WLHS/Biology/Oppelt Name _____

Study Guide- Unit 6: Genetic Engineering (Chapter 15)

Answer the following questions using your lecture notes, textbook, and other study charts. Remember, this is a study guide and the test is NOT limited to just the information here.

A) In your textbook, turn to pages 413-414 and answer the **selected** question by putting the answers in the space below.

16.	20
18.	21
19.	25

In your textbook, turn to pages 442-444 and answer the **selected** question by putting the answers in the space below.

1.	8.	12.
2.	10.	18.
3.	11.	25.

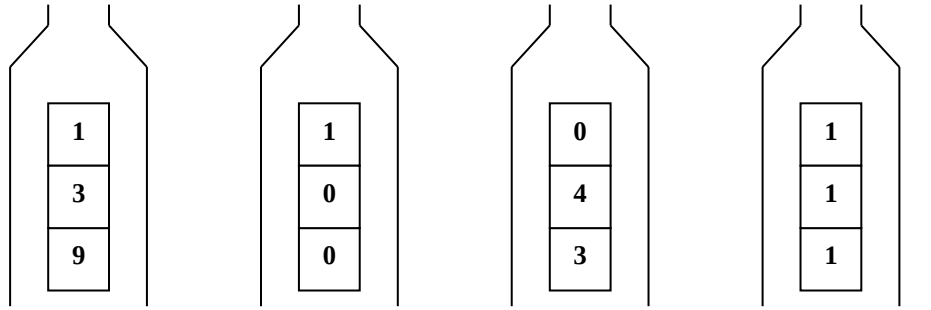
B). Answer the following questions using your textbook and lecture notes.

1. How do breeders produce genetic variation that are not found in nature?

2. a) What is a transgenic organism?

b) How is a transgenic plant different from a hybrid plant?

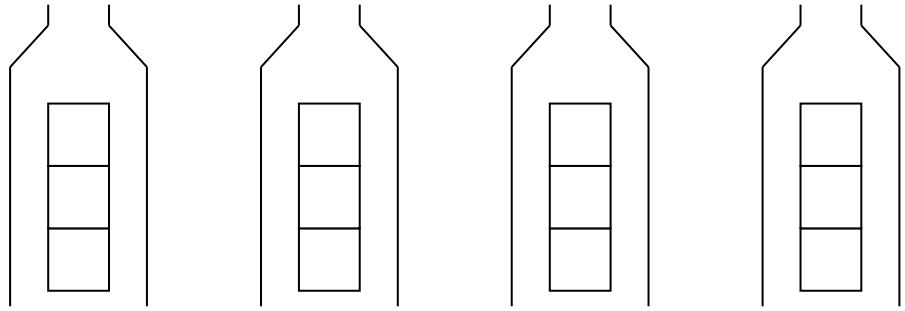
3. Use the display window in the following P-20 micropipettes to determine the volume they will collect/dispense.



a. _____ b. _____ c. _____ d. _____

4. If you were trying to measure the following volumes with a P-20, what would the display window show?

a. 12.9 µL b. 2.7 µL c. 10.5 µL d. 3.0 µL



5. What are restriction enzymes? How are they used in genetic engineering?

7. The table to the right show the DNA sequences that are recognized by 5 different restriction enzymes and the locations where those enzymes cut.

a) Which enzymes produce DNA fragments with “sticky ends”?

b) What is the common feature of the sequences cut by these enzymes?

DNA Sequences Cut by Enzymes

Enzyme	Recognition Sequence
*Alu*I	A G ↓ C T T C ↑ G A
*Hae*III	G G ↓ C C C C ↑ G G
*Bam*HI	G ↓ G A T C C C C T A G ↑ G
*Hind*III	A ↓ A G C T T T T C G A ↑ A
*Eco*RI	G ↓ A A T T C C T T A A ↑ G

8. Examine the following DNA strand.

a) On the line below, write the complementary strand to the DNA strand.

A T G A G A T C T A C G G A A T T C T C A A G C T T G A A T C G

_____

b) Using the DNA Restriction Enzyme table, mark where EACH enzyme will cut the above DNA strand

DNA Restriction Enzymes

Enzyme	Recognition Sequence
*Bgl*III	A ↓ G A T C T T C T A G ↑ A
*Eco*RI	G ↓ A A T T C C T T A A ↑ G
*Hind*III	A ↓ A G C T T T T C G A ↑ A

9. What is gene splicing?

10. What are vectors? Give 2 examples.

11. Identify at least 3 general ways that scientists can use recombinant DNA technology to improve human health.

12. What does PCR enable scientists to do?

13. What is gel electrophoresis? How can it be used with a paternity test?

14. What does CRISPR stand for and how is it used with genetic engineering?

15. What are pros and cons with CRISPR?

Ways to Study/Review

1. Review all **lecture notes** and readings.
2. Answer the questions at the end of EACH section AND chapter.
3. Study with a friend (not just socialize).
4. Look over old study guides.
5. Flashcards
6. Putting lecture notes into your own words
7. Make yourself a test and take it. Also, have a friend make a test too and exchange tests.
8. Come into class with questions!
9. Review a little each day…. Do not cram the night before!

My child has studied this study guide for at least 20 minutes (2 bonus points)

_____

(Parent/guardian signature)