CHAPTER 5 QUIZ

Part A: Knowledge and Understanding

Multiple Choice: For each question, select the best answer from the four alternatives. (8 marks)

1. If a true-breeding pea plant with yellow seeds is crossed with a true-breeding pea plant with green seeds, what is the probability that the F1 generation will have green seeds?

(a) 0 %

(b) 25 %

(c) 75 %

(d) 100 %

2. The hereditary units that Mendel called "factors" are known today as

(a) genes

(b) traits

(c) chromosomes

(d) characteristics

3. In snapdragons, a cross between a red-flowering snapdragon and a white-flowering snapdragon will produce snapdragons that have pink flowers. This is an example of

(a) complete dominance

(b) codominance

(c) incomplete dominance

(d) X-linked dominance

4. In humans, the blood type allele IA shows complete dominance when paired with

(a) the allele i only

(b) the allele IB only

(c) the allele i or the allele IB

(d) neither the allele i nor the allele IB

5. In a cross, the P generation consists of two true-breeding pea plants: one with purple flowers and one with white flowers. How many different genotypes will be present in the F1 generation? (5.1) K/U

(a) 1

(b) 2

(c) 3

(d) 4

6. What term describes an individual who carries only one type of allele for a gene? (5.1) K/U

(a) heterozygous

(b) monohybrid

(c) homozygous

(d) dihybrid

7. What pattern of heredity is demonstrated when, in shorthorn cattle, a cross between a red bull and a white cow results in roan calves? (5.2) K/U

(a) complete dominance

(b) codominance

(c) incomplete dominance

(d) X-linked dominance

8. In humans, which blood type is the result of codominance? (5.2) K/U

(a) type A

(b) type B

(c) type AB

(d) type 0

Matching: Match each term with the most its appropriate description below. (7 marks)

9.

(a) dominant trait

(b) recessive trait

(c) incompletely dominant trait

(d) codominant trait

(i) expressed as a blending of traits

(ii) expressed only if the genotype is homozygous for the trait

(iii) expressed along with another trait

(iv) always expressed when present in the genotype

10.

(a) dominance

(b) law of segregation

(c) law of independent assortment

(i) A parent passes on only one of its two alleles for a trait.

(ii) Alleles of a heterozygous individual separate during gametogenesis.

(iii) Recessive alleles show in the phenotype only if they are the only alleles in the genotype.

True or False: Indicate whether each statement is true or false. If you think the statement is false, rewrite it to make it true. (12 marks)

11. In genetics, the mating of two organisms is called an allele.

12. Recessive alleles are expressed only when both alleles are the same.

13. An individual's outward appearance for a particular characteristic is his or her phenotype.

14. Each parent passes along one allele for each gene.

15. A Punnett square is a diagram that can be used to predict the outcome of a cross between two organisms.

16. AB blood type in humans is an example of incomplete dominance.

17. An individual with the genotype RrGG can produce gametes with three different allele combinations.

18. The set of alleles an individual has is called its genotype.

19. An allele that is always expressed whenever it is present is a recessive allele.

20. When an individual who is heterozygous for a trait has a blended phenotype, this is called codominance.

21. For blood type, humans have three different alleles.

22. Dihybrid crosses can be used to demonstrate the law of independent assortment.

Part B: Thinking and Inquiry (3 marks)

23. The round pea seed allele (R) is dominant, while the wrinkled pea seed allele (r) is recessive. A heterozygous, rounded pea plant is crossed with another heterozygous, round-seeded pea plant.

(a) Predict the percent abundance of the F1 genotypes.

(b) Predict the percent abundance of the F1 phenotypes.

(c) If this cross produced 40 plants, how many plants would you predict would be wrinkle-seeded plants?