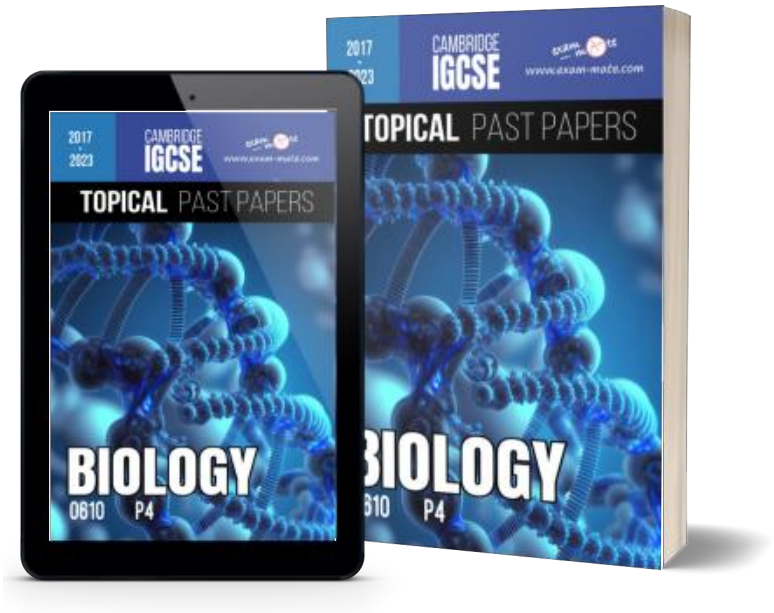
IGCSE Cambridge Topical Past Papers

BIOLOGY

0610 | Paper 3

2017 — 2023



BIOLOGY 0610

TOPICAL PAST PAPER WORKSHEETS

2017 - 2023 | Questions + Mark scheme

AVAILABLE PAPERS

P1	P2	P3	P4	P6
1383 Questions	1374 Questions	472. Questions	430 Questions	163 Questions

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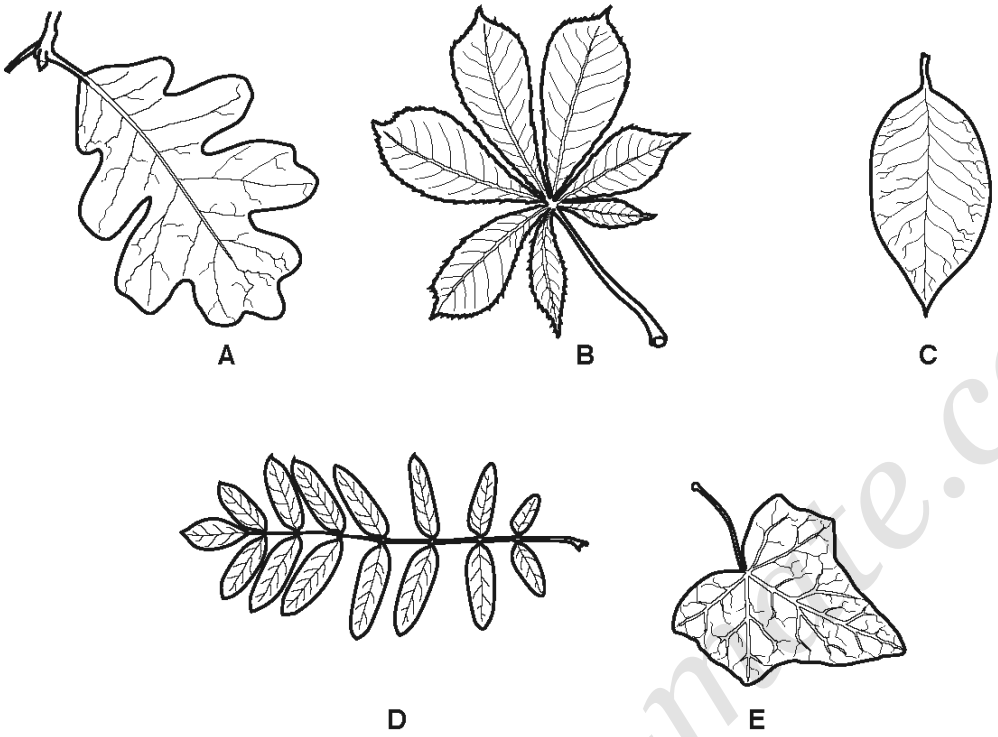
TOPICS	P1	P2	P3	P4	P6
Charactristics & Classification of living organisms	95	68	34	30	9
Organization & Maintenance of the Organism	66	63	15	12	25
Movement in and out of Cells	63	56	10	9	12
Biological Molecules	31	43	9	11	41
Enzymes	40	51	10	13	16
Plant Nutrition	65	62	33	19	13
Human Nutrition	106	83	35	34	3
Transport in Plants	67	77	22	20	11
Transport in Animals	61	55	19	24	3
Diseases & Immunity	34	35	13	17	0
Gas Exchange in Humans	41	35	13	10	4
Respiration	57	62	20	14	8
Excretion in Humans	39	37	12	7	1
Co-Ordination & Response	104	113	31	31	3
Drugs	43	32	15	7	0
Reproduction	127	114	51	32	6
Inheritance	86	119	26	26	0
Variation & Selection	54	46	19	20	0
Organisms & Their Environment	104	88	35	39	5
Biotechnology & Genetic Engineering	43	75	17	26	3
Human Influences on Ecosystem	57	60	33	29	0

