

(Variation and evolution)

Q1.(2018)

What is a mutation?

[1 mark]

Tick **one** box.

A change in a gene

☐

Accidental damage to an organism

☐

An organism with a new characteristic

☐

The loss of a species

☐

Q2.(2019)

Sometimes there are errors in copying the genetic material.

What term describes an error in the genetic material?

[1 mark]

Tick (✓) **one** box.

Absorption

☐

Fertilisation

☐

Mitosis

☐

Mutation

☐

Q3.(2020)

A genetic disorder develops as a result of a change in a gene.

What scientific term describes a change in a gene?

[1 mark]

Q4.a)(2020)

The 'three-domain system' of classification places all living organisms in one of three domains.

Which domain was the Siberian rhinoceros in?

[1 mark]

Tick (✓) **one** box.

Archaea

☐

Eukaryota

☐

Prokaryota

☐

Q4.b)(2020)

Who developed the 'three-domain system' of classification?

[1 mark]

Tick (✓) **one** box.

Carl Woese

☐

Charles Darwin

☐

Gregor Mendel

☐

Q4.c)(2020)

The horn of the Siberian rhinoceros is estimated to have been 150 cm long.

Suggest **one** advantage of this adaptation to the Siberian rhinoceros.

[1 mark]

Q4.d)(2020)

The only parts of the Siberian rhinoceros that have been found are fossilised bones.

Give **one** reason why **only** the bones of the body of the Siberian rhinoceros became fossils.

[1 mark]

Q4.e)(2020)

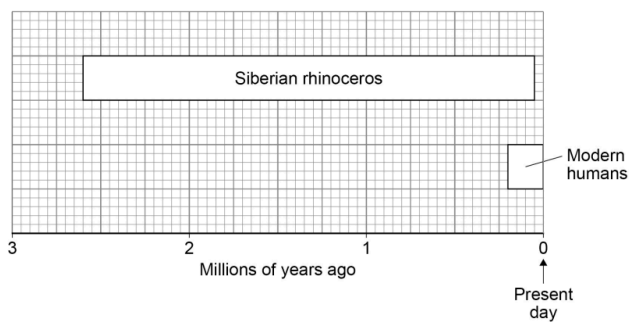
Suggest how scientists can estimate when the Siberian rhinoceros was alive.

[1 mark]

Q4.f)(2020)

Figure 9 shows when the Siberian rhinoceros existed and when modern humans existed.

Figure 9



How many million years ago did the Siberian rhinoceros become extinct?

[1 mark]

_____ million years ago

Q4.g)(2020)

Determine the time in years when both the Siberian rhinoceros and modern humans existed together.

Use Figure 9 and your answer to Question 06.7.

[3 marks]

Time = _____ years

Q4.h)(2020)

Suggest **two** factors that may have caused the extinction of the Siberian rhinoceros.

[2 marks]

1 _____

2 _____

Q5.a)(2022)

Inheritance, Variation and Evolution

<http://www.pcfgstudy.com>

Living organisms can be classified into groups.

Trilobites are animals that lived in the sea 400 to 500 million years ago.

Table 3 gives the classification of two species of trilobite.

Table 3

Classification group	Trilobite A	Trilobite B
	<i>Animalia</i>	<i>Animalia</i>
Phylum	<i>Arthropoda</i>	<i>Arthropoda</i>
Class	<i>Trilobita</i>	<i>Trilobita</i>
Order	<i>Ptychopariida</i>	<i>Ptychopariida</i>
Family	<i>Alokistocaridae</i>	<i>Marjumiidae</i>
	<i>Elrathia</i>	<i>Modocia</i>
Species	<i>kingii</i>	<i>typicalis</i>

Complete **Table 3**.

[2 marks]

Choose answers from the box.

Community	Genus	Kingdom	Mammal	Population
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Q5.b)(2022)

Which scientist invented the classification system given in **Table 3**?

[1 mark]

Tick (✓) **one** box.

Darwin	☐
Lamarck	☐
Linnaeus	☐
Mendel	☐

Q5.c)(2022)

What is the binomial name of trilobite **A**?

Use information from **Table 3**.

[1 mark]

Tick (✓) **one** box.

Arthropoda kingii

☐

Elrathia kingii

☐

Trilobita kingii

☐

Q5.d)(2022)

Figure 10 shows fossils of the two species of trilobite.

