

TEST NAME: **Biotechnology**
TEST ID: **2322243**
GRADE: **08 - Eighth Grade**
SUBJECT: **Life and Physical Sciences**
TEST CATEGORY: **My Classroom**

04/18/18, Biotechnology

Student: _____

Class: _____

Date: _____

1. How does biotechnology **most** benefit the economy of North Carolina?
 - A. creation of jobs
 - B. creation of hybrid plants
 - C. creation of new medicines
 - D. creation of transgenic species

2. Personal medical records become more available and more detailed because of biotechnological research. Based on this information, which is a major concern to the public?
 - A. transmission of more diseases
 - B. an increase in underqualified doctors
 - C. inappropriate use of medical information
 - D. overdiagnosis of certain medical conditions

3. Which is a benefit of genetically modified foods?
 - A. The cost of research is included in the cost to the consumer.
 - B. The cost of food will decrease, and the quality of food will increase.
 - C. When foods are genetically modified, they no longer need to be studied.
 - D. When foods are genetically modified, they are completely resistant to disease and drought.

4. Biotechnology uses a procedure called genetic engineering. Which **best** describes genetic engineering?
 - A. making artificial DNA in the laboratory from chemicals
 - B. cutting out pieces of DNA from an organism under a microscope
 - C. adding DNA from one organism into the DNA of another organism

5. Which would a person who pursues a career in bioinformatics study?
- A. ways DNA stores information
 - B. ways of cross-breeding plants
 - C. ways of cross-breeding animals
 - D. ways of storing and retrieving biological data
6. Which process describes how many pure-bred dogs have been produced?
- A. cloning
 - B. crossbreeding
 - C. selective breeding
7. Which is a hypothesis a scientist could test using principles of biotechnology?
- A. How long can a wheat plant live without water?
 - B. What are the effects of extreme cold on wheat plants?
 - C. Can wheat be genetically modified to be resistant to mold?
 - D. Which variety of wheat tastes best when made into pasta?
8. Which is an agricultural benefit of biotechnology in North Carolina?
- A. farmers' growing cost of fuel
 - B. farmers growing smaller vegetables
 - C. farmers growing longer lasting vegetables
9. Which application of biotechnology is of greatest economic benefit to North Carolina?
- A. development of livestock that are more domesticated
 - B. development of livestock that produce higher quality meat
 - C. development of crops that can be grown in extremely dry environments
 - D. development of crops that can be grown in extremely low temperatures

10. Which is an application of genetic engineering?
- A. destroying all bacteria
 - B. creating synthetic insulin
 - C. producing cells from nonliving material
 - D. preventing weeds from spreading to farmland
11. All states test infants for specific genetic diseases that can be treated early in life. Which would **most likely** be the result if newborn genetic screening were eliminated?
- A. The human population would drastically decline.
 - B. The overall genetic health would drastically decline.
 - C. There would be an increase in the adult mortality rate.
 - D. There would be an increase in the infant mortality rate.
12. Which **best** describes genetic modification?
- A. It allows large quantities of medications to be produced.
 - B. It improves the removal of pollution from soil and water.
 - C. It is used to alter crops to become insect-resistant.
13. Which project is **most likely** to be worked on by a biotechnician?
- A. developing plants with resistance to high temperatures
 - B. developing architectural designs for houses in floodplains
 - C. discovering different isotopes of existing elements in the periodic table
 - D. designing lightweight, strong metallic alloys for use in car manufacturing

14. Which would **most likely** result in the largest economic benefit to North Carolina?
- A. North Carolina partnering with farmers for use of agricultural biotechnology
 - B. North Carolina being a lead consumer state in pharmaceutical manufacturing
 - C. North Carolina making the world's best-trained work force for biomanufacturing
 - D. North Carolina making a long-standing commitment to biotechnology development
15. Which improvement to agriculture is **most likely** a result of biotechnology?
- A. increased land
 - B. increased fertilizer
 - C. increased productivity
16. Which is an example of scientists using biotechnology to benefit aquaculture?
- A. creating pest-resistant crops
 - B. making new forms of human antibiotics
 - C. developing a rot-resistant gene for trees
 - D. producing a faster-growing salmon species
17. Residents of North Carolina presently burn 5 billion gallons of imported petroleum-based liquid fuel per year. How would the state's economy be affected if North Carolina could produce biofuels locally as a replacement?
- A. Tax revenues would decrease.
 - B. Unemployment would increase.
 - C. The economy would decline due to exports.
 - D. The economy would improve with new jobs and tax revenue.