1 – (0610/32_Summer_2017_Q1) – *Characteristics And Classification Of Living Organisms*

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]

2 – (0610/33_Summer_2017_Q1) – *Plant Nutrition, Characteristics And Classification Of Living Organisms*

(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.

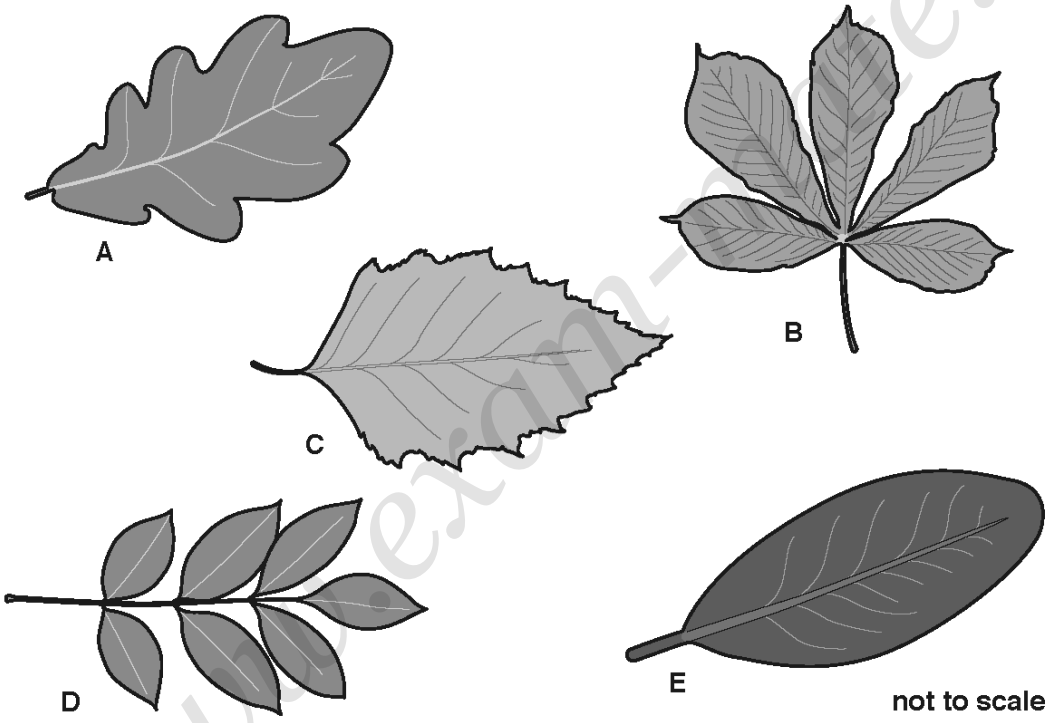


Fig. 1.1

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.

