Virus & Genetics Exam

1. Viruses are not considered living because:
	1. They cannot reproduce without the cell’s machinery
	2. They can cause the death of other organisms
	3. They have proteins
	4. They are smaller than a cell
2. The virus replication cycle that involves the replication of a cell with virus DNA:
	1. Lysogenic
	2. Lytic
3. The virus replication cycle that involves the synthesis of virus within the cell:
	1. Lysogenic
	2. Lytic
4. The virus replication cycle that involves the release of new viruses to infect other cells:
	1. Lysogenic
	2. Lytic
5. A co-dominant trait includes situations where both type A & type B phenotypes are expressed. If you cross a mother with type O phenotype with a father with type AB phenotype. What are the percentages of phenotypes in the offspring?
	1. 100% AB
	2. 25% A, 50% AB, & 25% B
	3. 50% A, 50% B
	4. 100% O
6. In a monohybrid cross between a homozygous dominant mother and homozygous recessive father. All of the offspring would be:
	1. Homozygous recessive
	2. Homozygous dominant
	3. Heterozygous
	4. Different genotypes
7. The projections on the surface of this virus allow the virus to — A photograph of a virus is shown below.



1. move inside a host cell
2. attach to a host cell
3. control a host cell’s DNA
4. signal other viruses to infect a host cell
5. If several pea plants with the genotype TTYy are crossed with pea plants with the genotype Ttyy, what percentage of the offspring will be expected to have the TTYy allele combination?
6. 25%
7. 40%
8. 50%
9. 75%
10. Crossing-over between nonsister chromatids during meiosis is significant in heredity because chromosomes exchange segments. This process most likely leads to an increase in which of the following?
11. The expression of dominant traits
12. Number of gametes
13. The occurrence of polyploidy
14. Genetic variation
15. In cocker spaniels the allele for a black coat color (B) is dominant over the allele for a brown coat color (b). If a brown cocker spaniel is crossed with a heterozygous black cocker spaniel, which of the following genotypic ratios can be expected?
16. 0 BB: 2 Bb: 2 bb
17. 1 BB: 2 Bb: 1 bb
18. 2 BB: 0 Bb: 2 bb
19. 2 BB: 1 Bb: 0 bb
20. How does DNA in cells determine an organism’s complex traits?
	1. A DNA contains codes for proteins, which are necessary for the growth and functioning of an organism.
	2. B DNA separates into long single strands that make up each part of an organism.
	3. C DNA produces the energy an organism needs in order to grow.
	4. D DNA folds into the nucleus of each of the cells of an organism.
21. Cold sores are caused by the herpes simplex virus type 1. A company that wants to develop antiviral drugs would ask a research immunologist to study —
	1. A the mechanism used by the virus to infect cells
	2. how closely related the virus is to cold viruses
	3. the metabolism of the virus
	4. meiosis in the virus
22. The fact that a strain of yeast with a certain defective gene can use the human version of the gene to repair itself is evidence that yeast and humans —
	1. depend on the same food supply
	2. share a genetic code
	3. both have eukaryotic cells
	4. have identical genomes
23. A mutation that occurs in the gametes of an organism will most likely be transferred to which of the following?
	1. The siblings of the organism
	2. The offspring of the organism
	3. The other organisms living nearby
	4. The mating partner of the organism
24. A person infected with the human immunodeficiency virus (HIV) may not have any symptoms for a period of time. During this period the virus affects the body by doing which of the following?
	1. The virus produces toxins that weaken immune cells and prevent them from reproducing.
	2. The virus damages immune cells while using their machinery to produce copies of itself.
	3. The virus uses nutrients meant for immune cells to fuel its own cellular respiration.
	4. The virus changes the identity of the nucleotides of immune cells to prevent the immune system from functioning normally.
25. In the 1860s Gregor Mendel performed numerous dihybrid crosses between pea plants. Dihybrid crosses involve the study of the inheritance patterns related to two different traits. In guinea pigs the allele for black fur (B) is dominant over the allele for brown fur (b), and the allele for short fur (F) is dominant over the allele for long fur (f). What percentage of the offspring from a BbFf x bbff cross would be expected to be heterozygous for both traits?
	1. 0%
	2. 25%
	3. 50%
	4. 100%
26. Severe acute respiratory syndrome (SARS) is an illness caused by a coronavirus. Symptoms including a high fever, headaches, and body aches typically occur two to seven days after infection by the virus. SARS is more serious in elderly patients. This information suggests that the reproductive cycle of the SARS virus is —
	1. lysogenic, because the virus is a coronavirus
	2. lytic, because the virus causes respiratory illness
	3. lysogenic, because the virus primarily affects older people
	4. lytic, because of the quick onset of symptoms after infection
27. The picture below shows a person’s karyotype-



Which of the following can best be determined by examining this karyotype?

1. The presence of an additional chromosome
2. The presence of a homozygous genotype
3. The person’s genome
4. The person’s phenotype
5. Tomato plants usually have hairy stems. Hairless stems are present in tomato plants that are homozygous recessive for this trait. If the stem characteristics are determined by a single gene, what is the expected outcome of crossing two tomato plants that are heterozygous for hairy stems?
6. 75% hairy stems: 25% hairless stems
7. 100% hairy stems
8. 100% hairless stems
9. 50% hairy stems: 50% hairless stems
10. Researchers Robert Briggs and Thomas King used ultraviolet radiation to destroy the nuclear DNA of frog eggs. Nuclei from adult skin cells and from tadpole-gut epithelial cells were cultured and then injected into eggs that had their nuclei destroyed. The results were tadpoles.



Which conclusion is supported by the data from this investigation?

1. The DNA information for development was silenced in differentiated cells.
2. The transplanted DNA functioned as the original nuclear DNA of the egg cell would have.
3. The DNA from skin cells and epithelial cells was not transcribed.
4. The transplanted DNA mutated during culturing

Dual Credit Questions:

1. Viruses that infect animals use what method of entry within the cell? Fabulous
	1. Destroying the cell membrane
	2. Injecting its DNA into the cell from the outside of the cell
	3. Using enzymes that break down phospholipids
	4. Receptor-mediated endocytosis
2. A virus that causes hyperplasia shows what symptoms on a plant?
	1. Tumors
	2. Thinned, yellow patches
	3. Dead, blackened areas
	4. Slow-growing areas of the plant
3. Two normal guinea pigs have 4 offspring but 1 of them doesn’t survive. The reason why normal parents could produce a lethal phenotype is because of:
	1. Recessive lethality
	2. Dominant lethality
4. In pea plants, height and color seem to two traits. Short plants with yellow peas seem to occur in the majority of the offspring. What is the likely reason for this observation?
	1. The offspring is randomly acquired the traits together
	2. Short and yellow alleles are located on the same chromosome
	3. There are only yellow alleles in the population
	4. There is a mutation in the tall gene
5. There are two alleles that determine the colors tan and gray in mice. However, a few white mice are produced when a tan and gray mouse breed.
	1. Tan and gray are co-dominant
	2. Tan and gray display incomplete dominance to show the 3rd color
	3. There is another set of alleles that determine the expression of color
	4. Color is a Y-linked trait