Topical Past Paper Questions Worksheets

IGCSE Biology (0610) Paper 3

[Theory (Core) | Short-answer and structured questions]

Exam Series: February/March 2017 - October/November 2024

Format Type B:
Each question is followed by its answer scheme

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Introduction

Each Topical Past Paper Questions Workbook contains a comprehensive collection of hundreds of questions and corresponding answer schemes, presented in worksheet format. The questions are carefully arranged according to their respective chapters and topics, which align with the latest IGCSE or AS/A Level subject content. Here are the key features of these resources:

1. The workbook covers a wide range of topics, which are organized according to the latest syllabus content for Cambridge IGCSE or AS/A Level exams.
2. Each topic includes numerous questions, allowing students to practice and reinforce their understanding of key concepts and skills.
3. The questions are accompanied by detailed answer schemes, which provide clear explanations and guidance for students to improve their performance.
4. The workbook's format is user-friendly, with worksheets that are easy to read and navigate.
5. This workbook is an ideal resource for students who want to familiarize themselves with the types of questions that may appear in their exams and to develop their problem-solving and analytical skills.

Overall, Topical Past Paper Questions Workbooks are a valuable tool for students preparing for IGCSE or AS/A Level exams, providing them with the opportunity to practice and refine their knowledge and skills in a structured and comprehensive manner. To provide a clearer description of this book's specifications, here are some key details:

- Title: Cambridge IGCSE Biology (0610) Paper 3 Topical Past Papers
- Subtitle: Exam Practice Worksheets With Answer Scheme
- Examination board: Cambridge Assessment International Education (CAIE)
- Subject code: 0610
- Years covered: February/March 2017 - October/November 2024
- Paper: 3
- Number of pages: 1186
- Number of questions: 446

Contents

Chapter 1

Characteristics and classification of living organisms

1.1 Characteristics of living organisms

1. 0610_m19_qp_32 Q: 8

Table 8.1 lists some processes carried out by living organisms.

Place a tick (✓) in a box to show the type of process that occurs in animals, occurs in plants, or occurs in both.

An example has been done for you.

Table 8.1

name of process	occurs in animals	occurs in plants
absorption	✓	✓
diffusion		
egestion		
photosynthesis		
respiration		
sexual reproduction		
transpiration		

[6]

Answer:

Question	Answer	Marks	Guidance
8	process / in animals / in plants absorption / ✓ / ✓ diffusion / ✓ / ✓ ; egestion / ✓ / ; ; photosynthesis / / ✓ ; respiration / ✓ / ✓ ; sexual reproduction / ✓ / ✓ ; transpiration / / ✓ ;	6	

1.2 Concept and uses of classification systems

2. 0610_m24_qp_32 Q: 2

Fig. 2.1 shows part of a strawberry tree.

Fig. 2.1

(a) Complete the sentences, using words from the list, to describe how living things are named.

Each word may be used once, more than once or not at all.

binomial	**dichotomous**	**gamete**	**genus**
kingdom	**offspring**	**organism**	**species**

The ..... system is used to give every species a scientific name.

The scientific name for the strawberry tree in Fig. 2.1 is *Arbutus unedo*.

Arbutus is the ..... name and *unedo* is the .....

name.

[3]

(b) Describe what is meant by the term species.

.....

..... [2]

(c) Plant species can be identified using a dichotomous key.

Fig. 2.2 shows the leaves from six plant species, **A** to **F**.