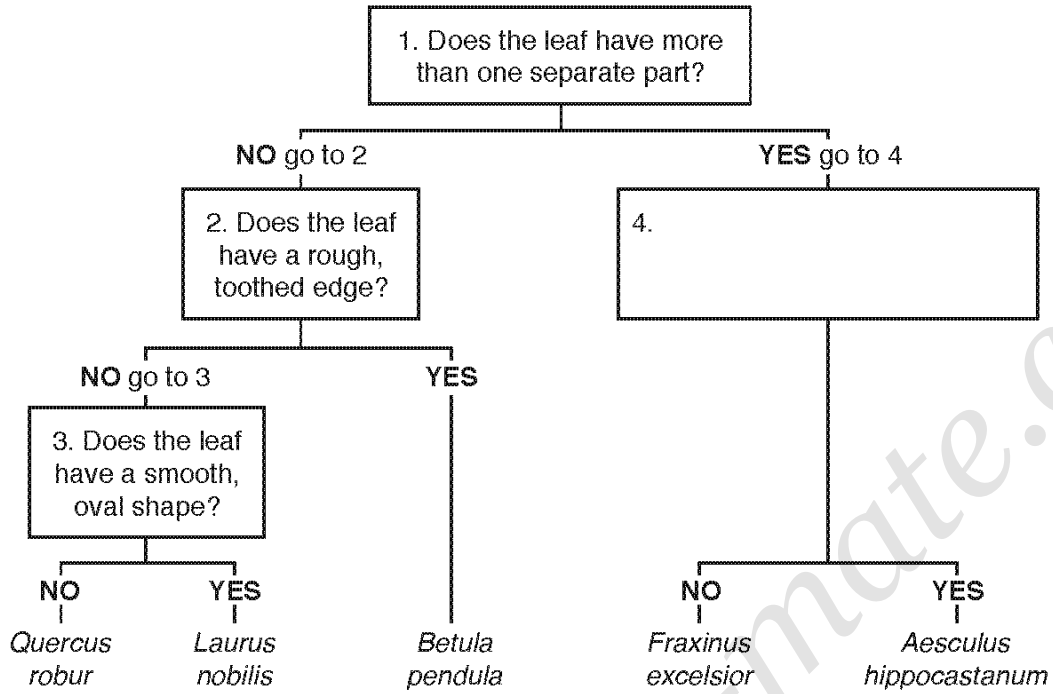


Fig. 1.2

(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
Aesculus hippocastanum	**B**
Betula pendula	
Fraxinus excelsior	
Laurus nobilis	
Quercus robur	