Figure 10

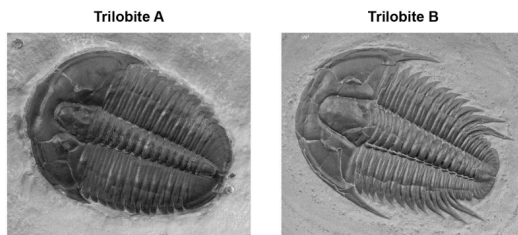
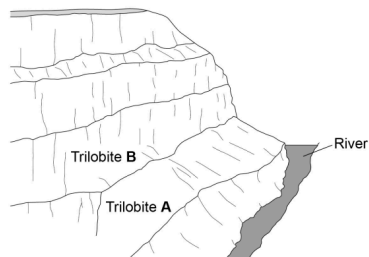


Figure 11 shows:

- layers of rock in a cliff
- where the trilobite fossils were found.

Figure 11



A scientist made the hypothesis:

'Trilobite **B** may have evolved from trilobite **A**.'

What **two** pieces of evidence from **Figure 10** and **Figure 11** support the scientist's hypothesis?

[2 marks]

Tick (✓) **two** boxes.

Trilobite **A** and trilobite **B** were in the same type of rock.

☐

Trilobite **A** was found in older rocks than trilobite **B**.

☐

Trilobite **B** has a smaller mass than trilobite **A**.

☐

Trilobite **B** is a different colour from trilobite **A**.

☐

Trilobite **B** is more complex than trilobite **A**.

☐

Q5.e)(2022)

Trilobites are animals that lived in the sea.

Complete the sentences about how the fossils of trilobites **A** and **B** were formed.

Choose answers from the box.

[3 marks]

acids	bones	hard parts	minerals
rocks	sediments	soft parts	

The animal dies and falls to the sea bed.

The animal is buried in _____.

The _____ of the animal decay.

The remains which do **not** decay are replaced by _____.

Q5.f)(2022)

Trilobites **A** and **B** are now extinct.

Give **three** possible causes of extinction.

[3 marks]

1 _____

2 _____

3 _____

Q5.g)(2022)

Suggest **one** reason why scientists **cannot** be sure what caused the trilobites to become extinct.

[1 mark]

Q6.a)(2023)

Figure 12 shows four species of bird from the same habitat in the UK.

Figure 12

Brambling (*Fringilla montifringilla*)Bullfinch (*Pyrrhula pyrrhula*)Chaffinch (*Fringilla coelebs*)Goldfinch (*Carduelis carduelis*)

Which species of bird in **Figure 12** do scientists think are most closely related?

[1 mark]

Tick (✓) **one** box.

Brambling and chaffinch

☐

Brambling and goldfinch

☐

Bullfinch and chaffinch

☐

Bullfinch and goldfinch

☐

Q6.b)(2023)

Scientists think the brambling and the bullfinch belong to different species.

What evidence is used by scientists to classify the brambling and the bullfinch as different species?

[1 mark]

Tick (✓) **one** box.

The brambling and the bullfinch are different sizes.

☐

The brambling and the bullfinch cannot breed together to give fertile offspring.

☐

The brambling and the bullfinch live in different parts of the habitat.

☐

The brambling eats mainly seeds and the bullfinch eats mainly insects.

☐

Q7.a)(2023)

Reproduction can produce offspring which are:

- genetically different
- or**
- genetically identical.

Farmers grow tomato plants in greenhouses.

The tomatoes are sold in supermarkets.

Suggest **one** advantage of growing tomato plants that are genetically different.

[1 mark]

Q7.b)(2023)

Suggest **one** advantage of growing tomato plants that are genetically identical.

[1 mark]

Q7.c)(2023)

Scientists can grow genetically identical tomato plants using tissue culture.

What is tissue culture?

[1 mark]

Q7.d)(2023)

Genetically identical tomato plants growing in the same garden do **not** all grow to the same height.

Give **one** reason why.

[1 mark]

Q8.a)(2024)

Carl Linnaeus invented a classification system that places organisms into groups.

What is the name of the largest classification group in Linnaeus's system?

[1 mark]

Tick (✓) **one** box.

Family

☐

Kingdom

☐

Order

☐

Q8.b)(2024)

Linnaeus gave each species a binomial name.

Which **two** classification groups form the binomial name?

[2 marks]

Tick (✓) **two** boxes.

Class

☐

Genus

☐

Order

☐

Phylum

☐

Species

☐

Q9.a)(2024)

Evolution of new species occurs by mutation and natural selection.

What is a mutation?

[1 mark]

Q9.b)(2024)

Describe the process of natural selection.

[3 marks]
