

Cambridge IGCSE Biology



Classified Questions with Video Explanation

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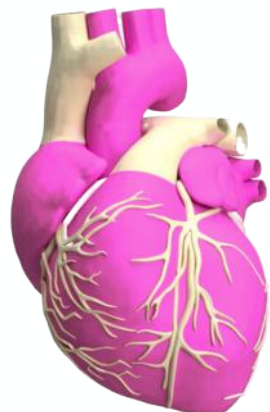
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How to use this book

★ The questions are selected to cover the entire syllabus in detail.

★ Once you finish this book, you will be fully prepared to solve complete past papers.

★ Try to solve the questions first, then scan the QR code to see how I explained the answers.

CONCEPT AND USE OF CLASSIFICATION

1

Fig. 6.1 shows three different insects.



Vespa flavopilosa
insect 1

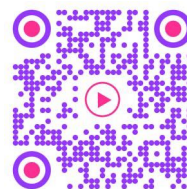


Vespa rufa
insect 2



Callicera rufa
insect 3

Fig. 6.1



click here
for answers

(a) Insects 1 and 2 are more closely related to each other than to insect 3.

- (i) Explain how the binomial names indicate that insects 1 and 2 are more closely related.

**Both have the same genus names
while insect 3 has a different genus name**

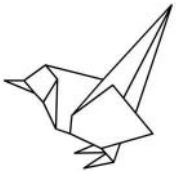
[2]

- (ii) Explain how the appearance of the three insects suggests that insects 1 and 2 are more closely related.

**Both have two pairs of wings
Both insects are larger in size
Antennae have the same shape**

[2]





CONCEPT AND USE OF CLASSIFICATION



Vespula flavopilosa gives a painful sting. The insect shown in Fig. 6.2 is very similar in appearance to *Vespula flavopilosa* but does not give a sting.



Chrysotoxum cautum

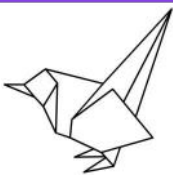
Fig. 6.2

- (b) *Chrysotoxum cautum* is very similar in appearance to *Vespula flavopilosa*. Explain how this is an advantage.

**This helps the insect to keep predators away
and would increase its chance of survival**

[2]

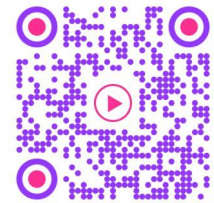




4 Fig. 1.1 shows a goliath beetle, *Goliathus giganteus*.



Fig. 1.1

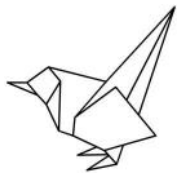


[click here
for answers](#)

(a) State two features, visible in Fig. 1.1, that show that *Goliathus giganteus* is an arthropod.

- 1 **Jointed legs**
- 2 **Exoskeleton** [2]





Various arthropods are pests of date palms and cause much damage to this important crop throughout the Middle East.

Fig. 1.2 shows eight species of arthropod that are pests of date palms.



[click here
for answers](#)

