

IGCSE Cambridge Topical Past Papers

BIOLOGY 9-1

0970 | Paper 3

2020 — 2025

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1 - (0970/32_Summer_2020_Q5)

(a) Fig. 5.1 is a photograph of part of a flower.

Some of the outer structures have been removed to show the internal parts.



Fig. 5.1

(i) Label these structures on Fig. 5.1 with a label line and the name:

- anther
- petal
- stigma.

[3]

(ii) Describe **two** features visible in Fig. 5.1 that suggest that this is an insect-pollinated flower.

1

.....

2

.....

[2]

(b) Many living organisms can be classified as plants or animals.

Table 5.1 shows some features of animals and plants.

Place ticks (✓) in the boxes to show the correct features of animals and plants.

Table 5.1

feature	animals	plants
can respire		
can grow		
can make their own food		
contain DNA		
can respond to changes in their environment		

[5]

(c) State **two** structures that are present in plant cells but **not** in animal cells.

1

2

[2]

[Total: 12]

2 - (0970/32_Winter_2020_Q1)

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]

3 - (0970/31_Summer_2021_Q1)

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

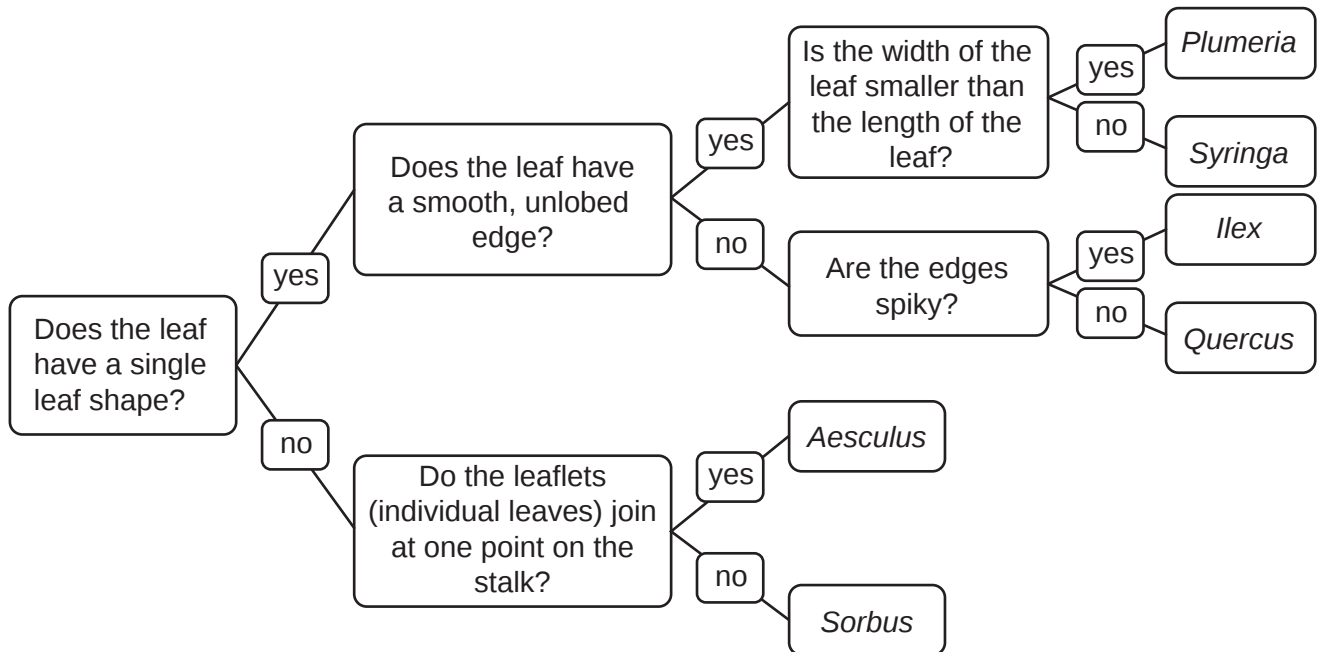


Fig. 1.1

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.

