1.9 Monohybrid Inheritance and Genetic Diagrams: 10-minute Pack

EDEXCEL 4BI1 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 In a flower species, allele P gives purple petals and is dominant to p, which gives white petals. What phenotype does genotype Pp produce?

(Total for Question 1 is 1 mark)

2 In a beetle species, allele G for green shell is dominant to g for yellow shell. A yellow beetle has genotype gg. State the allele in each gamete it can produce.

(Total for Question 2 is 1 mark)

3 Define the term phenotype as used when discussing a single inherited characteristic in humans.

(Total for Question 3 is 1 mark)

4 Predict the probability, as a percentage, that a child of an XX mother and XY father will be male. Show your working.

(Total for Question 4 is 2 marks)

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5 In a fish species, allele D for spotted scales is dominant to d for plain scales. A spotted fish with genotype Dd is crossed with a plain fish with genotype dd. Give the possible offspring genotypes and their ratio.

(Total for Question 5 is 2 marks)

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6 Construct a genetic diagram to show how sex is determined in humans when the mother is XX and the father is XY. Label the gametes, complete the Punnett square and state the genotypes of male and female offspring.

(Total for Question 6 is 3 marks)

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Mark scheme · 1.9 Monohybrid Inheritance and Genetic Diagrams: 10-minute Pack

Question 1

purple petals **B1**

Answer: Purple petals.

Question 2

g **B1**

Answer: Each gamete carries g.

Question 3

the observable characteristics or traits of an organism resulting from genotype and environment **B1**

Answer: The observable characteristic resulting from genotype and environment

Question 4

uses Punnett square result that 2 out of 4 boxes are XY **M1**

gives 50% cao **A1**

Answer: 50%

Question 5

identifies gametes D and d from Dd and d from dd **M1**

offspring Dd and dd in a 1:1 ratio **A1**

Answer: Gametes are D or d and d. Offspring are Dd and dd, giving a genotype ratio of 1 Dd : 1 dd.

Question 6

correct gametes shown: mother X and X, father X and Y **M1**

Punnett square completed with boxes: XX, XX, XY, XY or equivalent placement **M1**

states genotypes: XX = female, XY = male and implies 50% each **A1**

Answer: Gametes X and X from mother, X and Y from father. Offspring XX and XY; female = XX, male = XY, 50% each

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