

Trial Examination 2013

VCE Biology Unit 2

Written Examination

Suggested Solutions

*Modified per
St Columba's exam
per CQ below with*

*have been
changes*

SECTION A: MULTIPLE-CHOICE QUESTIONS

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

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

Question 1 C

Sweating would be an advantage to cool the organism, so an inability to sweat is not an adaptation to a hot environment. Hairless forearms are a structural adaptation, and panting is a behavioural adaptation.

Question 2 B

Panting and licking will both increase water loss. Relatively hairless forearms are a structural adaptation to cooling the Euro, not conserving water.

Question 3 D

In the 2-hour period, the reptile has been able to maintain a relatively stable temperature by behavioural means such as moving in and out of the sun or seeking a cooler place. Reptiles are not homeothermic and do not have structural or physiological adaptations to regulate their body temperature.

Question 4 C

The nervous system has neurotransmitters which are chemicals used to convey information across synapses. The responses are fast, of short duration, and messages are not carried by the circulatory system.

Question 5 D

The electrical action potential triggers the release of the neurotransmitter by exocytosis and it diffuses across the synaptic cleft and opens channels for the movement of sodium ions into the cell.

Question 6 B

Ethylene is responsible for fruit ripening, gibberellins are responsible for general elongation of the shoot system and cytokinins are responsible for increased cell division.

Question 7 B

Substance X from the agar block in 2 and the apical bud in 4 will inhibit lateral bud growth.

Question 8 B

This is instinctive and not learnt of which imprinting is rapid learning at an early age. Habituation is the loss of an innate response to conserve energy.

Question 9 D

Responding to the noise is an innate response. The lessening/loss of the response is habituation. Instinct is innate. Conditioning is the responding to an unrelated stimulus due to association.

Question 10 A

Learnt behaviour is not innate or instinctive. It is developed from specific experiences not any environmental factor.

Question 11 B

The levels of oestrogen and progesterone are low when contractions begin. Prolactin levels rise and do not appear to affect labour.

Question 12 C

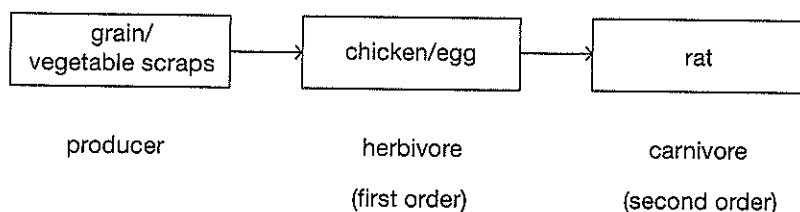
The level of these hormones steadily rise throughout pregnancy so both are required. Oxytocin rises around birth.

Question 13 A

There are no producers, this food web is detritus based.

Question 14 B

As these organisms feed on organic matter (detritus) made up of decomposed plant, animal and waste matter.

Question 15 B**Question 16 B**

Biotic factors are the living components (communities) and the abiotic factors make up the non-living components. The niche is the role of an organism in its environment and the habitat is where an organism lives.

Question 17 A

Both the algae and fungi depend on each other therefore they both benefit.

Question 18 C

The mistletoe, being a parasite gains benefit from the eucalyptus tree, which in turn is harmed.

Question 19 C

The dingo gains food (a benefit) and the bandicoot dies (extreme harm).

Question 20 A

Photosynthesis produces oxygen whereas all the other processes use oxygen.

Question 21 C

Combustion produces water and carbon dioxide when oxygen combines with the fuel. Both of these contain oxygen. Methane and nitrogen do not contain oxygen. Ozone is O_3 , however it is not the product of combustion.

Question 22 D

Oxygen is entering plants and animals and they are producing the same outputs as combustion; hence oxygen is being used by these organisms and water and carbon dioxide are released.

Question 23 A

ADH antidiuretic hormone, is produced by the hypothalamus, released from the pituitary and acts on the kidney tubule to increase the reabsorption of water.

Question A

The number and biomass would be similar and be a typical pyramid shape.

Question C

The number pyramid is unusual as the box would be small as there are very few trees. The amount of energy would decrease with each step of the food chain.