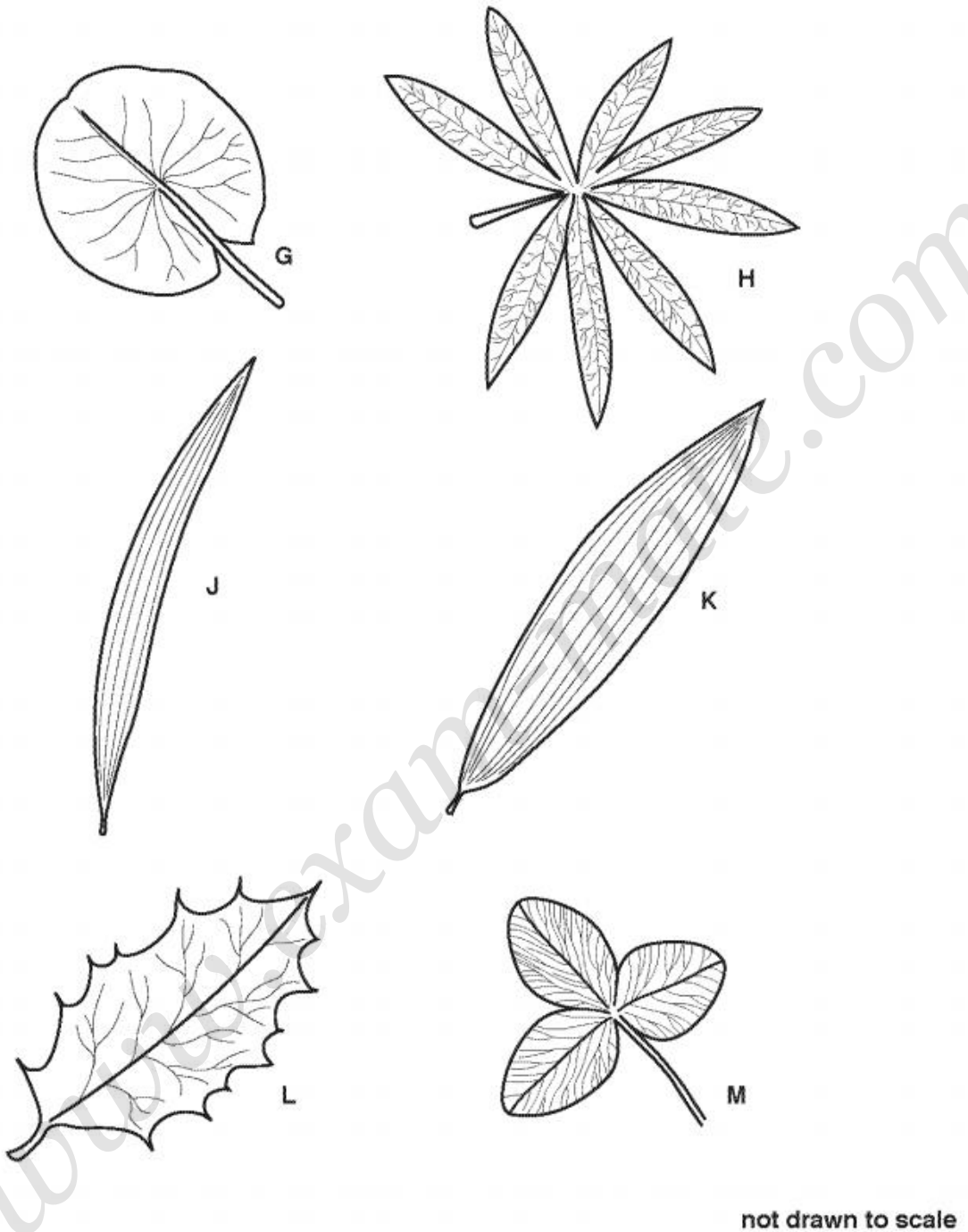
[3]

(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. [1]

3 – (0610/31_Summer_2017_Q7) – *Characteristics And Classification Of Living Organisms*

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]

4 – (0610/31_Winter_2017_Q1) – *Characteristics And Classification Of Living Organisms*

Fig. 1.1 shows five different insects.

