Name ……ADM.NO……..

Candidate's Sign

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Date

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231/2

Biology Paper 2(Theory)

TERM ONE 2021.

Time: 2 Hours

MOMALICHE 3 CYCLE 8 2021.

Kenya Certificate of Secondary Education

- Write your name, Index Number in the spaces provided above
- Write the date of examination in the space provided above
- Answer ALL the questions in section A in the spaces provided below each question in the question paper
- In section B, answer question 6(Compulsory) and either question 7 or 8

FOR EXAMINER'S USE ONLY

Section	Question	Maximum Score	Candidate's Score
A	1	08	
	2	08	
	3	08	
	4	08	
	5	08	
B	6	20	
	7 or 8	20	

	TOTAL	80	

1. a) In a garden with pea plants,625 plants had tall stems while 205 had short stems in the F2 generation:

i)Work out the ratio of tall to short plants.(Give your answer to the nearest whole number). (1 mk)

ii) Using letter T to represent the dominant gene, work out a cross between an F1 offspring and a short plant. (4 mks)

iii) What is the genotypic ratio from the cross in (ii) above?. (1 mk)

b) What is meant by the term test cross in genetic studies? (1mk)

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c) State one characteristic that researchers select in breeding programmes. (1 mk)

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2. Study the table below and then answer the questions that follow.

Name of disease	Causative agent	Age when vaccine is administered	Method of vaccination
Tuberculosis	Bacterium	At birth	Injection
Poliomyelitis	Virus	At birth, after 6 weeks, after 10 weeks, after 14	Oral inoculation

		weeks	
Whooping cough	Bacterium	6th and 14th week	Injection
measles	Virus	9th month	Injection

(a)What part of the human body is affected by the virus that causes poliomyelitis? 1mk

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(b)Give a reason why some doses of vaccine are given more than once. 1mk

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(c) Suggest a reason for delay in vaccinating against measles until the 9th month(1 mark)

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.(d) Describe immune response. (2 marks)

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……(e) What is a vaccine? (1 mark)

……(f) What is the role of vaccination in providing immunity? (1 mark)

……(g) What triggers an allergic reaction? (1 mark)

…… 3.(a)State ***three*** limitations of using a quadrat to estimate the population of organisms.(3mks)

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…… b)In an attempt to estimate the number of grasshoppers in the field, a student captured 435 marked and released. Three days later, 620 were captured 75 of which were marked.

(i) What is the name of the sampling method describe above? (1 mark)

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(ii) Calculate the approximate population size of the grasshoppers in the field(2 marks).

(iii) What are the disadvantages of this method? (2 marks)

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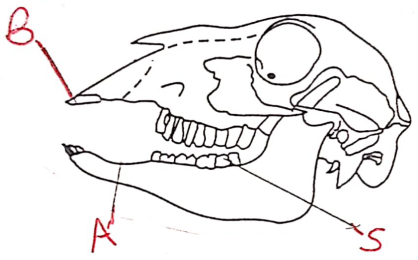
……4.Study the photograph below and answer the questions that follow



(a) Name the parts labelled A and B and state its functions. (2 marks)

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(b) Identify the mode of feeding of the organism. (1 mark)

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(c) (i) Name the tooth labelled S. (1 mark)

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(ii) State how the tooth named in (c) (i) above is adapted to its function.(2 marks)

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(d)Distinguish between competitive and non-competitive enzyme inhibitors.(2 marks)

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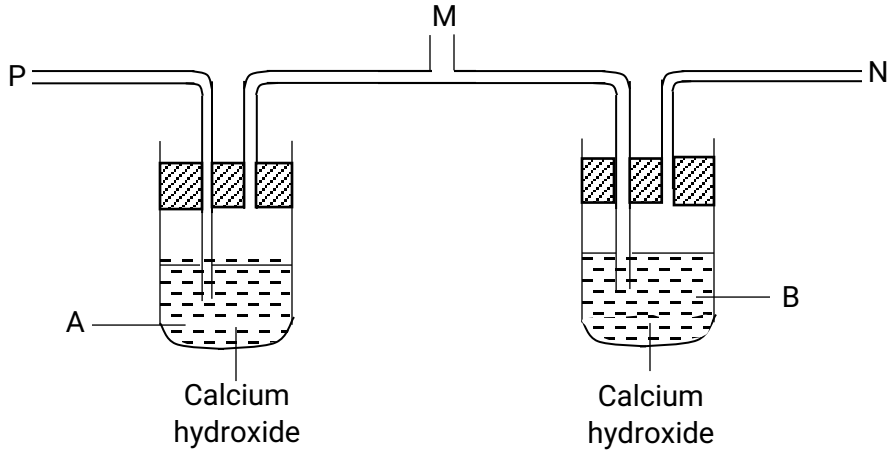
5. A student set up an experiment to investigate some aspect of gaseous exchange using the apparatus represented below.



The student placed the mouth at the M and breathed in out several times through the tube.