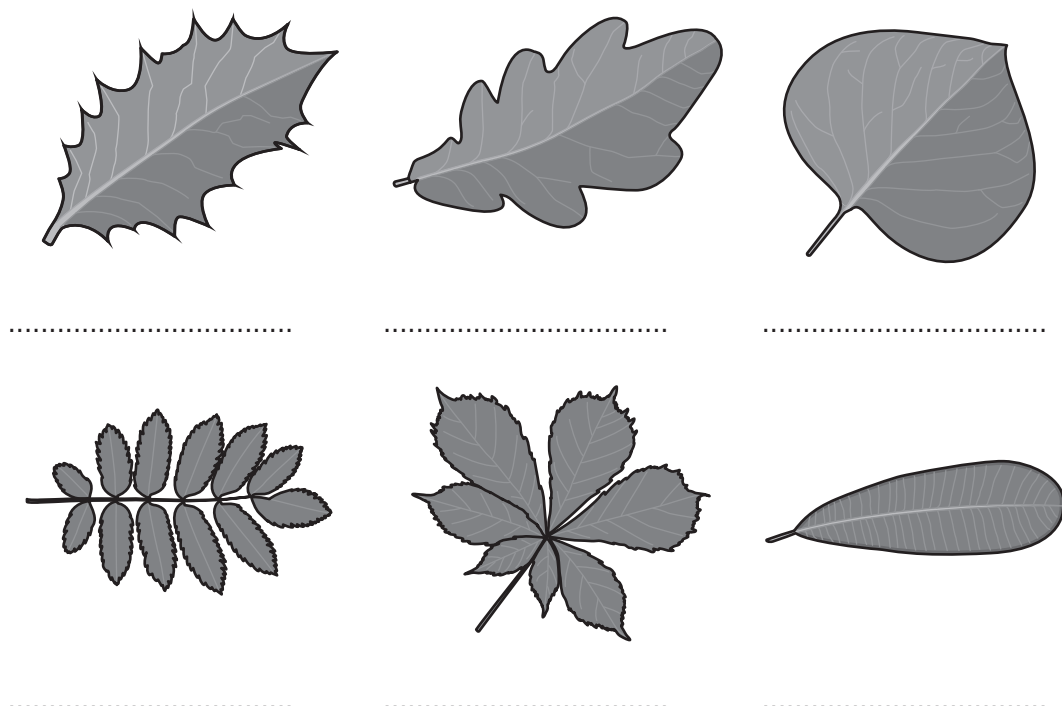


Fig. 1.2

4 - (0970/31_Summer_2022_Q6)

Fig. 6.1 is a photograph of a section through a flower.



Fig. 6.1

- (a) (i) State the names of the parts labelled **A**, **C** and **E** in Fig. 6.1.

A

C

E

[3]

- (ii) State the function of the part labelled **B** in Fig. 6.1.

.....

..... [1]

- (iii) State the letter of the part in Fig. 6.1 where pollination occurs.

..... [1]

- (b) State **one** piece of evidence from Fig. 6.1 that shows this is an insect-pollinated flower.

.....

.....

..... [1]

- (c) Describe the adaptations of the flower structure **and** pollen in a wind-pollinated flower.

.....

.....

.....

.....

.....

.....

..... [3]

- (d) Living organisms are classified into kingdoms. The organism shown in Fig. 6.1 belongs to the plant kingdom.

State the name of **one** other kingdom.

..... [1]

[Total: 10]

5 - (0970/31_Summer_2022_Q7)

- (a) A scientist measured the mass of carbon dioxide produced by anaerobic respiration in yeast cells for 1200 minutes.

Fig. 7.1 shows the results.

