

NAME INDEX NO.....

SCHOOL

BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2007
TIME 1 ¾ HOURS

KAKAMEGA DISTRICT MOCK EXAMINATION

Kenya Certificate of Secondary Education 2007

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY /AUGUST 2007

INSTRUCTIONS TO CANDIDATES

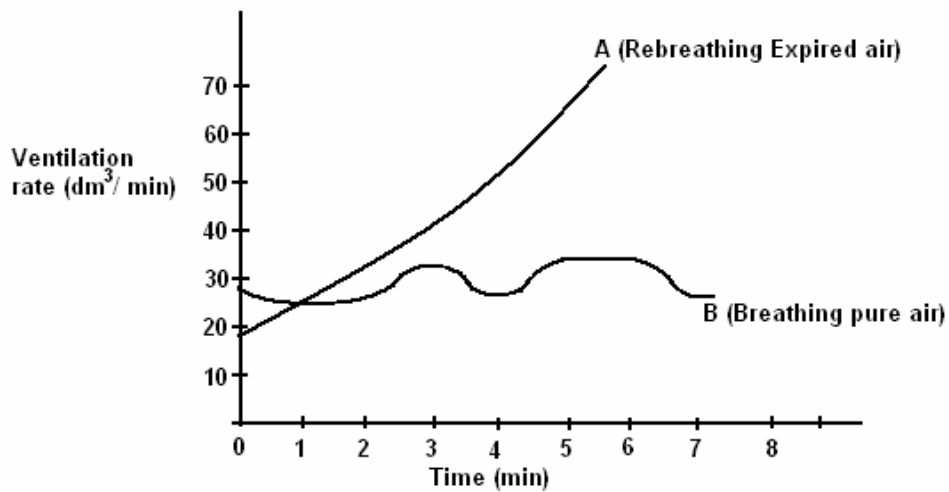
- ❖ Answer all questions in section A by filling in the spaces provided.
- ❖ Answer ***Q*** and either or from section B.

For Examiner's Use Only.

Section	Questions	Maximum score	Candidates score
A	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
B	9	20	
	10	20	
	11	20	

SECTION A: 40 MARKS**Answer all questions in this section by filling in the space provided.**

1. The diagram below shows the effect of rebreathing expired air on ventilation rate in a mammal.



- (a) **How** does rebreathing expired air affect ventilation rate? (1mk)

.....

- (b) **Identify** the gas which is highly concentrated in rebreathed expired air. (1mk)

.....

- (c) Account for the rate of ventilation in graph A. (1mk)

.....

- (d) (i) **Name** the type of respiration likely to take place in the body cell of a mammal if rebreathing of expired air persisted for some times. (1mk)

.....

- (ii) Write a word equation to illustrate the type of respiration named in d (i) above. (1mk)

.....

- (e) **Which two** factors affect the rate of ventilation as illustrated on the graphs. (1mk)

.....

2. (a) In plants, lateral buds do not sprout into side branches in the presence of a growing terminal bud. **Explain** why this happens. (1mk)

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- (b) **Name one** area in agriculture where the knowledge in 2 (a) above is applied and **give** a reason why. (1mk)

.....

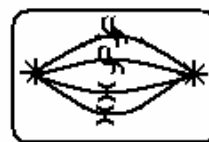
- (c) **Explain** the effect of removing the terminal bud from a plant. (1mk)

.....

3. **The diagrams** below represent a stage of cell division.



A



B

- (a) **Identify** the type of cell division represented by the cells A and B. (1mk)

A

B

- (b) **Which** stage of cell division is represented by the cells A and B.? (1mk)

A

B

- (c) **Name two** regions in mammals where the type of cell division in cell A occurs. (1mk)

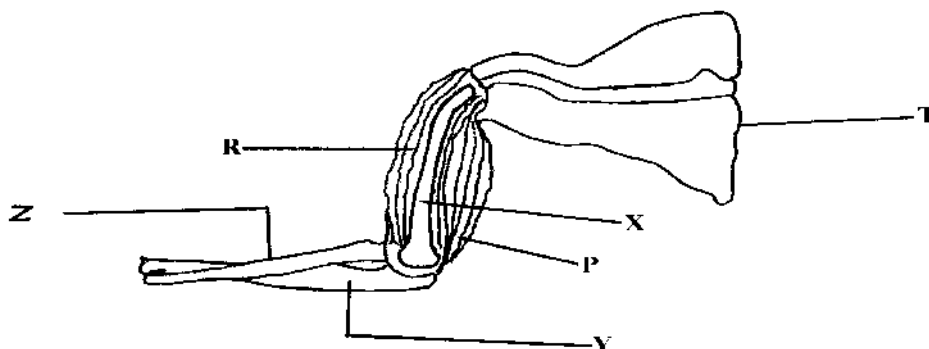
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- (d) **State** the significance of the type of cell division in A. (1mk)

.....

