CHAPTER 1

Pgs. 23-31

1. Why was antimony great for building custom acids?
2. Why couldn't you pick up a substance with a pH of -31?
3. What is carborane good for?
4. Lewis's work was passed over for _____?
5. What possibilities could have contributed to Lewis's death?
6. What elements lie in the "great plains" of the periodic table?
7. Sodium has _____ electrons; magnesium has _____ electrons.
8. Transition metals appear in columns _____ through _____ of the periodic table and rows _____ through _____.
9. Lanthanides are also called the _____ _____.
10. Why isn't it possible to find a pure sample of a lanthanide in nature?
11. What makes up 99% of an atom's mass?

12. Write a paragraph about the difficulties Maria Goeppert had to overcome to become a recognized as a scientist.

13. She began work in 1948 on the _____, the core and essence of an atom. The _____ _____ determines the atom's identity.

14. The atomic number plus the number of _____ is called the _____ _____.

15. Explain the mystery that Goeppert-Mayer discovered.

16. Filling nuclear shells leads to _____.

17. She proved that nuclei do have shells and do form what she called _____ nuclei. The magic happens at atomic numbers _____, _____, _____, _____, _____, _____, and so on.

18. Why is oxygen in seemingly overabundance?

19. Beautiful shapes are _____ _____.

20. What happened in 1963?

21. Why is reading the periodic table up and down or longitudinal more significant than reading from left to right?

CHAPTER 2

1. What does the longest word mean, discovered in what year, and how many letters?

2. Describe the most versatile element on the periodic table.

3. Each amino acid contains _____ atoms on one end, a _____ on the other, and a trunk of _____ atoms in the middle.

4. What allows carbon to build complex chains and why are the bonds steady and stable?

5. What was the 189,819 –letter- protein shortened to?

6. What element has been cited as a carbon-based life in other galaxies?

7. What is the relationship between silicon and an alien?

8. What is P16 and how does it develop?

9. What is the most common mineral on earth?

10. What is the relationship between volcanoes and dinosaurs?

11. What is a "fractious word"?

12. What do advances in artificial intelligence tell us about the brain?

13. Why wouldn't silicon work as a substitute for carbon in forms of life?

14. What would the environment look like if it were silicon based instead of carbon?

15. While an element may resemble the one below it, _____ _____ accumulate.

16. What element is like the "black sheep of the family?"

17. In a short paragraph describe how the semiconductor industry came to be. Include William Shockley.

18. Who are Bardeen and Brattain and how did they have a symbiotic relationship?

19. Why did B & B use germanium?

20. Explain Shockley's belief in eugenics.

21. Shockley was ruthless. How did he break up the B & B team?

22. Why did things turn sour for germanium?

23. P.T. Barnum is a metaphor for whom? What did he do?

23. What is a gaffe?

25. What was the job of low-paid women at TI?

26. What did Jack Kilby change? When did he finally get recognition?

27. What did Sir Isaac Newton say?

28. Who became the father of the periodic table?

CHAPTER 3

1. Bunsen's first love was _____.
2. Roman assassins used it to _____.
3. What is a cacodyl?
4. What is the best antidote to arsenic and how does it work?
5. After Bunsen became blind he transferred his interest to _____. What did he construct in his lab?
6. What ensured Bunsen scientific immortality?
7. If a mysterious substance emits red, yellowish green, baby blue, and indigo blue bands what does it contain?
8. What is Bunsen's second great contribution to the periodic table?
9. How does the periodic table and "The Odyssey" compare?
10. How did Mendeleev's mother help with her son's career?
11. Mendeleev and Meyer split what medal?
12. What 3 things did Mendeleev have a hard time believing in?

13. _____ are the most ambiguous and knotty elements to place on the table?

14. Why did Mendeleev mesmerize people?

15. Explain why Dostoevsky and Mendeleev were considered outsized characters.

16. What did the tsar say about a double standard for Mendeleev?

17. How does Mendeleev's work compare to Darwin and Einstein's work?

18. Who discovered gallium?

19. What characteristics of gallium make it a good practical joke?

20. Using context clues define acrimonious.

21. What makes a great story?

22. What does Einstein say about discovery?

23. What were a couple of mistakes Mendeleev made?

24. How could Mendeleev have solved his frustration about cerium?

25. Why was Johann Friedrich Botteger treated like Rumplestiltskin?

26. Describe the power of porcelain.

27. What were the secret ingredients of Chinese porcelain?

28. What is Ytterby?

29. Bright colors are dead giveaways of _____.

30. Scandinavians embraced rationalism en masse. What does this mean?

31. What elements did Gandolin discover?