SMART EXAM RESOURCES
CAMBRIDGE LOWER SECONDARY
STAGE 7 BIOLOGY
TOPIC:FOOD CHAINS / FOOD WEBS
SET-1

1 Look at the three food chains for a desert.

cactus → rat → hawk → microorganisms

cactus → grasshopper → lizard → hawk → microorganisms

cactus → rat → tarantula → snake → microorganisms

(a) Use the food chains to make a food web.

[3]

(b) There is a disease which kills **all** the grasshoppers in the desert.

Predict what happens to the number of lizards in the desert.

.....

Explain your answer.

.....

.....

[1]

(c) (i) What is the role of the microorganisms in a food web?

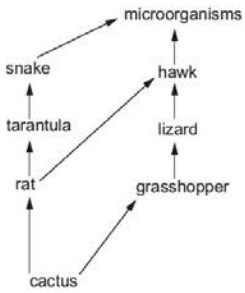
.....[1]

(ii) Explain why microorganisms are important in a habitat.

.....

.....[1]

Mark Scheme:

(a)		3	**all three** food chains correctly drawn with **nine** correct arrows = 3 marks **two** food chains correctly drawn in a web = 2 marks incorrect food web that starts with cactus and ends with microorganisms = 1 mark **Ignore** arrow from microorganisms to cactus
(b)	decrease **and** they will **not** have any food to eat / they will migrate to other areas to find food	1	increase = 0 marks for the question **Accept** they all die / more die **Note** answer must have both decrease **and** an explanation for the mark
(c)(i)	to decompose (dead material)	1	**Accept** to break down / decay (dead material)
(c)(ii)	to release nutrients (back into the ground)	1	**Accept** to recycle nutrients **Accept** minerals for nutrients **Ignore** to stop dead bodies building up

2 Yuri finds some information on the internet about organisms which live in the Amazon rainforest.

Trees produce fruit and nuts.

Jaguars eat tapirs.

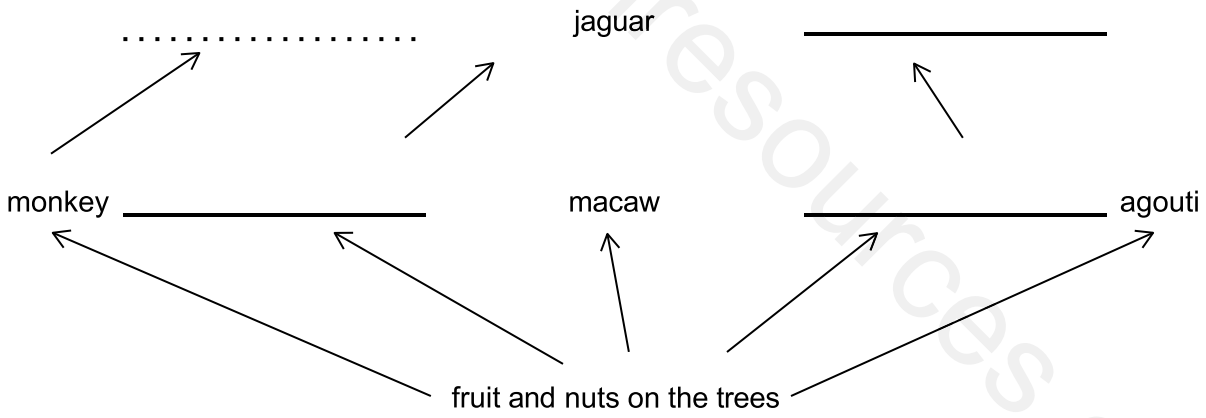
Boa constrictors eat sloths.

Macaws, monkeys, agoutis, tapirs and sloths eat the fruit and nuts on the trees.

Monkeys are eaten by eagles.

(a) Yuri uses the information to write a food web.

Complete his food web.



[2]

(b) What do the arrows in the food web show?

_____ [1]

(c) How many **primary** consumers are there in this food web?

_____ [1]

(d) There are **decomposers** in the rainforest.

