

Name.....Index Number

Admission number..... Class.....

Candidates Signature.....

231/2
BIOLOGY
 Paper 2
 July 2015
 2 Hours

**ALLIANCE HIGH SCHOOL
 TRIAL EXAMINATION 2015**

INSTRUCTIONS TO CANDIDATES

- Write your name, Index Number, class and admission number in the spaces provided above.
- This paper consists of **two** sections. Section A and section 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

For Examiners use only.

Section	Question	Maximum Score	Candidates Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
TOTAL SCORE		80	

Candidates should check the question paper to ensure that all the Papers are printed as indicated and no questions are missing

SECTION A (40 MARKS)

1. In an experiment to find out the action of pepsin on egg albumen, 5cm³ of egg albumen suspension was placed in each of the four test tubes Q, R, S and T. Three drops of hydrochloric acid were added to the test tubes Q, R and T. Exactly 1 cm³ of 1% boiled pepsin was added to test tubes R and T and 1cm³ of unboiled pepsin to test tubes Q and S. The four test tubes were then placed in a water bath at 37°C for 10 minutes.

(a) Account for the results in test tubes Q, R and S when the mixtures in the test tubes were subjected to a protein test at the end of the experiment. (6 marks)

Q

R

S

(b) Briefly outline the procedure for protein test the investigator used (2 marks)

2.. A fish farmer wanted to know the number of fish in his pond. He collected twenty fish from the pond and labeled each, by tying a tag label on its fin and returned the twenty fish to the pond to mix with the other fish. When he later collected hundred fish from the pond, he found only eight of them had labels

(a) Estimate the total number of fish in the pond. (Show your working) (2 marks)

(b) The pond in which the farmer did the above study is considered an ecosystem.

(i) Define the term ecosystem (1 mark)

ii) Distinguish the terms habitat and ecological niche. (2 mks)

(iii) Name the source of energy in an ecosystem (1 mark)

(c) The flow of energy in an ecosystem can be represented by the pyramid of numbers and pyramid of biomass. Why is the pyramid of biomass preferred to pyramid of numbers in representing energy flow in an ecosystem? (1 mark)

(d) What role do saprophytic bacteria and fungi play in the ecosystem? (1 mark)

3. Explain how the following adaptations minimize the rate of transpiration

(a) Leaf folding (2 marks)

(b) waxy thick cuticle (2 marks)

(c) reversed stomata rhythm (2 marks)

(d) sunken stomata (2 marks)

4. (a) What is accommodation? (1 mark)

(b) Describe the sequence of events that occur in the eye for one to be able to see clearly.

(i) a distant object.

(4 marks)

(ii) if one moves from a dim lit room to bright light.

(3 marks)

5. Pure breed of red cows and pure breed of white bulls were crossed to give F_1 calves that had a mixture of red and white coat known as roan. The F_1 were then selfed.

(a) Using letter R to represent gene for red color and W to represent gene for white color work out the phenotypic ratio of F_2 .

(4marks)

(b) Work out the genotypic ratio of a cross between F_1 offspring and white bull

(3marks)

(c) Comment on the gene(s) controlling the color of coats in cattle mentioned above.