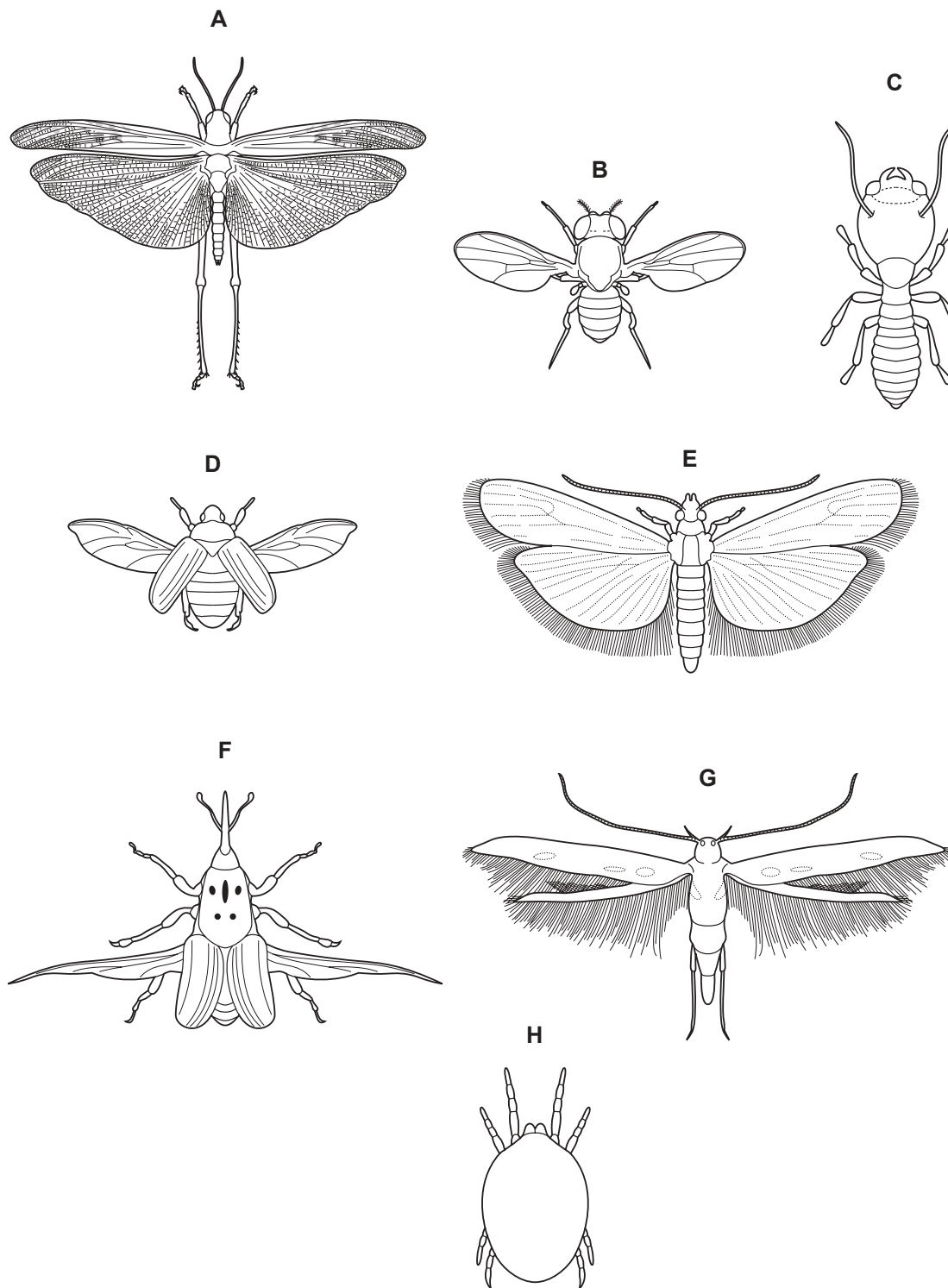
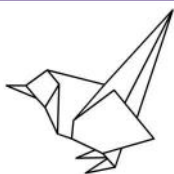


Fig. 1.2





CONCEPT AND USE OF CLASSIFICATION



- (b) Use the key to identify each species. Write the letter of each species, **B** to **H**, in the correct box in the key. One, **A**, has been done for you.

Key

1 (a)	Wings present	go to 2	
(b)	Wings absent	go to 7	
2 (a)	Back legs adapted for jumping	<i>Schistocerca gregaria</i>	A
(b)	Back legs not adapted for jumping	go to 3	
3 (a)	Two pairs of wings	go to 4	
(b)	One pair of wings	<i>Drosophila melanogaster</i>	B
4 (a)	Wings with hairs	go to 5	
(b)	Wings with no hairs	go to 6	
5 (a)	Hairs on back wings longer than width of back wing	<i>Ephestia cautella</i>	G
(b)	Hairs on back wings shorter than width of back wing	<i>Batrachedra amydraula</i>	E
6 (a)	Thorax with spots	<i>Rhynchophorus ferrugineus</i>	F
(b)	Thorax with no spots	<i>Oryctes agamemnon</i>	D
7 (a)	Three pairs of legs	<i>Microcerotermes diversus</i>	C
(b)	Four pairs of legs	<i>Oligonychus afrasiaticus</i>	H