(a) Using arrows show the direction of air movement along tube P and N on the diagram during the experiment. (1 mark)

(b) Suggest a possible aim of this experiment. (2 marks)

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(c)What results were expected after breathing in and out through tube M several times?3mks

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(d) What characteristics do mammalian lungs and the gills of bony fish have in common that enables them to exchange gases efficiently? (2mks)

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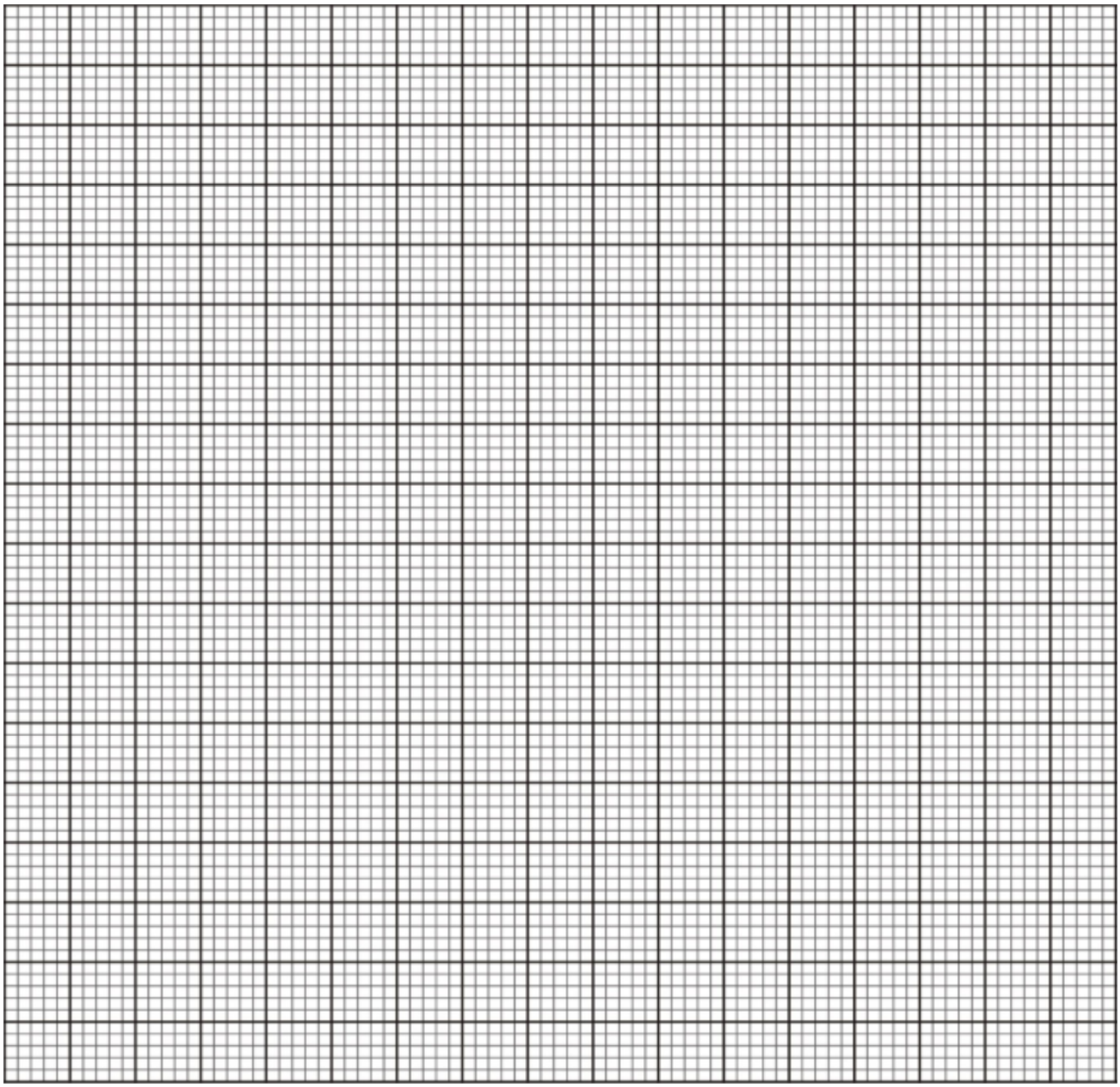
Answer questions 6 (compulsory) in the spaces provided and either question 7 or 8 in the spaces provided after question 8.

6. The table below shows the concentration of lactic acid in mg/100cm^3 in the human blood during and after exercise

Time (seconds)	0	5	10	15	20	25	30	35	40	45	50	55
Lactic acid concentration (mg/100cm^3)	22	25	45	90	86	85	84	60	44	25	22	22

(a)Using the readings in the table ,plot a graph of lactic acid concentration against time [6marks]



b) From the graph determine the duration of vigorous exercise [1mark]

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c) Write an equation leading to the production of lactic acid in humans [1mark]

…….

d)i) Suggest the normal concentration of lactic acid in the blood when the person was

resting [1mark]

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ii) What is the effect of lactic acid on the body tissues when its concentration rises above 90mg/100cm^3 [1mark]

…….

iii) Give three ways in which the body adjusts to the high concentration of lactic acid [3marks]

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e) From the graph determine the time when oxygen debt

i) Occurred
[1mark]

……

ii) Began to be paid in the person's body
[1mark]

…….

f) List three differences between aerobic and anaerobic respiration in animals [3marks]

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g) Name the product of anaerobic respiration that is essential in: [2marks]

I) The brewing industry …….

II) The bread making industry ……

7(a) Describe the process of fertilisation in Angiosperms. (15 mks)

(b) State the changes that take place in a flower after fertilization.

8. Describe how the mammalian skin is adapted to its functions. (20

mks)

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