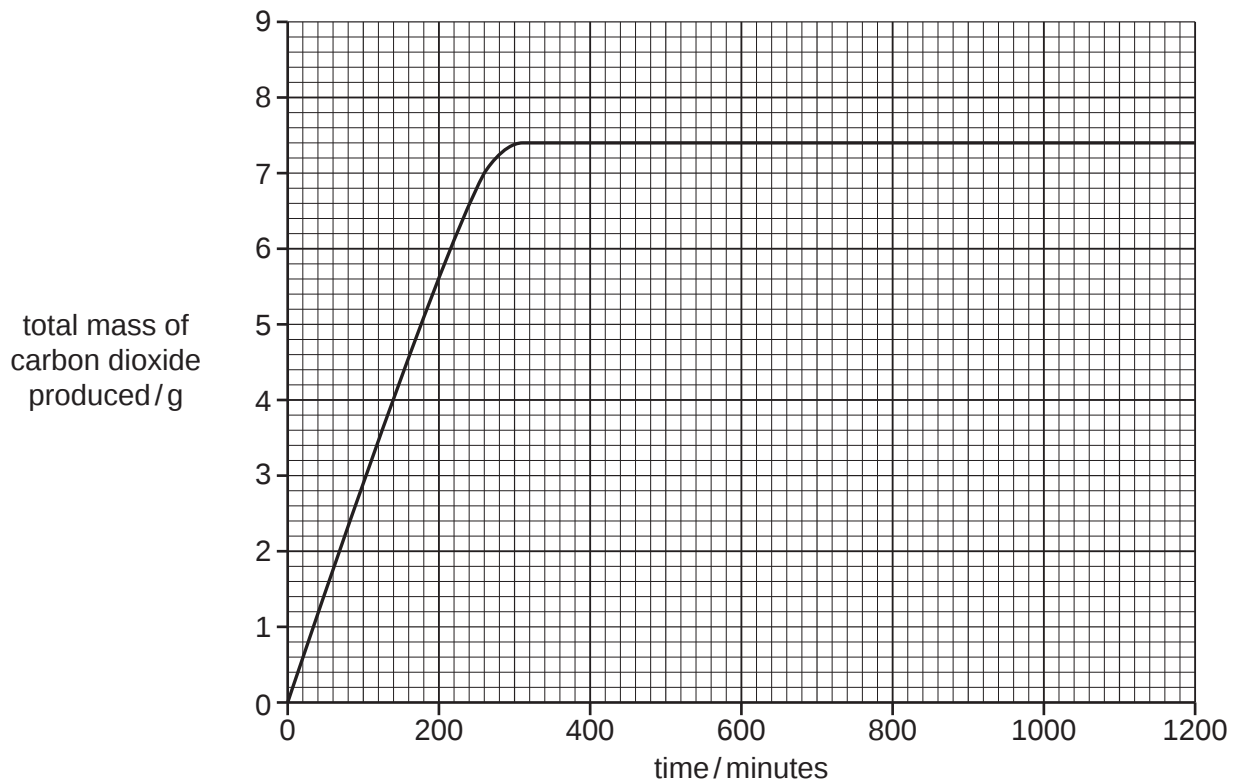


Fig. 7.1

- (i) Complete the sentences to describe the results shown in Fig. 7.1.

The yeast cells produced a total of g of carbon dioxide during 1200 minutes.

The yeast cells stopped producing carbon dioxide at minutes.

[2]

- (ii) The investigation was repeated with boiled yeast cells.

Predict the effect on the mass of carbon dioxide produced **and** explain your prediction.

.....
.....
.....
.....
..... [2]

(iii) State the name of **one other** product of anaerobic respiration in yeast cells.

..... [1]

(b) The box on the left contains the term 'Respiration'.

The boxes on the right contain sentence endings.

Draw **two** lines to join the term 'Respiration' to two boxes on the right to make **two** correct sentences.

Respiration

always produces carbon dioxide.

is necessary for diffusion.

occurs only in animals.

releases energy.

uses glucose.

[2]

(c) State **one** substance required for aerobic respiration that is **not** required for anaerobic respiration.

..... [1]

(d) Respiration is one of the characteristics of living things.