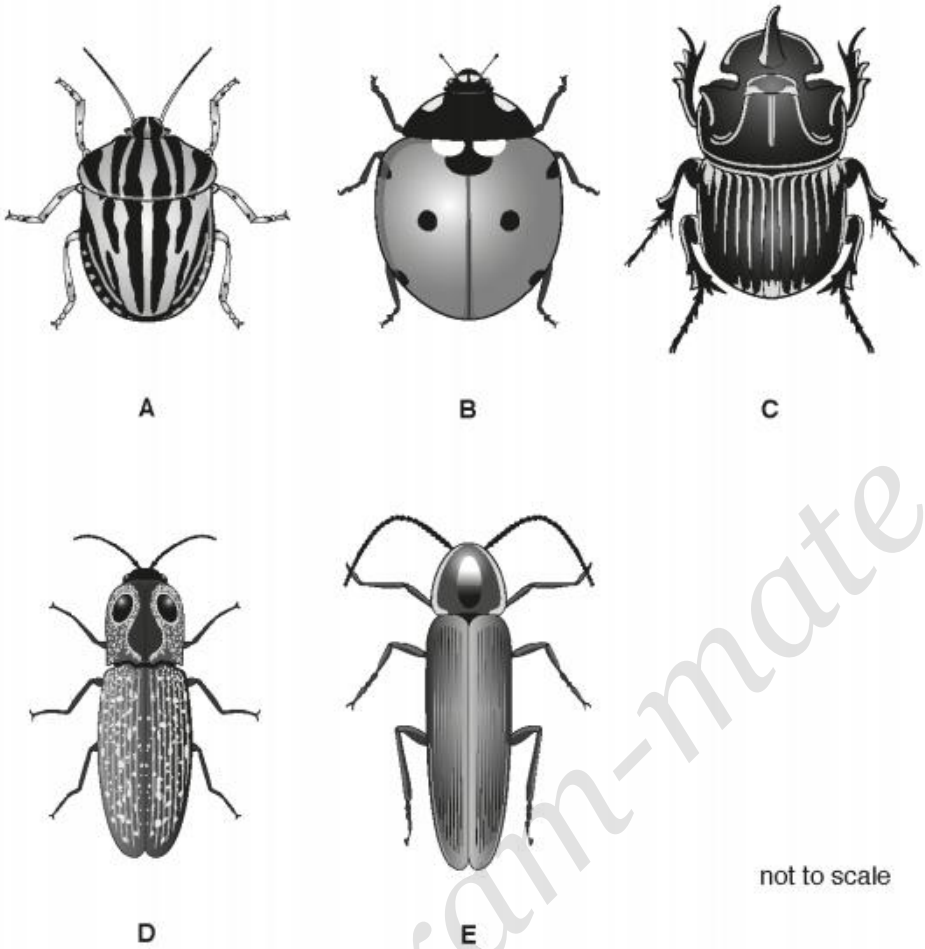


Fig. 1.1

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

Write the letter for each insect in Table 1.1.

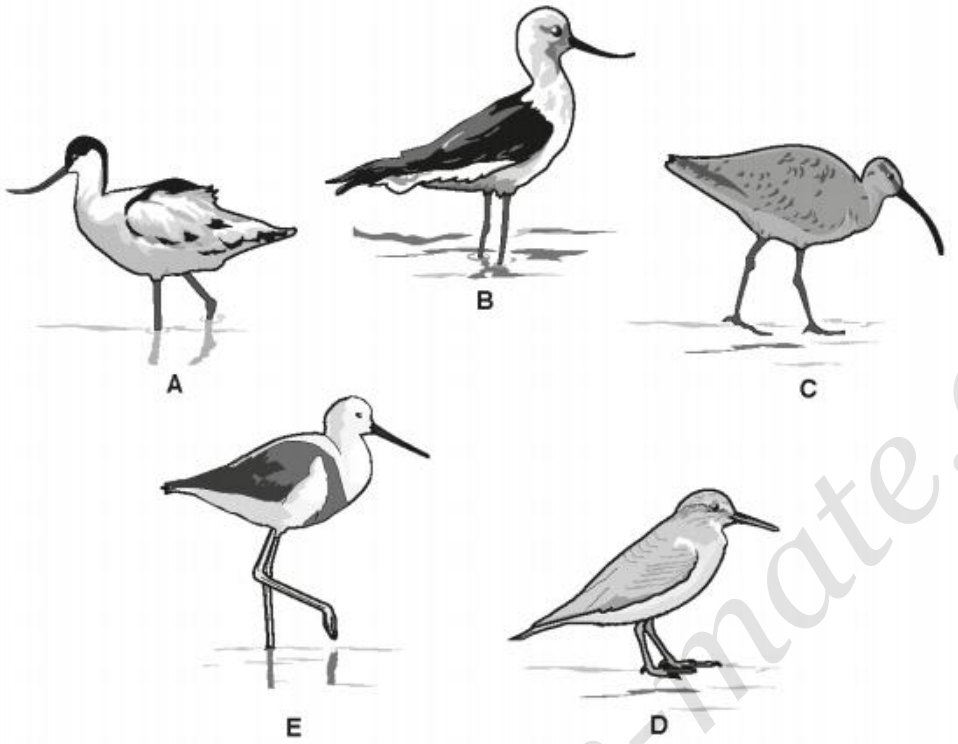
Table 1.1

	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]

5 – (0610/33_Winter_2017_Q1) – *Characteristics And Classification Of Living Organisms*

Fig. 1.1 shows five species of birds that live near the water in habitats such as mudflats, marshes and shorelines.



not to scale

Fig. 1.1

(a) State **two** features that are characteristic of all birds.

