

**Brett Robbins Academic Consulting**

# **Biology 30 Practice Test**

## **Unit C: Cell Division, Genetics & Molecular Biology**

10 Questions

Original practice questions written to the Alberta curriculum, in the style of past diploma examinations. Work through each question, then check your answers with the key at the end.

**This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.**

Question 1

The diploid chromosome number in dogs is 78.

A skin cell of a dog divides by mitosis. The number of chromosomes in each daughter cell is

- A) 39
- B) 78
- C) 156
- D) 23

Question 2

In organisms that reproduce sexually, the primary purpose of meiosis is

- A) to produce genetically identical body cells
- B) to repair damaged chromosomes
- C) to produce gametes with half the chromosome number
- D) to double the chromosome number before fertilization

Question 3

In a molecule of DNA, 30% of the nitrogen bases are adenine.

The percentage of the bases that are guanine is

- A) 20%
- B) 30%
- C) 25%
- D) 70%

Question 4

In pea plants, the allele for tall stems ( $T$ ) is dominant to the allele for short stems ( $t$ ).

A heterozygous tall plant is crossed with a short plant. The probability that an offspring will be short is

- A) 0.00
- B) 0.25
- C) 0.75
- D) 0.50

Question 5

A segment of the template strand of a gene has the base sequence TAC TTT.

The base sequence of the mRNA transcribed from this segment is

- |            |            |
|------------|------------|
| A) ATG AAA | B) AUG AAA |
| C) UAC UUU | D) AUG UUU |

Question 6

The phase of mitosis during which sister chromatids separate and move toward opposite poles of the cell is

- |             |              |
|-------------|--------------|
| A) prophase | B) metaphase |
| C) anaphase | D) telophase |

Question 7

A species of grasshopper has a diploid chromosome number of 24.

The number of chromosomes in a grasshopper gamete is

Question 8

In guinea pigs, black coat colour (*B*) is dominant to brown coat colour (*b*).

A black guinea pig is crossed with a brown guinea pig, and half of the offspring are brown.

The genotype of the black parent is

- |              |                         |
|--------------|-------------------------|
| A) <i>Bb</i> | B) <i>BB</i>            |
| C) <i>bb</i> | D) cannot be determined |

Question 9

In snapdragons, flower colour shows incomplete dominance. A red flower ( $C^R C^R$ ) crossed with a white flower ( $C^W C^W$ ) produces pink offspring.

When two pink snapdragons are crossed, the probability that an offspring will be white is

- |         |         |
|---------|---------|
| A) 0.00 | B) 0.50 |
| C) 0.75 | D) 0.25 |

Question 10

Two heterozygous parents ( $Aa \times Aa$ ) are expected to produce 240 offspring.

The expected number of offspring that will show the recessive phenotype is

# Answer Key

- |      |       |        |
|------|-------|--------|
| 1. B | 5. B  | 9. D   |
| 2. C | 6. C  | 10. 60 |
| 3. A | 7. 12 |        |
| 4. D | 8. A  |        |

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.