

IGCSE Cambridge Topical Past Papers

BIOLOGY

0610 | Paper 3

2017 — 2024

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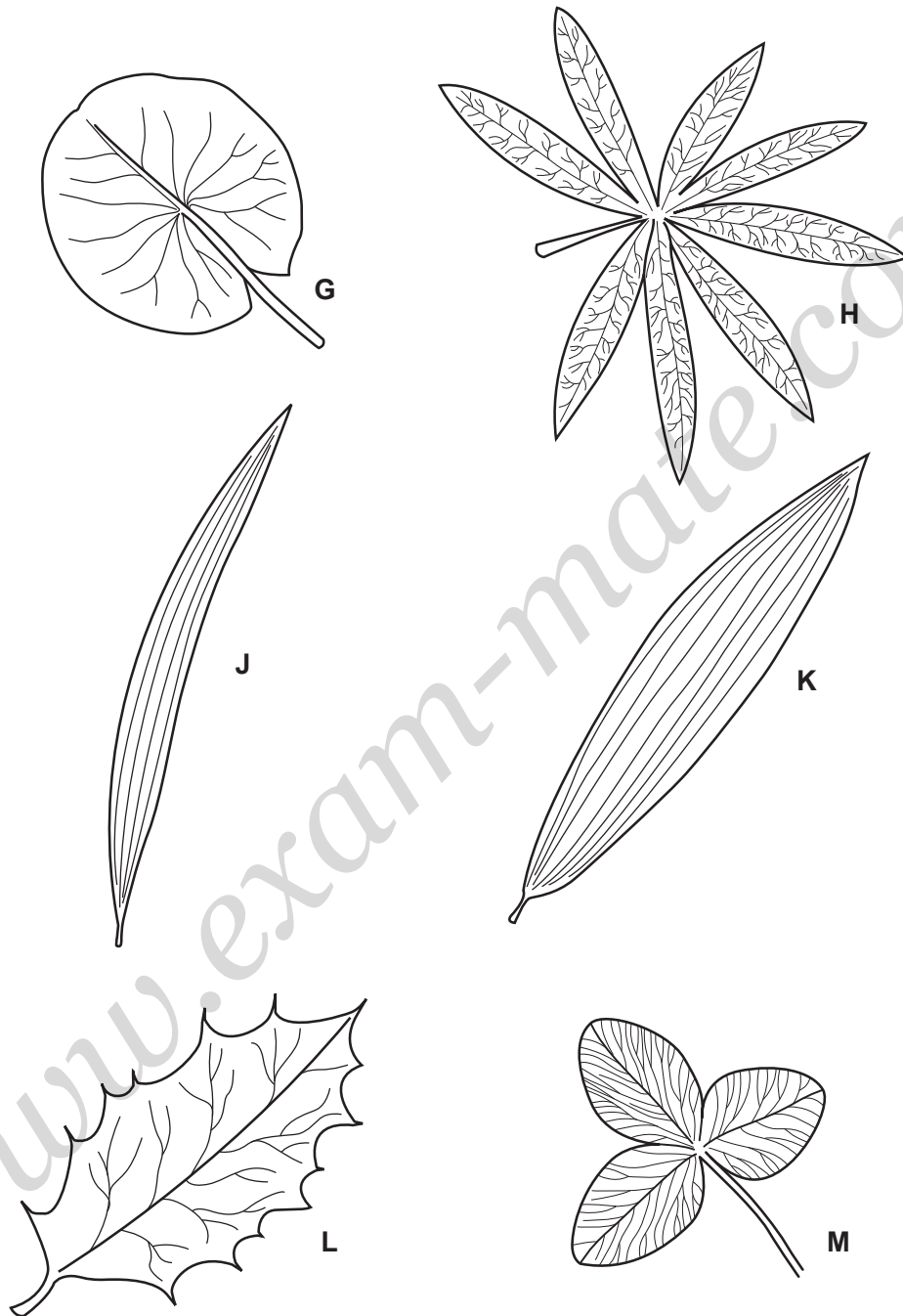
CHAPTER 1

