

Classification of Living Organisms

These practice questions can be used by students and teachers and is suitable for GCSE AQA Biology topic Questions 8641

Level: GCSE AQA Biology 8641

Subject: Biology

Exam board: GCSE AQA

Topic: Classification of Living Organisms

Q1.

Figure 1 shows a ring-tailed lemur.

Figure 1



The table below shows part of the classification of the ring-tailed lemur.

Classification group	Name
Kingdom	<i>Animalia</i>
Phylum	<i>Chordata</i>
	<i>Mammalia</i>
	<i>Primates</i>
	<i>Lemuroidea</i>
Genus	<i>Lemur</i>
	<i>catta</i>

(a) Complete the table above to give the names of the missing classification groups.

(2)

(b) Give the binomial name of the ring-tailed lemur.

Use information from the table above.

(1)

Lemurs are only found on the island of Madagascar.

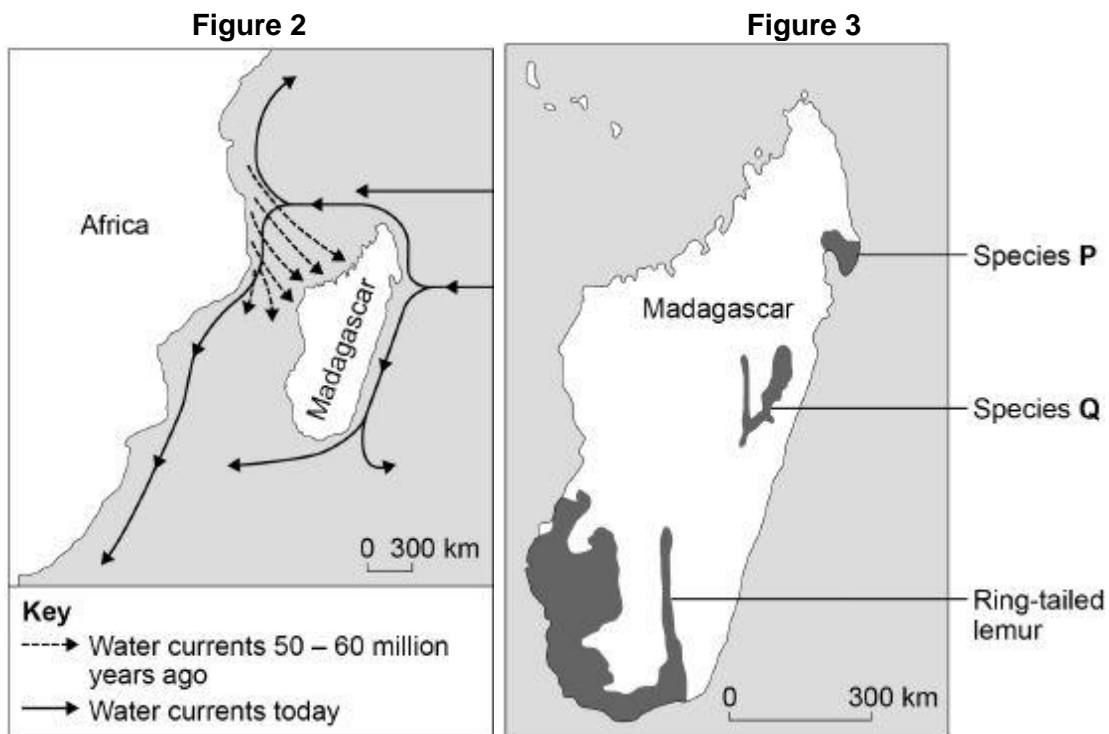
Madagascar is off the coast of Africa.

Scientists think that ancestors of modern lemurs evolved in Africa and reached Madagascar about 50-60 million years ago.

Today there are many species of lemur living on Madagascar.

Figure 2 shows information about water currents.

Figure 3 shows the distribution of three species of lemur on Madagascar.



(c) Suggest how ancestors of modern lemurs reached Madagascar.

(1)

(d) Describe how the ancestors of modern lemurs may have evolved into the species shown in **Figure 3**.

- Class
- Order
- Family
- Genus
- Species

(a) Which scientist first suggested this type of classification system?

Tick **one** box.

Alfred Russel Wallace	<input type="checkbox"/>
Carl Linnaeus	<input type="checkbox"/>
Charles Darwin	<input type="checkbox"/>
Gregor Mendel	<input type="checkbox"/>

(1)

The stone plant, *Lithops bromfieldi*, is adapted to live in very dry deserts.

Figure 1 shows several stone plants.

Figure 1





(b) Give the genus to which the stone plant belongs.

(1)

(c) The stone plant has many adaptations that help it to survive in the desert.

Draw **one** line from each adaptation to how the adaptation helps the stone plant to survive.

Adaptation	How the adaptation helps survival
Plants look like stones	Can trap a lot of light
Leaves with thick, waxy cuticles	Absorb water from deep in the ground
Many long, branching roots	Help cross-pollination
Thick, fleshy leaves	Are not easy to see and so are not eaten
	Reduce water loss
	Store water

(4)

The jerboa is a small desert animal.