Tick (✓) **two** boxes to show two other characteristics of **all** living things.

breathing	
excretion	
growth	
photosynthesis	
sexual reproduction	

[2]

[Total: 10]

6 - (0970/32_Winter_2022_Q1)

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

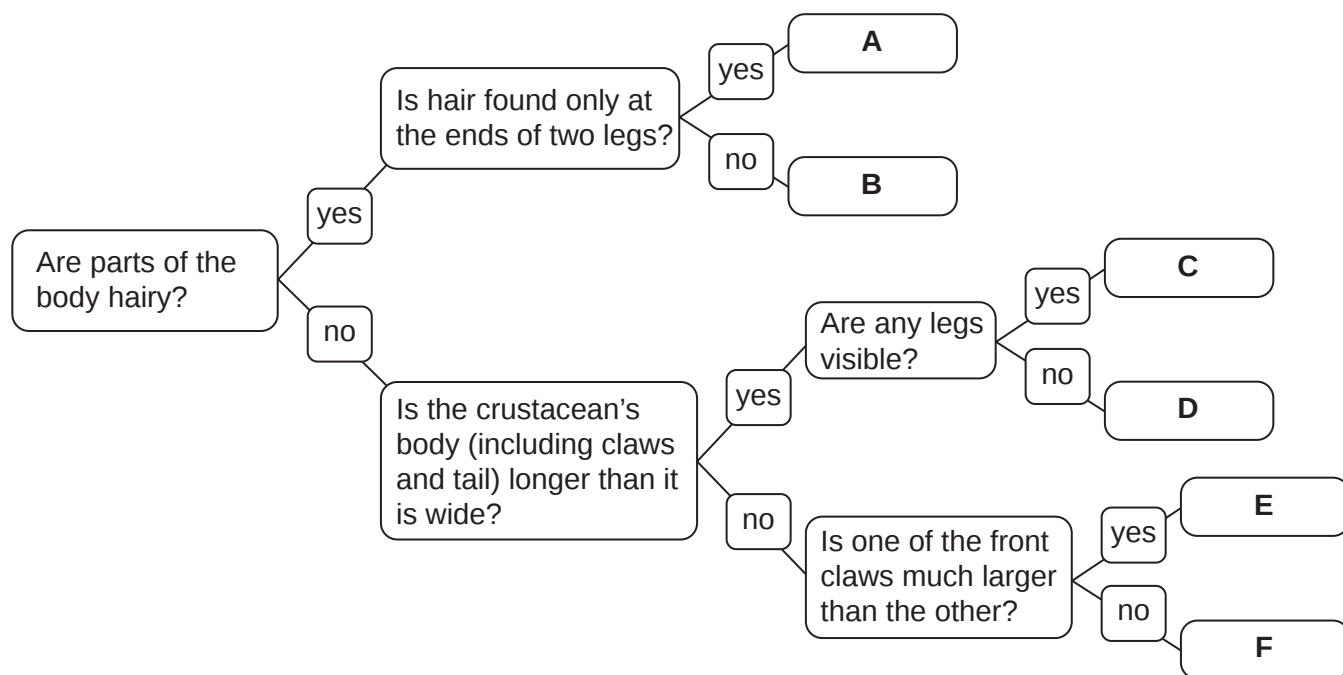


Fig. 1.1

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.

