cat is felis catus. Outline the rule that were never followed in writing the name. (3mrks)

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25. State the use of the following apparatus used during collection of specimen for laboratory study.

 (i) Pooter (1mrk)

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 (ii) Pit fall trap (1mrk)

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 (iii) Sweep net (1mrk)

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26. Study the set up below and answer the question that follow.



**Oil**

**Lime water**

**A**

**B**

**Yeast**

 **+**

**glucose solution**

 (a) (i) What process was being investigated? (1mrk)

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 (ii) Why was glucose included in the experiment ? (1mrk)

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 (iii) What was the role of oil in the set-up? (1mrk)

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 (b) Explain briefly the expected observation in test tubes **B** after a few hours. (2mrks)

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