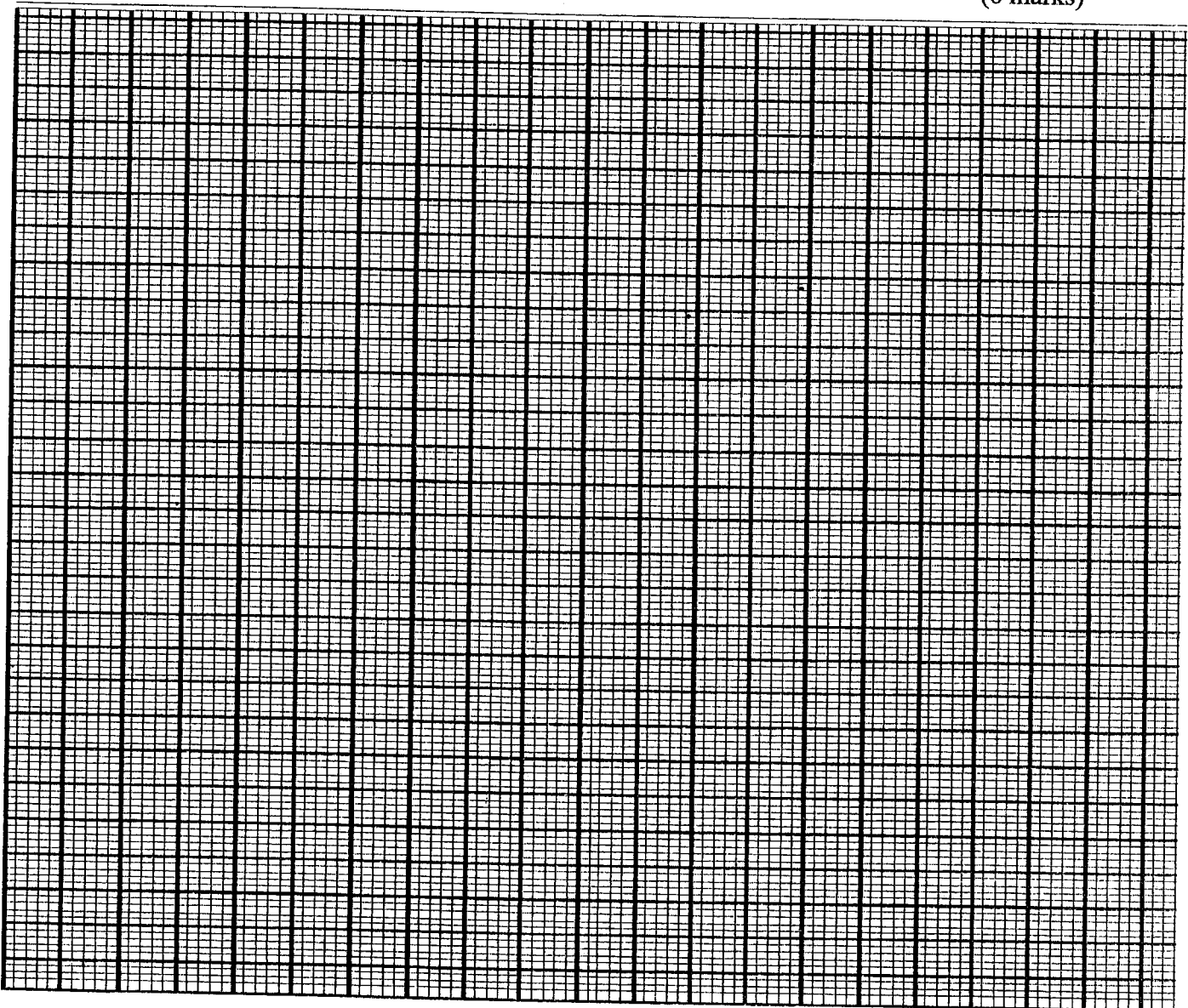
(1mark)

SECTION B (40 MARKS)

6. In an experiment to investigate certain processes in a given plant species, the rate of carbon (IV) oxide consumption and release were measured over a period of time of the day. The results of the investigation are shown below.

Time of the day (Hrs.)	4-6	6-8	8-10	10-12	12-14	14-16	16-18	18-20	20-22	22-24
CO ₂ consumption mm ³ /min	0	43	69	91	91	50	18	0	0	0
CO ₂ release mm ³ /min	38	22	10	3	3	6	31	48	48	48

(a) On the same axis on the grid provided plot of graphs of volume of carbon (IV) oxide consumed and released against time
(6 marks)



(b) Name the biochemical processes being investigated above (2 marks)

(c) Account for the change in CO₂ consumption from
(i) 4-6 hours (2 marks)

(ii) 6-10 hours (2 marks)

(d) From the graphs state the time when compensation points are achieved (2 marks)

(e) i) Name **one** inhibitory factor that would affect the process that leads to the release of carbon (IV) oxide. (1 mark)

(ii) State the importance of the physiological process that uses carbon (IV) oxide in the experiment. (1 mark)

(iii) State the adaptation of the site where the physiological process that uses carbon (IV) oxide occurs (2 marks)