1 .....

2 .....

[2]

(b) Fig. 1.2 is a key to identify the five birds in Fig. 1.1.

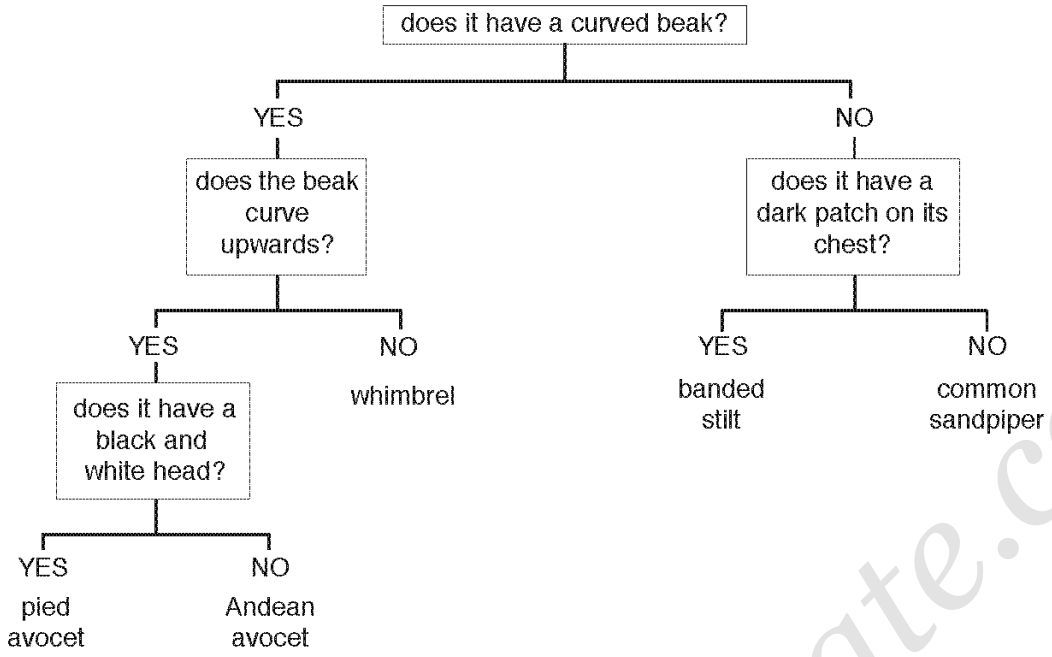


Fig. 1.2

Use the key to identify the five birds shown in Fig. 1.1.

Complete Table 1.1 by writing the letters **A**, **B**, **C**, **D** and **E** in the boxes next to the name of each bird.

Table 1.1

name of the bird	letter
pied avocet	
Andean avocet	
common sandpiper	
banded stilt	
whimbrel	

[4]

(c) Bird **A** in Fig. 1.1 feeds mainly on small animals found in the mud or in the water.

It has long legs and a long beak.

(i) Suggest how these features help it to survive in its habitat.

.....

.....

..... [2]

(ii) State the name of the process that has produced birds with these features.

..... [1]

6 – (0610/32_Winter_2017_Q6) – *Characteristics And Classification Of Living Organisms*

(a) Fig. 6.1 shows six insects.