CHARACTERISTICS AND CLASSIFICATION OF LIVING ORGANISMS

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1 - (0610/31_Summer_2017_Q7) **ANSWER**

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

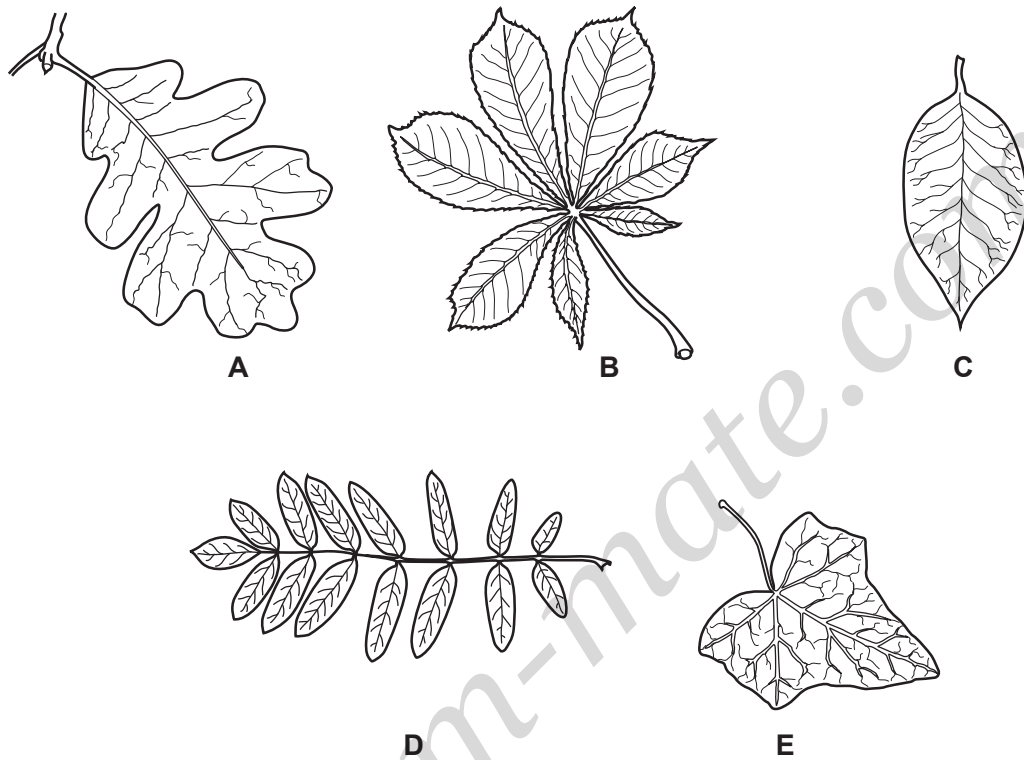
description		name of organism	letter
1 (a)	veins parallel	go to 2	
(b)	veins not parallel	go to 3	
2 (a)	leaf length more than six times leaf width at its widest point	<i>Plantago maritima</i>	
(b)	leaf length less than six times leaf width at its widest point	<i>Plantago lanceolata</i>	
3 (a)	leaf has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

[5]

[Total: 5]

2 - (0610/32_Summer_2017_Q1) **ANSWER**

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	<i>Hedera</i>	
3	(a)	leaf is oval and has a smooth edge	<i>Magnolia</i>	
	(b)	leaf is not oval and has a lobed edge	<i>Quercus</i>	
4	(a)	leaf has leaflets joined at one point on the stalk	<i>Aesculus</i>	
	(b)	leaf has leaflets joined at different points along the stalk	<i>Sorbus</i>	

[4]

[Total: 4]

3 - (0610/33_Summer_2017_Q1) **ANSWER**

(a) Leaves play an important part in plant nutrition.

(i) Name the process plants use to make carbohydrates such as simple sugars.

.....[1]

(ii) State the word equation for this process.

.....[2]

(iii) Suggest **one** way that leaves are adapted to make carbohydrates.

.....[1]

(b) Fig. 1.1 shows whole leaves from five different trees.

