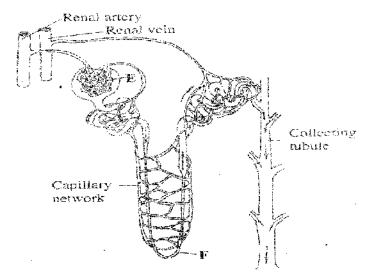
Lose Paper 2

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

- 1.In a certain plant species which is normally green, a recessive gene for colour (n) causes the plants to be white in colour. Such plants die at an early age. In the heterozygous state, the plants are pale green in colour but grow to maturity.
- (a) Give a reason for the early death of the plants with the homozygous recessive gene. (2 marks)
- If a normal green plant was crossed with the pale green plant, what would be the genotype of the first filial generation (F generation)? Show your working. (4 marks)
- (c) If heterozygous plants were self-pollinated and the resulting seeds planted,work out the proportion of their offspring that would grow to maturity. (2 marks)

The diagram below illustrates the structure of the kidney nephron.



- (a) Name the part labelled E.
- (b) How is the part labelled F adapted to its function?
- (c) State **three** physiological mechanisms of controlling the human body temperature during a cold day.

Test tube	Temperature	Number of							
	(°C) 50	bubbles							
	200°								
G	20	28							
H O	35	42							
J co	55	10							
4C3									

(i) Name **one** requirement for this process that is not mentioned in the investigation. (I mark)

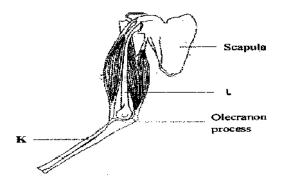
(ii) Name the gas produced in this investigation.

(1 mark)

(iii) Account for the results in test tubes **H** and **J**.

(2 marks)

- (b) State **two** ways in which the human intestinal villus is adapted to its function. (4marks)
- 4. (a) The diagram below illustrates the arrangement of bones and muscles in the human arm.



(i) Name the bones labelled K and L.

2marks)

	ADE
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	200°
K	iteekese satipase
L	e e e e e e e e e e e e e e e e e e e
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- (ii) Explain how the upward movement of the lower arm is brought about by the bones and muscles shown diagram above. (3 marks)
- b) State **three** ways in which support is brought about in a leaf. (3 mark)

5. a) Describe the process of inhalation.

(4marks)

b) Explain the mechanism of stomatal opening. (4marks)

SECTION B (40 marks) Answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.

6 The data provided below represent populations of a predator and its prey over a fifty years period.

J	cars period.											
	TIME IN YEARS	POPULATION IN RELATIVE NUMBERS										
		POPULATION OF P	POPULATION OF Q									
	5	24500	17000									
	10	30000	20500									

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	5.500	
15	33500 _{trum} .	26000
20	33500 _{kith} .	30000
25	31000	33000
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35 40 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2	29000	27500
45	32500	28000
50	34000	28500

(a) (i) Using the same axes, draw graphs of the relative populations of P and Q against time. (7 marks)

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(ii) With a reason, identify the curve that represents the prey.

(2 marks)

(iii) Account for the two populations between 25 and 32 years.

(2 marks)

(iv) Which years were the two populations equal?

(2 marks)

- (v) Apart from predation, state **three** biotic factors that may have led to the decline of the prey population. (3 marks)
- (b) Describe the hazards of air pollution by Sulphur (IV) Oxide.

(4 marks)

- 7. Using a relevant example in each case, describe simple and conditional reflex actions. (20 marks)
- (a) Using a relevant example, describe how an allergic reaction occurs in a human being. (10 marks)
- (b) Describe how environmental factors increase the rate of transpiration in terrestrial plants. (10 marks)