

Question 1

(12 marks)

Cane toads (*Rhinella marina*) were introduced into Queensland in 1935 to help control the sugar cane beetles that were destroying the sugar crops. Unfortunately, the toads soon established themselves as environmental pests throughout northern Queensland and the Northern Territory, due to their carnivorous behaviour and toxicity.

By 2009, the cane toads had crossed into Western Australia, and the State Government investigated a number of programs to help manage the movement of the cane toad. One possible method was using the presence of a lungworm, which lives inside the cane toad and causes reduced growth rates and even death.

- (a) Draw a food chain for the cane toad that includes at least **three** organisms. (2 marks)



- (b) A vital group of organisms is not included in the food chain.

- (i) Identify the missing group of organisms. (1 mark)

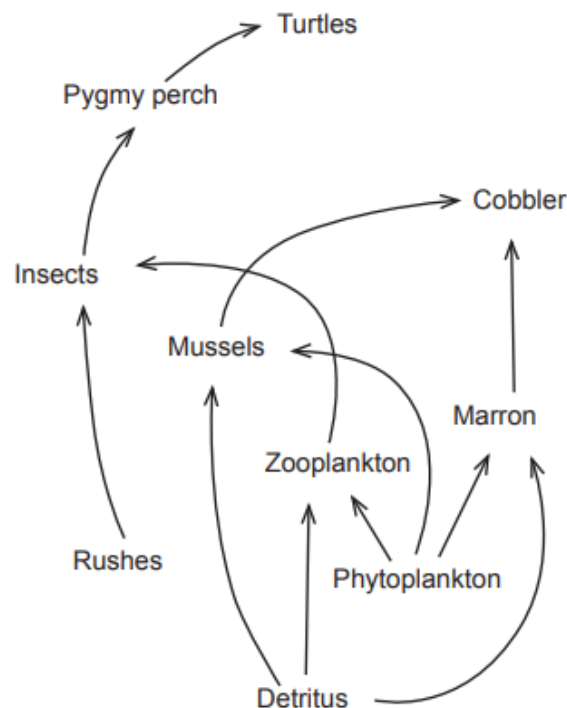
- (ii) Explain why the group of organisms identified in part (b)(i) is considered to be an important part of the ecosystem. (2 marks)

Question 2**(19 marks)**

David notices a species of fish in the Moore River that he hasn't seen before. After some research, he identifies it as a mosquito fish. The mosquito fish was introduced into Western Australia from Central America in 1934 to lower mosquito populations. Unfortunately, mosquito fish will only eat mosquito larvae if there is no other food supply. They prefer to eat juvenile marron and zooplankton, while their only major predators are turtles.

David is worried about the impact mosquito fish will have on the Moore River if they establish themselves. Below is a food web of the river as it runs through his farm.

- (a) Based on the information above, complete this food web to include the mosquito fish. (2 marks)



- (b) From the food web, draw a food chain that includes at least four organisms. (2 marks)

- (c) Do you think the population of cobblers would increase, decrease or stay the same after the introduction of mosquito fish? Explain your answer. (3 marks)

- (d) Using your food web, predict **two** effects that the mosquito fish might have on organisms in the web other than the cobbler. (2 marks)

One: _____

Two: _____