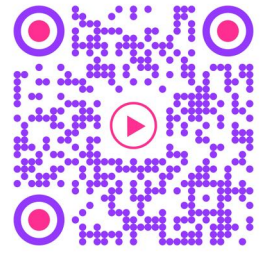


CONCEPT AND USE OF CLASSIFICATION

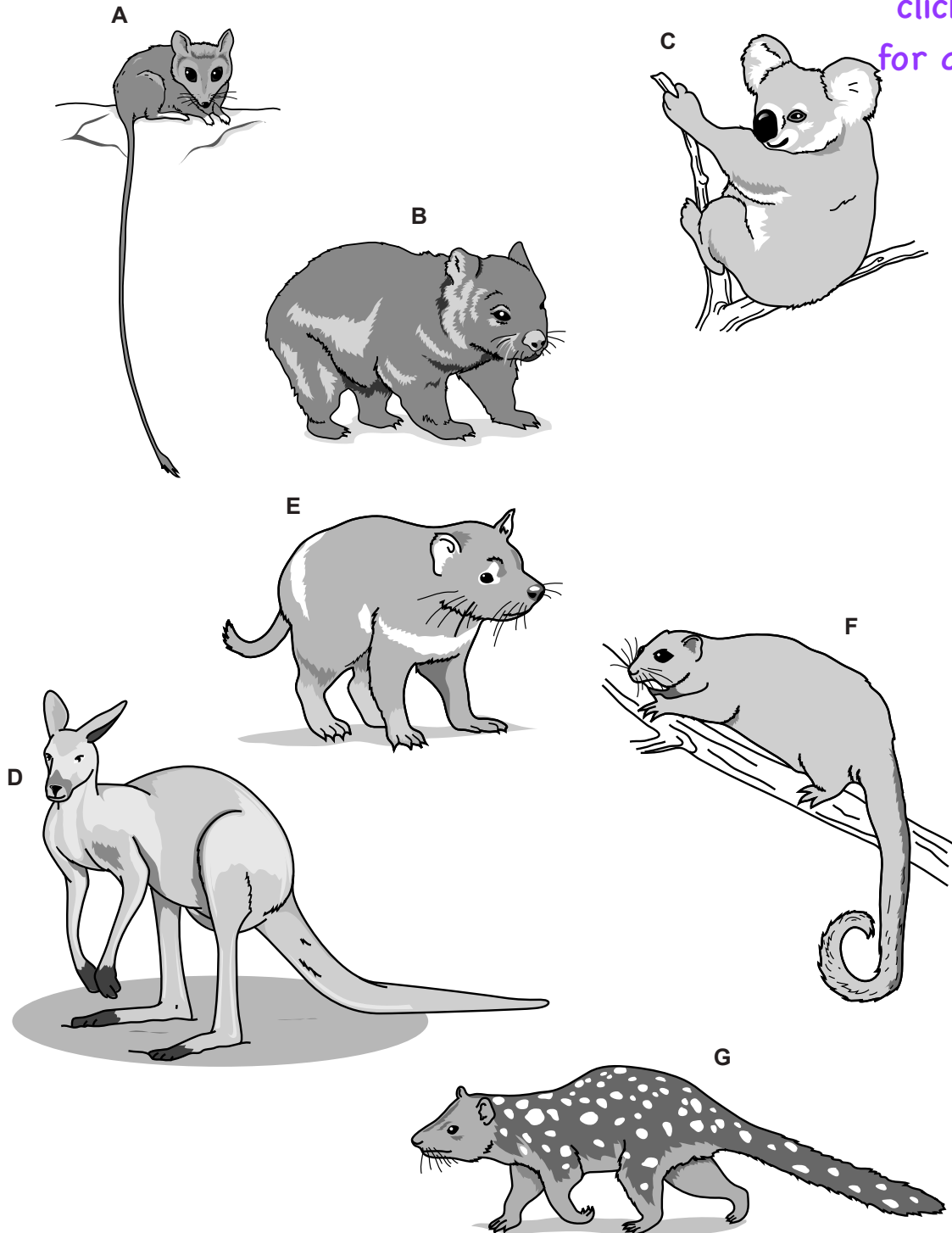


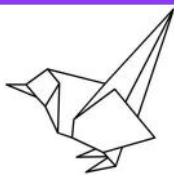
13

Fig. 1.1 shows seven marsupial mammals.