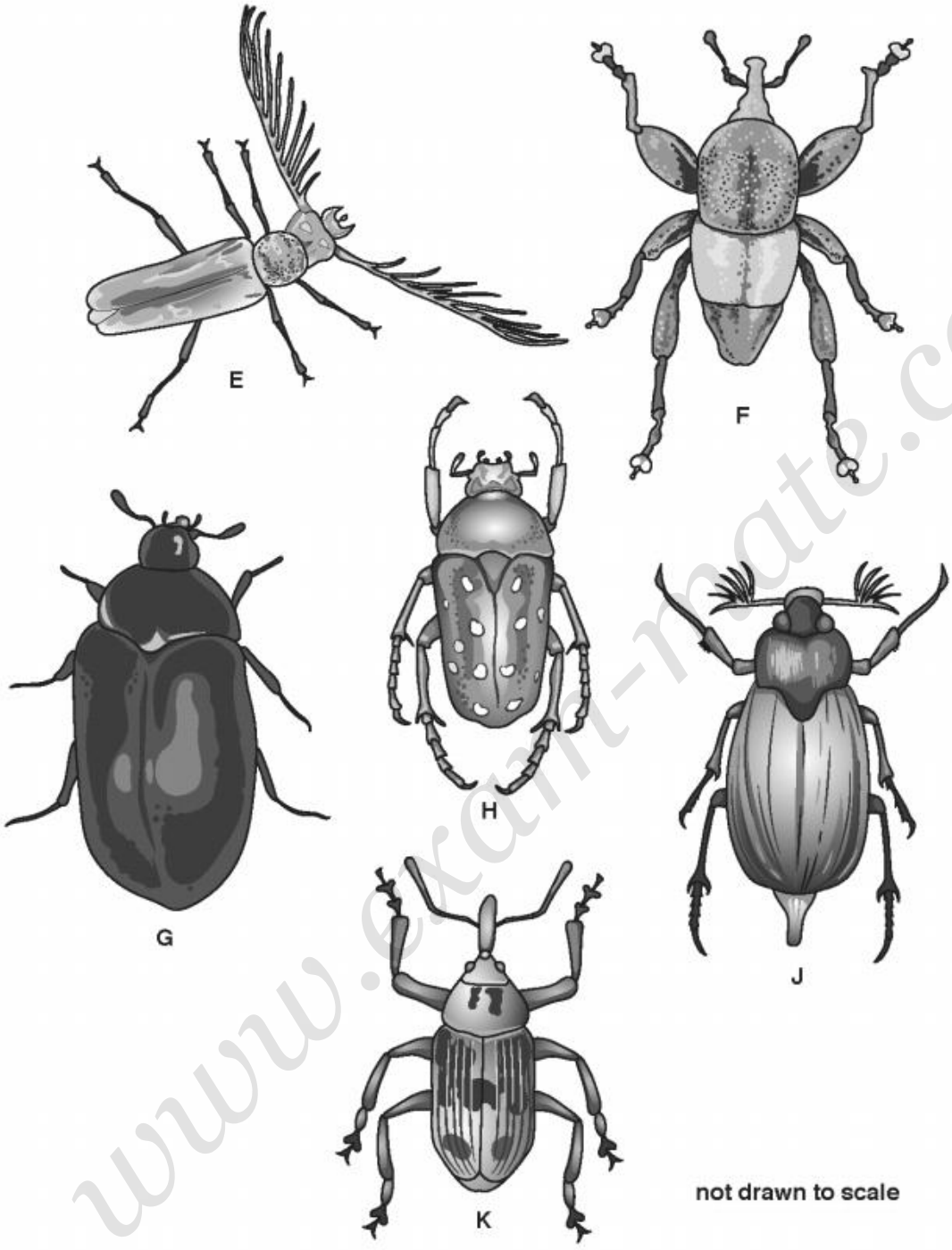


Fig. 6.1

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	*Melolontha*	
	(b) antenna branched all the way along	*Cyriopalus*	
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	*Trigonopterus*	
	(b) abdomen with spots	*Ceutorhyncus*	
5	(a) front legs extend beyond the head	*Stephanorrhina*	
	(b) front legs do not extend beyond the head	*Attagenus*	

[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]

ANSWERS

1 – (0610/32_Summer_2017_Q1) – *Characteristics And Classification Of Living Organisms*

