



HIGH SCHOOL BIOLOGY

ASSESSMENT PART 1

GENETICS

Student ID	
Teacher ID	

BIOLOGY CONTENT

Use what you know from your studies in Biology to answer the following questions. Circle the letter next to the correct response.

A_____B___C_____D

1. If the diagram above represents the genes on a chromosome, which genes would have the highest frequency of recombination between them?
 - a. A and B
 - b. A and D
 - c. B and C
 - d. B and D

2. If a human baby boy inherits a recessive allele from his mother, in which circumstance would he most likely show the trait coded for by the recessive allele?
 - a. The baby inherits the dominant allele from his father.
 - b. The allele is on an autosomal chromosome and the baby is a twin.
 - c. The allele is on the X chromosome.
 - d. The allele is on the Y chromosome.

3. Mendel hypothesized that reproductive cells have only one factor for each inherited trait. This hypothesis is supported by the observation that:
 - a. Haploid cells are produced by mitosis
 - b. Diploid cells are produced by mitosis
 - c. Haploid cells are produced by meiosis
 - d. Diploid cells are produced by meiosis

	T	T
t	Tt	Tt
t	Tt	Tt

4. What is the chance that an offspring plant shown in the Punnett Square above will be short? (T = tall; t = short)
- No chance
 - 1 out of 4
 - 2 out of 4
 - 3 out of 4
 - 4 out of 4
5. Laboratory mice are to be classified based on genes A, B, C. How many genetically different gametes can be formed by a mouse that is genotypically AaBbCc? (Assume that none of these is a lethal gene.)
- 3
 - 6
 - 8
 - 9
 - 12
6. Tall is dominant over short in a certain plant. A tall plant was crossed with a short plant, and both tall and short offspring were produced. This demonstrates
- The law of segregation
 - Incomplete dominance
 - Linkage
 - Mutation
 - The law of independent assortment

7. Suppose the sequence of bases along one side of a particular section of DNA is ATGTCAGC. Which of the following is the correct sequence of bases with which this sequence would be paired?
- CTAGATAT
 - CTAGTGCT
 - TCACTCG
 - TACAGTCG
 - ATGTCAGC
8. All of the following about the structure of DNA are correct EXCEPT
- DNA is a polymer
 - DNA contains Deoxyribose
 - The two strands are connected by hydrogen bonds
 - Adenine bonds to guanine
 - Nucleotides consist of a sugar, phosphate, and nitrogenous base
9. A clone is an organism that develops from one parent through asexual reproduction, inheriting all the genetic material from that parent. Dolly the sheep was the first animal clone produced by scientists. Which of the following is a clone?
- A baby born to a mother who was artificially inseminated
 - A colt born to a mare who mated with a racing stallion
 - A coleus plant grown from a stem cutting buried in rooting mixture
 - A pea plant grown from a seed that developed after pollination by another plant
 - A spider hatched from an egg fertilized by the sperm of a male spider
10. Which of the following involves taking DNA from two sources and putting it into one cell?
- Gel electrophoresis
 - Restriction enzymes
 - Polymerase chain reaction
 - Recombinant DNA