**Study Guide – Genetics Test – Answers**

**Define the following terms:**

1. Genetics – study of heredity
2. Asexual Reproduction – type of reproduction in which an organism is an exact copy of its parent (one parent)
3. Dominant – trait that is always present if at least one copy is in the genotype (stronger allele)
4. Gene – trait for an organism
5. Genotype – letter combinations showing the alleles an organism contains
6. Hybrid (Heterozygous) – Genotype that contains a dominant and a recessive allele (one of each)
7. Incomplete Dominance – trait that has three possibilities (includes a blending of the two options for a given trait)
8. Phenotype – physical appearance of a trait
9. Probability – likelihood of a particular trait occurring (represented as a ratio, fraction, decimal, or percent)
10. Purebred (Homozygous) – genotype that contains two of the same alleles (dominant or recessive) for a given trait
11. Recessive – trait that is only present if two copies are in the genotype (weaker allele)
12. Sex-Linked Traits – Traits found on either the X or Y chromosome
13. Sexual Reproduction – type of reproduction in which two parents are required providing a variety in offspring
14. Trait – characteristic passed from parent to offspring
15. Allele – various form of a particular trait (blue eyes, brown eyes, green eyes, etc)
16. Fertilization – the process of egg and sperm combining

**Answer the following in complete sentences:**

17. A pea plant can have yellow pods or green pods. If a pea plant has yellow pods and the genotype, Yy, the y stands for what type of pod?

    y = green

18. If a purebred curly hair parent is crossed with a purebred straight hair parent and all their offspring have wavy hair, what is this an example of?

    Incomplete Dominance

19. Who was Gregor Mendel? What is he known for?

    He was an Austrian monk who is known as the father of genetics for his findings in the way traits are passed from parents to offspring

20. Why did Mendel study pea plants and not another organism (like humans)?

    They grow quickly and he could control the traits he was cross pollinating

21. What are two types of asexual reproduction? Define them.

    Budding – when an organism grows on another organism until it reaches maturity (also identical copies)

    Binary Fission – when an organism divides into two identical organisms (generally a single celled organism)

22. Compare/contrast meiosis and mitosis in a Venn Diagram.

    See your venn diagram in your notebook

23. If you have a gene for a disease but DO NOT have the disease present in your body, you are considered what?

    A carrier for that disease (can pass it to offspring but you do not have it)

24. If a child is born with a disease but neither parent has symptoms of the disease, create a punnett square to show how this is possible (use G, g for your punnett square).

| | G | g |
|---|---|---|
| G | GG | Gg |
| g | Gg | gg |

The shaded box is the child with the disease

25. Round shaped eyes (R) are dominant to almond shaped eyes (r). Create a punnett square for a hybrid crossed with a purebred dominant parent.

| | R | r |
|---|---|---|
| R | RR | Rr |
| R | RR | Rr |

a. Besides being told in the problem, how would you know which trait is dominant and which trait is recessive?

   Dominant is represented with a capital letter, recessive with a lowercase letter

b. What are the Genotypes and their Probabilities (percentages) for the offspring?

   RR – 50%

   Rr – 50%

c. What are the Phenotypes and their Probabilities (percentages) for the offspring?

   Round – 100%

   Almond – 0%

26. _____ describes a trait that is controlled by genes on the X and Y chromosomes.

    Sex-Linked

27. During asexual reproduction, how much of the genetic information is passed to the offspring?

    100% - exact copies

28. How many parent cells are there during asexual reproduction?

    ONE

29. A bee transfers pollen to another flower. What type of reproduction is this an example of?

    Sexual

30. Gametes are sex cells (sperm/egg). How many chromosomes do humans have in the gamete cells?

    23 (46 in body cells)