18. Which is the **most likely** result of having a large number of biotechnology companies located in North Carolina?
- A. decrease in available jobs
 - B. improvement in crop yields
 - C. increase in antibiotic resistance
 - D. decrease in vaccine effectiveness
19. Which organisms are used to manufacture human insulin?
- A. algae
 - B. amoebas
 - C. bacteria
 - D. protozoans
20. How does biotechnology **most likely** affect North Carolina's population?
- A. Jobs are created and attract more people to the area.
 - B. Research advancement causes people in need of medicines to move to the area.
 - C. People are not concerned with biotechnology so the overall population is not impacted.
 - D. The issue causes controversy and people hesitate to live in a state where a large amount of research takes place.
21. Many countries in the world eat a diet consisting mostly of rice which is filling but is often low in nutritional value. Which one of these biotechnologies could be used to create a more nutritional rice?
- A. genetic modification of current rice plants
 - B. selective breeding of current rice plants
 - C. cloning of current rice plants

22. In which area would biotechnology have the greatest effect on agriculture?
- A. development of biological weapons
 - B. development of biopharmaceuticals
 - C. development of biological pesticides
 - D. development of biodegradable plastics
23. Wes graduated with a degree in biotechnology. For which job is he **best** qualified?
- A. financial manager
 - B. automobile mechanic
 - C. laboratory researcher
 - D. mathematics teacher
24. Which is the **most useful** change made to crops using applications of biotechnology?
- A. Crops use more nutrients.
 - B. Crops need more fertilizer.
 - C. Crops resist more diseases.
 - D. Crops take more time to grow.
25. Which is a concern of scientists when genetically modifying plants?
- A. Plants will pass on diseases to animals.
 - B. There will be a decrease in biodiversity.
 - C. Plants will have a longer growing season.
 - D. There will be a decrease in revenue for pesticide manufacturers.

26. Which was **most likely** the earliest way biotechnology was studied by humans?
- A. finding evidence of crimes
 - B. making new medicines to cure sicknesses
 - C. discovering the cause of hereditary diseases
 - D. breeding better varieties of crops and livestock
27. What is involved in creating genetically modified bacteria?
- A. allowing them to reproduce freely
 - B. changing their food source
 - C. using biotechnology techniques
 - D. growing them on selected plants
28. How has genetic modification **most likely** affected the safety and availability of fruits and vegetables?
- A. It has decreased the safety and availability of fruits and vegetables.
 - B. It has increased the safety and availability of fruits and vegetables.
 - C. It has decreased the safety of food, but increased the availability of fruits and vegetables.
 - D. It has increased the safety of food, but decreased the availability of fruits and vegetables.
29. A number of projects in North Carolina biotechnology involve genomics. Which **best** describes genomics?
- A. the study of anatomy and how the body functions
 - B. the study of biology and how energy flows in cells
 - C. the study of genes and how they function
 - D. the study of technology and how it works

30. Which would **most likely** increase the amount of money made from agriculture in North Carolina?
- A. Tomatoes that are resistant to disease.
 - B. Tomatoes that are more expensive.
 - C. Tomatoes that taste the same.
31. David tests a small amount of new drug developed at a laboratory to make sure it meets the Food and Drug Administration standards. What is **most likely** David's occupation?
- A. pharmaceutical technician
 - B. pharmaceutical salesman
 - C. pharmacist
 - D. physician
32. Which would **least likely** be a result of biotechnology in agriculture?
- A. increase in soil erosion
 - B. decrease in use of pesticide
 - C. increase in nutritional value of food
 - D. decrease in amount of land used for farmland
33. What type of science allows us to alter the DNA of a corn plant so that it will contain more protein?
- A. biology
 - B. biotechnology
 - C. geology
 - D. physiology

34. Which is a potential ethical issue resulting from the use of biotechnology?
- A. deteriorating the ozone layer
 - B. causing mass extinction of a species
 - C. increasing pollution of natural resources
 - D. introducing a genetically-altered species
35. Which molecule from humans is inserted into bacteria to cause them to produce insulin?
- A. DNA
 - B. lipids
 - C. proteins
 - D. carbohydrates
36. How does knowledge about human genetics **best** help doctors?
- A. Doctors can remove damaged genes from a patient's body.
 - B. Doctors can change patients' genes to make them resistant to disease.
 - C. Doctors can give patients new genes to improve the health of their children.
 - D. Doctors can predict whether patients are at risk of developing a genetic disease.
37. North Carolina has over 400 biotechnology companies. How would the economy **most likely** change if that number were reduced by half?
- A. The economy would decline because of job loss.
 - B. The economy would suffer as funding for research decreases.
 - C. The economy would increase due to an increase in production.
 - D. The economy would improve when the government offers assistance.

38. Which is a positive result of the use of biotechnology in agriculture?
- A. increased cost
 - B. increased yield
 - C. increased use of pesticides
 - D. increased use of preservatives
39. A company that creates hair dye would **most likely** employ a biotechnician for which job?
- A. researching trends
 - B. developing new colors
 - C. creating cost-effective packaging
 - D. developing a product that will be safe for consumers
40. Which is **most important** when investigating ethical issues in biotechnology?
- A. cost of the technology
 - B. advantage of the technology
 - C. public opinion of the technology
 - D. benefits of the technology outweighing the harm