

NAME:INDEX NO:.....

SCHOOL:

231/2
BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2007
TIME: 2 HOURS

KISUMU DISTRICT JOINT EVALUATION TEST (KDJET) Kenya Certificate Of Secondary Education (KCSE) 2007

BIOLOGY
PAPER 2
THEORY
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INSTRUCTIONS TO CANDIDATES

- ❖ Write your name and Index Number in the spaces provided above.
- ❖ This paper consists of 2 sections, A and B
- ❖ Answer all questions in section A in the spaces provided.
- ❖ In section B answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.

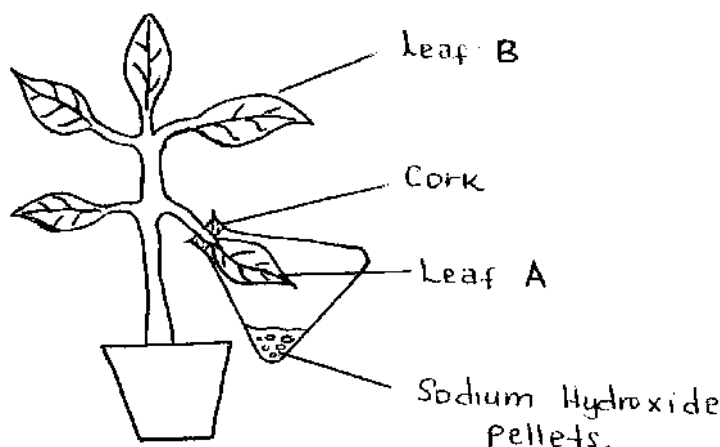
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SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1	08	
	2	08	
	3	08	
	4	08	
	5	08	
B	6	20	
	7	20	
	8	20	
TOTAL		80	

This paper consists of 11 printed pages. Candidates should check the questions to ensure that all pages are printed as indicated and no questions are missing.

SECTION A (40 marks)**Answer ALL the questions in this section in the spaces provided.**

1. A student set up the following experiment using a potted plant which had been kept in the dark for 48hours.



The plant was well watered then leaf **A** was enclosed in a conical flask containing Sodium Hydroxide pellets as shown in the diagram above. The potted plant was then placed in sunlight for 8 hours. Leaf **A** and **B** were then tested for starch.

- (a) **Why** was the potted plant kept in the dark for 48hours before setting up the experiment?

(1mk)

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- (b) **State** the observations made during the test for starch in.

Leaf A.....

..... (1mk)

Leaf B.....

..... (1mk)

- (c) **Account** for the observations made in **B** above

(2mk)

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.....

3

(d) **Explain** why leaf B was also tested for starch

(1mk)

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(e) **What** role is played by the following factors in the process of photosynthesis?

(i) Water.

(1mk)

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(ii) Carbon(iv)Oxide.

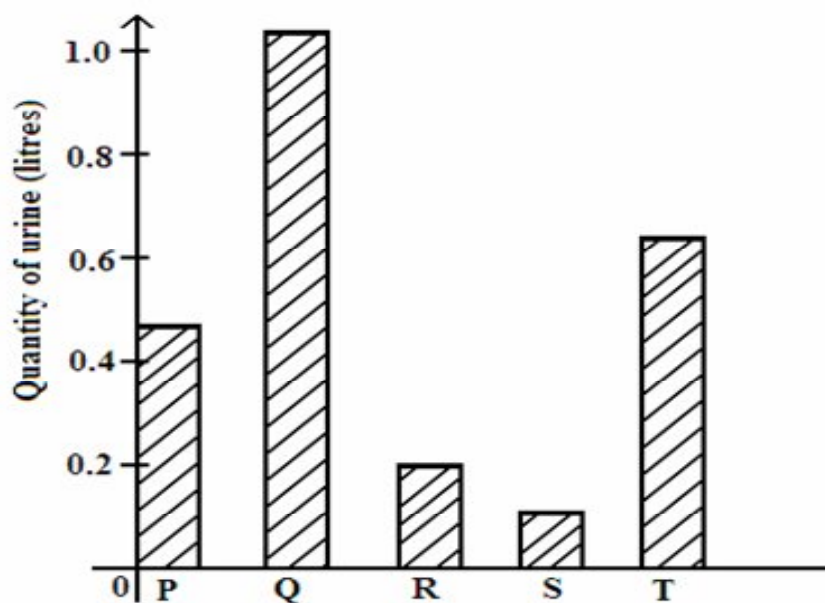
(1mk)

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2. The quantity of urine passed out per day was established in five animals P,Q,R,S,and T of same species

in their natural habitat. The results obtained were as shown below.

(a) (i) **Which** of the five animals was likely to be excreting urine very rich in ammonia?

(1mk)

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(ii) **Give a reason** for your answer in (a)(i)above

(1mk)

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(b) (i) **Which** of the five animals was likely to be living in an arid environment? (1mk)

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

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(c) **State two** structural differences expected in the nephrons of mammals **Q** and **S** (2mks)

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(d) **Explain** how ingestion of very salty food may affect the quantity of urine produced. (2mks)

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(e) **In what** form is nitrogenous waste excreted in a desert animal? (1mk)

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3. In a certain plant species which is normally green, a recessive gene for colour (n) causes the plant to be white when present in a homozygous state. Such plants die at early age. In heterozygous state, the plant are pale green in colour but grow to maturity.