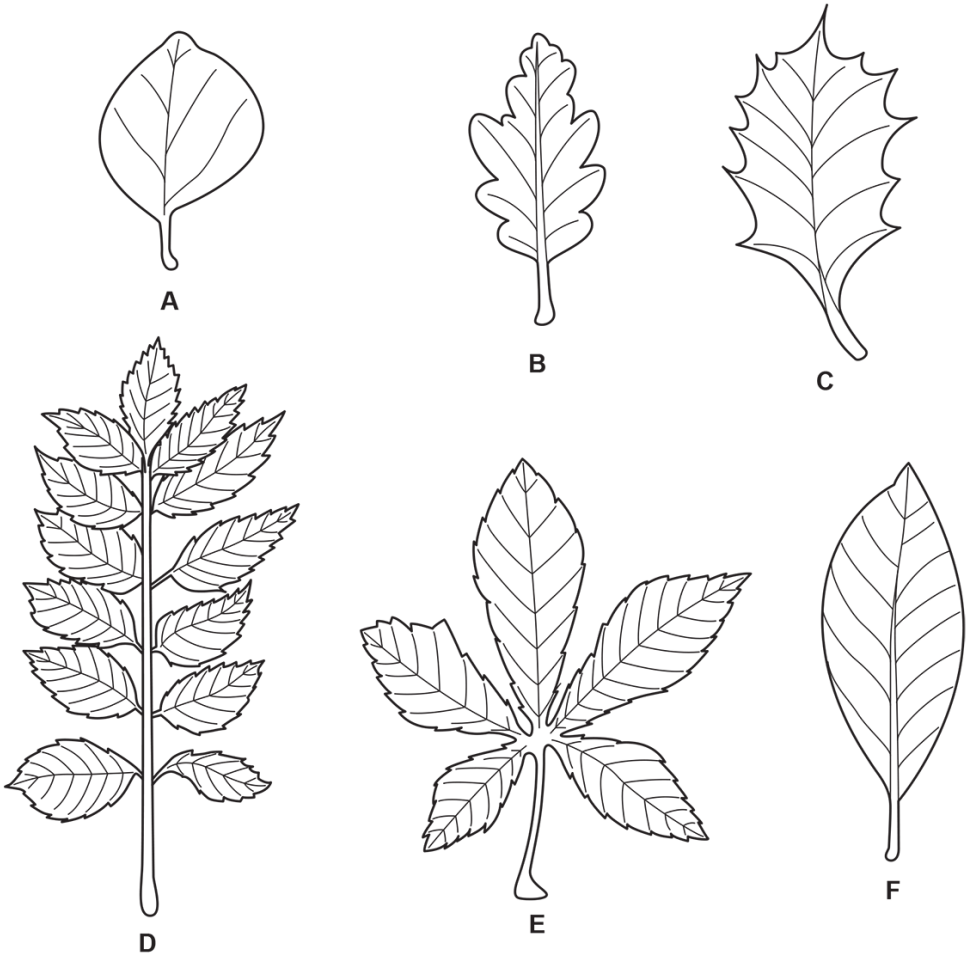


Fig. 2.2 (not to scale)

Use the key to identify the species shown in Fig. 2.2.

Write the letter of each species (**A** to **F**) in the correct box in the key.

Key

1	**(a)**	leaf has a smooth, unlobed outline	**go to 2**	
	(b)	leaf does **not** have a smooth, unlobed outline	**go to 3**	
2	**(a)**	leaf is more than twice as long as it is wide	*Laurus nobilis*	
	(b)	leaf is **not** more than twice as long as it is wide	*Cydonia oblonga*	
3	**(a)**	leaflets are present	**go to 4**	
	(b)	leaflets are **not** present	**go to 5**	
4	**(a)**	only five leaflets are present	*Aesculus hippocastanum*	
	(b)	more than five leaflets are present	*Fraxinus excelsior*	
5	**(a)**	leaf has spikes on its outer edge	*Ilex aquifolium*	
	(b)	leaf does **not** have spikes on its outer edge	*Quercus robur*	

[5]

[Total: 10]

Answer:

Question	Answer	Marks	Guidance
(a)	binomial ; genus ; species ;	3	
(b)	(group of) organisms ; (reproduce to give) fertile offspring ;	2	
(c)	*Laurus nobilis* **F** *Cydonia oblonga* **A** *Aesculus hippocastanum* ***E*** *Fraxinus excelsior* **D** *Ilex aquifolium* **C** *Quercus robur* **B** ;;;;;	5	all 6 must be correct for 5 marks 4 or 5 correct = 4 marks 3 correct = 3 marks 2 correct = 2 marks 1 correct = 1 mark

3. 0610_s21_qp_31 Q: 1

Fig. 1.1 is a dichotomous key. It can be used to identify different types of tree by using their leaves.

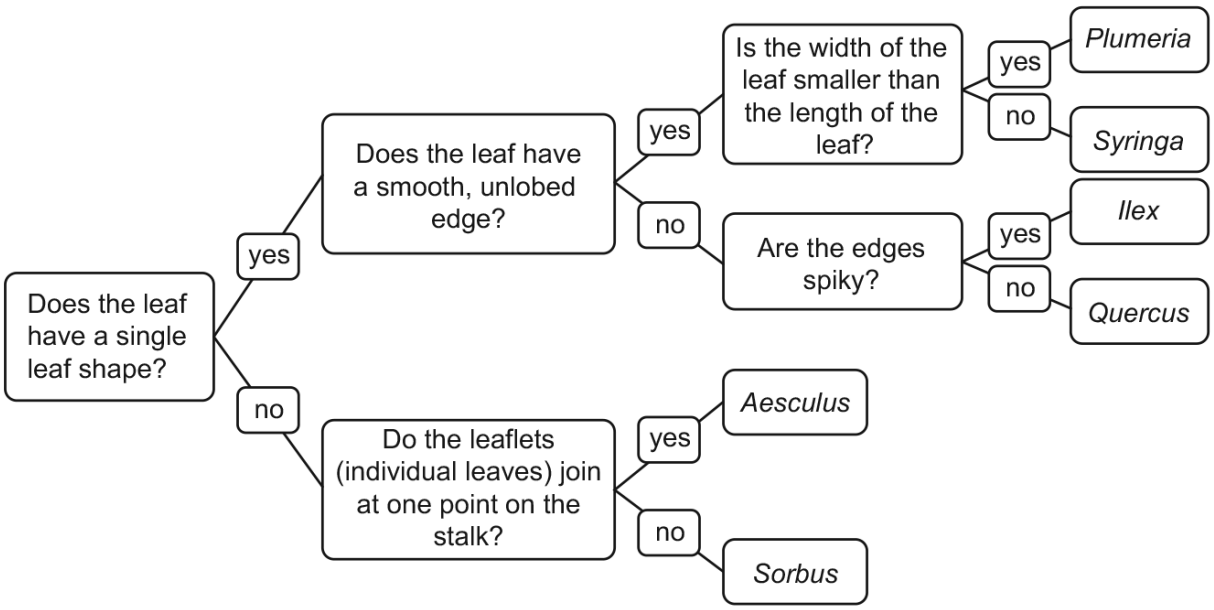
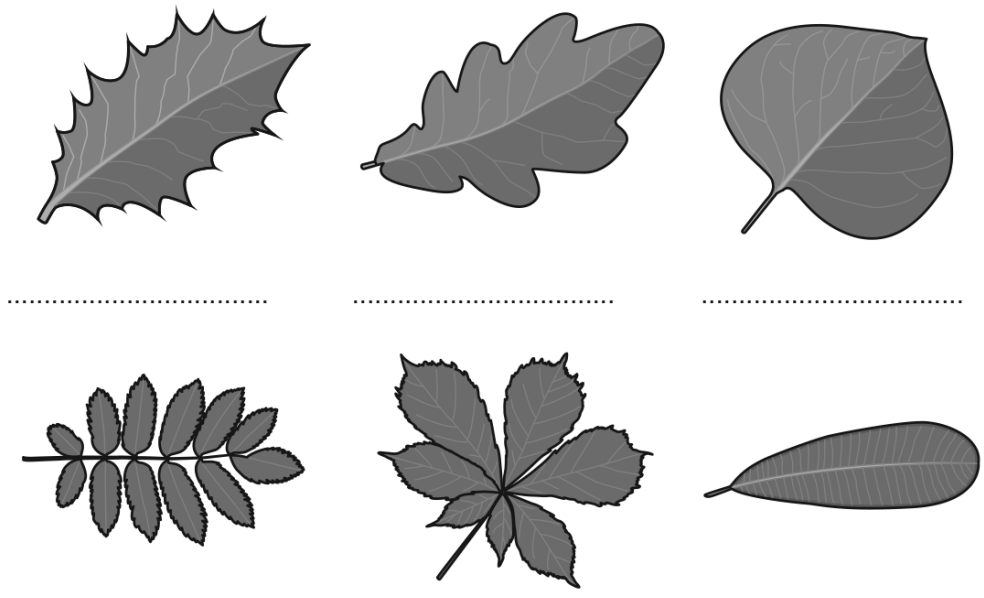


