**NAME……INDEX NO……**

**SCHOOL…….. DATE……**

**ADM NO……..**

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

# KCSE TOP PREDICTION MASTER CYCLE 4

## INSTRUCTIONS TO CANDIDATES

- *Write your name, Index and Adm number in the spaces provided above.*
- *Answer all questions in the spaces provided on the question paper.*
- *Sign and write the date of examination in the spaces provided above.*
- *Additional pages must NOT be inserted.*

## FOR EXAMINER'S USE ONLY

| Question | Maximum Score | Candidate's Score |
|---|---|---|
| 1-27 | 80 | |

*This paper consists of 8 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.*

1. Name the blood vessel that supplies:

(a) The heart with nutrients. ***(1mk)***

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(b) The foetus with oxygen ***(1mk)***

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2. Explain why it is important to stain specimen to be observed under a light microscope. ***(2mks)***

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3. What is wilting? ***(2mks)***

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4. State the significance of the following steps while testing for disaccharide in food sample. ***(2mks)***

(a) Addition of dilute hydrochloric acid

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(b) Addition of sodium bicarbonate.

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5. a) (i) Name the fluid produced by sebaceous gland. ***( 1mk)***

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(ii) State **two** function of the fluid name in 5 a) (i) above. ***( 2mks)***

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b) Explain how malpighian layer of the skin is adapted to perform its function. ***(1mk)***

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6. A certain animal had one cell from its alimentary canal observed under light microscope. A total of 40 chromosomes were seen.

(a) State the number of chromosomes in

(i) The spermatozoan of this animal ***(1 mk)***

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(ii) One of cells in the tongue. ***(1mk)***

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(b) Name a structure in mature plant where meiosis takes place. ***(1mk)***

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7. A biological washing detergent contain enzymes which remove stain like mucus and oil from clothes which are soaked in water with the detergent.

(a) Explain why stain would be removed faster with detergent in water at 35°C rather than 50°C ***(1mk)***

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(b) Why is boiling clothes with the detergent less likely to remove stain. ***(1mk)***

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(c) Name an enzyme that catalyses the decomposition of sodium hydrogen carbonate to facilitate transportation of carbon (IV) Oxide. ***(1mk)***

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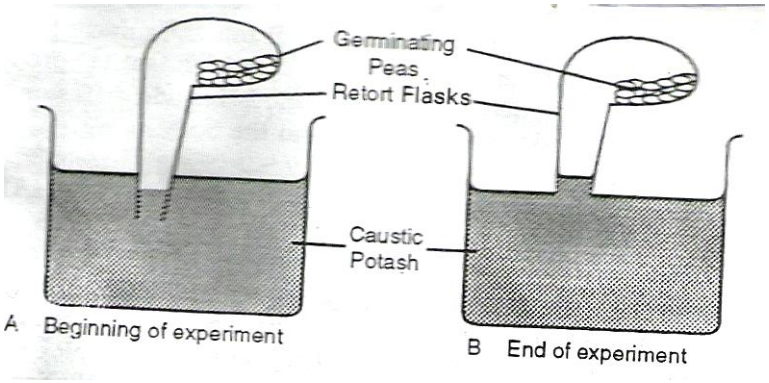
8. Form 2 students from samba secondary school set up an experiment as shown below.




***(a)*** Explain the change observed at the end of the experiment. ***(2mks)***

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***a)*** Explain what would happen if water has been used instead of potassium hydroxide. ***(2mks)***

