

WARNING

This material has been reproduced and communicated to you by or on behalf of *Charles Darwin University* in accordance with section 113P of the *Copyright Act 1968 (Act)*.

The material in this communication may be subject to copyright under the Act.
Any further reproduction or communication of this material by you may be the subject of copyright protection under the Act.

Do not remove this notice



Family Name					
Given Name/s					
Student Number					
Teaching Period	Semester 1, 2019				

ENV102 – The Diversity of Life	DURATION	
	Reading Time:	10 minutes
	Writing Time:	180 minutes
INSTRUCTIONS TO CANDIDATES		
Section A: Suggested Time: 45 mins	Multiple Choice Questions: Answer ALL 45 questions. 1 mark per question (Total marks = 45)	
Section B: Suggested Time: 90 mins	Short Answer Questions: Answer ALL 20 questions. 4.5 marks per question (Total marks = 90)	
Section C: Suggested Time: 45 mins	Short Essay Questions: Answer EITHER Part A or Part B of each of the 5 questions. 9 marks per question. (Total marks = 45)	
EXAM CONDITIONS		
<u>You may begin writing from the commencement of the examination session.</u> The reading time indicated above is provided as a guide only.		
This is a CLOSED BOOK examination		
No calculators are permitted		
No handwritten notes are permitted		
No dictionaries are permitted		
ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED	
No additional printed material is permitted	1 x 20 Page Book 1 x 4-Multiple Choice Answer Sheet 1 x Scrap Paper	

**THIS EXAMINATION IS PRINTED
DOUBLE-SIDED.**

**THIS PAGE HAS BEEN INTENTIONALLY
LEFT BLANK.**

Section A

Multiple Choice Questions

Total number of marks for this section: 45

This section should be answered on the Multiple Choice Answer Booklet provided. Please ensure that your name and student number have been written on the Answer sheet and place in the completed answer Booklet.

Each question is one mark. Suggested time allocation for Section A: 45 mins

Section B

Short Answer Questions

Total number of marks for this section: 90

This section should be answered on the Answer Booklet provided.

Please ensure that your name and student number have been written on the Answer sheet and place in the completed answer Booklet.

There are 20 questions and each question is 4.5 marks.

Suggested time allocation for Section B: 90 mins

Question 46

Give three different general reasons why a daisy requires energy.

(Marks: 4.5)

Question 47

What are the two types of reactions involved in photosynthesis? Which reaction directly involves sunlight? Which reaction involves a gas from the atmosphere and what is the gas?

(Marks: 4.5)

Question 48

Give an example of the economic importance of a (a) conifer plant, (b) bacteria, and (c) monocotyledon plant.

Name both the organism (either common or scientific) and its economic use.

(Marks: 4.5)

Question 49

Explain the difference between a phylogenetic classification and a classification based on flower colour?

(Marks: 4.5)

Question 50

Explain two differences between a seed and a spore.

(Marks: 4.5)

Question 51

Explain in a sentence each, an example of how a plant that is able to (a) avoid, (b) be resilient to, or (c) be tolerant of fire.

(Marks: 4.5)

Question 52

Describe one general adaptation each, with regard to (a) leaf water loss and (b) water transport, that a flowering plant has for overcoming the challenges of terrestrial life so it can grow on land. Why are these not needed for a multi-cellular algae such as a kelp?

(Marks: 4.5)

Question 53

Describe three specialist adaptations for acquiring nutrients by plants, including an adaptation which involves a mutualistic association.

(Marks: 4.5)

Question 54

List **TWO** (2) ways in which animals in the Subphylum Chelicerata differ from animals in the Subphylum Hexapoda.

(Marks: 4.5)

Question 55

Briefly describe countercurrent flow. Which type of gas exchange (countercurrent or co-current) is more advantageous and why?

(Marks: 4.5)

Question 56

Briefly explain the difference between radial and bilateral symmetry.

(Marks: 4.5)

Question 57

Briefly describe the two variations in basic body form in the Phylum Cnidaria and give an example organism for each form.

(Marks: 4.5)

Question 58

Briefly describe how the water vascular system functions.

(Marks: 4.5)

Question 59

Briefly describe parthenogenesis and give an example of a vertebrate group that uses this mode of reproduction.

(Marks: 4.5)

Question 60

Not all species of birds are able to fly. Describe three features of modern flightless birds that link them to their flying ancestors.

(Marks: 4.5)

Question 61

Within the reptiles are animals with skulls that lack openings (anapsid) and those with two pairs of openings behind the eye socket (diapsid). Name a reptile that is an example of an anapsid reptile and a diapsid reptile.

(Marks: 4.5)

Question 62

Briefly explain the difference between indirect and direct development and give an example vertebrate for each type.

(Marks: 4.5)

Question 63

What are two characteristics of K-strategist species? Name an example of an r-strategist and a K-strategist species.

(Marks: 4.5)

Question 64

Give one example of a biotic and one example of an abiotic factor in an aquatic ecosystem.

(Marks: 4.5)

Question 65

Please use mammal examples to explain the concepts of commensalism and competition.

(Marks: 4.5)

Section C

Short Essay Questions

Total number of marks for this section: 45

This section should be answered on the Answer Booklet provided.
Please ensure that your name and student number have been written on the Answer sheet and place in the completed answer Booklet.

There are 5 questions and each question is 9 marks.
Suggested time allocation for Section C: 45 mins

Question 66

EITHER

Define evolution, speciation and the process of natural selection. Discuss how the process of natural selection could result in two new species from two isolated populations.

OR

Compare and contrast the alternation of generation and gametic meiosis lifecycles noting which generations are haploid, diploid, single celled or multicellular and where meiosis and fertilisation occur. Answer the question using labelled diagrams if you wish.

Which of these life cycle types could describe the lifecycle of a moss?

Which of these lifecycle types could describe the lifecycle of a Protista?

Which of these lifecycle types could describe the lifecycle of a dog?

(Marks: 9)

Question 67

EITHER

Describe primary and secondary cell growth, and primary and secondary plant growth in a gum tree and in an herbaceous daisy.

Where does primary and secondary cell growth and plant growth occur (if it occurs) in the two plants? What meristems or cambiums are involved?

OR

Compare and contrast the life cycle of a moss and a tree (use a diagram if you wish). Explain how the statement “the sporophyte is dependent on the gametophyte” applies in each case.

Which of the generations is:

- a) larger?
- b) diploid or haploid?
- c) multicellular?

(Marks: 9)

Question 68

EITHER

Describe how the shell and foot are adapted in the different kinds of animals in the Phylum Mollusca.

OR

Explain advantages and disadvantages of an exoskeleton.

(Marks: 9)

Question 69

EITHER

What features are unique to Mammals? Name the three main groups of mammals, explain key characteristics of each group and give an example of a species for each group.

OR

Describe the various anatomical adaptations of birds that enable them to fly.

(Marks: 9)

Question 70

EITHER

Draw a food web containing two primary producer species (wild rice and the floodplain weed paragrass), two primary consumers (magpie geese and dusky rats), one secondary consumer species (water python), a tertiary consumer species (eagle) and a detritivore species.

- Draw the energy flows through the food web and note where energy enters the food web.
- Which of the above species would be likely to compete?

OR

Define the difference between density-independent factors and density-dependent factors that influence population size.

Use the dusky plains rat as an example and identify two density-independent factors and two density-dependent factors that could influence its population size. For each of the factors briefly explain why they are density-independent or density-dependent factors.

(Marks: 9)