

Revision Sheet

IGCSE Biology · Unit 18 Variation and selection

7 vocabulary items · 30 marks of exam questions (6 questions)

Part 1 · Vocabulary review (7 items). The terms this unit is examined on most. Mark it yourself from the answer key.

Section A · Chinese to English

Write the English word.

1.

[1]
2.

[1]
3.

[1]
4.

[1]
5.

[1]
6.

[1]
7.

[1]

Part 2 · Exam questions (30 marks, 6 questions) begins on the next page. They are ordered easy to difficult and none of them has been set before.

- 8 Which statement describes a type of variation?
- ☐

A

Continuous variation is usually caused by the environment only.

B

Continuous variation results in a limited range of phenotypes with no intermediates.

C

Discontinuous variation is usually caused by genes only.

D

Discontinuous variation results in a range of phenotypes between two extremes.

- 9 Which row shows features of xerophytes that reduce water loss?

☐

	green colour from chlorophyll	leaves reduced to spines	presence of stomata	thick cuticle
A	✓	✗	✓	✗
B	✓	✓	✗	✗
C	✗	✓	✗	✓
D	✗	✗	✓	✓

key

✓ = reduces water loss

✗ = does **not** reduce water loss

- 10 Which adaptation may be present in a xerophyte?
- ☐

A

leaves with small surface area and large numbers of stomata

B

little or no xylem tissue and leaves with large surface area

C

stomatal hairs and rolled leaves

D

thin or no cuticle and deep roots

- 11 Which feature is a leaf adaptation for living in a hot, dry desert?

- ☐

A

hairy

B

large surface area

C

many stomata

D

thin waxy cuticle

12 Characteristics of plants are controlled by genes. Alleles are alternative forms of a gene.

(a) Explain how new alleles are formed.

[2]

(b) The number of hours of daylight affects when plants produce flowers. This ensures that flowers are produced at an appropriate time of year for each species.

This response to the number of hours of daylight is controlled by genes.

(i) Wheat is a crop plant. A farmer wants to produce a type of wheat that flowers when there are fewer hours of daylight.

Describe how the farmer could selectively breed this type of wheat.

[3]

(ii) Wheat is grown from seeds.

State **two** conditions needed for the germination of seeds.

1

2

[2]

(iii) Different types of wheat have also evolved through natural selection.

Explain how natural selection differs from artificial selection.

[3]

(c) Scientists can selectively breed for increased pest resistance in wheat.

Explain the benefits of growing wheat with increased pest resistance.

[2]

[Total: 12]

(ii) The monkey flower plant in Fig. 5.1 reproduces sexually.



Fig. 5.1

Describe the advantages and disadvantages of sexual reproduction for monkey flower plants.

1

.....

2

.....

[2]

(ii) The monkey flower plant in Fig. 5.1 reproduces sexually.

Describe the advantages and disadvantages of sexual reproduction for monkey flower plants.

[4]

(b) Monkey flower plants were introduced to Europe from North America about 200 years ago.

Scientists measured the leaf area of five monkey flower plants growing in Europe and five monkey flower plants growing in North America.

Their results are shown in Table 5.1 and Table 5.2.

Table 5.1

plants growing in Europe	
plant number	leaf area / cm ²
1	310
2	335
3	390
4	348
5	365
mean	350

Table 5.2

plants growing in North America	
plant number	leaf area / cm ²
1	285
2	310
3	302
4	315
5	294
mean	

(i) Using the data in Table 5.2, calculate the mean leaf area for plants growing in North America.

Give your answer as a whole number and include the unit.

.....

[2]

(ii) State a conclusion for the results shown in Table 5.1 and Table 5.2.

.....

.....

..... [1]

(iii) Ancestors of monkey flower plants had a much smaller leaf area.

Explain how the monkey flower plants have developed a larger leaf area over time.

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..... [5]

[Total: 14]