Figure 2 shows a jerboa.

Figure 2



The jerboa is adapted for survival in the desert.
The jerboa spends the daytime in its underground burrow.
The jerboa only leaves its burrow to look for food during the night.

(d) Describe how these adaptations help the jerboa to survive in the desert.

(2)

(e) What type of adaptations are described in Question (d)?

Tick **one** box.

Behavioural

Functional

Structural



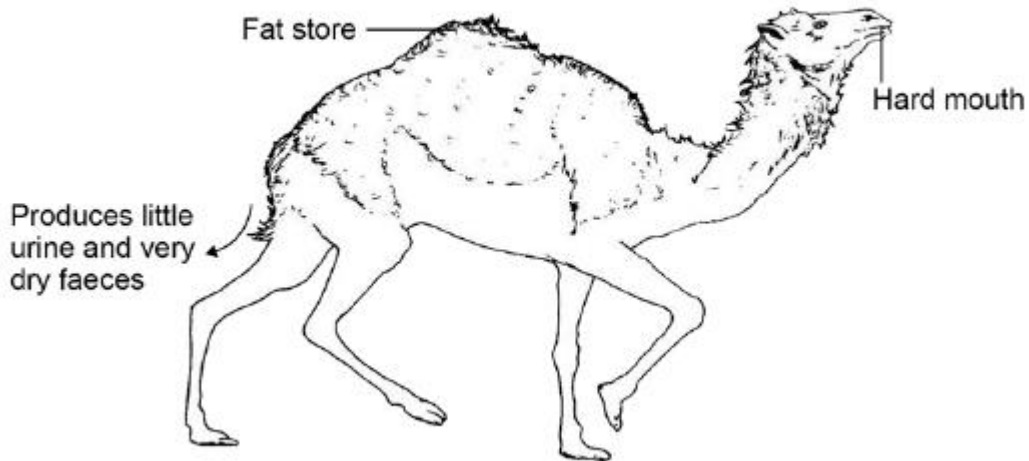
(1)
(Total 9 marks)

Q3.

Figure 1 shows a type of camel called a dromedary (*Camelus dromedarius*).

The dromedary lives in hot, dry deserts.

Figure 1



- (a) One adaptation of the dromedary is 'temperature tolerance'.

This means that the animal's body temperature can rise by up to 6 °C before it starts to sweat.

Explain how temperature tolerance can help the dromedary to survive in the desert.

(2)

(b) Three more adaptations of the dromedary are given in **Figure 1**.

Give a reason why each adaptation helps the animal survive in the desert.

Fat store

Produces little urine and very dry faeces

Hard mouth

(3)

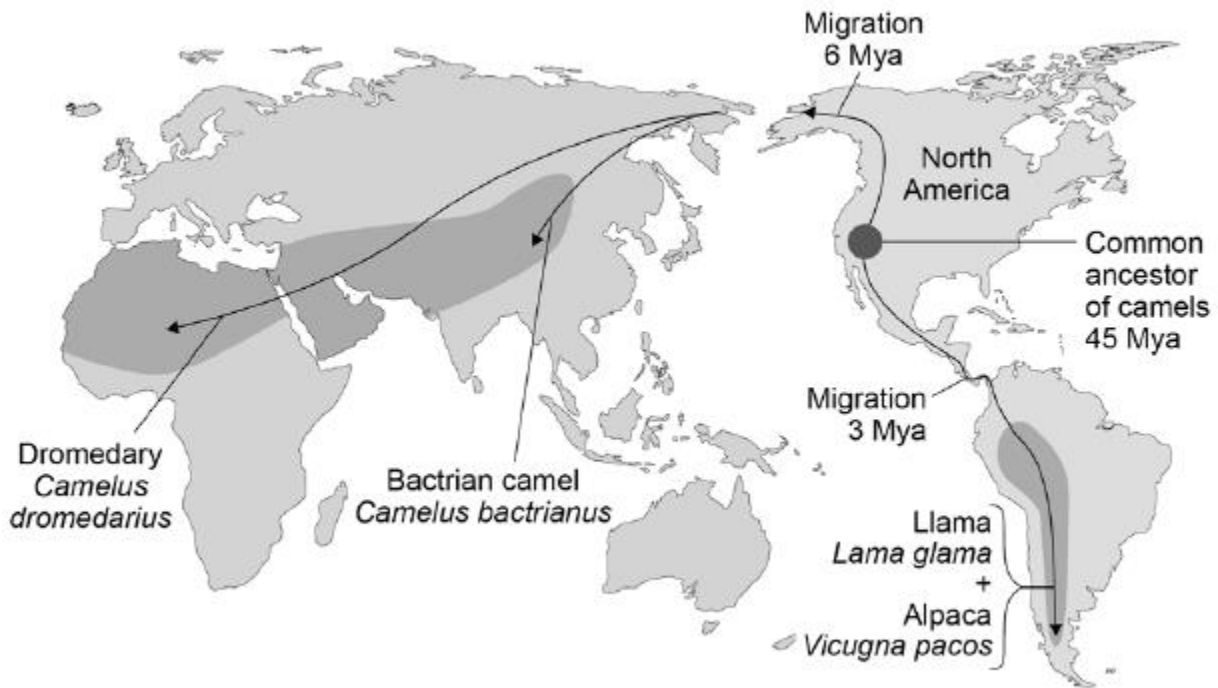
There are several species of the camel family alive today.

