

# BIOLOGY B – FINAL EXAM REVIEW

## UNIT 7: Genetics

1. A segment of DNA that codes for a protein is called a \_\_\_\_\_.
2. An organism with the genotype TT would be called \_\_\_\_\_.
3. An organism with the genotype Tt would be called \_\_\_\_\_.
4. An organism with the genotype tt would be called \_\_\_\_\_.
5. If an organism has a recessive trait then it must have \_\_\_\_\_ alleles for that trait. (#)
6. Green pea pods are dominant to yellow pea pods. A plant that is homozygous dominant for pod color is crossed with a plant that is heterozygous. Show the cross below.

\_\_\_\_\_ x \_\_\_\_\_

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What percent of the offspring will have green pods? \_\_\_\_\_

What percent of the offspring will have yellow pods? \_\_\_\_\_

7. Green pea pods are dominant to yellow pea pods. A plant that is heterozygous green for pod color is crossed with a plant that is yellow. Show the cross below.

\_\_\_\_\_ x \_\_\_\_\_

|  |  |
|--|--|
|  |  |
|  |  |

What percent of the offspring will have green pods? \_\_\_\_\_

What percent of the offspring will have yellow pods? \_\_\_\_\_

8. A person with blood type A mates with a person of blood type B. Their child has blood type O. What inheritance pattern does this gene have?
9. A black mouse mates with a white mouse all offspring are brown. What pattern of inheritance does this gene have?

10. A red cow and a white cow are crossed and produce all speckled offspring. What pattern of inheritance does this gene have?

**UNIT 8: Applications of Genetics**

11. What is a transgenic organism?

12. Give an example of a transgenic organism.

13. What is the gender shown in the karyotype to the right?

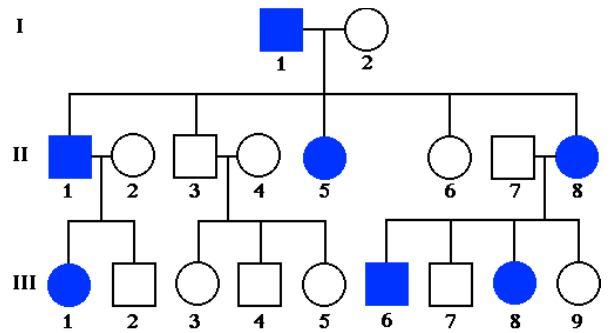
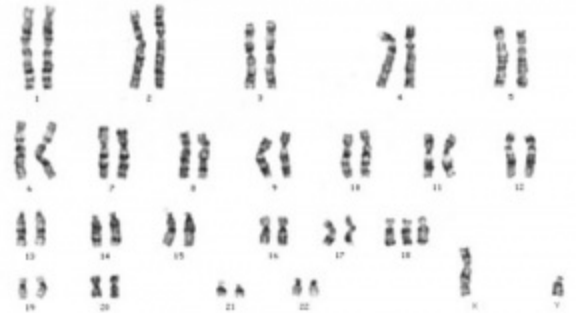
14. Circle and identify the chromosomal disorder shown in the karyotype.

15. Identify the inheritance pattern for the trait in the pedigree shown.

16. Label the genotype for each individual in the pedigree to the right.

17. What pattern would you see in a pedigree if the trait was recessive?

18. Compare and contrast hybridization and inbreeding.



**UNIT 9: Change Over Time**

19. What is a population?

20. \_\_\_\_\_ is a change in a population over time.

21. A change in a DNA sequence is called a \_\_\_\_\_

22. What is the original source of all variation within a population?

23. The process by which individuals that are better suited to their environment survive and reproduce most successfully is called \_\_\_\_\_.

24. When is a mutation considered an adaptation?

25. The tortoises on the Galapagos Islands are believed to have originated from a common mainland ancestor. Describe the process by which tortoises on Hood Island (an island with sparse vegetation) came to have longer necks than the tortoise populations on the other islands.
26. Why is it that some organisms survive and reproduce better than other members of the same species?
27. What did Darwin consider a “detailed record of evolution”?
28. When one bird says “tweet-tweet” for a mating call, but another bird says “chirp-chirp-chirp”. The two birds don’t understand each other so they don’t mate. This is called \_\_\_\_\_.
29. Give an example of temporal isolation.

## **UNIT 10: Evidence of Evolution**

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30. Describe the process of relative dating.
31. Define vestigial structure and give an example.
32. Define homologous structure and give an example.
33. Define analogous structure and give an example.
34. What do similarities in embryonic development tell you about two organisms?
35. Give an example of divergent evolution.
36. Give an example of convergent evolution.
37. Give an example of coevolution.

