



Edith Cowan University

2021 ATAR Revision Seminar

12 ATAR Biology
ECU Revision Seminar
Unit 4 Workbook

Prepared and presented by Alison Siciliano 2021

ATAR Biology

Curriculum Dot points

Examination and study tips

Revision notes Examination questions

Examination marker comments

Never measure the height of a mountain until you reach the top.
Then you will see how low it was.

Dag Hammarskjold

Websites, Facebook pages and You tube channels

- bioninja : <https://ib.bioninja.com.au/>
- Amoeba Sisters: <https://www.youtube.com/user/AmoebaSisters>
- Crash Course: <https://www.youtube.com/user/crashcourse/featured>
- All About Molecular Biology: <https://all-about-molecular-biology.jimdo.com/> and also on Facebook!

Unit 4: Surviving in a Changing Environment

Learning Outcomes

By the end of this unit students will

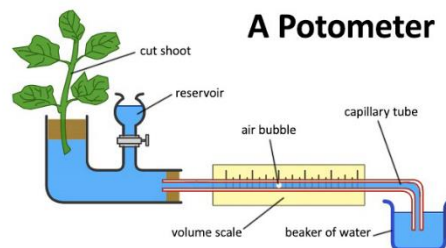
understand the mechanisms by which plants and animals use homeostasis to control their internal environment in a changing external environment

understand the ways in which infection, transmission and spread of disease occur in vector-borne diseases

understand how biological models and theories have developed over time

use science inquiry skills to design, conduct, evaluate and communicate investigations into organisms' responses to changing environmental conditions and infectious disease

communicate biological understanding using qualitative and quantitative representations in appropriate modes and genres.



<http://www.passmyexams.co.uk/GCSE/biology/measuring-transpiration.html>

Understand the **mechanisms** by which plants and animals **use homeostasis to control their internal environment** in a **changing external environment**.

PART ONE:

- Homeostasis
 - stimulus-response model
 - negative feed-back loops
- Tolerance limits
- Thermoregulation
- Water and Salt balance
- Nitrogenous waste
- Xerophytes and halophytes

Homeostasis

Question 1: Mammals regulate their core body temperature through a model which is represented in the diagram being shown on the PowerPoint.

a. In this flow chart name the:

i. stimulus: _____

ii. response: _____

(2marks)

b. What is meant by negative feedback? In the case above what is the negative feedback?

(2marks)

Question 2: Many Australian mammals do not sweat. In order to cool themselves they will pant. Describe, in detail, the homeostatic mechanism of panting. (10 marks) *Dot point an answer- you only need 10 facts.*

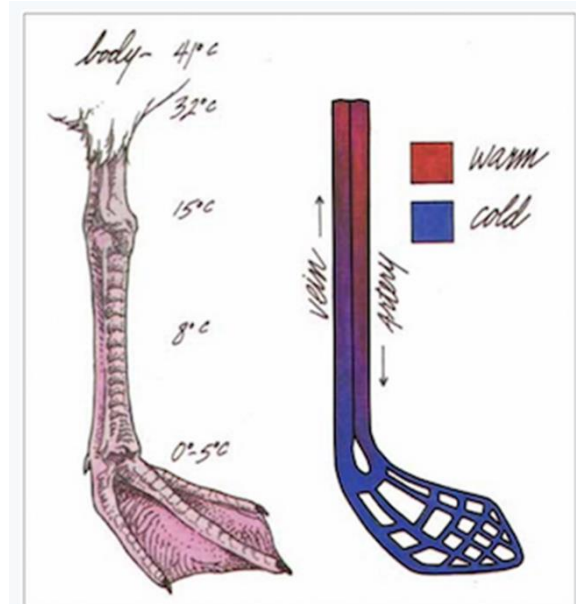
Thermoregulation

Thermoregulation in Red Kangaroos

Thermoregulation in Spinifex mice

Thermoregulation in seals

Counter-current blood flow



FROM COLD TO WARM: Two views of a gull's leg show how heat is exchanged between blood vessels. Art by Michael McNelly (after Ricklefs. 1990. Ecology. W.H. Freeman, New York).

Question 4: Describe how marine iguanas regulate their body temperature through the following methods of heat transfer.

a.

Conduction		2
Convection		2
Evaporation		1
Radiation		2

4b. Explain why small marine iguanas must feed in the shallow intertidal zones while large marine iguanas are able to dive to 12 metres for up to 30 minutes. (4 marks)

hint: this question still relates to heat loss



Osmoregulation: water balance.