Fig. 1.1

Fig. 1.2 shows leaves from six different trees.

Use the key in Fig. 1.1 to identify the six different types of tree.

Write the name of each tree on the lines in Fig. 1.2.



....

....

Fig. 1.2

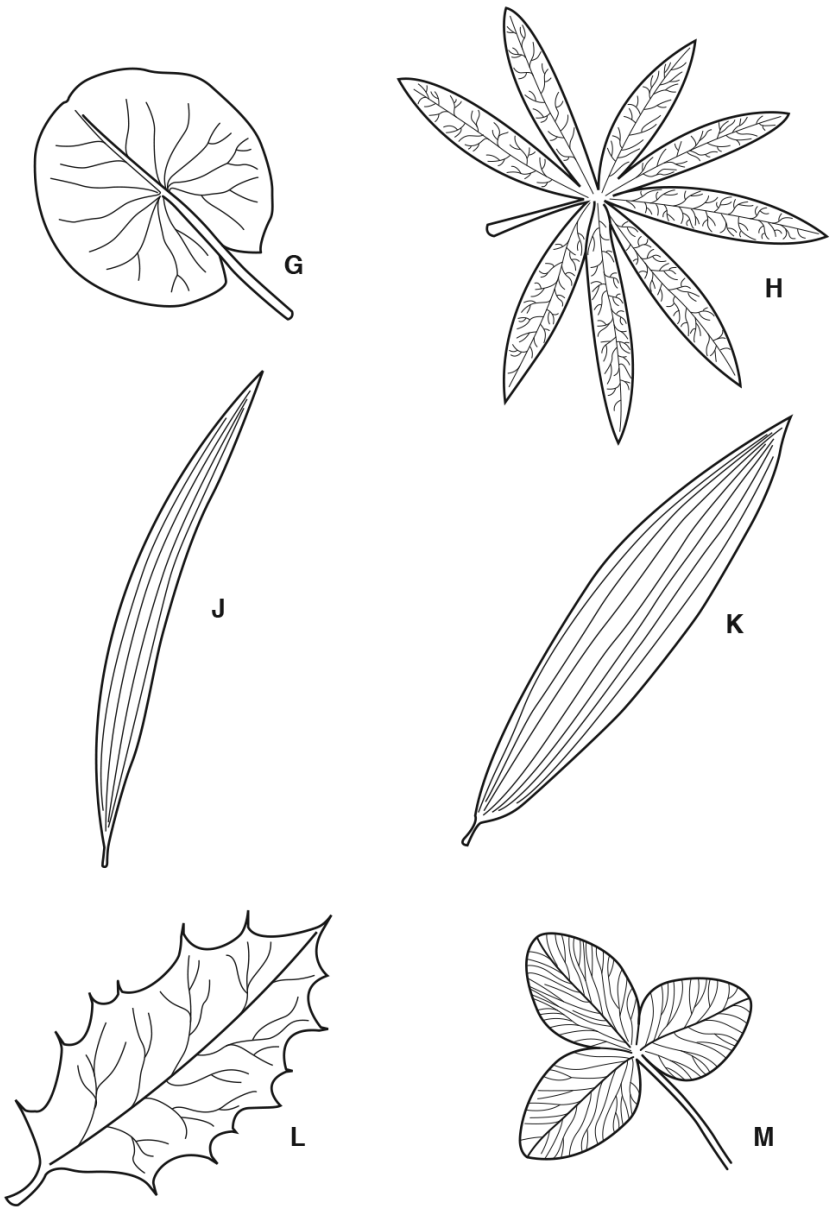
[5]

Answer:

Question	Answer			Marks	Guidance
	Ilex	*Quercus*	*Syringa*	5	must be in this order
	Sorbus	*Aesculus*	*Plumeria* ;;;;;		6 correct = 5 marks 4 or 5 correct = 4 marks 3 correct = 3 marks 2 correct = 2 marks 1 correct = 1 mark

4. 0610_s17_qp_31 Q: 7

Fig. 7.1 shows six leaves.



not drawn to scale

Fig. 7.1

Use the key to identify the plants that these leaves came from.

