**Name:**

**Diseases and Biotechnology Review**

**Directions**: Please complete the following questions to prepare for your test on **Thursday, March 14. You will also turn in this review as a grade.**

\*Remember that the top scorer during the review challenge will be exempt from the test.\*

1. Why would a doctor not prescribe an antibiotic for a cold? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What would a person pursuing a career in bioinformatics study? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Which if the following statements about biotechnology is not true?
2. Biotechnology is the use of nonliving substances to make living organisms or parts of living organisms.
3. Biotechnology is a quickly growing field with many questions and ethical issues associated with it.
4. Biotechnology causes an increase in job opportunities in the research field.
5. Biotechnology is the use of living organisms to produce food, drugs or other items.
6. What are some concerns of scientists when genetically modifying plants? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. You have strep throat and the doctor prescribes antibiotics to be taken for ten days. You feel better after the second day. What should you do? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What are the ethical issues associated from the use of biotechnology? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. A scientist discovers a pathogenic microbe that has its genetic material and ribosomes floating in the cytoplasm. It also has a cell wall and flagella. What kind of microbe did this scientist discover? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What would be an argument against genetically modifying plants (GMO) so they are capable of making their own pesticides? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Genes for herbicide resistance might be transferred to weeds by cross-pollination. Explain how this works and why is this a problem for GMOs? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. How does biotechnology affect North Carolina’s population? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What is an example of scientists using biotechnology to benefit aquaculture? \_\_\_\_\_\_\_\_

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1. How does biotechnology have a great effect on agriculture? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Malaria is spread to humans when a mosquito transmits the Plasmodium protist into the bloodstream though bites. What is the mosquito in this process? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What would prevent an epidemic from becoming a pandemic? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What is a nonliving microbe with genetic material and a protein coat, but no nucleus or cell structure? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is unique about a stem cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. How are viruses like parasites? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What are transgenic crops and how do they help meet the world’s demand for food? \_\_

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1. What are some diseases that would be treated with antibiotics? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What happens when there is a limited nutrient supply for bacteria? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What would be a benefit of giving farm animals vaccines? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Why are vaccines important? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. If you are given the same antibiotics each of the four times you were sick this year, what may happen? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What can be done to prevent the spread of infectious disease? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Why are there hand sanitizer dispensers inside the gym and cafeteria? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Compare and contrast a virus to a bacterium. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Forty students became sick with stomach cramps and vomiting after eating the school lunch. What most likely is the reason for their illness? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is true about the ethics of creating/designing living organisms? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Which food is most likely a product of biotechnology today? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Golden rice is a GMO that has a high vitamin A content. Why are scientists creating golden rice? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What would contribute to antimicrobial resistance? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What situation could result in Lyme disease? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What are transgenic crops? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. How does the flu vaccine work? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What contagion is correctly matched to the disease it causes?
2. polio – virus B. rabies – fungus

C. influenza – parasite D. chicken pox – bacteria

36. How do viruses cause disease? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What is a way to prevent a parasitic disease? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What is unique about *E. coli*? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What is bioremediation? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Answer the following questions in detail in the open space to the right.**

1. Explain what a scientist working at a modern biotechnology company would most likely do for their job.
2. Explain what types of crops are most likely a product of biotechnology today. Why are these crops genetically modified more compared to other crops.
3. Is bioengineering ethical or not? Explain and justify why you think it is or is not ethical.
4. Explain how bacteria become resistant to antibiotics and why they mutate/evolve.
5. Explain how the rate of death due to infectious disease has changed over the past 100 years. What is the primary reason for this change?