

## **WARNING**

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Family Name					
Given Name/s					
Student Number					
Teaching Period	Semester 1, 2018				

<b>ENV102 – The Diversity of Life</b>	<b>DURATION</b>	
	Reading Time:	<b>10 minutes</b>
	Writing Time:	<b>180 minutes</b>
<b>INSTRUCTIONS TO CANDIDATES</b>		
<b>Section A:</b> Suggested Time: 45 mins	<b>Multiple Choice Questions:</b> Answer ALL 45 questions. 1 mark per question (Total marks = 45)	
<b>Section B:</b> Suggested Time: 90 mins	<b>Short Answer Questions:</b> Answer ALL 20 questions. 4.5 marks per question (Total marks = 90)	
<b>Section C:</b> Suggested Time: 45 mins	<b>Short Essay Questions:</b> Answer <b>EITHER Part A or Part B</b> of each of the 5 questions. 9 marks per question. (Total marks = 45)	
<b>EXAM CONDITIONS</b>		
<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		
<b>ADDITIONAL AUTHORISED MATERIALS</b>	<b>EXAMINATION MATERIALS TO BE SUPPLIED</b>	
No additional printed material is permitted	1 x 20 Page Book 1 x 4-Multiple Choice Answer Sheet 1 x Scrap Paper	

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DOUBLE-SIDED.**

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## Section A

### Multiple Choice Questions

## 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

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#### Question 46

Cell theory is a central tenet of biology. Describe three key points of cell theory.

(Marks: 4.5)

#### Question 47

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

(Marks: 4.5)

#### Question 48

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

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

(Marks: 4.5)

#### Question 49

Describe how the sporophyte is dependent on the gametophyte in a fern and in a flowering plant.

(Marks: 4.5)

#### Question 50

Explain two differences between a seed and a spore.

(Marks: 4.5)

#### Question 51

Give examples explaining in a sentence each how a plant that is able to (a) avoid, (b) be resilient to, or (c) be tolerant of fire.

(Marks: 4.5)

**Question 52**

Where would you find primary and secondary growth in a woody plant? Name a meristem responsible for secondary growth.

(Marks: 4.5)

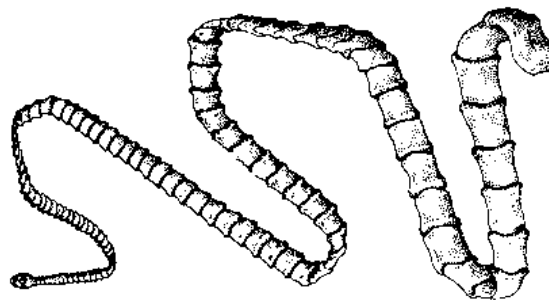
**Question 53**

Describe three adaptations for acquiring light by rainforest plants.

(Marks: 4.5)

**Question 54**

Where is the animal shown on the right mostly likely to be found? Describe how it would feed in that environment.



(Marks: 4.5)

**Question 55**

Briefly describe the life cycle of an animal in the Class Scyphozoa in the Phylum Cnidaria.

(Marks: 4.5)

**Question 56**

List two (2) ways in which arthropods in the Sub-phylum (or Phylum) Chelicerata differ from those in the Sub-phylum (or Phylum) Crustacea.

(Marks: 4.5)

**Question 57**

List two (2) functions of termites in ecosystems.

(Marks: 4.5)

### Question 58

Name the structure in the picture on the right, state what kind of animal would have these structures and describe their function. [Image from *Biology: An Australian focus*, 4e by Knox, Ladiges, Evans and Saint.]



(Marks: 4.5)

### Question 59

Describe the difference between ectotherms and endotherms and name an animal that is an example of an ectotherm and one that is an example of an endotherm.

(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

What features are unique to Mammals? Name the three main groups of mammals and explain how you would identify a representative of each.

(Marks: 4.5)

### **Question 62**

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 63**

Describe two abiotic and two biotic components of the flood plain ecosystem.

(Marks: 4.5)

### **Question 64**

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

(Marks: 4.5)

### **Question 65**

Explain the difference between density dependent mortality and density independent mortality. Give an example of each.

(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

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#### Question 66

##### **EITHER**

Define evolution and the process of natural selection. Discuss how and why the process of natural selection may prevent evolution from occurring when environmental conditions are stable for very long periods of time.

##### **OR**

Compare and contrast the alternation of generation and zygotic 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?

(Marks: 9)



### Question 67

**EITHER**

Discuss the resources that a plant growing in a rainforest requires, the factors which are limiting for growth of plants in rainforest and three adaptations to acquire the limiting factor.

**OR**

Compare and contrast water and nutrient transport processes in (A) a liverwort (Hepatophyta), (B) a herbaceous dicotyledon and (C) a *Eucalyptus* tree.

(Marks: 9)

### Question 68

**EITHER**

Animals in the Classes Trematoda and Cestoda, in the Phylum Platyhelminthes, are parasitic. Describe and discuss the ways in which the animals in these two groups are similar and different.

(Marks: 9)

**OR**

Describe the different ways in which the shell has been modified, and is used, in animals in the Phylum Mollusca.

(Marks: 9)

### Question 69

#### **EITHER**

Describe the anatomical adaptations of birds that enabled them to fly.

#### **OR**

Describe the physiological and anatomical adaptations that were accomplished to enable vertebrates to move from an aquatic environment to living and reproducing on land.

(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 a population? What are three characteristics of a population that you could measure?

What would you measure to determine whether a species was an r-strategist or a K-strategist during a poor year followed by a particularly favourable year? Explain how you would decide.

(Marks: 9)