[click here
for answers](#)





CONCEPT AND USE OF CLASSIFICATION



- (a) (i) State **one** visible feature that could be used to identify the marsupials in Fig. 1.1 as mammals.

hair / external ear flap (pinna).....[1]

- (ii) Use the key to identify each species. Write the letter of each species (**A** to **G**) in the correct box beside the key. One has been done for you.

Key

1 (a)	tail visible	go to 2	
(b)	no tail visible	go to 3	
2 (a)	back feet at least twice as long as front feet	go to 4	
(b)	back feet and front feet of similar length	go to 5	
3 (a)	large ears relative to the size of the head	<i>Phascogalea cinerea</i>	C
(b)	small ears relative to the size of the head	<i>Vombatus ursinus</i>	B
4 (a)	tail at least twice as long as body	<i>Sminthopsis longicaudata</i>	A
(b)	tail less than twice as long as body	<i>Macropus rufus</i>	D
5 (a)	uniform body colouring	<i>Paljara tirarensis</i>	F
(b)	markings on body	go to 6	
6 (a)	white band across back and chest	<i>Sarcophilus harrisii</i>	E
(b)	no white band across back and chest	<i>Dasyurus maculatus</i>	GG

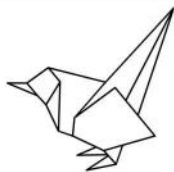
[3]

14

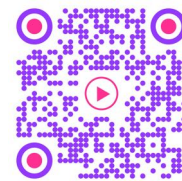
- (a) Name **one** feature of dicotyledonous leaves that distinguishes them from monocotyledonous leaves.

wide leaves / branched veins.....[1]





CONCEPT AND USE OF CLASSIFICATION



click here
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5

Arachnids, crustaceans, insects and myriapods are all classified as arthropods.

Scorpions, such as *Heterometrus swammerdami* shown in Fig. 1.1, are arachnids.

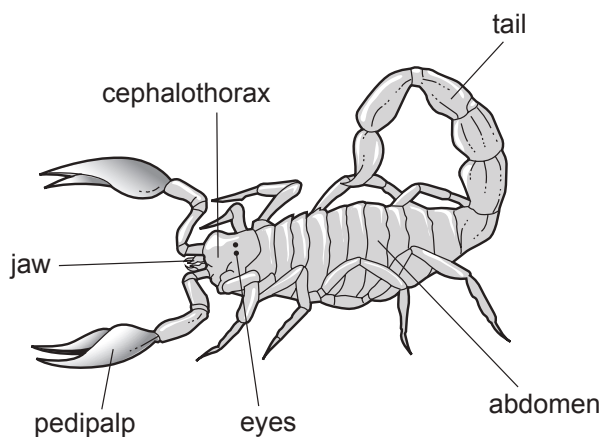


Fig. 1.1

(a) State **three** features, shown by *H. swammerdami* and **visible** in Fig. 1.1, that arachnids share with other arthropods.

- 1 **Jointed legs**
- 2 **Exoskeleton**
- 3 **Segmented body** [3]

6

(c) Fig. 6.2 shows the vent crab, *Bythograea thermydron*, which lives at great depths in the sea where there is no light.

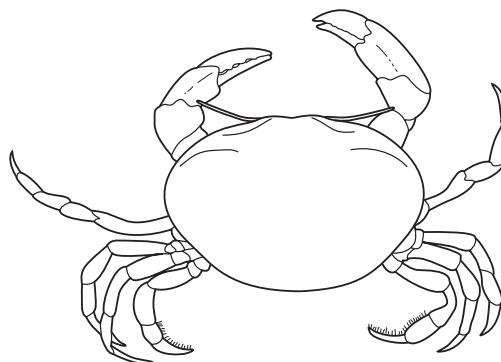
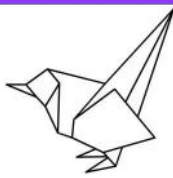


Fig. 6.2

(i) State **one** feature, **visible** in Fig. 6.2, that show that *B. thermydron* is an arthropod.

joined legs / exoskeleton [1]





CONCEPT AND USE OF CLASSIFICATION



7

Sorghum bicolor is a cereal crop important in many dry areas of the world. Fig. 4.1 shows some plants of *S. bicolor* growing in a field in China.