SECTION B: SHORT-ANSWER QUESTIONS**Question 1 (7 marks)**

- a. 1. stimulus 1 mark
2. effector 1 mark
- b. • inter/intermediate neuron 1 mark
• *Any one of:*
• found in the CNS
• unmyelinated
• connects sensory to motor neurons 1 mark
- c. *Any one of the following:*
• blinking
• dropping hot objects
• knee jerk
Or any other suitable answer. 1 mark
- d. *Any two of the following:*
The reflex arc
• does not go to the brain.
• is not homeostatic.
• has a response that does not alter the stimulus.
Or any other suitable answer. The converse for negative feedback is also suitable, or a combination thereof. 2 marks

Question 2 (6 marks)

- a. i. A feature of an organism 1 mark
which helps it to survive and reproduce in a particular environment. 1 mark
ii. These modified leaves reduce water loss 1 mark
as there are less stomata. 1 mark
Or any other suitable or reasoned answer.
- b. *Any two of the following:*
• lower levels of light
• more water
• lower temperature
Or any other suitable answer. 2 marks

Question 3 (7 marks)

- a. i. The maintenance of a relatively stable internal environment. 1 mark
1 mark
ii. negative feedback 1 mark
- b. i. the nervous system 1 mark
ii. *Any one of the following:*
• faster
• uses electricity
• uses neurotransmitters
Or any other suitable answer. 1 mark
- c. *One from each of the following categories:*
• physiological
• sweating
• increased blood flow to the skin 1 mark
• behavioural
• remove clothes
• seek cool place 1 mark

Note: decreased metabolism is not acceptable as a physiological adaptation, as it is not a cooling mechanism.

Question 4 (7 marks)

- a. through the bloodstream 1 mark
- b. there would be reduced/no production 1 mark
- c. i. it would decrease it 1 mark
ii. that a lack of iodine caused the goitre 1 mark
iii. Take two groups of people unaffected by goitre with similar health, etc. 1 mark
One group should be given sufficient iodine and the other not. 1 mark
iv. *One of the following:*
• a cheap food
• readily available
• widely eaten 1 mark

Question 5 (9 marks)

- a. 10 million per km² 1 mark
- b. i. *Any one of the following:*
- Rats could have been on boats 1 mark
and come ashore when ships landed. 1 mark
 - Rats could have been carried on drift material 1 mark
from neighbouring islands. 1 mark
- Or any other suitable answer.*
- ii. *Any two of the following:*
- abundant food
 - lack of competition
 - lack of predators
- Or any other suitable answer.* 2 marks
- c. i. *Any one of the following:*
- Rats could eat seeds.
 - Rats could use plants as nesting material.
- 1 mark
- ii. *Any one of the following:*
- Rats could eat eggs of birds.
 - Rats could eat young of other animals.
 - Rats could spread disease amongst animals.
- 1 mark
- d. *Any two of the following:*
- kill native fauna
 - kill fauna for food
 - kill any rat predators
- Or any other suitable answer.* 2 marks

Question 6 (7 marks)

- a. The bark protects the (epicormic) buds 1 mark
which sprout and replace the canopy. 1 mark

- b. *Any two of the following:*
- triggers seed germination
 - clears undergrowth
 - returns nutrients trapped in debris

Or any other suitable answer.

2 marks

- c. *Any one of the following:*
- move animals into the open
 - encourage new growth to attract animals
 - clear areas for easier hunting

Or any other suitable answer.

1 mark

- d. *Any two of the following:*
- deforestation
 - cellular respiration
 - burning of fossil fuels
 - decomposition
 - volcanos

Or any other suitable answer.

2 marks

Question 7 (7 marks)

a. i. A niche is the role of an organism in its environment. 1 mark

ii. *Any two of the following:*

- feed on blood
- parasitic
- live in hair

Or any other suitable answer.

2 marks

b. *Any one of the following:*

structure	function
strong legs	jump to new host
compressed body	move through hairs
hooks on legs	hold on to host
hairs face backwards	prevent being scratched off
sharp mouth parts	puncture host's blood supply

Or any other suitable answer.

2 marks

c. *Any two of the following:*

- cooler temperature for head lice
- pubic lice require shelter from clothes
- pubic lice prefer coarser hair
- pubic lice prefer a more moist environment

Or any other suitable answer.

2 marks