Write the letter for each leaf in the key.

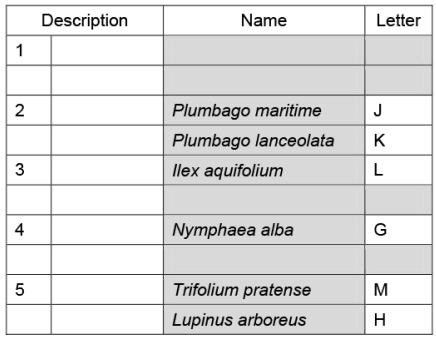
Key

description		name of organism	letter
1 (a)	veins parallel	go to 2	
(b)	veins not parallel	go to 3	
2 (a)	leaf length more than six times leaf width at its widest point	*Plantago maritima*	
(b)	leaf length less than six times leaf width at its widest point	*Plantago lanceolata*	
3 (a)	leaf has thorns (spikes)	*Ilex aquifolium*	
(b)	leaf has no thorns (spikes)	go to 4	
4 (a)	leaf not divided into sections	*Nymphaea alba*	
(b)	leaf divided into sections	go to 5	
5 (a)	leaf divided into 3 sections	*Trifolium pratense*	
(b)	leaf divided into 8 sections	*Lupinus arboreus*	

[5]

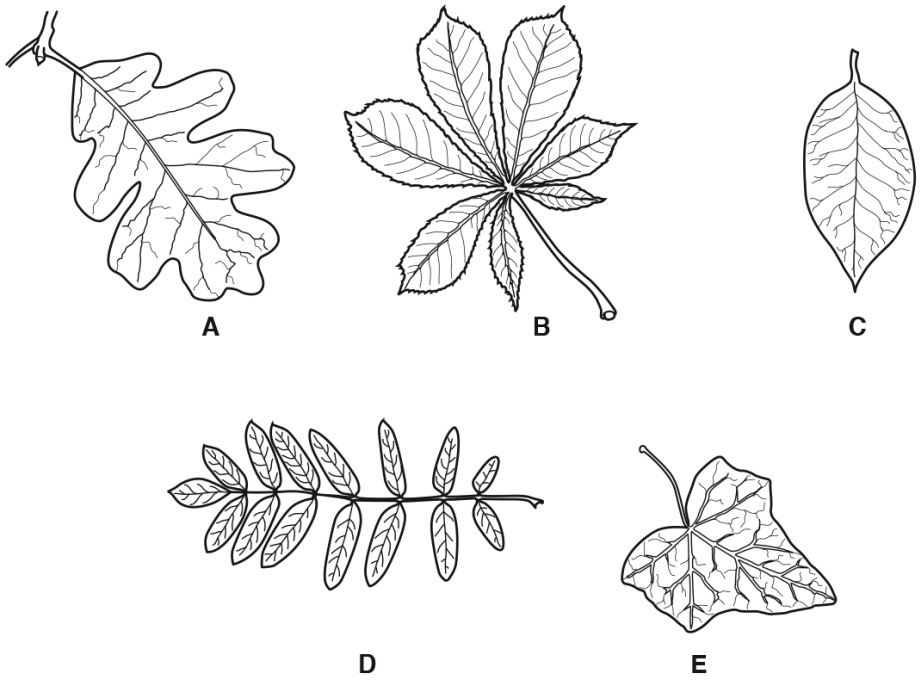
[Total: 5]

Answer:

Answer	Mark	Partial Marks
	5	1 correct = 1 mark 2 correct = 2 marks 3 correct = 3 marks 4 or 5 correct = 4 marks 6 correct = 5 marks

5. 0610_s17_qp_32 Q: 1

Fig. 1.1 shows five whole leaves from different trees.



not to scale

Fig. 1.1

Use the key to identify the leaves in Fig. 1.1 and write the answers in Table 1.1.

Table 1.1

		key	name of tree	letter
1	(a)	leaf is a single leaf shape	go to 2	
	(b)	leaf is divided into several parts called leaflets	go to 4	
2	(a)	veins branch from a long middle vein	go to 3	
	(b)	veins branch from a single point at the stalk	*Hedera*	
3	(a)	leaf is oval and has a smooth edge	*Magnolia*	
	(b)	leaf is not oval and has a lobed edge	*Quercus*	
4	(a)	leaf has leaflets joined at one point on the stalk	*Aesculus*	
	(b)	leaf has leaflets joined at different points along the stalk	*Sorbus*	

[4]

[Total: 4]

Answer:

	Answer	Mark	Partial Marks
	<table><tr><td>name of tree</td><td>letter</td></tr><tr><td>go to 2</td><td></td></tr><tr><td>go to 4</td><td></td></tr><tr><td>go to 3</td><td></td></tr><tr><td>Hedera</td><td>E</td></tr><tr><td>Magnolia</td><td>C</td></tr><tr><td>Quercus</td><td>A</td></tr><tr><td>Aesculus</td><td>B</td></tr><tr><td>Sorbus</td><td>D</td></tr></table>	4	1 correct = 1 mark 2 correct = 2 marks 3 or 4 correct = 3 marks 5 correct = 4 marks

6. 0610_w17_qp_31 Q: 1

Fig. 1.1 shows five different insects.

