1.6 Inheritance, Variation and Evolution: 10-minute Pack

Total Marks

AQA 8461 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Reproduction and inheritance rely on several key structures found in cells.

(a) Define the term 'gamete'. **(1)**

(b) Define the term 'chromosome'. **(1)**

(c) Define the term 'gene'. **(1)**

(d) Define the term 'allele'. **(1)**

(Total for Question 1 is 4 marks)

2 DNA is the molecule that carries genetic information in almost all living organisms.

(a) Name the shape formed by a DNA molecule. **(1)**

(b) State what is meant by the 'genome' of an organism. **(1)**

(c) State the number of chromosomes found in a normal human body (somatic) cell. **(1)**

(Total for Question 2 is 3 marks)

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3 Genetic engineering can be used to produce crop plants with useful new characteristics, such as resistance to insect pests.

Give one potential benefit and one potential concern of growing genetically modified (GM) crops.

(Total for Question 3 is 2 marks)

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Mark scheme · 1.6 Inheritance, Variation and Evolution: 10-minute Pack

Question 1

(a) a sex cell (e.g. sperm or egg cell) used in sexual reproduction (oe) **B1**

(a) Answer: A sex cell, such as a sperm cell or egg cell, used in sexual reproduction.

(b) a long molecule of coiled/packaged DNA (that carries genetic information) (oe) **B1**

(b) Answer: A long, coiled molecule of DNA found in the nucleus, made up of many genes.

(c) a small section of DNA (on a chromosome) that codes for a particular protein/characteristic (oe) **B1**

(c) Answer: A small section of DNA on a chromosome that codes for a particular protein and so controls a characteristic.

(d) one of the different (alternative) forms of a gene (oe) **B1**

(d) Answer: One of the alternative forms of a gene.

Question 2

(a) double helix **B1**

(a) Answer: A double helix.

(b) the entire genetic material of an organism (oe) **B1**

(b) Answer: The entire genetic material of an organism.

(c) 46 (23 pairs) **B1**

(c) Answer: 46 chromosomes (23 pairs).

Question 3

benefit: e.g. higher crop yield, resistance to pests/disease so less pesticide is needed, or crops can grow in difficult conditions, oe **B1**

concern: e.g. possible unknown long-term effects on human health, reduction in biodiversity if only GM varieties are grown, or GM genes spreading to wild plant populations, oe **B1**

Answer: Benefit: e.g. higher crop yield or less pesticide needed. Concern: e.g. possible long-term effects on health or on biodiversity are not yet fully known.

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