BIOL-8 Practice Test 05

Module 9: Inheritance

Instructions: This practice test covers material from Module 9 only. Answer all questions to the best of your ability.

Part A: Multiple Choice

1. An alternate form of a gene is called a(n): A) Chromosome B) Allele C) Genotype D) Phenotype

2. If an individual has two identical alleles for a trait (e.g., **AA**), they are: A) Heterozygous B) Homozygous dominant C) Homozygous recessive D) Hemizygous

3. The physical appearance of an organism (such as tall or short) is its: A) Genotype B) Phenotype C) Allele D) Karyotype

4. An organism with two different alleles for a trait (e.g., **Aa**) is: A) Homozygous B) Heterozygous C) Dominant D) Recessive

5. In a cross between a heterozygous tall plant (Tt) and a short plant (tt), what is the probability of having short offspring? A) 0% B) 25% C) 50% D) 100%

6. In a cross between two heterozygous individuals (Aa × Aa), what fraction of offspring will show the recessive phenotype? A) 1/4 B) 1/2 C) 3/4 D) All

7. Which inheritance pattern results in an intermediate phenotype (e.g., Red × White = Pink)? A) Complete dominance B) Codominance C) Incomplete dominance D) X-linked inheritance

8. Blood type AB (genotype I^A I^B) is an example of: A) Incomplete dominance B) Codominance C) Simple dominance D) Sex-linked inheritance

9. Traits controlled by genes on the X chromosome are called: A) Autosomal traits B) Sex-linked traits C) Polygenic traits D) Multiple alleles

10. Why are X-linked recessive disorders (like color blindness) more common in males? A) Males have two X chromosomes B) Males have only one X chromosome, so there is no dominant allele to mask the recessive one C) The Y chromosome carries the disorder D) Males have weaker immune systems

11. A chart that tracks a trait across generations in a family is called a: A) Karyotype B) Punnett Square C) Pedigree D) Genetic map

12. In a pedigree, a filled-in circle represents: A) An affected male B) An affected female C) A carrier D) An unaffected individual

13. A cross between a red flower (RR) and a white flower (WW) produces all pink offspring. If two pink flowers (RW × RW) are crossed, the phenotypic ratio is: A) All pink B) 1 Red : 2 Pink : 1 White C) 3 Red : 1 White D) 1 Red : 1 White

14. Which of the following genotypes would be considered homozygous recessive? A) AA B) Aa C) aa D) AB

15. Gregor Mendel is known as the "Father of": A) Evolution B) Genetics C) Anatomy D) Microbiology

16. A woman who is a carrier for color blindness (X^C X^c) and a man with normal vision (X^C Y) have children. What is the probability their sons will be color blind? A) 0% B) 25% C) 50% D) 100%

Part B: Fill in the Blank

17. Gregor Mendel's work with ___ plants laid the foundation for genetics.

18. The physical appearance of an organism is its ___, while its genetic makeup is its ___.

19. In a heterozygote, the allele that is masked (hidden) is called ___.

20. A cross involving two traits (e.g., AaBb × AaBb) is called a ___ cross.

21. A trait determined by multiple genes (such as skin color or height) is an example of ___ inheritance.

Part C: Short Answer

22. Set up a Punnett square for a cross between two heterozygous parents (**Aa** × **Aa**). What are the Genotypic and Phenotypic ratios?

23. Explain the difference between incomplete dominance and codominance. Give one example of each.

24. A father who is color blind (X^c Y) and a mother who is a carrier (X^C X^c) have children. Set up the Punnett square and determine the probability of their daughters being color blind.

25. Define the following terms: allele, genotype, phenotype, dominant, recessive.

End of Practice Test 05