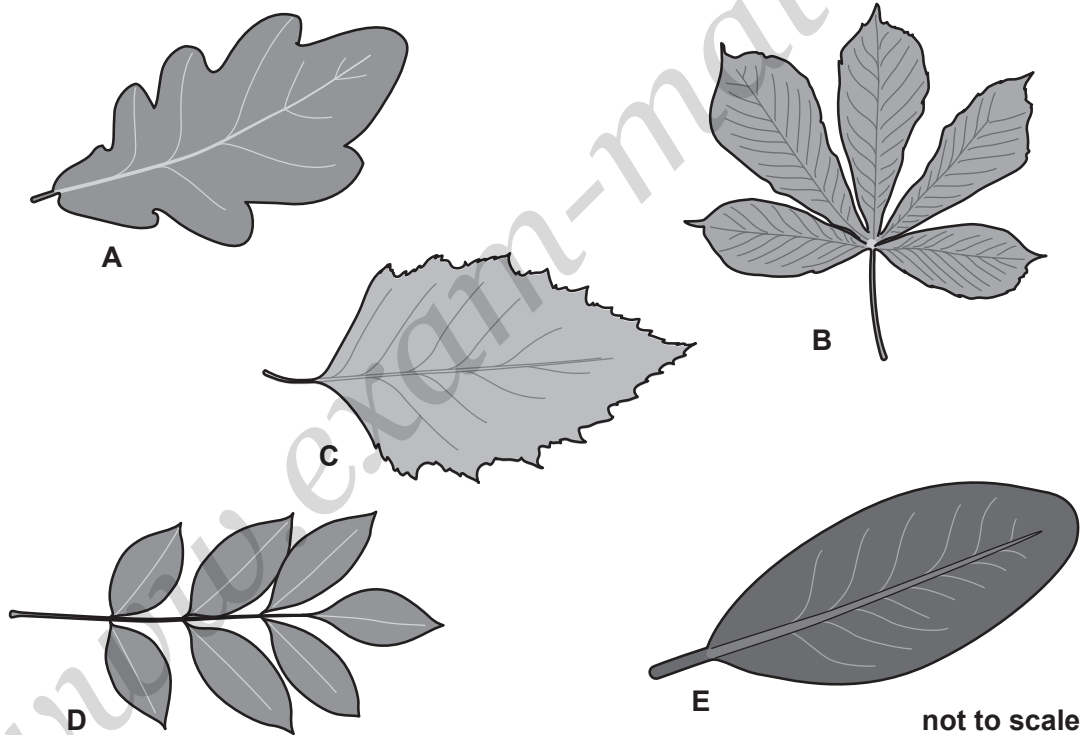


Fig. 1.1

Fig. 1.2 is a key which can be used to identify the five leaves shown in Fig. 1.1.

The key shows the scientific names of the five trees that the leaves came from.

In this key Box 4 is missing.

