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BIOLOGY
Trial Examination Unit 3
SOLUTIONS BOOK

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Use this page as an overlay for marking the multiple choice answer sheets. Simply photocopy the page onto an overhead projector sheet. The correct answers are open boxes below. Students should have marked their answers with a cross. Therefore, any open box with a cross inside it is correct and scores 1 mark.

1.	A	B	C	
2.	A	B	C	
3.	A	B		D
4.	A		C	D
5.		B	C	D
6.	A	B		D
7.		B	C	D
8.	A		C	D
9.	A	B	C	
10.	A	B	C	
11.	A	B		D
12.	A	B		D
13.	A	B		D

14.	A	B	C	
15.		B	C	D
16.	A		C	D
17.		B	C	D
18.	A	B	C	
19.		B	C	D
20.	A		C	D
21.	A		C	D
22.	A	B	C	
23.	A		C	D
24.	A	B		D
25.		B	C	D

TEACHERS, PLEASE NOTE:

In marking the Trial Exam, teachers should keep in mind that this paper is designed as a teaching tool. The language used in the suggested answers is sometimes more sophisticated than a student would offer since these answers are written for teachers' information in their correction of the Trial Exam.

*The answers suggested here might not be the only correct responses possible. Teachers must use their professional judgement in awarding marks for other answers offered. However, in accordance with the VCAA practice, students who give a correct response, and then offer a contradictory incorrect response within the same part of the question, should **not** be awarded any marks for the correct part of the response. Also in accordance with the VCAA practice, no half marks should be given.*

SECTION A – MULTIPLE CHOICE QUESTIONS (1 mark each: 25 marks)

1	D	16	B
2	D	17	A
3	C	18	D
4	B	19	A
5	A	20	B
6	C	21	B
7	A	22	D
8	B	23	B
9	D	24	C
10	D	25	A
11	C		
12	C		
13	C		
14	D		
15	A		

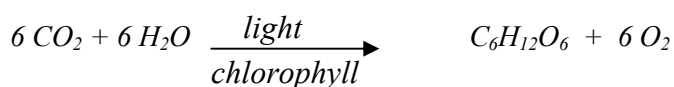
SECTION B – SHORT ANSWER QUESTIONS**Question 1**

- a Enzymes speed up biochemical reactions that would otherwise occur too slowly to sustain life. 1 mark
- b Reaction rate increases quickly at first and then rate increases more slowly. (Note: the rate has not yet reached a plateau on the graph, so students should not extrapolate to a plateau.) 1 mark
- c 0.006 arbitrary units 1 mark
- d When all possible active sites of an enzyme are filled with substrate the reaction rate can go no faster. (1) In the case of lactate dehydrogenase, the substrate concentration that causes this to happen is 80 arbitrary units. (1) 2 marks
- e Prediction: Zero reaction rate. (1)
Explanation: High temperatures denature enzymes, making them inactive. (1) Heating the enzyme at 75°C would denature the enzyme so no activity would be seen. (1) 3 marks

Total Question 1: 8 marks

Question 2

a



(Correct chemical formulae (1), correct balancing (1)) (Students may add another 6 H₂O molecules to each side, but should not be penalised if they do not.)

2 marks

b

Cellular respiration (or aerobic respiration) (respiration alone is insufficient)

1 mark

c

The standard experiment against which the results of other experiments are compared.

1 mark

d

Repeating the experiment in the dark.

1 mark

Total Question 2: 5 marks**Question 3**

a

This concentration of ethylene is the level commonly found in supermarkets, where ethylene is likely to cause deterioration of flowers.

1 mark

b

The molecules on cell membranes that act as receptors for hormones are generally proteins. (1) Therefore it would be expected that proteins on the plant cell membranes would be the ethylene receptors. (1)

2 marks

c

Ripening and rotting apples release ethylene that accelerates the ripening and rotting of apples nearby. (1) EthylBloc treated apples will be resistant to the effects of ethylene and will not ripen and rot in the barrel. (1)

2 marks

Total Question 3: 5 marks**Question 4**

a

Auxin (or Indole Acetic Acid)

1 mark

b

Auxin is formed on the dark side of the plant and causes the coleoptile to bend. (1) Therefore there was auxin on block 1 on plant X, but no auxin on block 2 on plant Y, causing plant X but not plant Y to bend. (1)

2 marks

c



Cells drawn on the left side of the coleoptile should be longer than those on the right. (1) The coleoptile should be drawn bending to the right as in the original diagram. (1) (The drawing above is simple, but shows all that is needed.)

2 marks

d

Bending towards the light ensures that the tip gains maximum exposure to the light for maximum photosynthesis and growth.

1 mark

Total Question 4: 6 marks**Question 5**

a

Conduction (The colder water is in contact with the muskrat's body. The warmer water loses heat to the colder water near it by convection, but that's not the initial mechanism by which the muskrat loses heat.)

1 mark

b

As the heat loss is directly proportional to the surface area exposed to the environment, there would tend to be a large heat loss via the tail, because of the large surface area.

1 mark

c

Endotherms

1 mark

d

In the muskrat's counter-current heat exchange tail circulation heat is transferred from the blood in the artery to the blood in the vein. (1) So the blood at the surface of the tail loses less heat to the cold environment. (1) Hence heat is conserved for the muskrat.

2 marks

Total Question 5: 5 marks

Question 6

- a* Homeostasis is the maintenance of an organism's internal environment within tolerance limits. 1 mark
- b* A feedback system where the response reduces the magnitude of the original stimulus. 1 mark
- c* Stimulus: Large amount of water enters the blood from the alimentary canal. (0 mark – given)
 Receptor: Osmoreceptors in the hypothalamus detect increase in blood water. (1)
 Message: DECREASED ADH secretion from hypothalamus. (1)
 Effector: Kidney collecting ducts absorb LESS water back into the blood. (1)
 Response: Excess water is excreted from the body via urine. (1) 4 marks
- d* ADH is responsible for increasing the reabsorption of water in the kidneys. (1)
 Therefore in blocking this hormone, alcohol leads to decreased water reabsorption, increased urine output and possible dehydration. (1) 2 marks

Total Question 6: 8 marks**Question 7**

- a* Any two sensible responses such as:
 • Attaches firmly to the host (cow)
 • Produces many eggs
 • Does not kill the host 2 marks
- b* Answer depends on answers to part a. For those given, the reasons are:
 • Ticks are not dislodged as they feed on the blood of the host.
 • Many eggs increase the chance of some finding a host, keeping the life cycle going.
 • Host may provide food for many generations of ticks. 1 mark
- c* Eukaryote (it's a protozoan) 1 mark
- d* Vector (for the *B.bovis*) 1 mark
- e* Pathogen 1 mark
- f* *Babesia bovis* 1 mark
- g* Any two sensible answers such as:
 • It can survive in one host when the other is not present.
 • Increases the chance of transmission between hosts. 2 marks
- h* An attenuated vaccine has been treated to retain antigenic properties but no longer cause disease. (1) Therefore the attenuated vaccine does not cause disease in the calf. (1) 2 marks
- i* Vaccination causes the production of both antibodies and memory cells. (1)
 Therefore the memory cells, which can quickly form antibodies in response to future exposure to *B.bovis*, protect the cattle for at least 4 years. (1) 2 marks

Total Question 7: 13 marks**Total Section B: 50 marks****Total Examination: 75 marks**