(a) **Suggest** a reason for the early death of plants with the homozygous recessive gene (2mks)

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- (b) If a normal green plant was crossed with a pale green plant, **what** would be the genotype of the F1 generation? (Show your working) (3mks)

- (c) If seeds from the heterozygous plants were planted and the resulting plants allowed to self pollinate, **work out** the phenotypic ratio of the plants that would grow to maturity. (2mks)

- (d) **Give** an explanation for occurrence of the pale green colour in heterozygous plants (1mk)

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4. The table below shows the approximate distribution of blood groups in a sample of 100 people in a population.

Blood group	Frequency	Rhesus +ve	Rhesus -ve
A	26	22	4
B	20	18	2
AB	4	3	1
O	50	42	8

- (a) **Calculate** the percentage of rhesus negative (Rh-ve) individuals in the population (1mk)

(b) **Account for.**

(i) The large number of blood group **O** individuals in a population

(2mks)

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(ii) The small number of individuals with blood group

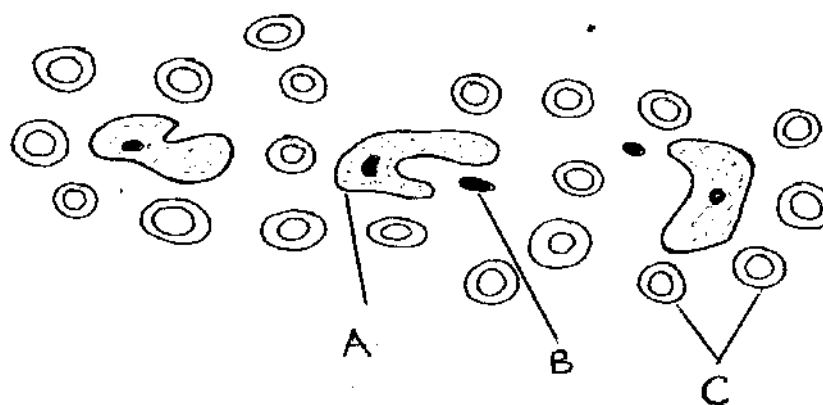
(2mks)

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(c) The diagram below represents a blood smear on a glass slide



(i) **State** the importance of structure C being large numbers in the blood smear

(1mk)

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(ii) **Give** a reason why structure C would be found in larger numbers at high altitude than at low Altitude

(1mk)

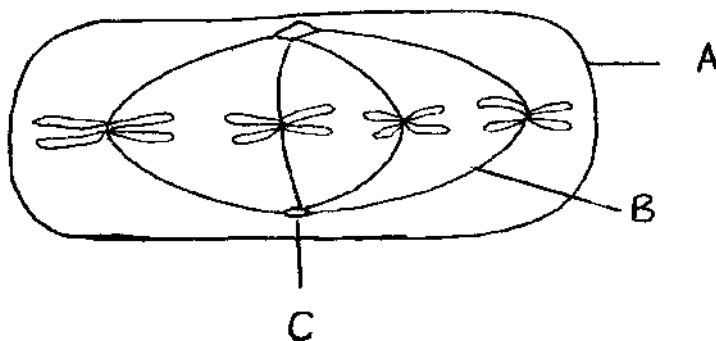
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(iii) **Name** the process by which structure A would engulf structure B (1mk)

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5. The diagram below represents a stage in cell division. **Study** it and answer the questions below.



(a) **Name** the stage of cell division illustrated in the diagram above (1mk)

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(b) **Name** the parts labelled A, B, and C

A

B

C

(c) **State three** differences between mitosis and meiosis.

	Mitosis	Meiosis
(i)		
(ii)		
(iii)		

(d) **Name** the process during which the exchange of genetic materials occur at prophase I of meiosis

(1mk)

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SECTION B(40 MARKS)

Answer question 6 (compulsory) in the spaces provided and either 7or 8 in the spaces provided after question 8.

6. A biologist carried out a study to investigate the growth of a certain species of herbivorous bony fish and the factors influencing plant and animal life in four small lakes A,B,Cand D. The lakes were located in the same geographical area. Two of the lakes A and B were found contain hard water due to the presence of high content of calcium salts. Lake C and D were found to have soft water with low content of calcium salts. The mean body length of 2years old fish amount of plant life and invertebrate biomass in each lake were determined. The data was recorded as shown in the table below.

Lakes	Mean body length of 2 year old fish (cm)	Type of water	Amount of plant life (g/m ³ of water	Invertebrate biomass (g/m ³ of water)			
				worms	insects	Snails	Crustaceans
A	31.2	Hard	1050	180	11	300	10
B	28.6	Hard	950	90	72	100	9
C	18.4	Soft	1.2	20	97	0	2
D	16.3	Soft	0.5	10	99	0	1

- (a) **Describe** the procedure that may have been used to determine the mean body length of the fish.

(6mks)

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- (b) **What** are the likely reasons for the difference in the mean body length of the fish living in lakes **A** and **D**

(4mks)

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(c) **Suggest one** reason for the absence of snails in the lakes **A** and **D** (1mk)

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(d) (i) **Name** any **six** abiotic (physical) factors that are likely to influence the plant and animal life in Lake **A**. (3mks)

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(ii) **Explain** how each of the factors named in d(i) above may influence plant animal life in lake **A** (6mks)

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7. (a) **What** is pollination? (2mks)

(b) **Discuss** the sequence of events that take place from the time a pollen grain falls on the stigma Until a seed is formed. (18mks)

8. **Describe** locomotion in a finned fish. (20mks)