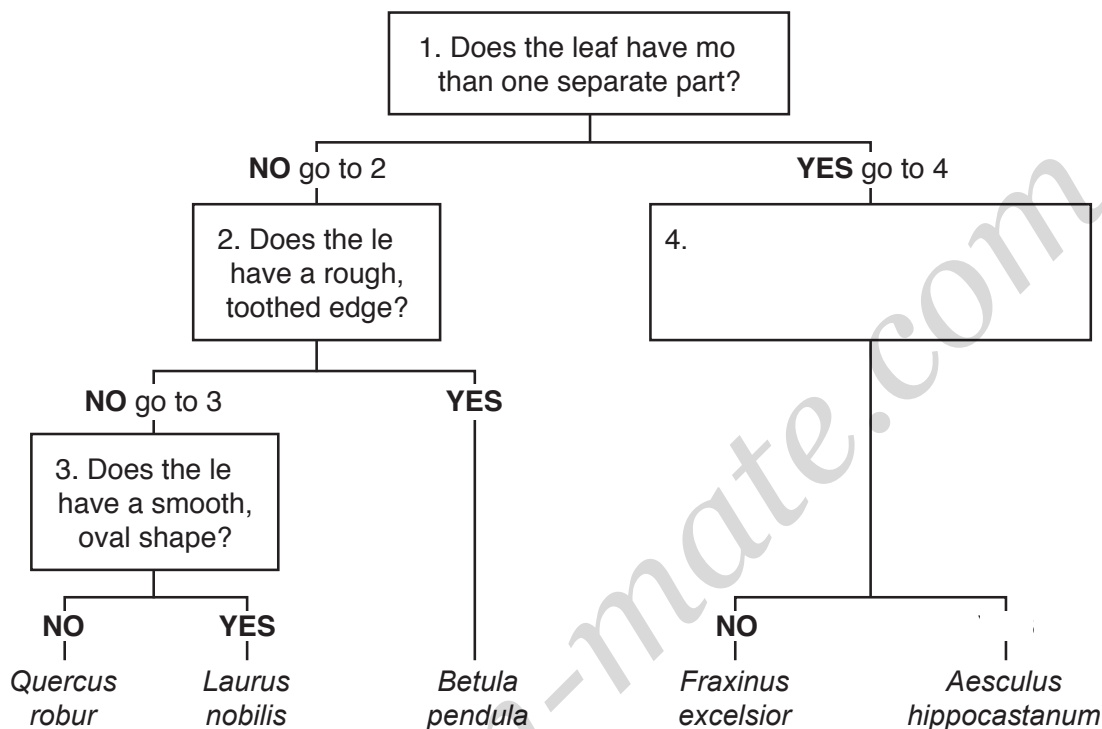


Fig. 1.2

(i) Use the key to identify the five leaves shown in Fig. 1.1.

The leaf labelled **B** has been identified for you.

Complete Table 1.1 by writing the correct letter next to the Latin name of each type of leaf.

Table 1.1

name of tree	letter
