Fall 2016 Final Exam Giant Practice Test – *This does not cover every single type of question on the test – it just gives you an idea*

6. How many atoms of hydrogen are in one molecule of CH_3Cl?
   A) 6
   B) 2
   C) 3
   D) 5
   E) 4

7. How many neutrons are there in one atom of $^{46}_{22}Ti$?
   A) 22
   B) 24
   C) 46
   D) 68
   E) none of these

8. Which of the following elements is an alkaline earth metal?
   A) Ca
   B) Cu
   C) Fe
   D) Na
   E) Sc

11. Which of the following is an element?
   A) brass
   B) salt
   C) water
   D) earth
   E) oxygen

12. The symbol for the element strontium is
   A) S
   B) St
   C) Sm
   D) Str
   E) Sr

13. How many atoms are represented by one formula unit of aluminum dichromate, $Al_2(Cr_2O_7)_3$?
   A) 14
   B) 25
   C) 27
   D) 29
   E) none of these

14. How many nitrogen atoms are indicated by the formula $Al(NO_3)_3$?
   A) 1
   B) 3
   C) 9
   D) 4
   E) 0

15. List the three main subatomic particles.

16. How many protons, electrons, and neutrons, respectively, does ^{16}O have?
   A) 8, 18, 8
   B) 8, 8, 8
   C) 8, 10, 8
   D) 8, 14, 8
   E) 8, 18, 16

17. The number of neutrons in one atom of $^{206}_{82}Hg$ is
   A) 82
   B) 206
   C) 124
   D) 288
   E) none of these

18. An atom with 15 protons and 16 neutrons is an atom of
   A) P
   B) Ga
   C) S
   D) Pd
   E) Rh

19. How many neutrons are contained in an iodine nucleus with a mass number of 131?
   A) 53
   B) 74
   C) 78
   D) 127
   E) 131

20. An atom with 45 protons has a mass number of 99. It must contain how many neutrons?
   A) 144
   B) 45
   C) 99
   D) 54
   E) none of these

21. Which of the following elements is most similar to lithium?
   A) Au
   B) He
   C) Na
   D) Hg
   E) Mg

22. When $^{230}_{90}Th$ decays by producing an alpha particle, the product nuclide is _____.

23. Alpha particles are
   A) electrons
   B) protons
   C) neutrons
   D) helium nuclei
   E) X rays

24. The cesium-131 nuclide has a half-life of 30 years. After 90 years, about 6 g remains. The original mass of the cesium-131 sample is closest to
A) 30 g
B) 40 g
C) 50 g
D) 60 g
E) 70 g

26. How many atoms of oxygen are in one formula unit(compound) of calcium hydrogen sulfate?
A) 3
B) 4
C) 5
D) 6
E) 8

27. How many protons, electrons, and neutrons, respectively, does $^{27}Al^{3+}$ have?
A) 13, 13, 14
B) 13, 10, 14
C) 13, 13, 27
D) 13, 10, 27
E) 13, 13, 13

28. Which of the following exhibits the correct orders (decreasing) for both atomic radius and ionization energy?
A) S, O, F, and F, O, S
B) F, S, O, and O, S, F
C) S, F, O, and S, F, O
D) F, O, S, and S, O, F
E) none of these

29. The electron configuration for Cr^{2+} is
A) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^4$
B) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 3d^5$
C) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4$
D) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^2$
E) none of these

30. An element has the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^2$. The element is a(n)
A) nonmetal.
B) transition element.
C) metal.
D) lanthanide.
E) actinide.

31. Antimony can be represented by which of the following noble gas configurations?
A) $1s^2 2s^2 2p^6 3s^2 3p^6\ 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^5$
B) $1s^2 2s^2 2p^6 3s^2 3p^6\ 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6$
C) $1s^2 2s^2 2p^6 3s^2 3p^6\ 4s^2 3d^{10} 4p^6 5s^2 5d^{10} 5p^5$
D) $1s^2 2s^2 2p^6 3s^2 3p^6\ 4s^2 3d^{10} 4p^6 5s^2 5d^{10} 5p^6$
E) $1s^2 2s^2 2p^6 3s^2 3p^6\ 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^3$

32. Which of the following best describes the "trend" for electronegativity across periods (L->R) and down groups, respectively (periods/groups)?
A) Decrease / Decrease
B) Increase / Decrease
C) Decrease / Increase
D) Increase / Increase
E) neither

33. When an electron in the ground state absorbs energy, it goes to a(n) _____ state.
A) excited
B) lower
C) frenetic
D) ionic
E) stable

34. Which of the following has the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$?
A) Cr
B) Ca
C) Mn
D) Br
E) none of these

35. Which of the following is the atomic number of a halogen?
A) 10
B) 13
C) 17
D) 136
E) 27

36. Which of the following statements *BEST* describes the alkali metal?
A) They have two valence electrons, and they form ions with a 2- charge.
B) They have two valence electrons, and they form ions with a 2+ charge.
C) They have one valence electron, and they form ions with a 1+ charge.
D) They have one valence electron, and they form ions with a 1- change.
E) They have one valence electron, and they form ions with a 2- charge