Question 5:

a.

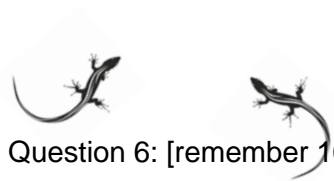
b.

Behavioural adaptation:

Explanation:

c.

d.



Question 6: [remember 10 marks means 10 points to write]

1.

2.

3.

4.

5.

6.

7.

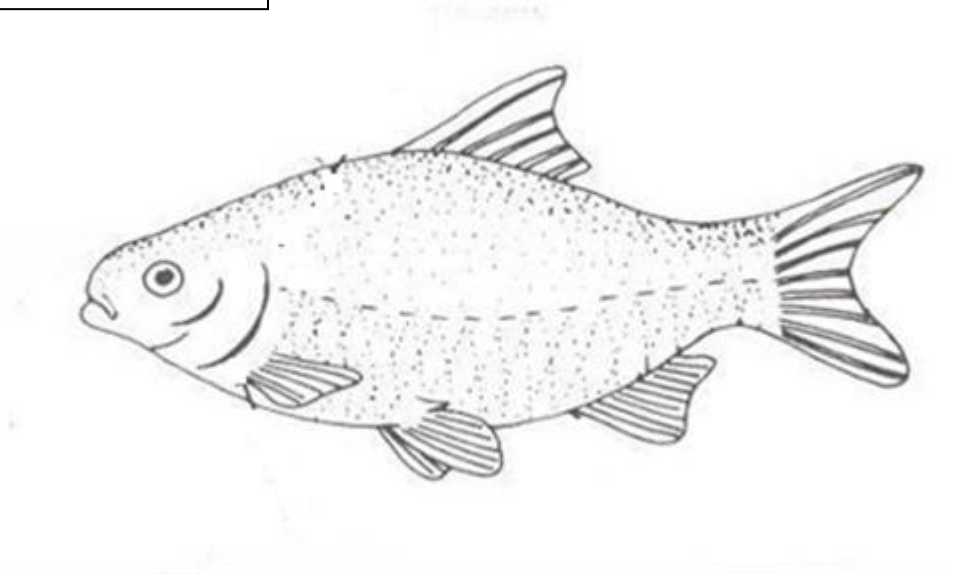
8.

9.

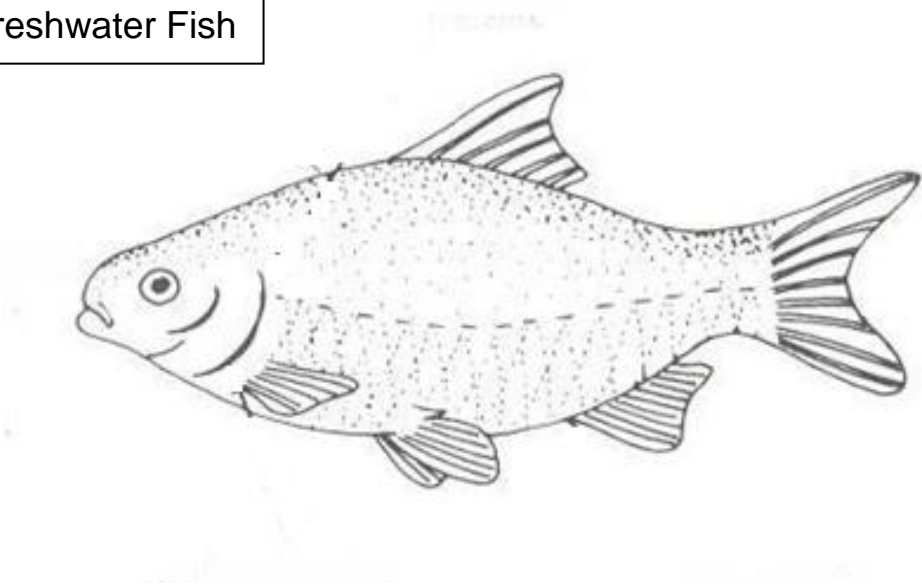
10.