<i>Aesculus hippocastanum</i>	B
<i>Betula pendula</i>	
<i>Fraxinus excelsior</i>	
<i>Laurus nobilis</i>	
<i>Quercus robur</i>	

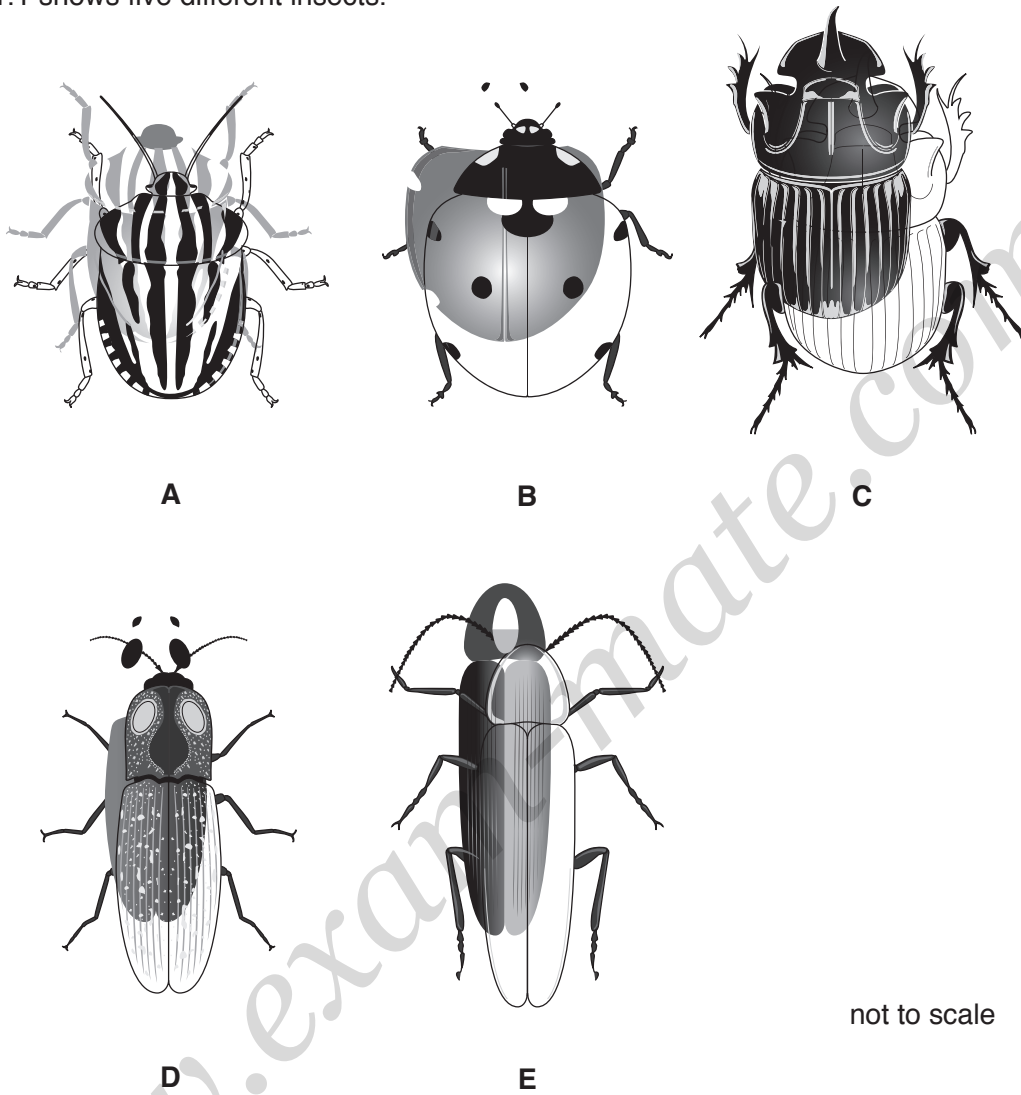
(ii) Suggest a suitable question which could be used to distinguish between the leaves of *Aesculus hippocastanum* and *Fraxinus excelsior*.