37. An atom that has an electron configuration of $1s^2 2s^2 2p^6 3s^2 3p^6$ is classified as
A) a noble gas element
B) a transition metal
C) an alkaline earth element
D) an alkali metal
E) a halogen

38. When magnesium and oxygen form a bond 2 electrons will be
A) Shared equally
B) shared unequally
C) Lost by magnesium gained by oxygen
D) Lost by oxygen gained by magnesium
E) evenly distributed

39. A stable element will have how many valance electrons?
    A) 8
    B) 32
    C) 6
    D) 18
    E) Zero

40. What is the name of the compound whose formula is NO_2
    A) Nitrogen pentoxide
    B) Dinitrogen oxide
    C) Nitrogen oxide
    D) nitrogen dioxide
    E) Nitrogen (V) oxide

41. What is the correct chemical formula for copper(II) oxide?
    A) Cu_2O_3
    B) Cu_3O
    C) CuO_3
    D) Cu_3O_2
    E) CuO

42. What is the chemical formula for Mercury (I) oxide
    A) Hg_2O_2
    B) Hg_2O
    C) Hg_2O_4
    D) HgO_2
    E) HgO

43. Calculate the molar mass of Na_2SO_4.
    A) 142 g
    B) 100 g
    C) 132 g/mol
    D) 142 g/mol
    E) 124 g/mol

44. The prefix "di" means
    A) 1
    B) 2
    C) 3
    D) 4
    E) 5

45. The chemical formula for dicarbon hexahydride is
    A) CH_4
    B) C_2H_6
    C) CH
    D) CH_2
    E) C_3H_8

46. With which of the following would fluorine atoms MOST easily combine to form an ionic compound?
    A) oxygen
    B) chlorine
    C) carbon
    D) Sodium
    E) sulfur

47. The electron configuration of carbon is $1s^2\ 2s^2\ 2p^2$. How many more electrons does carbon need to satisfy the octet rule?
    A) 1
    B) 4
    C) 8
    D) 5
    E) 2

Use the following to answer question 65:
Consider the following molecules.

I. BF_3
II. $CHBr_3$ (C is the central atom)
III. Br_2
IV. $XeCl_2$
V. CO
VI. SF_4

Select the molecule(s) that fit the given statement.

48. These molecules follow the octet rule.
    A) I, II, IV
    B) I, III, IV, VI
    C) III, V, VI
    D) I, IV, VI
    E) II, III, V

Use the following to answer questions 52-56:
A) Halogens
B) Alkaline Earth Metals
C) Noble Gases
D) Alkali Metals
E) Metal/Non-metal

49. $1s^2 2s^2 2p^6 3s^2 3p^6$ Represents this type of element

50. These elements become more reactive as you decrease their atomic number.

51. Barium is this type of element

52. The cation of table salt is made from one of these types of elements

53. Nitrogen, Phosphorus, Sulfur, Oxygen represent these elements

54. The name for $NaHCO_3$ is
    A) sodium hydrogen carbonate (sodium bicarbonate)
    B) sodium carbonate
    C) sodium(I) hydrogen carbonate
    D) sodium(I) bicarbonate
    E) none of these

55. Titanium(IV) oxide has the formula
    A) Ti_4O
    B) TiO_4
    C) Ti(IV)O
    D) TiO_2
    E) Ti_4O_2

56. According to the following Nuclear Equation, $^{238}_{92}U \rightarrow {}^{234}_{90}Th +$ ____, which particle is produced?
A) $^{0}_{0}\gamma$
B) $^{4}_{2}He$
C) $^{0}_{-1}\beta$
D) $^{0}_{+1}\beta$

57. What is the electron configuration of Al^{+3}
A) $1s^2 2s^2 2p^1$
B) $1s^2 2s^2 2p^6$
C) $1s^2 2s^2 2p^6 3s^2 3p^1$
D) $1s^2 2s^2 2p^6 3s^2 3p^6$
E) $1s^2 2s^2 2p^6 3s^2$

58. An atom with 75 neutrons, 52 protons, and 52 electrons
A) $^{127}_{51}Sb$
B) $^{120}_{52}Te$
C) $^{127}_{50}Te$
D) $^{75}_{52}Te$
E) $^{127}_{52}Te$

59. Which describes the alkali metals?
A) They have two valence electron and for ions with a +1 charge
B) They have one valence electron and for ions with a +1 charge
C) They have one valence electron and for ions with a +2 charge
D) They have two valence electron and for ions with a +2 charge
E) They have one valence electron and for ions with a +3 charge