Scientists think these species evolved from a common ancestor that lived in North America about 45 million years ago (Mya).

Figure 2 shows:

- where four modern species of the camel family live today
- how the ancestors of these camels migrated from North America.

Figure 2



- (c) Which **two** of the four modern species of camel do scientists believe to be most closely related to each other?

Give the reason for your answer.

_____ and _____

Reason

(1)

- (d) Describe the type of evidence used for developing the theory of camel migration shown in **Figure 2**.



(2)

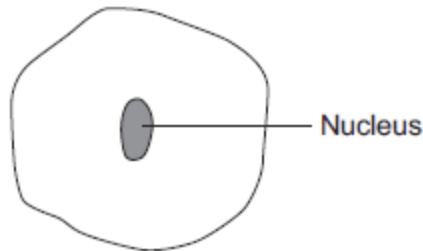
- (e) Explain how several different species of camel could have evolved from a common ancestor over 45 million years.

(6)

(Total 14 marks)

Q4.

The diagram below shows a cell.



- (a) Draw a ring around the correct answer to complete each sentence.

- (i) In the nucleus of a cell, genes are part of

chromosomes.
membranes.
receptors.

(1)

- (ii) Different genes control different

characteristics
gametes
nuclei

of an organism.

(1)

- (iii) Studying the similarities and differences between organisms allows us to

classify
clone
grow

the organisms.

(1)



(b) Complete the following sentence.

Living things can be grouped into animals, microorganisms and _____

(1)

(Total 4 marks)

Mark schemes

Q1.

(a)

Classification group	Name
Class	<i>Mammalia</i>
Order	<i>Primates</i>
Family	<i>Lemuroidea</i>
Species	<i>catta</i>

all 4 correct = 2 marks
2 or 3 correct = 1 mark
0 or 1 correct = 0 marks

2

(b) Lemur *catta*

ignore capitalisation / non-capitalisation of initial letters

ignore italics / non-italics

ignore underlining / non-underlining

1

(c) carried by (favourable) currents on masses of vegetation

allow description of currents from Figure 2

ignore swimming

1

(d) isolation of different populations

1

habitat variation between lemur populations

allow examples – biotic (e.g. food / predators) or abiotic (e.g. temperature)

1

genetic variation or mutation (in each population)

1

better adapted survive (reproduce) **and** pass on (favourable) allele(s) to offspring

*allow natural selection **or** survival of the fittest **and** pass on (favourable) allele(s) to offspring*
allow gene(s) / mutation as an alternative to allele(s)

1

(eventually) cannot produce fertile offspring with other populations

allow cannot reproduce 'successfully' with other populations
 ignore cannot reproduce unqualified

1
[9]

Q2.

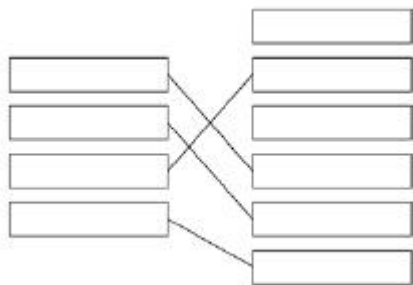
(a) Carl Linnaeus

1

(b) Lithops

extras cancel
ignore capitalisation / non-capitalisation

1



(c)

1 mark per line
extra line from adaptation negates the mark for that adaptation

1
1
1
1

(d) any **two** from:

- cooler underground / at night
- or**
- the jerboa can keep cool
- loses less water
- or**
- sweats less
- less likely to be seen (by predators / prey)

2

(e) behavioural

1

[9]

Q3.

(a) less sweating so less water loss

1

- (as) no / little water available in desert 1
- (b) (fat store) can be metabolised / respired to water 1
- (little urine...) conserve water 1
- (hard mouth) not damaged by spines on plants / on food
or
 not damaged by hard / dry food 1
- (c) dromedary / *C.dromedarius*
and bactrian / *C. bactrianus*
no mark for the names, but must be identified
because
 same genus
ignore 'both are Camelus' 1
- (d) any **two** from:
 • the fossil record
 • oldest fossils in N. America
or
 • newer fossils in S. America / in Asia / in Africa
*allow numbers for ages (45 Mya **and** 3 Mya / 6 Mya)*
 • chemical / DNA analysis of living species
allow radioactive dating of fossils 2
- (e) isolation of separate camel populations by sea
or
 by mountains 1
- habitat variation / described between populations
allow examples – biotic (e.g. food / predators) or abiotic 1
- genetic variation / mutation in each population 1
- 45 million years is sufficient time to accumulate enough mutations 1
- natural selection
or
 better adapted survive to reproduce 1
- pass on favourable allele(s)

allow gene(s)

1

[14]

Q4.

(a) (i) Chromosomes

1

(ii) Characteristics

1

(iii) Classify

1

(b) Plants

ignore algae

1

[4]