Write your answer in Box 4 on Fig. 1.2.

[Total: 8]

4 - (0610/31_Winter_2017_Q1) **ANSWER**

Fig. 1.1 shows five different insects.



not to scale

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	<i>Alaus oculatus</i>	
	(b) body has a plain pattern	<i>Photinus pyralis</i>	
3	(a) no visible antennae	<i>Copris lunaris</i>	
	(b) visible antennae	go to 4	
4	(a) body has a striped pattern	<i>Graphosoma lineatum</i>	
	(b) body has a dotted pattern	<i>Coccinella septempunctata</i>	

[4]

[Total: 4]

5 - (0610/32_Winter_2017_Q6) **ANSWER**

(a) Fig. 6.1 shows six insects.

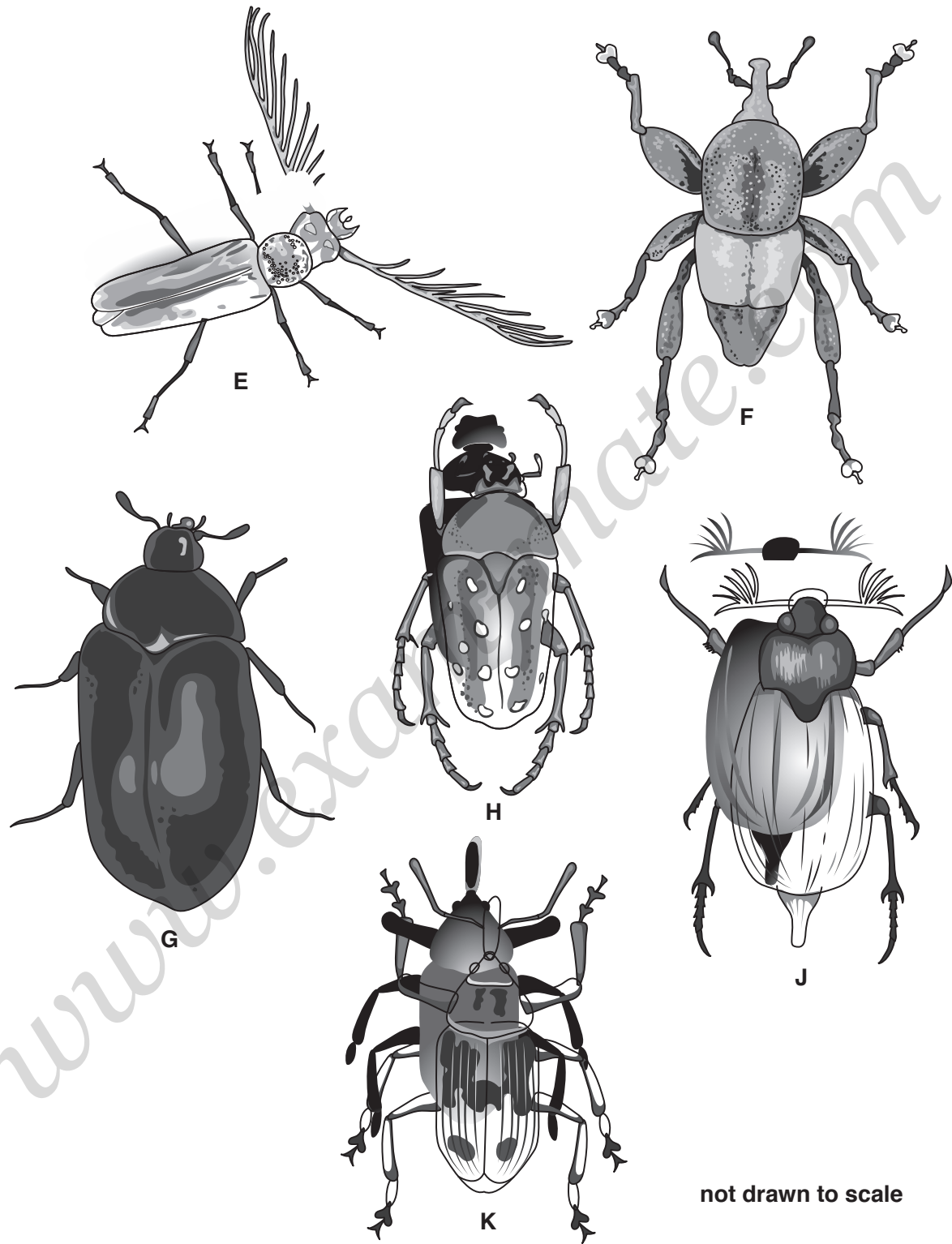


Fig. 6.1

Use the key to identify the insects in Fig. 6.1.

Write the letter for each insect in the key.

Key

	description	name of insect	letter on Fig. 6.1
1	(a) has branched antenna	go to 2	
	(b) antenna not branched	go to 3	
2	(a) antenna branched at the end	<i>Melolontha</i>	
	(b) antenna branched all the way along	<i>Cyriopalus</i>	
3	(a) head has long thin projection	go to 4	
	(b) head does not have long thin projection	go to 5	
4	(a) abdomen has no spots	<i>Trigonopterus</i>	
	(b) abdomen with spots	<i>Ceutorhyncus</i>	
5	(a) front legs extend beyond the head	<i>Stephanorrhina</i>	
	(b) front legs do not extend beyond the head	<i>Attagenus</i>	

[5]

(b) Insects are arthropods.

(i) State **one** feature of **all** arthropods.

..... [1]


(ii) State the names of **two** other groups of arthropods.

1

2

[2]

[Total: 8]

1 - (0610/31_Summer_2017_Q7) 

Description		Name	Letter
1			
2		<i>Plumbago maritime</i>	J
		<i>Plumbago lanceolata</i>	K
3		<i>Ilex aquifolium</i>	L
4		<i>Nymphaea alba</i>	G
5		<i>Trifolium pratense</i>	M
		<i>Lupinus arboreus</i>	H


;;;;

2 - (0610/32_Summer_2017_Q1) 


name of tree	letter
go to 2	
go to 4	
go to 3	
<i>Hedera</i>	E
<i>Magnolia</i>	C
<i>Quercus</i>	A
<i>Aesculus</i>	B
<i>Sorbus</i>	D