.....

4. **Below** is a diagram showing the fore arm bones and muscles covering them?



- (a) **Name** the bones represented by T, X, Y, and Z. (2mks)

T

X

Z

- (b) **Name** the joints formed between;

- (i) T and X. (1mk)

.....

.....

- (ii) Y and X (1mk)

.....

.....

- (c) **Name** the muscles labeled P and R. (1mk)

.....

.....

- (d) **What** happens to each muscle as the arm is straightened. (1mk)

.....

.....

- (e) **Name four** strengthening tissues in woody stems. (2mks)

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5. (a) **What** is meant by the following terms?

(1mk)

(i) Adaptive radiation

.....

(ii) Vestigial structures.

.....

(b) Evolution is an ongoing process and is still going on even today. **State two** pieces of evidence which suggests that evolution is still taking place.

(2mks)

.....

(c) **Explain** how the following factors influence natural selection.

(2mks)

(i) Predators

.....

(ii) Diseases

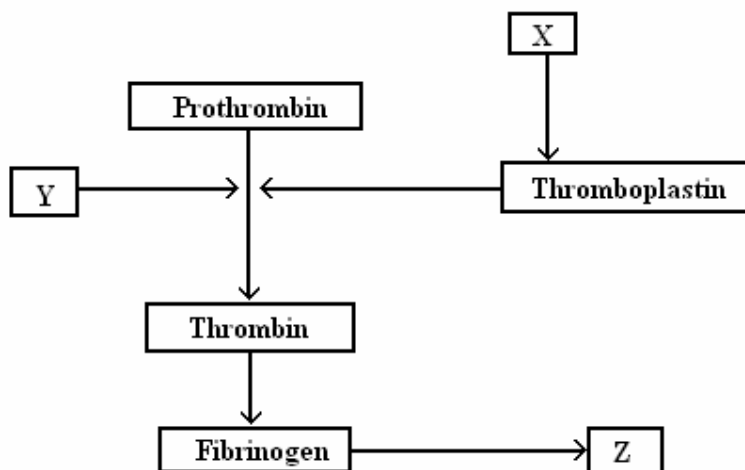
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6. (a) **State two** ways by which the skin prevents entry of micro- organisms.

(2mks)

.....

(b) The chart below is a summary of the blood clotting mechanism in man.



Identify the following

- (i) **The blood** cells represented by **X** (½mk)

.....

.....

- (ii) **The metal** ion represented by **Y** (1mk)

.....

.....

- (c) **What** is the function of blood clotting in human beings? (1mk)

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.....

7. A plant cell was placed in a hypotonic solution for 15 minutes then transferred to a hypertonic solution for 20 minutes.

- (a) **What** happened to the plant cell in the two solutions? (1mk)

Hypotonic

.....

.....

Hypertonic

.....

.....

- (b) **Explain what** happed to the plant cell in the hypertonic solution. (1mk)

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- (c) **What** is the function of the process that occurred when a plant cell is put in hypertonic solution in Plants. (1mk)

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8. In a certain plant species which is normally green, a recessive gene for colour (n) causes the plant to be White when present in homozygous state such plants die at an early stage; The plants are pale green in colour when in latency state and grow to maturity.

- (a) **Give** a reason for the early death of plants with homozygous recessive gene. (1mk)

.....

.....

7

- (b) If a normal green plant was crossed with the pale green plant, what would be the genotypes of the F_1 generation (use punnet square to work out the answer) (2mks)

- (c) If seeds from the heterozygous plants were planted and the resulting plants crossed, work out the phenotypic ratio of plants that would grow to maturity. (3mks)

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- (d) **Explain** the occurrence of the pale green colour in the heterozygous plants. (1mk)

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SECTION B (40 MARKS)**Answer question 9 (compulsory) and either question 10 or 11 in the space provide after question 11**

9. In an experiment to investigate the action of salivary amylase on starch, equal amounts of amylase was added to equal amount of starch in different tubes. The test tubes were placed at different temperatures. The table below shows the time taken for the enzyme to digest starch.

Time (mn)	45	27.5	15	05	1.5	1	8	35
Temperature (⁰ c)	0	10	20	30	35	38	40	45

- (a) Plot a graph of time (min) against temperature. (5mks)

(b) **What** is the optimum temperature of the enzyme? (1mk)

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.....

(c) Account for the time taken to digest starch at

(i) 5⁰c (2mks)

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.....

(ii) 45⁰c (2mks)

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(d) **Other** than temperature, name two factors that influence the rate of enzyme action.

(2mks)

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(e) **What** is rate of enzyme action at 15⁰c? Work out using the graph drawn. (3mks)

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(f) Salivary amylase continues to digest starch to maltose in the food bolus from the mouth down the esophagus but stops in the stomach. **Explain** this observation. (2mks)

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