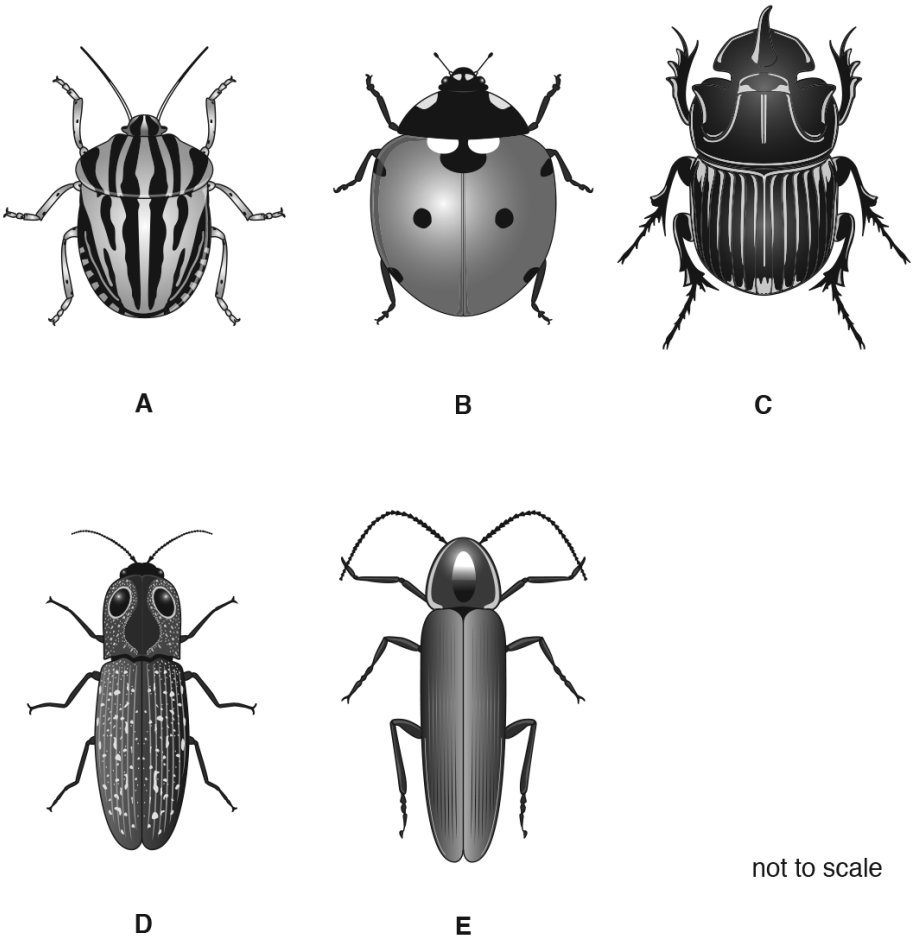


Fig. 1.1

Use the key to identify the insects in Fig. 1.1.

Write the letter for each insect in Table 1.1.

Table 1.1

	key	name of insect	letter
1 (a)	body is long and thin	go to 2	
(b)	body is short and rounded	go to 3	
2 (a)	body has a spotted pattern	*Alaus oculatus*	
(b)	body has a plain pattern	*Photinus pyralis*	
3 (a)	no visible antennae	*Copris lunaris*	
(b)	visible antennae	go to 4	
4 (a)	body has a striped pattern	*Graphosoma lineatum*	
(b)	body has a dotted pattern	*Coccinella septempunctata*	

[4]

[Total: 4]

Answer:

Answer				Mark	Partial Marks
	key	name of insect	letter	4	1 correct = 1 mark 2 correct = 2 marks 3 correct = 3 marks 4 or 5 correct = 4 marks
1 (a) (b)	body is long and thin body is short and rounded	go to 2 go to 3			
2 (a) (b)	body has a spotted pattern body has a plain pattern	*A. oculatus* *P. pyralis*	**D** **E**		
3 (a) (b)	no visible antennae visible antennae	*C. lunaris* go to 4	**C**		
4 (a) (b)	body has a striped pattern body has a dotted pattern	*G. lineatum* *C. septempunctata*	**A** **B**		
			;;;;		

1.3 Features of organisms

7. 0610_w22_qp_32 Q: 1

(a) Fig. 1.1 is a branching key that can be used to identify different types of crustaceans.