## UNIT 11: Ecology

38. The branch of biology dealing with the interactions among organisms and their environment is called:

39. List the levels of organization of the biosphere in order from smallest to largest.

40. All of the members of a particular species that live in one area are called a(n) \_\_\_\_\_

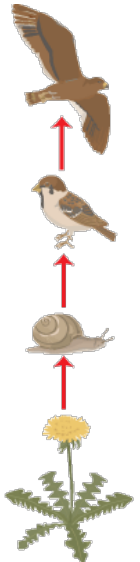
41. All of the living and nonliving things in a given area is called a(n) \_\_\_\_\_

42. All of the populations in a given area is called a(n) \_\_\_\_\_

43. An organism that can make its own food in an \_\_\_\_\_ while an organism that cannot make its own food is a \_\_\_\_\_.

44. What are the two original sources of energy for life on Earth?

45. Label each of the organisms in the food chain shown using the following terms: producer, consumer, herbivore, carnivore, primary and secondary. For each organism, use all terms that apply.



46. What are the producers that do NOT require sunlight called?

47. The complex network of energy transfer interactions among organisms in a community is shown in a picture called a:

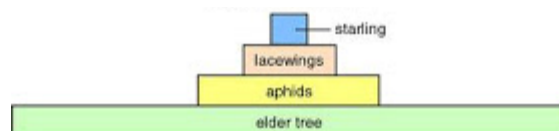
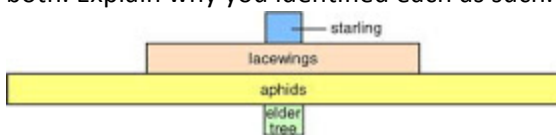
48. An animal that eats only producers is called a:

49. An animal that eats only consumers is called a:

50. An animal that eats producers and consumers is called a:

51. An animal that eats herbivores and carnivores is called a:

52. Identify each of the ecological pyramids shown as only an energy pyramid, only a numbers pyramid or could be both. Explain why you identified each as such.



53. When a harmful molecule builds up as you move up trophic levels is called: \_\_\_\_\_  
Which organism is most affected by these chemicals?

54. Organisms that obtain nutrients by breaking down dead plants and animals are called:
55. If the herbivores consume 685 kcal, how much energy is passed on to the next trophic level and where does the rest of the energy go?
56. What does a niche include?
57. The series of predictable changes that occur in an ecosystem over time is called:
58. How are primary and secondary succession different?
59. List the three types of symbiotic relationships and give an example of each.
60. An organism that is introduced into a new area by humans is called a \_\_\_\_\_. An organism that is introduced into a new area by humans and is causing harm is called a \_\_\_\_\_.
61. List 3 invasive species in Michigan; describe how they got here & how they are harming the ecosystem.

## **UNIT 12: Ecology & Abiotic Factors**

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62. The average year after year conditions of temperature and precipitation are called:
63. List all of the factors that contribute to Earth's climate:
64. List the three main climate zones and briefly describe their respective climates.
65. What is the greenhouse effect?
66. What does the ozone layer do for us?

67. What was causing ozone depletion?

68. Create a T chart and list 5 biotic factors and 5 abiotic factors that could affect an ecosystem.

69. Nitrogen exists as  $N_2$  in the atmosphere. Plants and animals cannot use that form directly, it must be fixed into a usable form. Which organisms perform nitrogen fixation?

70. List the four classes of organic molecules that we studied this year.

71. List all of the ways that carbon is stored in the atmosphere.

72. Which ecosystem would store the most carbon: Tundra, Rain Forest, Dessert? \_\_\_\_\_

73. How will an ecosystem be affected by a nutrient in short supply?

74. What are the four pieces of evidence that we looked at for global warming?

### **UNIT 13: Populations**

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75. What are the units for population density?

76. Moving into a population is called \_\_\_\_\_, moving out of a population is called \_\_\_\_\_.

77. List three ways that a population can increase in size:

78. What are the conditions necessary for exponential growth?

79. A biotic or abiotic factor that causes population growth to decrease is called a:

80. Make a T chart of density-dependent and density-independent limiting factors. List at least 4 for each.

81. Why does the population size level off on a logistic growth curve, and what is that called?

82. What happened to the human population after the industrial revolution? WHY?

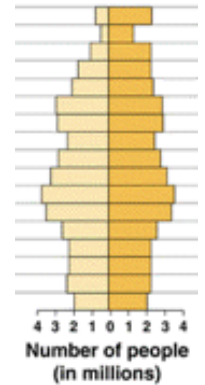
83. Demographic transition is a shift from \_\_\_\_\_ birth rates and \_\_\_\_\_ death rates to \_\_\_\_\_ birth rates and \_\_\_\_\_ death rates. What begins this transition?

84. What does a pyramid shape in an age-structure diagram tell you about the country?

85. What does a more rectangular shape in an age-structure diagram tell you about the country?

86. For the age-structure diagram to the right, how many infants are there in this population?

87. Create a graph with type I, II, and III survivorship curves and name an organism that would be represented by each. Don't forget to label the axes.



88. How would a survivorship curve for a developed country be different than a survivorship curve for an undeveloped county? Why? (Draw it!)