[click here
for answers](#)



Fig. 4.1

(a) *S. bicolor* is a monocotyledon.

State **two** features that are used to identify plants as monocotyledons.

- 1 long leaves / parallel veins
- 2 one cotyledon / flower in 3 parts [2]

8

(a) Table 1.1 shows some features of the five groups of vertebrates.

Complete Table 1.1 to compare the five groups of vertebrates using a tick (✓) to indicate if the group shows the feature, or a cross (✗) if not.

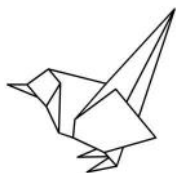
The first row has been completed for you.

Table 1.1

group of vertebrates	scaly skin	external ear (pinna)	feathers	mammary glands
birds	✓	✗	✓	✗
bony fish	✓	✗	✗	✗
amphibians	✗	✗	✗	✗
reptiles	✓	✗	✗	✗
mammals	✗	✓	✗	✓

[4]





9

Myriapods are a group of arthropods that are commonly found in soil habitats in many parts of the world. Many myriapods are very small and not easy to identify.

Fig. 6.1 shows four species of myriapod, not drawn to the same scale.

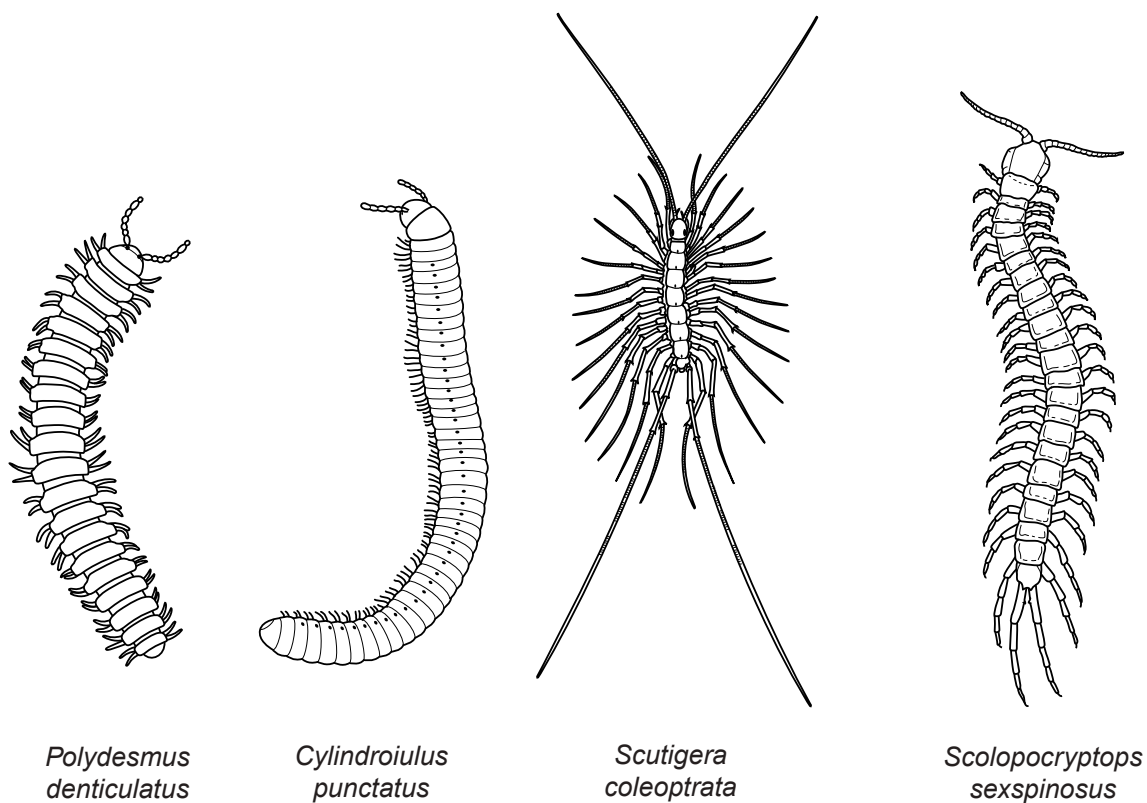
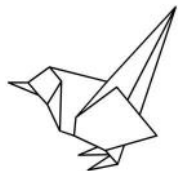