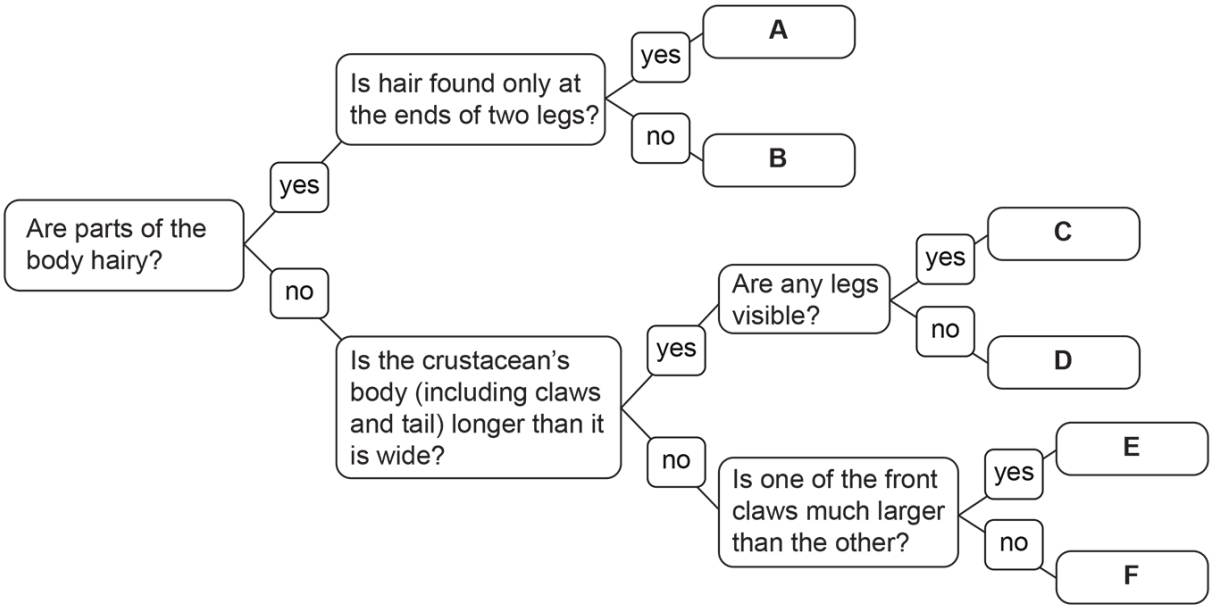


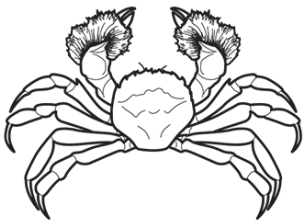
Fig. 1.1

Fig. 1.2 shows six crustaceans.

Use the key in Fig. 1.1 to identify the six different types of crustacean.

Write the letters on the lines in Fig. 1.2.

.....



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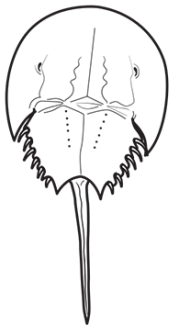

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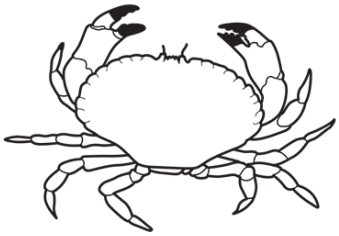

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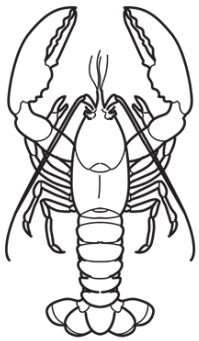


.....

.....

Fig. 1.2 [5]

(b) Crustaceans are one group of arthropods.

State the names of **two other** groups of arthropods.

1 .....

2 .....

[2]

(c) Describe **one** way in which all vertebrates differ from arthropods.

.....

.....

..... [1]

[Total: 8]

Answer:

Question	Answer	Marks	Guidance
(a)	**E, A, D,** **F, C, B** ;;;;;	**5**	6 correct = 5 marks 4 or 5 correct = 4 marks 3 correct = 3 marks 2 correct = 2 marks 1 correct = 1 mark **R** any additional letters
(b)	*any two from:* myriapods ; insects ; arachnids ;	**2**	
(c)	(vertebrates) have a backbone / don't have an exoskeleton ;	**1**	

8. 0610_s21_qp_33 Q: 1

(a) State the name of the large group of organisms that includes insects, arachnids, crustaceans and myriapods.

..... [1]

(b) Fig. 1.1 shows a key that identifies nine genera of invertebrates that have jointed legs.

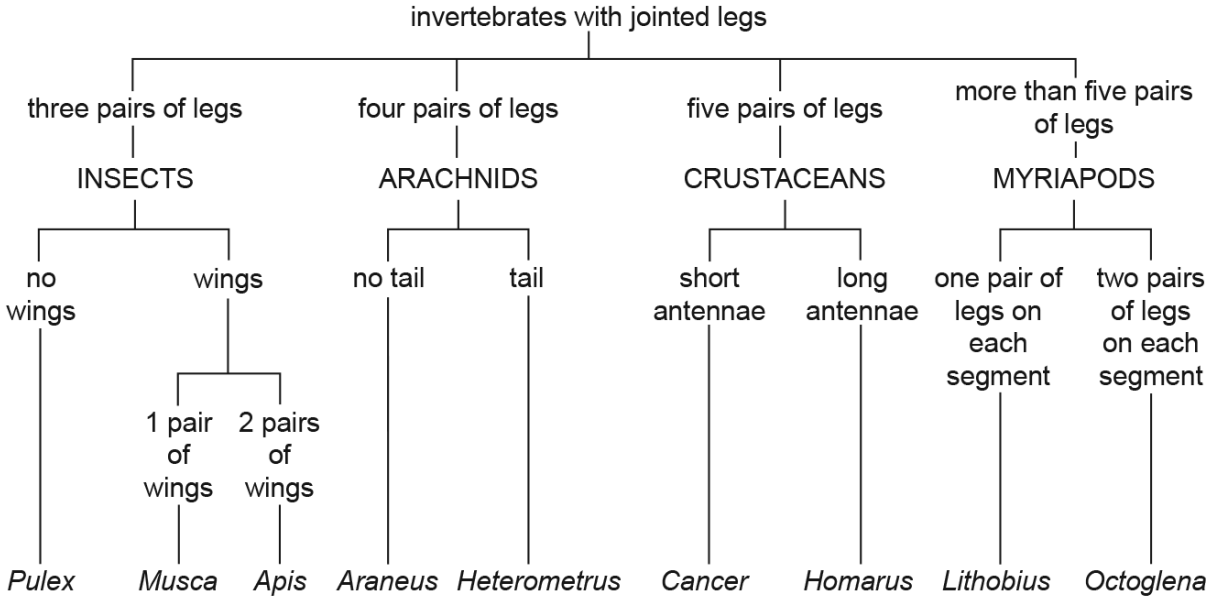


Fig. 1.1

(i) Use the information in Fig. 1.1 to describe **two** features of *Musca*.