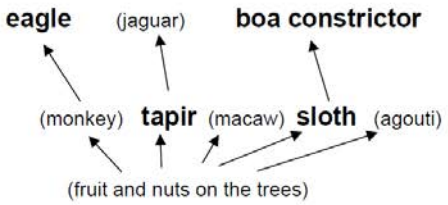
(i) Name an example of a decomposer.

_____ [1]

(ii) What do decomposers feed on?

_____ [1]

Mark Scheme:

(a)		2	**all four** organisms correct = 2 marks **two** or **three** organisms correct = 1 mark **one** organism correct = 0 marks
(b)	energy flow (through the food web)	1	**Ignore** reference to what eats what
(c)	5	1	
(d)(i)	microorganisms / bacteria / fungi	1	**Accept** named examples **Accept** earthworms / maggots / woodlice or other detritivores
(d)(ii)	dead material / decaying material / waste material / dead leaves / dead animals / faeces	1	

3 Safia investigates the effect of the number of earthworms on the rate of decay of dead leaves.

Safia:

- measures the mass of some dead leaves
- places the dead leaves in a container
- adds **five** earthworms
- measures the mass of the dead leaves after one week
- repeats with a different number of earthworms.

(a) Write down two **control** variables in her investigation.

1 .....

2 .....

[2]

(b) What is the **independent** variable in her investigation?

..... [1]

(c) What is the **dependent** variable in her investigation?

..... [1]

Mark Scheme:

(a)	**any two from** **type of** earthworm / **size of** earthworms / **age of** earthworms / **mass of** leaves / **size of** leaves / **number of** leaves / **type of** leaves / size of container / temperature / moisture / pH / time	**2**	each correct answer = 1 mark **Ignore** light
(b)	**number of** earthworms	**1**	
(c)	mass of (dead) leaves / rate of decay (of dead leaves)	**1**	

4 Fig. 2.1 shows part of a food web for a coral reef. Algae and plankton are producers.

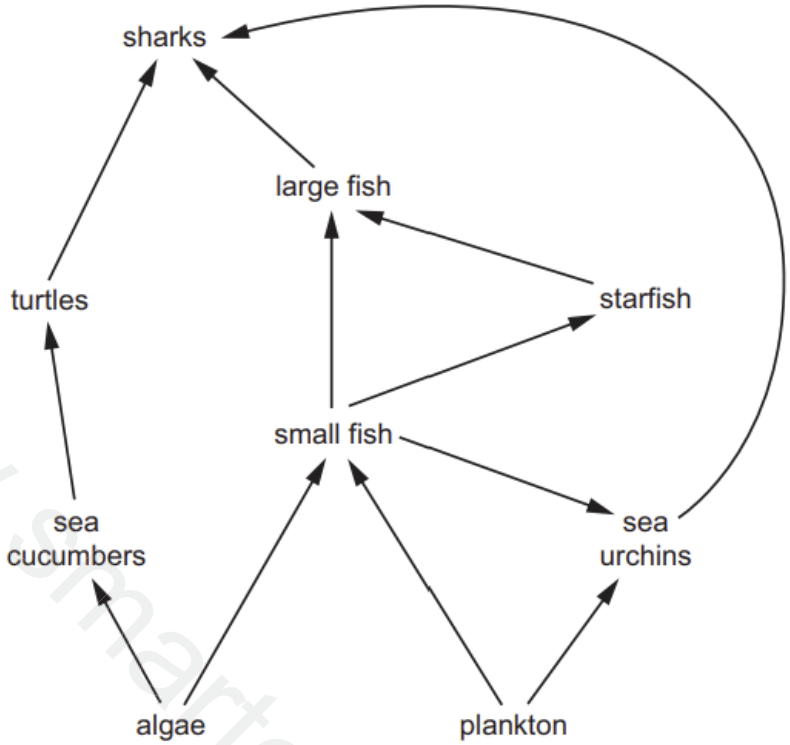


Fig. 2.1

(a) Using the information in Fig. 2.1, identify:

an organism that feeds at the third trophic level .....

a herbivore .....

a carnivore .....

an organism that is a primary consumer **and** a secondary consumer. .....

.....