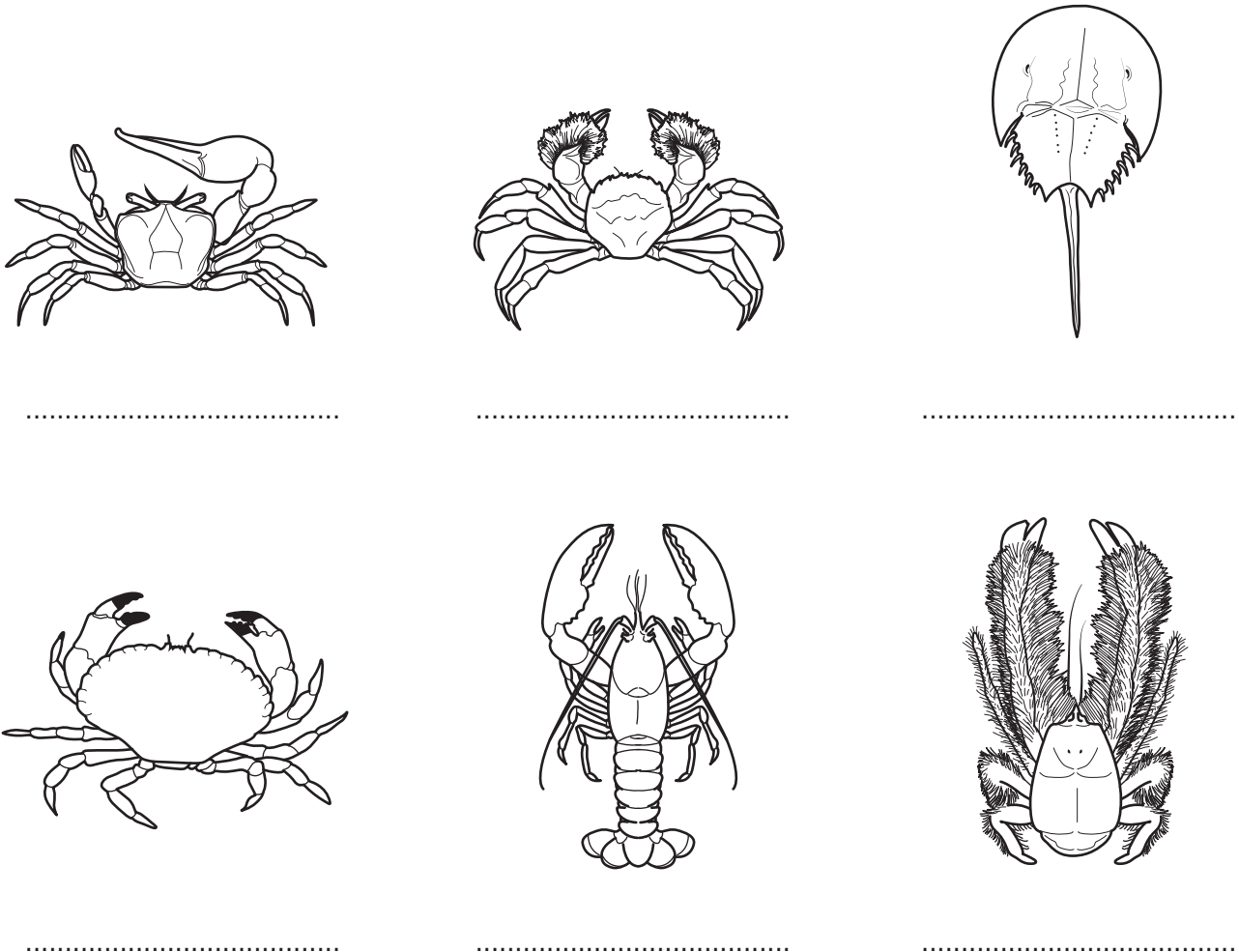


Fig. 1.2

[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]

7 - (0970/31_Summer_2023_Q1)

- (a) Describe the meaning of the term species.

.....
.....
..... [2]

- (b) Fig. 1.1 is a photograph of *Lithobius forficatus*, a species of myriapod.



Fig. 1.1

- (i) State the genus of the organism shown in Fig. 1.1.

..... [1]

- (ii) State **one** feature **visible** in Fig. 1.1 that identifies the organism as:

a myriapod

an arthropod.

[2]

- (iii) State the names of **two** groups of arthropods, other than myriapods.

1

2

[2]

- (iv) State **two** features of plant cells that would be **absent** in the cells of the organism shown in Fig. 1.1.

1

2

[2]

- (c) Adaptive features enable organisms to survive in their environment.

Fig. 1.2 is a photograph of another species of arthropod. Some of its adaptive features are visible in Fig. 1.2.



Fig. 1.2

- (i) State **one** adaptive feature visible in Fig. 1.2 that reduces water loss when the organism is on land.

..... [1]

- (ii) State the name of the kingdom that the organism in Fig. 1.2 belongs to.

..... [1]

[Total: 11]

8 - (0970/31_Summer_2023_Q7)

(a) Fig. 7.1 is a diagram showing some of the organs in the human body.