Marine Fish



Freshwater Fish

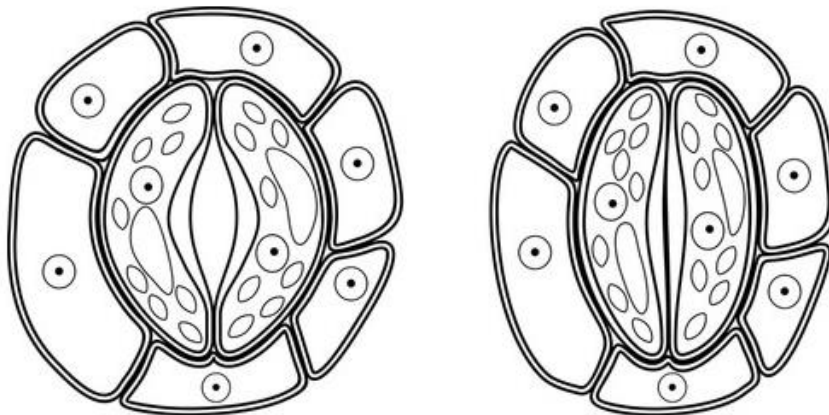


Nitrogenous Wastes

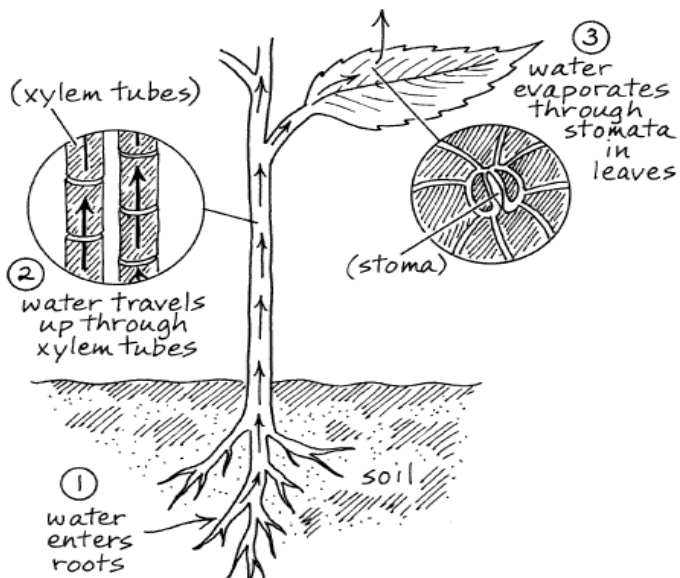
Question 7:

Animal	Type of Nitrogenous waste	Availability of water	Benefit	Cost
Freshwater fish				
Dog				
Desert lizard				

Water movement in plants: STOMATAL FUNCTION



Transpiration Process



Understand the ways in which infection, transmission and spread of disease occur in vector-borne diseases.

Part Two

- Infectious Disease
- Zoonoses
- Bacteria
- Fungi
- Protists
- Viruses
- Spread of disease
- Management Strategies

What do you know? Questions.



Flying insects.

Q11.

Q12. Complete this table:

Disease	Type of organism causing the disease	Type of organism affected by the disease
Tuberculosis		
Crown Gall		
Chytridiomycosis		
Phytophthora dieback		
Influenza		
Malaria		
Tetanus		
Australian Bat Lyssavirus		

Malaria

Q13.

Q14.

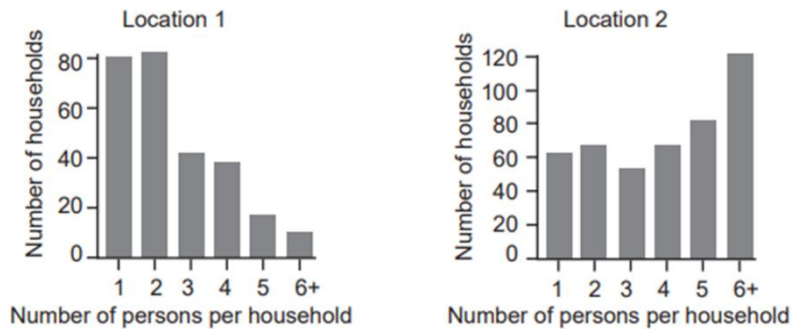
Q15a.

Q15d.

Q15e.

Influenza- common flu

Q16. A group of biologists developed a model for predicting the spread of influenza in human populations. As a part of this, they collected data on the number of individuals per household in two locations, which are shown in the figure below.



16a. **Compare** the number of people per household in the two locations. **Use data** from the figure to support your answer. (4 marks)

(b) **Explain why** data on the number of people per household are relevant to the development of a model for predicting the spread of influenza in human populations. (4 marks)

(c) Can influenza be treated with antibiotics? Explain why or why not. (4 marks)

Q17. Viral reproduction- what is happening at each stage?