[4]

(b) **(i)** State what the arrows in Fig. 2.1 represent.

..... [1]

(ii) Using the information in Fig. 2.1, construct a food chain containing **five** organisms.

Do **not** draw the organisms.

[2]

Mark Scheme:

a)	turtles / large fish / sea urchins / sharks / starfish ; sea cucumbers / small fish / sea urchins ; sea urchins / turtles / large fish / starfish / sharks ; sea urchin ;	**4**
b)(i)	energy, transfer / flow ;	**1**
b)(ii)	algae / plankton → small fish → starfish → large fish → shark ;;	**2**

5 **(a)** Fig. 4.1 shows a small pond.

Fig. 4.1

A student investigated a pond ecosystem and found that:

- Frogs eat pond snails.
- The pond contains aquatic plants.
- Pond snails eat aquatic plants.

Construct a food chain for these organisms. Do **not** draw the organisms.

.....

[2]

(b) The student then investigated a seashore ecosystem.

The food web for this seashore is shown in Fig. 4.2.

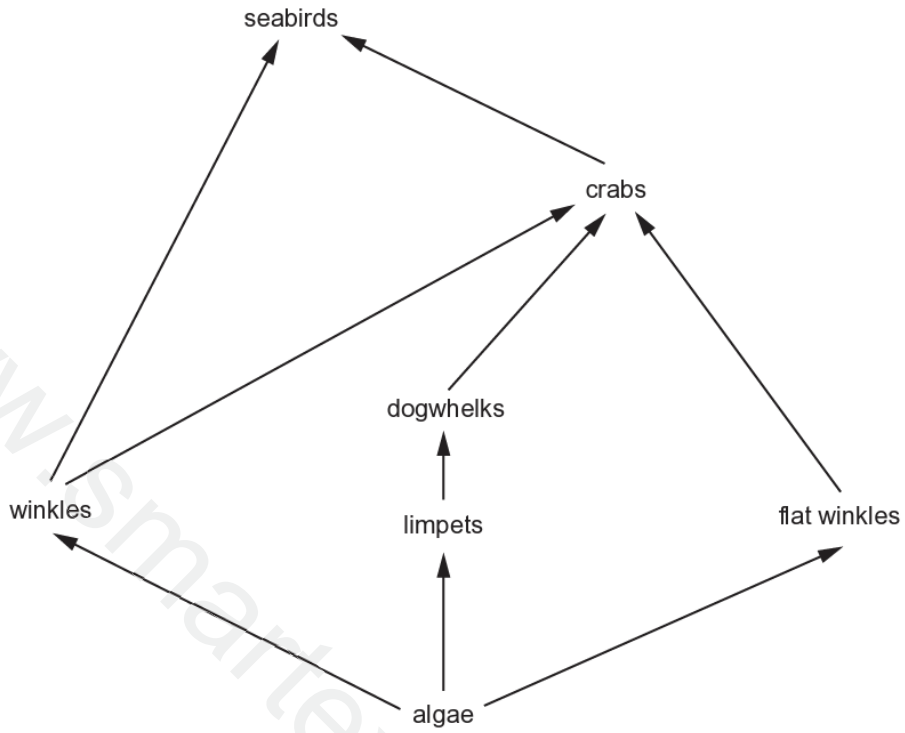


Fig. 4.2

(i) Complete Table 4.1 by counting the number of each type of organism in the food web.

Table 4.1

description	number of each type of organism in the food web
carnivore	
consumer	
herbivore	
producer	

[4]

Mark Scheme:

<table>
<tr><td>(a)</td><td>aquatic plants → snails → frogs ;;</td><td>2</td><td>MP1 for correct order ;
MP2 for arrows pointing in the correct direction ;</td></tr>
<tr><td>b)(i)</td><td><table><tr><th>description</th><th>number of each type of organism in the food web</th></tr><tr><td>carnivore</td><td>3 ;</td></tr><tr><td>consumer</td><td>6 ;</td></tr><tr><td>herbivore</td><td>3 ;</td></tr><tr><td>producer</td><td>1 ;</td></tr></table></td><td>4</td><td></td></tr>
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