Fig. 6.1

(a) State **three** features of **all** myriapods that are visible in Fig. 6.1.

- 1 **segmented body**
 - 2 **joined legs**
 - 3 **antennae**
- [3]





- 10** Reed warblers are small birds that migrate over long distances between western Africa and northern Europe.

Fig. 5.1 shows a reed warbler, *Acrocephalus scirpaceus*.

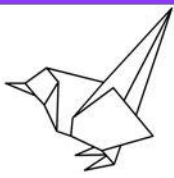


Fig. 5.1

- (a)** State three characteristic features of birds that are visible in Fig. 5.1.

- 1 beak
- 2 feathers
- 3 scales only on feet [3]
wings





15

Fig. 2.1 is an electron micrograph showing the bacteria, *Vibrio cholerae*.

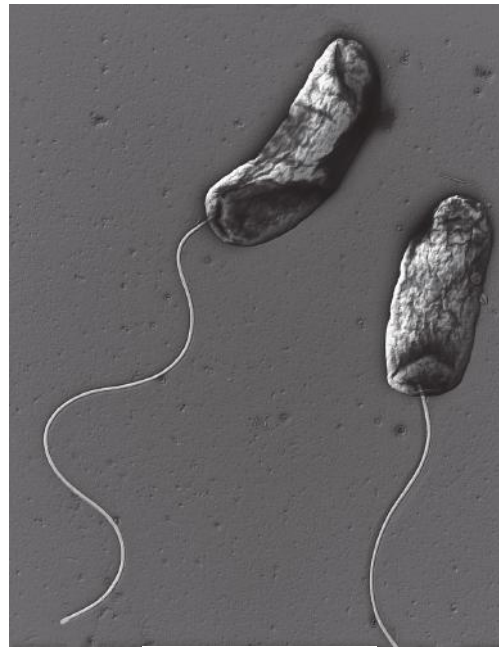


Fig. 2.1

- (a) (i) Bacteria are prokaryotes.

State **two** distinguishing features of all prokaryotes.

- 1 **no nucleus**
- 2 **cell walls**

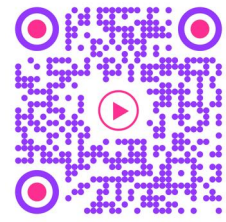
[2]

- (ii) The bacteria shown in Fig. 2.1 each have a flagellum.

Suggest the function of the flagellum in bacteria.

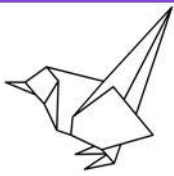
- **movement / swimming**
-
-

[1]



click here
for answers





CONCEPT AND USE OF CLASSIFICATION



click here
for answer

16

Quinoa, *Chenopodium quinoa*, is a dicotyledonous plant that produces seeds that resemble those of cereals, such as rice.

- (a) State one feature shown by **all** dicotyledonous plants.

branched

[1]

17

Fig. 4.1 is a photograph of a yellow-shouldered Amazon, *Amazona barbadensis*, a species of parrot found along the Venezuelan coast of the Caribbean.



Fig. 44.1

- (a) State the vertebrate group that includes *A. barbadensis* and give **two** features that are used to classify animals into this group.

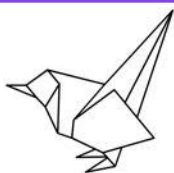
vertebrate group birds

feature 1 feathers

feature 2 wings

[2]





CONCEPT AND USE OF CLASSIFICATION



[click here
for answers](#)

- 19** The kingdom Fungi contains a great diversity of organisms including yeasts, moulds and mushrooms.