1 .....

.....

2 .....

.....

[2]

(ii) Fig. 1.2 shows one of the animals described in the key.

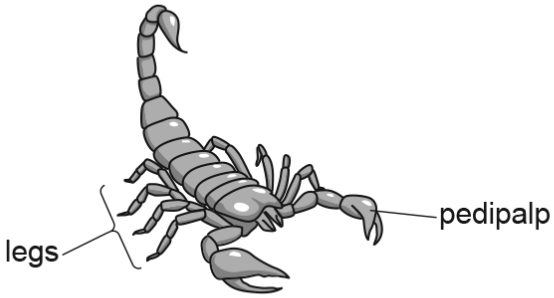


Fig. 1.2

Use the key in Fig. 1.1 to identify this animal.

..... [1]

[Total: 4]

Answer:

Question	Answer	Marks	Guidance
(a)	arthropods ;	1	
(b)(i)	*any 2 from:* does not have a backbone ; 3 pairs of legs / 6 legs ; has (1 pair of) wings ; has jointed legs ;	2	
(b)(ii)	*Heterometrus* ;	1	

9. 0610_m20_qp_32 Q: 1

(a) Fig. 1.1 shows six species of reptiles.

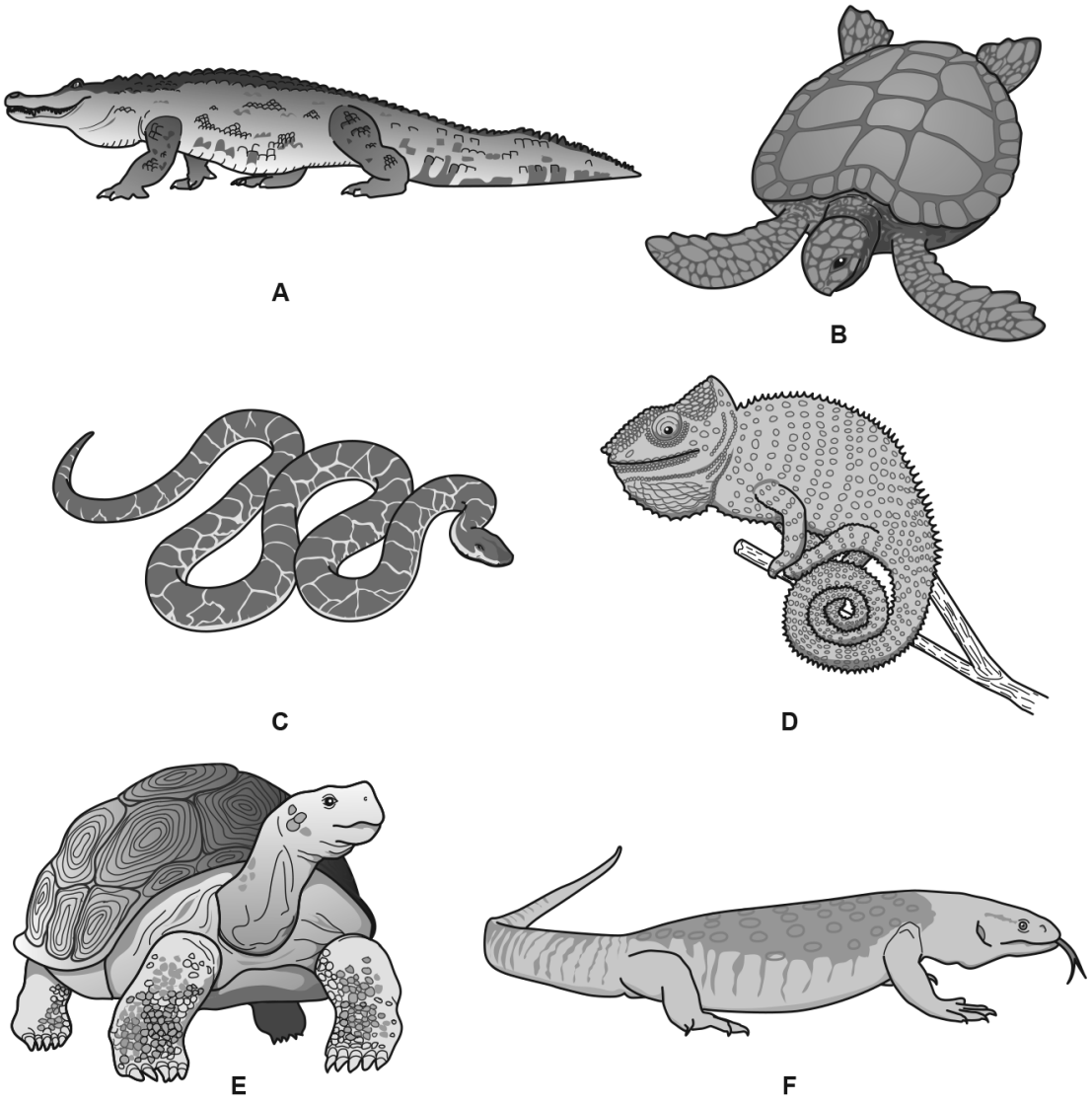


Fig. 1.1

(i) Use the key to identify each species. Write the letter of each species (**A**–**F**) in the correct empty box beside the key.

