

Bio K/H Final Review – Fall Semester 2019 (Due on the day of the final exam!)

1. What is a theory?
2. When would a theory need to be changed?
3. Mrs. Sanchez is interested in growing tomatoes. She is unsure if she should use a fertilizer on her plants. She sets up the following experiment with these conditions: each tomato plant is in a separate container, each plant will be watered 100 milliliters every other day, and each plant will receive 6 hours of direct sunlight a day. Plant #1 will be given 2.5 grams of fertilizer mixed into the water while plant #2 will not be given the fertilizer.
 - a. Why is Mrs. Sanchez including plant #2 in her experiment? _____
 - b. Name at least 2 control variables. _____
 - c. What is the independent variable? _____
 - d. What is the dependent variable? _____

4. Incorrect Hypothesis: I believe that plants will grow 10 cm when placed in direct sunlight.
Correct Hypothesis:
5. Which part of the DNA molecule is responsible for the coding of traits in ALL organisms?
6. How would you graph the following information? Label each axis. (MIX & DRY)

Solution	Concentration of acid	Depth agar dissolved
A	0%	2 cm
B	1%	2 cm
C	2%	2 cm
D	3%	3 cm

7. List the order in which your body uses biomolecules for energy.
8. If your body has 25 grams of Carbohydrates, how many calories will you burn before you begin to burn lipids?
9. What are the 4 biomolecules and their functions?
10. List the elements found in each of the 4 biomolecules.
11. What are the monomers of each of the 4 biomolecules?
12. If there are 30 Adenine's in a DNA molecule made of 100 base pairs, how many Guanine's, Cytosine's and Thymine's are in this same DNA molecule?
13. Name the 4 kingdoms of Domain Eukaryota.
14. What is different in the cell walls of Kingdom Archaeobacteria and Kingdom Eubacteria?
15. Name the 7 characteristics of life (MRROUGH)
16. What is natural selection? What are the results of natural selection?
17. What is fitness?
18. What can DNA sequences show you about two different organisms?
19. What can lead to the extinction of a species?

20. What did Darwin observe on the Galapagos Islands? What were his conclusions about the finches?
21. List the taxons of classification in order from most general to specific.
22. What should you do if just discovered a new species?
23. What are structural similarities?
24. Draw 3 graphs that represent natural selection in a population and EXPLAIN.
25. How did Eukaryotic cells evolve? Describe the Theory.
26. What is an adaptation?
27. What is survival of the fittest?
28. Name 2 sources of genetic variation
29. Darwin's conclusions were not based on....
30. What is reproductive isolation?
31. What is a vestigial structure? Give 2 examples.
32. What is coevolution? Give an example.
33. What biomolecule is inside the capsid of a virus?
34. The scientific name of an organism consists of which two taxon?
35. Prokaryotic, asexual reproduction is called _____
36. Eukaryotic, asexual reproduction is called _____
37. Describe cell specialization
38. All multi-celled organisms have a complete set of _____ in their somatic cells.
39. Draw and describe what happens in:
 - Interphase (*Be sure to include G1, S, & G2*)

 - Prophase

 - Metaphase

-Anaphase

-Telophase

-Cytokinesis

40. Name the 4 stages of Mitosis.
41. In which phase of Interphase does the DNA replicate?
42. What is the role of spindle fibers in the cell cycle?
43. Draw a DNA molecule. Label sugar, phosphate and base.
44. What is the end result of DNA replication? Describe the strands.
45. What is binary fission?
46. What are sister chromatids held together by?
47. What is the DNA complementary strand of GATCCA that would be created during DNA replication?
48. When DNA replicates, where does the DNA molecule separate?
49. If a somatic cell contains 20 chromosomes, how many chromosomes are in each daughter cell for mitosis? Meiosis?
50. What is the result of crossing-over? When does crossing over occur?
51. What does a punnett square show?
52. Complete the monohybrid cross. Two eyebrows are dominant to a unibrow. Cross a heterozygous two eyebrows with a unibrow.
53. Complete the incomplete dominance cross. In some flowers, red is incompletely dominant over white. Cross a pink flower with a red.
54. Complete the sex-linked problem. Cross a colorblind man with a normal vision woman, whose dad is colorblind.
55. Complete the blood type problem. Cross a woman with heterozygous blood type A with a man with heterozygous type B blood.

56. Complete the dihybrid problem. Brown eyes are dominant to green and two eyebrows are dominant to a unibrow. Cross a heterozygous brown eyed unibrow person with a green eyed unibrow.

57. What is a pedigree? How is a male and female represented?

58. What does the term heterozygous mean? Homozygous?

59. What are the building blocks (monomers) of proteins?

60. Describe the steps of transcription.

61. Describe the steps of translation.

62. What is a codon?

63. What is an anticodon?

64. What type of cell, somatic or gametes, passes on mutations to their offspring?

65. Who will be affected by a liver cancer cell mutation? (Individual OR the offspring)?

66. Use the DNA sequence below to answer the questions that follow

AATCCGATTAAA

a. What are the mRNA codons that complement this strand?

b. What are the tRNA anticodons that complement the codons above?

c. What is the maximum number of amino acids this DNA strand can code for? _____

d. What is the amino acid sequence? _____

e. When compared to the DNA strand above, what type of mutation would the following DNA strand be AAATCCGATTAAA? _____.

f. What is the new mRNA strand? _____

g. What is the new amino acid sequence? _____

h. How many amino acids changed as a result of the mutation? _____

67. List the steps (in order) that lead to the expression of a trait (How are genes expressed?)

68. If you have 5 amino acids, how many codons were needed?

69. What is a point mutation? List and describe the different types.

70. What is an Intron? What is an Exon?

71. The figure below represents a _____? Based on this figure you could determine the sex of the human to be _____?



72. What is a chromosomal mutation? List and describe the different types.