Like plants, fungi contain nuclei and mitochondria.

- (a) (i) State the function of mitochondria.

release energy by aerobic respiration

[2]

- (ii) State **two** characteristics of fungi that are used to distinguish them from plants.

1 no chloroplast

2 cell wall made of chitin

[2]

- 20** (a) (i) Fig. 1.1 is a branching key used to identify different species of bacteria.



[click here
for answers](#)

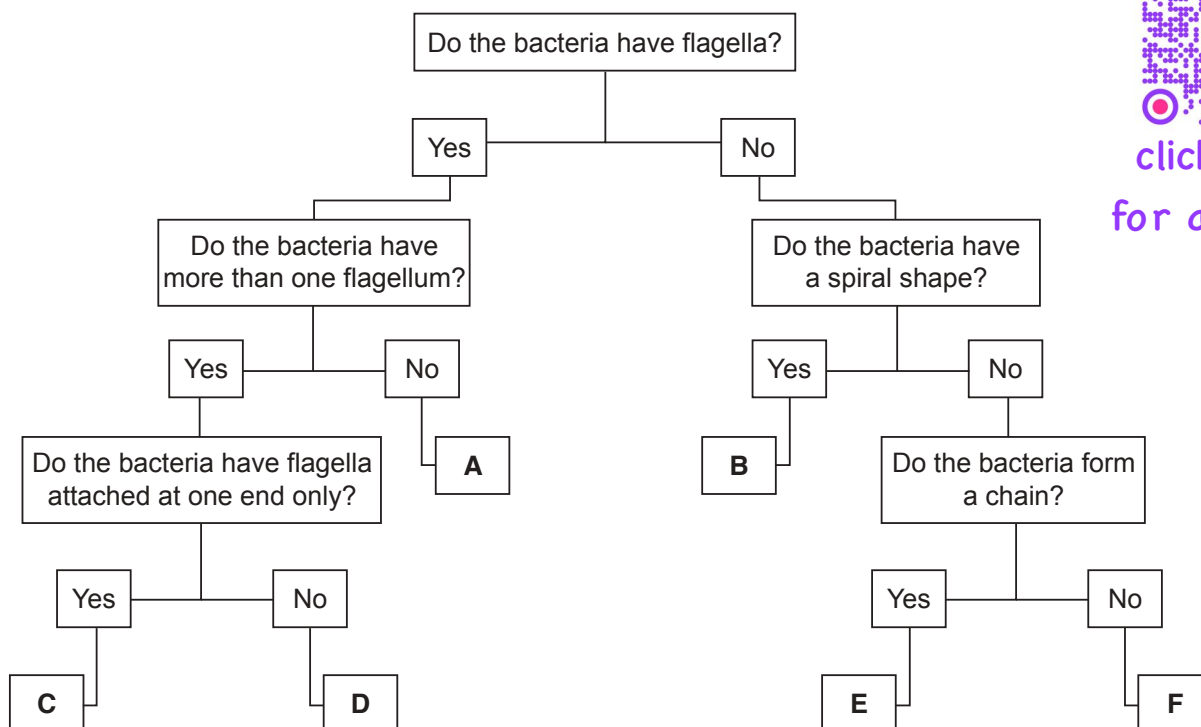


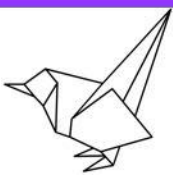
Fig. 1.1

Fig. 1.2 shows six different species of bacteria.

Use the key to identify the six different species of bacteria.

Write the letters on the lines in Fig. 1.2.