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

2 – (0610/33_Summer_2017_Q1) – *Plant Nutrition, Characteristics And Classification Of Living Organisms*

(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)	*Betula pendula* = **C** *Fraxinus excelsior* = **D** *Laurus nobilis* = **E** *Quercus robur* = **A** ;;;	**3**

(b)(ii)	does leaf have only 5 parts? ; does the leaf have less than 7 parts? ; do the leaf parts all join at one place? ; does the leaf have more than one vein? ; does the leaf have branched veins? ; does the leaf have more than one vein in each part? ; does the leaf have pointy ends? ;	1

3 – (0610/31_Summer_2017_Q7) – *Characteristics And Classification Of Living Organisms*

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

;;;;; 5

4 – (0610/31_Winter_2017_Q1) – *Characteristics And Classification Of Living Organisms*

	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	*A. oculatus*	**D**
(b)	body has a plain pattern	*P. pyralis*	**E**
3 (a)	no visible antennae	*C. lunaris*	**C**
(b)	visible antennae	go to 4	
4 (a)	body has a striped pattern	*G. lineatum*	**A**
(b)	body has a dotted pattern	*C. septempunctata*	**B**

;;;; 4

5 – (0610/33_Winter_2017_Q1) – *Characteristics And Classification Of Living Organisms*

(a)	*any 2 from* feathers / beak / wings / hard-shelled eggs / two legs ;;	2
(b)	<table><tr><th>name of bird</th><th>letter</th></tr><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></table> ;;;;	4
(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

6 – (0610/32_Winter_2017_Q6) – *Characteristics And Classification Of Living Organisms*

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

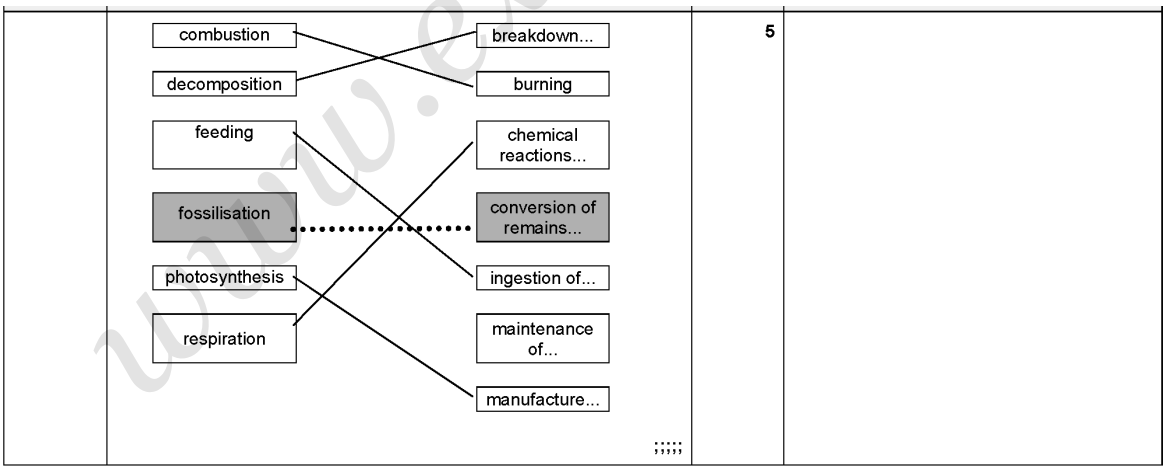
7 – (0610/33_Summer_2018_Q1) – *Characteristics And Classification Of Living Organisms*

(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	

8 – (0610/32_Summer_2018_Q3) – *Diseases And Immunity, Characteristics And Classification Of Living Organisms*

(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)	*Campylobacter* ;	1	
(c)	rehydration / oral rehydration therapy ;	1	A water with, sugar and salt / electrolytes
(d)	*cellular* / *chemical* / *mechanical* phagocytosis / stomach acid / nasal hairs antibodies / mucus / skin ;;;	3	1 mark for each correct column

9 – (0610/32_Winter_2018_Q1) – *Characteristics And Classification Of Living Organisms*



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