Chemistry CP Name:_____
Chapter 10/11 Test

1. What is a photon?
2. The form of electromagnetic energy that has more energy per photon than radio waves but less energy per photon than infrared is _____.
3. When an electron in ground state absorbs energy, it goes to a(n) _____ state.
4. Which color of visible light has the longest wavelength?
5. Which color of visible light has the shortest wavelength?
6. What was the problem with the Bohr model of the atom?
7. Define quantized.
8. As the principal energy level increases, the average distance of an electron from the nucleus _____.
9. The form of electromagnetic energy that has less energy per photon than yellow but more energy per photon than red is_____.
10. Which of the following is an INCORRECT designation for an atomic orbital?
    a. 3s
    b. 3d
    c. 3f
11. Calcium has how many electrons in its highest principal energy level?
12. Which color of visible light has the shortest wavelength?
13. $1s^2 2s^2 2p^6 3s^2 3p^2$ is the correct electron configuration for which atom?

14. Which element has the fewest number of electrons in its valence shell?

    a. Na
    b. At
    c. S

15. Which atom has the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^1$?

16. Which electron configuration indicates a transitional element?

    a. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^4$
    b. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
    c. $1s^2 2s^2 2p^6 3s^2 3p^4$

17. The Group 3 elements through the Group 8 elements with the exception of He form an area of the periodic table where the _____ sublevels are being filled.

18. Which of the following has the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^3$?

19. When electrons are shared unequally, chemists characterize these types of bonds as _____.

20. Chemical bonds formed by the attraction of oppositely charged ions are called

21. The electron pair in a C-O bond could be considered

    a. closer to C because carbon has a lower electronegativity than oxyben
    b. centrally located directly between the C and O
    c. closer to O because oxygen has a higher electronegativity than carbon

22. Which of the following has the smallest ionization energy?

    a. Ca

    b. Br

    c. Li

23. Carbon dioxide (CO_2) has _____ bonds.

24. Which of the following compounds contains an ionic bond?

    a. CH_4

    b. KCl

    c. O_3

25. Choose the largest element from the following elements:

    a. Ba

    b. Cl

    c. Hg

26. If atom X forms a diatomic molecule with itself, the bond is

27. Define Dipole moment.

The following questions are worth 1 point each.

28. Define speed.

29. Define frequency

30. Define wavelength

31. What is the name of the current model of the atom?

32. Who (2 people) developed this model?

Use the following choices to classify each of the molecules. Place the capital letter of your choice on the line. (1 point each)

A. ionic
B. covalent
C. polar covalent

33. NO_____

34. NaCl _____

35. N_2 _____

The following questions are worth 2 points each

36. What causes elements from the same group (column) to have similar chemical and bonding properties?

37. Draw and Label Thomson's model of the atom.

38. Draw and label Rutherford's model of the atom.

39. Draw and label Bohr's model of the atom.

40. Define "ELECTRONEGATIVITY"

41. Define “IONIZATION ENERGY”

42. What is a “BOND” (define)?

43. What is BOND ENERGY (define)?

44. Explain what causes the trend for atomic size down a group (column). (You need to state the if the trend is increasing or decreasing, and then explain why it is this way)

45. Draw a wave: label the peak and the trough.

The following questions are worth 1 point each.

46. How many electrons are shared in a double bond?

47. How many electrons are shared in a triple bond?

48. How many electrons are shared in a single bond?

The following questions are worth 3 points each.

49. Draw the Lewis dot diagram for the sulfur (Si- atomic # 16) atom.

50. Draw the Lewis dot diagram for the CCl_4 molecule.

51. Draw the Lewis structure for the Br_2 molecule.

52. Draw the Lewis structure for the CO molecule.

53. Draw the Lewis structure for the N_2 molecule.

54. Draw the Lewis structure for the HF molecule and show the dipole moment.

Each of the following Questions is worth 5 points

55. Write the electron configuration for platinum (Atomic # 78).

56. Write the electron configuration for Antimony (Atomic # 51).

57. Write the abbreviated electron configuration (noble gas) for polonium (Atomic # 84).

58. Write the abbreviated electron configuration (noble gas) for arsenic (Atomic # 33)

59. Draw the orbital diagram (box diagram) for sulfur (Atomic # 16).

60. Draw the orbital diagram (box diagram) for Bromine(Atomic # 35).