CONCEPT AND USE OF CLASSIFICATION

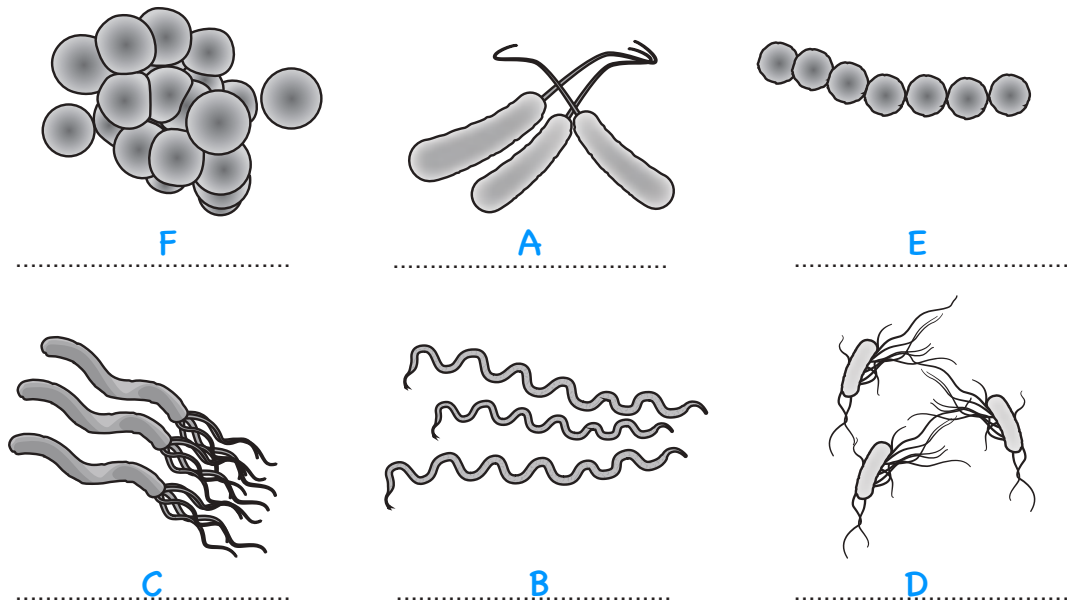


Fig. 1.2

[5]

- (ii) State the name of the kingdom that bacteria belong to.

Prokaryotes

[1]

- (b) State **one** similarity between the structure of bacteria and the structure of viruses.

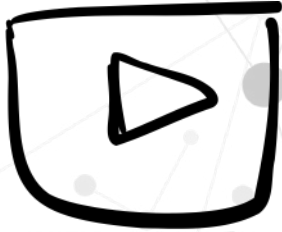
only bacteria have cell walls / cell membranes

cytoplasm / ribosomes ...

[1]



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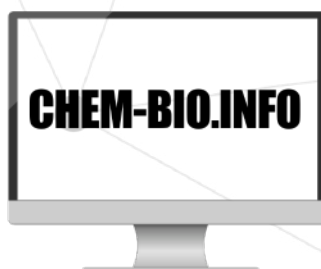
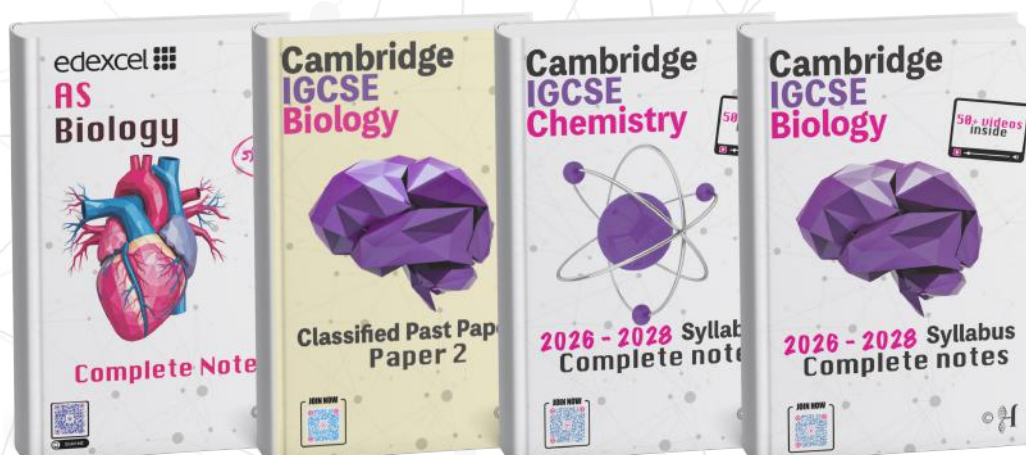


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