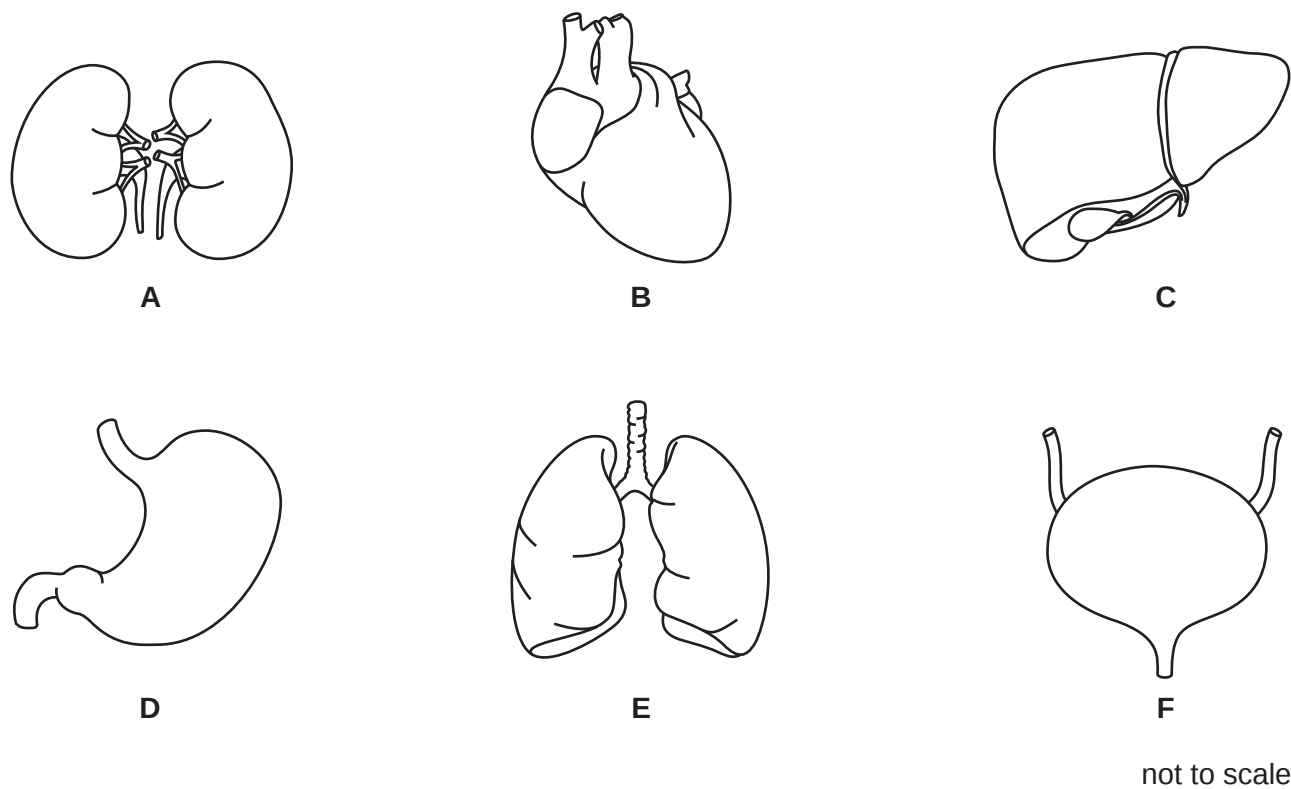


Fig. 7.1

Table 7.1 shows the names of some of the organs in Fig. 7.1, the identifying letters of some of these organs and their functions.

Complete Table 7.1.

Table 7.1

name	letter in Fig. 7.1	function
		excretes carbon dioxide from the body
heart	B	
	F	stores urine
		excretes urea, excess water and ions

(b) State the names of **two** organs from the human female reproductive system.

1

2

[2]

(c) Excretion and reproduction are two characteristics of all living organisms.

Place ticks (✓) in **two** boxes to show other characteristics of all living organisms.

breathing	
eating	
growing	
moving	
sleeping	
talking	

[2]

[Total: 10]

1 - (0970/32_Summer_2020_Q5)