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……..……

9. State **two** advantages of metamorphosis to the life cycle of insects. ***(2mks)***

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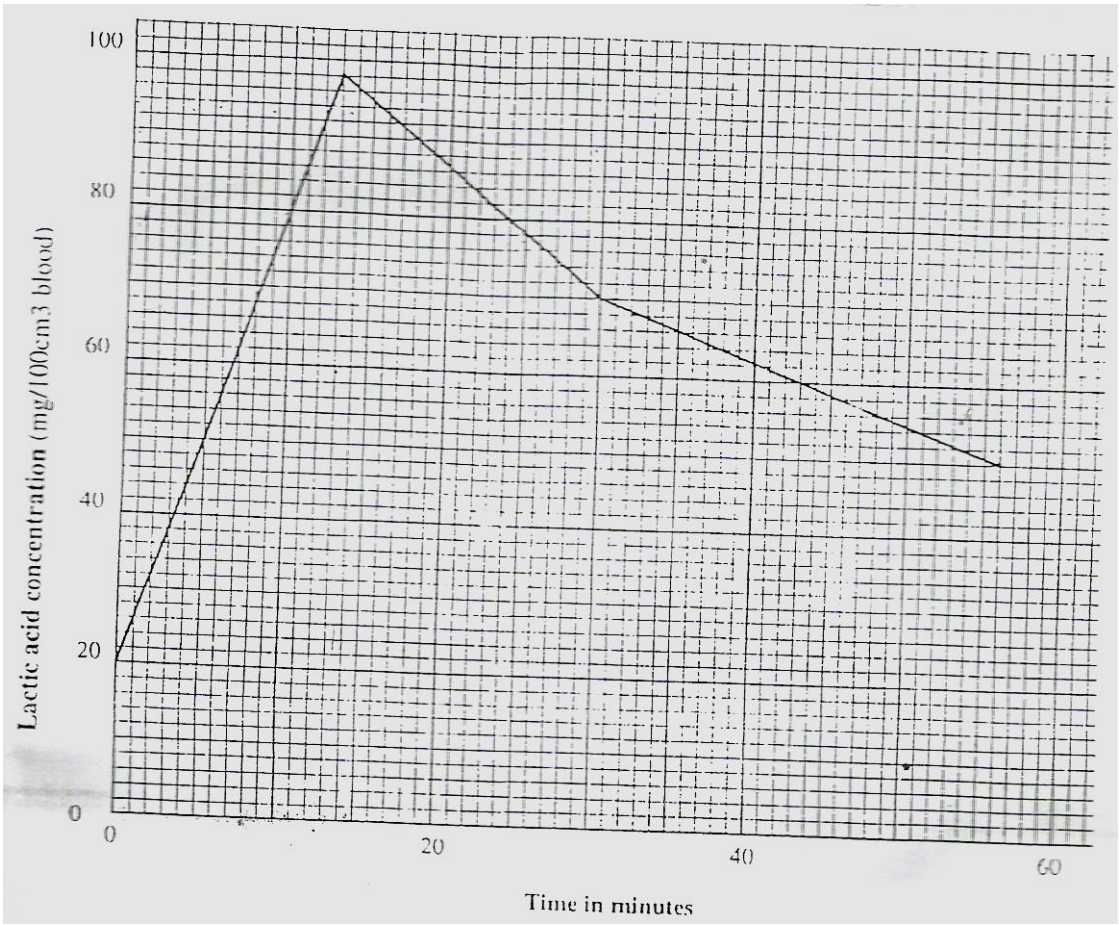
……..……

10. The concentration of lactic acid in blood during and after an exercise was determined. The results are shown in the graph below.




***(a)*** (i) By how much did the lactic acid increase at the end of 10 minutes? ***(1mk)***

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(ii) After how many minutes was the lactic acid concentration 78mg/100cm$^3$ ***( 2mks)***

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(iii) What would be the concentration of lactic acid at the 60$^{th}$ minutes. ***(1mk)***

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***(b)*** Give a reason for the high rate of production of lactic acid during the exercise. ***(1mk)***

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11. Name the part of human brain that perform the following function (***2mks)***

(a) Controls peristalsis

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(b) Control intelligence

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12. Outline the differences between Darwin's theory and Lamarck's theory of evolution. ***(2mks)***

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13. Give **three** functions of cystokinin hormone in plant . ***(3mks)***

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14. Explain why plants do not require specialized excretory organ. ***(3mks)***

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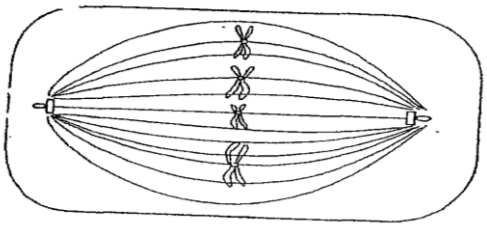
15. The diagram below represents a stage in cell division.\



(a) Identify the stage of cell division (***1mk***)

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***(b)*** Give a reason for your answer ***(1mk)***

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16. Outline **three** functions of colon . ***(3mks)***

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17. State **two** advantages of closed circulatory systems in mammal. ***(2mks)***

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18. Explain what happens to excess amino- acids in the liver of humans (***3 Mks)***

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19. (a) Which portions of the human nephron are only found in the cortex? ***(3 mks***)

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(b) (i) What would happen if a person produced less antidiuretic hormone? ***(2 marks)***

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(ii) What term is given to the condition described in (b) (i) above ***(1 mark)***

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20. Explain double fertilization as used in flowering plants. ***(2mks)***

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21. State one survival value for each of the following in plants ***(1mark)***

a) Haptotropism in stems

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***(1mark)***

b) Thigmonasty in *Mimosa pudica*

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c) What is meant by the term polyploidy? (***1mark)***

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d) Give an example of a genetic disorder caused by non-disjunction in somatic cell

***(1mark)***

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22. (a) Explain how mammalian trachea is adapted to its function **( 2mks)**

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(b) Name the gaseous exchange site in bony fish. ***(1mk)***

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23. Explain the role of the following hormone in homeostasis

(a) Insulin ***( 3mks)***

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(b) Aldosterone hormone when there is less water in blood stream. ***(2mks)***

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24. Outline **three** difference between plant divisions Bryophyta and Pteridophyta ***(3mks)***

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25. Name **two** products of light stage of photosynthesis that are useful in light independent stage. ***(2mks)***

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26. State **two** functions of xylem tissue. ***( 2mks)***

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27. State **two** function of golgi apparatus ***( 2mks)***

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