Key:

1 (a)	organism has a shell (hard covering on its back)	go to 2	
(b)	organism does not have a shell	go to 3	
2 (a)	organism has flat limbs (flippers)	*Caretta caretta*	
(b)	organism has legs and feet	*Chelonoidis nigra*	
3 (a)	organism has limbs	go to 4	
(b)	organism has a long body and no limbs	*Crotalus viridis*	
4 (a)	organism has ridges on its back	go to 5	
(b)	organism has no ridges on its back	*Varanus bengalensis*	
5 (a)	organism has a coiled tail	*Chamaeleo calyptratus*	
(b)	organism has a straight tail	*Alligator mississippiensis*	

[5]

(ii) Define the term species.

.....

.....

.....

.....

..... [2]

(b) The binomial system of naming organisms tells us the species and the genus of the organism.

State the genus name for *Chamaeleo calyptratus*.

..... [1]

(c) Table 1.1 shows some features of animals.

Place ticks (✓) next to **two** features of most reptiles.

Table 1.1

compound eyes	
fertilisation is internal	
wings	
lay eggs	
moist skin	

[2]

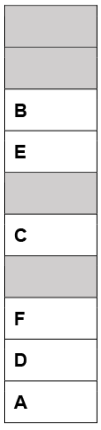
(d) State **two** features of cells that are shared by **all** living organisms.

1 .....

2 .....
[2]

[Total: 12]

Answer:

	Answer	Mark	Partial Marks
(a)(i)	 ;;;;;	5	6 correct = 5 marks 4 or 5 correct = 4 marks 3 correct = 3 marks 2 correct = 2 marks 1 correct = 1 mark
(a)(ii)	a group of organisms ; that reproduce to produce fertile offspring ;	2	
(b)	*Chamaeleo* ;	1	
(c)	*ticks in the boxes for:* fertilisation is internal ; lay eggs ;	2	**R** each additional tick
(d)	*any two from:* genetic material ; cytoplasm ; cell membrane ; AVP ;;	2	apply list rule

10. 0610_w20_qp_32 Q: 1

All living organisms have the same characteristics.

Two of these characteristics are movement and nutrition.

(a) State **three other** characteristics of living organisms.

1 .....

2 .....

3 .....

[3]

(b) Fig. 1.1 shows animals that belong to one vertebrate group.

State the name of this vertebrate group and give **one visible** characteristic feature of this group.

Fig. 1.1

name of group .....

feature of group .....

[2]

(c) State the names of **two other** groups of vertebrates.

1 .....

2 .....

[2]

[Total: 7]

Answer:

Question	Answer	Marks	Guidance
(a)	excretion ; growth ; sensitivity ; respiration ; reproduction ;	3	
(b)	*(group)* mammals ; *(feature)* hair / fur / external ears / pinna ;	2	
(c)	fish ; amphibians ; reptiles ; birds ;	2	

11. 0610_s18_qp_33 Q: 1

(a) Scientists classify organisms into groups.

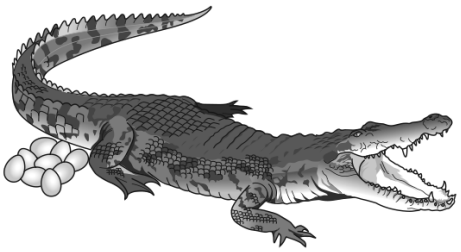
State **one** feature that is used to identify vertebrates.

.....[1]

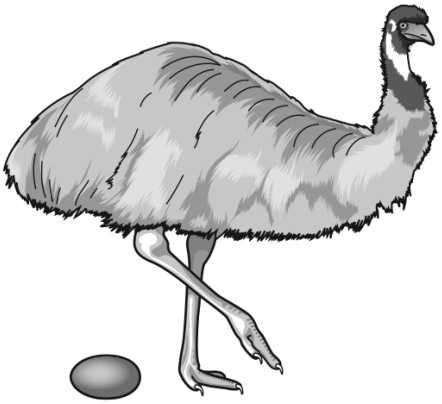
(b) Vertebrates are classified into five groups.

Fig. 1.1 shows three vertebrates found in Australia.

duck-billed platypus



saltwater crocodile



emu

Not to scale

Fig. 1.1

The emu, the saltwater crocodile and the duck-billed platypus each belong to a different vertebrate group.

All three animals lay eggs that develop and hatch on land.

(i) State the name of the vertebrate group to which emus belong and give **one** feature of this group that is visible in Fig. 1.1.

group .....

visible feature .....

.....

[2]

(ii) State the name of the vertebrate group to which crocodiles belong and give **one** feature of this group that is visible in Fig. 1.1.

group .....

visible feature .....

.....

[2]

(iii) The duck-billed platypus is classified as a mammal.

Give evidence from Fig. 1.1 for and against classifying the duck-billed platypus as a mammal.

evidence for .....

.....

.....

evidence against .....

.....

.....

[3]

(c) There are **two** groups of vertebrates which lay eggs that develop in water.

State the name of these two groups of vertebrates.

1 .....

2 .....

[2]

[Total: 10]

Answer:

	Answer	Mark	Partial Marks
(a)	bony skeleton / internal skeleton / endoskeleton / bones / vertebral column / backbone / spine / vertebrae / skull ;	1	
(b)(i)	birds ; feathers / beaks / bill / hard-shelled eggs ;	2	
(b)(ii)	reptiles ; scales (skin) / leathery eggs ;	2	**A** soft-shelled eggs
(b)(iii)	*evidence for (being a mammal)* it has fur / hair ; *evidence against* lays / external, eggs ; young develop outside the body ; has a beak / bill ;	3	
(c)	fish ; amphibians ;	2	