(a)(i)	anther labelled ; petal labelled ; stigma labelled ;	3																		
(a)(ii)	<i>any two from:</i> (large) petals ; stigma inside petals ; anther inside petals ; large stigma ;	2																		
(b)	<i>one mark per row:</i> <table border="1"> <thead> <tr> <th>feature</th><th>animal</th><th>plant</th></tr> </thead> <tbody> <tr> <td>can respire</td><td>✓</td><td>✓</td></tr> <tr> <td>can grow</td><td>✓</td><td>✓</td></tr> <tr> <td>can make their own food</td><td></td><td>✓</td></tr> <tr> <td>contain DNA</td><td>✓</td><td>✓</td></tr> <tr> <td>can respond to changes in their environment</td><td>✓</td><td>✓</td></tr> </tbody> </table> ;;;;	feature	animal	plant	can respire	✓	✓	can grow	✓	✓	can make their own food		✓	contain DNA	✓	✓	can respond to changes in their environment	✓	✓	5
feature	animal	plant																		
can respire	✓	✓																		
can grow	✓	✓																		
can make their own food		✓																		
contain DNA	✓	✓																		
can respond to changes in their environment	✓	✓																		
(c)	<i>any two from:</i> cell wall ; chloroplast ; (large) permanent vacuole ; AVP ; e.g. starch grains	2																		

2 - (0970/32_Winter_2020_Q1)

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

3 - (0970/31_Summer_2021_Q1)

	<i>Ilex</i> <i>Quercus</i> <i>Syringa</i> <i>Sorbus</i> <i>Aesculus</i> <i>Plumeria</i> ;;;;	5	must be in this order 6 correct = 5 marks 4 or 5 correct = 4 marks 3 correct = 3 marks 2 correct = 2 marks 1 correct = 1 mark
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4 - (0970/31_Summer_2022_Q6)

(a)(i)	A – filament ; C – petal ; E – ovary ;	3	
(a)(ii)	produce / release, pollen / male gamete ;	1	
(a)(iii)	D ;	1	
(b)	<i>any one from:</i> large petals ; (named) sexual organ(s) are, inside (the flower) / are internal ;	1	
(c)	<i>total of three from:</i> <i>flower structure - max two from:</i> petals / flower, small / none / dull / not (brightly) coloured ; anthers / stigma, hang outside (of flower) / are external / AW ; feathery stigma ; pendulous / versatile, anther AW ; <i>pollen - max two from:</i> large amounts of pollen, produced / released ; light / small, pollen ; smooth pollen ;	3	
(d)	Animal ;	1	

5 - (0970/31_Summer_2022_Q7)

(a)(i)	7.4 (g) ; 300 (minutes) ;	2	
(a)(ii)	mass decreases / no carbon dioxide is produced ; enzymes inactive / yeast killed or destroyed ;	2	
(a)(iii)	alcohol / ethanol ;	1	
(b)	(Respiration) releases energy. ; (Respiration) uses glucose. ;	2	R each additional line
(c)	oxygen ;	1	
(d)	excretion ticked ; growth ticked ;	2	R each additional tick

6 - (0970/32_Winter_2022_Q1)

(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)	<i>any two from:</i> myriapods ; insects ; arachnids ;	2	
(c)	(vertebrates) have a backbone / don't have an exoskeleton ;	1	

7 - (0970/31_Summer_2023_Q1)

(a)	a group of organisms that can reproduce ; to produce fertile offspring ;	2	
(b)(i)	<i>Lithobius</i> ;	1	
(b)(ii)	<i>myriapod</i> : any one from: many pairs of legs / more than 16 legs / more than 8 pairs of legs ; one or two pairs of legs on each segment ; <i>arthropod</i> : any one from: segmented body ; exoskeleton ; jointed legs ;	2	
(b)(iii)	any two from: insects ; arachnids ; crustaceans ;	2	
(b)(iv)	any two from: chloroplasts / chlorophyll ; cell wall / cellulose ; (permanent) vacuole ; AVP ; e.g. starch, grain / granule	2	
(c)(i)	(hard) shell / exoskeleton / carapace ;	1	
(c)(ii)	animal ;	1	

8 - (0970/31_Summer_2023_Q7)

(a)	name	letter	function	6	
	lungs ;	E ;	excretes carbon dioxide from the body		
	heart	B	pumps blood ;		
	(urinary) bladder ;	F	stores urine		
	kidney ;	A ;	excretes urea, excess water and ions		
(b)	<i>any two from:</i> vagina ; uterus ; oviduct ; ovary ; cervix ;			2	
(c)	growing ticked ; moving ticked ;			2	R each additional tick

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