3 - (0610/33_Summer_2017_Q1) 


(a)(i)	photosynthesis ;	1
(a)(ii)	water + carbon dioxide ; → oxygen + glucose ;	2
(a)(iii)	large surface area (to absorb light) ; contain chloroplasts / chlorophyll (to absorb light) ; ref. to xylem ; stomata (to allow gas exchange) ; thin (short diffusion distances) ; transparent cuticle / epidermis ; AVP ;	1
(b)(i)	<i>Betula pendula</i> = C <i>Fraxinus excelsior</i> = D <i>Laurus nobilis</i> = E <i>Quercus robur</i> = A ⋮	3
(b)(ii)	does leaf have only 5 parts? ;	1

4 - (0610/31_Winter_2017_Q1) 

	key	name of insect	letter	4
(a)	body is long and thin	go to 2		
(b)	body is short and rounded	go to 3		
(a)	body has a spotted pattern	<i>A. oculatus</i>	D	
(b)	body has a plain pattern	<i>P. pyralis</i>	E	
(a)	no visible antennae	<i>C. lunaris</i>	C	
(b)	visible antennae	go to 4		
(a)	body has a striped pattern	<i>G. lineatum</i>	A	
(b)	body has a dotted pattern	<i>C. septempunctata</i>	B	
;;;				

5 - (0610/32_Winter_2017_Q6) 

(a)		name of insect	letter on Fig. 6.1	5
	1			
	2	<i>Melolontha</i>	J	
		<i>Cyriopalus</i>	E	
	3			
	4	<i>Trigonopterus</i>	F	
		<i>Ceutorhyncus</i>	K	
	5	<i>Stephanorrhina</i>	H	
		<i>Attagenus</i>	G	
	(b)(i)	jointed legs / exoskeleton / segmented body ;		
(b)(ii)	any two from: crustacean ; myriapods ; arachnids / chelicerata ;			2

6 - (0610/33_Winter_2017_Q1) 

(a)	any 2 from feathers / beak / wings / hard-shelled eggs / two legs ;;	2												
(b)	<table border="1"> <thead> <tr> <th>name of bird</th> <th>letter</th> </tr> </thead> <tbody> <tr> <td>pied avocet</td> <td>A</td> </tr> <tr> <td>Andean avocet</td> <td>B</td> </tr> <tr> <td>common sandpiper</td> <td>C</td> </tr> <tr> <td>banded stilt</td> <td>E</td> </tr> <tr> <td>whimbrel</td> <td>D</td> </tr> </tbody> </table>	name of bird	letter	pied avocet	A	Andean avocet	B	common sandpiper	C	banded stilt	E	whimbrel	D	4
name of bird	letter													
pied avocet	A													
Andean avocet	B													
common sandpiper	C													
banded stilt	E													
whimbrel	D													
(c)(i)	idea of long legs allow them to wade in shallow water ; idea of long beaks to, dig up / catch their prey ; AVP ;	2												
(c)(ii)	natural selection ;	1												

7 - (0610/32_Summer_2018_Q3) 

(a)(i)	1995 ;	1									
(a)(ii)	195 (cases per 100 000 people) ;	1									
(a)(iii)	(steady) increase (from 2003) ; fluctuation between 2007 and 2009 / described ; level off / plateau / AW, from 2009 ; data quote with year and number including units ;	3									
(b)	<i>Campylobacter</i> ;	1									
(c)	rehydration / oral rehydration therapy ;	1									
(d)	<table border="1"> <thead> <tr> <th>cellular</th> <th>chemical</th> <th>mechanical</th> </tr> </thead> <tbody> <tr> <td>phagocytosis</td> <td>stomach acid</td> <td>nasal hairs</td> </tr> <tr> <td>antibodies</td> <td>mucus</td> <td>skin</td> </tr> </tbody> </table>	cellular	chemical	mechanical	phagocytosis	stomach acid	nasal hairs	antibodies	mucus	skin	3
cellular	chemical	mechanical									
phagocytosis	stomach acid	nasal hairs									
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