60. What best describes the reasons for the atomic radius trends
A) As you go down a group the energy level increases and as you go L→ R across a period the proton charge decreases
B) As you go down a group the energy level decreases and as you go L→ R across a period the proton charge increases
C) As you go down a group the energy level increases and as you go L→ R across a period the proton charge increases
D) As you go down a group the energy level decreases and as you go L→ R across a period the proton charge decreases
E) As you go up a group the energy level increases and as you go R→ L across a period the proton charge increases

61. The electron configuration below represents which periodic table group $1s^2 2s^2 2p^6 3s^2 3p^6$
A) Transition metal
B) Akali metal
C) Halogen
D) Noble Gas
E) Alkaline earth metal

62. What is the electron configuration for Cr^{+3}
A) $1s^2 2s^2 2p^6 3s^2 3p^6$
B) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^2$
C) $1s^2 2s^2 2p^6 3s^1$
D) $1s^2 2s^2 2p^6 3s^2 3p^6 4S^2$
E) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^3$

63. The number 0.00003044 expressed in scientific notation is
A) 3.044×10^{-5}
B) 3.0×10^{-5}
C) 3.044×10^{5}
D) 3.044×10^{-4}
E) 3.044

64. Express the number 0.00374 in scientific notation.
A) 3.74×10^{-3}
B) 3.74×10^{3}
C) 0.374×10^{-3}
D) 374×10^{-5}
E) none of these

65. Convert: 42.2 cm = _____ m.
A) 4.22×10^{3} m
B) 4.22×10^{4} m
C) 0.0422 m
D) 0.422 m
E) 4.22 m

66. Convert: 7.7 mm = _____ km.
A) 7.7×10^{-6} km
B) 7.7×10^{-3} km
C) 7.7×10^{3} km
D) 7.7×10^{6} km
E) 7.7×10^{2} km

67. Convert 9.16 kg to pounds (1 lb = 453.6 g).
A) 20.2 lb
B) 2.02×10^{-2} lb
C) 4.15×10^{3} lb
D) 4.15 lb
E) 4.15×10^{6} lb

68. Convert 418.2 mi to kilometers (1 m = 1.094 yd; 1 mi = 1760. yd).
A) 2.599×10^{-4} km
B) 6.728×10^{5} km
C) 457.5 km
D) 2.376×10^{-1} km
E) 6.728×10^{2} km

69. Perform the following conversion:
5.77 m/s = _____ km/h
A) 20.8 km/h
B) 0.346 km/h
C) 1.60 km/h
D) 624. km/h
E) 173. km/h

70. Perform the following conversion: 5.67 m/s = _____ mi/h
A) 0.395 mi/h
B) 12.7 mi/h
C) 284. mi/h
D) 211. mi/h
E) 11.3 mi/h

72. Which of the following compounds contains one or more covalent bonds?
A) NaCl
B) CaO
C) CO_2
D) Cs_2O
E) $BaBr_2$

73. Which of the following compounds contains an ionic bond?
A) HCl*(g)*
B) NaCl
C) CCl_4
D) SO_2
E) O_2

74. Which of the following elements has the lowest electronegativity?
A) Na
B) Rb
C) Ca
D) S
E) Cl

77. How many lone pairs of electrons are in the Lewis structure for ammonia, NH_3?
A) 0
B) 1
C) 2
D) 3
E) 4

78. Draw the Lewis electron structure for the HI molecule.

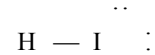
79. Draw the Lewis electron structure for the H_2Te molecule.

80. Draw the Lewis structure for CO.

82. Which of the following has a double bond?
A) H_2O
B) NH_3
C) O_2
D) CO
E) H_2S

Answer Key

6. C
7. B
8. A
11. E
12. E
13. D
14. B
15. electron, proton, neutron
16. B
17. C
18. A
19. C
20. D
21. C
22. $^{226}_{88}Ra$
23. D
24. C
26. E
27. B
28. A
29. C
30. C
31. E
32. B
33. A
34. C
35. C
36. C
37. A
38. C
39. A
40. D
41. E
42. B
43. D
44. B
45. B
46. D
47. B
48. E
49. C
50. A
51. B
52. D
53. E
54. A
55. D
56. B
57. B
58. E
59. B
60. C
61. D
62. E
63. A
64. A
65. D
66. A
67. A
68. E
69. A
70. B
72. C
73. B
74. B
77. B

78.


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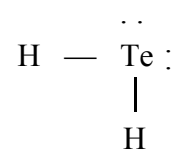

80.


82. C

Check your answers. Highlight the ones you got wrong. On page 130 list the question numbers you missed, next to them list the TOPIC that the question was about, and then show your correction next to it. The topics you missed are the topics you should study the most before the final!

Pick the TOP five questions you would like Mrs. Farmer to try and do in class under the document camera.

1) _____ 2) _____ 3) _____ 4) _____ 5) _____

Go to the following link and submit these questions to the online form so Mrs. Farmer knows which ones you would like her to do!

http://tinyurl.com/jxy7rwh