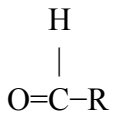
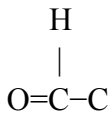
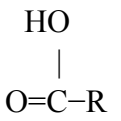
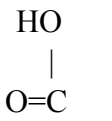
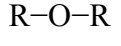
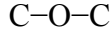
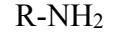
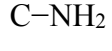
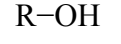
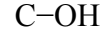
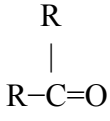
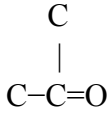
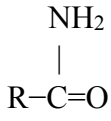
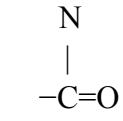
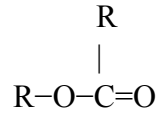
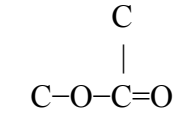
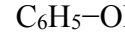
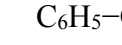
1a) 8.91×10^{-4}
1b) 8.9090×10^{-4}
2a) $2.51 cm^2$
2b) 1.00cm
3a) 7.944×10^{12}
3b) 349,000,000
4a) 6.57×10^{-8}
4b) 0.000000962
5a) 312.6 lb
5b) 18.71 lb
6a) 0.76077mL
6b) 24.9g
7a) 1.6M
7b) 143g
8a) 7.1588%
8b) 7.7108%
9a) 1.5L
9b) 375mL
10a) +7
10b) +3
11a) +2
11b) -2
11c) 0
12a) oxidized/reduced
12b) oxidation number increases
13a) 2, 3, 1, 3
13b) 1, 2, 1, 2
14a) 180.156g/mol
14b) 0.0999mol
15a) Reads most digits past decimal
15b) Need a standard
16a) baking, rusting, breathing
16b) melting, boiling, subliming
17a) atom with same number of protons and different number of neutrons
17b) proton and neutron
17c) $1s^2\ 2s^2\ 2p^6\ 3s^2$
17d) phosphorous
17e) argon

	R-Group	Pattern
18) aldehyde:		
carboxylic acid:		
ether:		
amine:		
alcohol:		
ketone:		
amide:		
ester:		
phenol:		

19) amino acids, (sugars and/or starches), (glycerol, 3 fatty acids), (glycerol, 3 fatty acids), sugar, (nitrogen base, phosphate group, deoxyribose sugar)
20) Na^+, Cl^-, NH_4^+, PO_4^{3-}
21a) 5.0mol
21b) 190g
22a) alpha particles, beta particles, gamma rays
22b) radiation causes chemical reactions in the body that lead to mutations
22c) alpha, paper; beta, aluminum foil; gamma, 10cm lead
23a) –ol, methanol
23b) ether, methyl ethyl ether; -oate, methyl ethanoate
23c) –al, methanal
23d) amine, methylamine
24a) (10 doses/1)*(75mg/dose)((mL/375mg) = 2.0mL (2SD)
24b) (15mL/1)*(375mg/mL)*(mL/10.mg) = 560mL (2SD)

24c) (75mg/1)*(mL/15mg) = 5.0mL (2SD)
25a) largest: K, smallest: Li
25b) largest: B, smallest: Ne
26a) most: K, least: Li
26b) most: B, least: Ne
27a) most: Li, least, K
27b) most, Ne, least, B
28. 0.22 m/s^2
29. 0.80 mol/L or 0.80 M
30. $Ba(ClO_3)_2 \rightarrow BaCl_2 + 3O_2$
31. diphoshorous pentasulfide
32. carboxylic acid
33. 0.0046
34. 3.847000×10^{-4}
35. 92 protons, 146 neutrons, 89 electrons
36. 34.80 miles
37. 1.12 g/ml
38. 27.1%
39. +4
40. -3
41. Al
42. nonelectrolyte
43. ±0.02 ml
44.
    a. P
    b. P
    c. C
    d. P
    e. P
    f. C
    g. P
    h. P
    i. C
    j. C
45. See class notes
46. See reference sheet, lab materials, or patterns from question 18
47. gamma ray, beta, positron, proton, neutron, alpha particle
48.
    a. –ol
    b. –amine
    c. –one
    d. –acid
    e. –ether

f. –amide
g. –oate
h. –al
i. –ol
j. –ide

49. Sour taste, conduct electricity, change litmus red, neutralize bases
50. Bitter taste, conduct electricity, change litmus blue, neutralize acids
51. 1.11 ml
52.
    a. 28.38 g NH_3
    b. 69.3 g N_2
53.
    a. ammonium sulfate
    b. diphosphorous pentasulfide
    c. copper(II) phosphate
    d. hydrosulfuric acid
    e. carbonic acid
    f. nitrous acid
54.
    a. ionic
    b. molecular
    c. ionic
    d. molecular
    e. molecular
    f. molecular
55.
    a. vapor to liquid
    b. liquid to vapor
    c. vapor to solid
    d. solid to liquid
    e. liquid to solid
    f. solid to vapor
56. 1s, 2s, 2p, 3s, 3p, 4s, 3d, 4p, 5s
57. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5$
58.
    a. left of zig zag or stepped line
    b. right of zig zag or stepped line
    c. side of element box on zig zag line, except for aluminum
    d. group VII A
    e. groups IIIB – IIA
    f. group VIIIA
59.
    a. Increases across, decreases down

b. Increases across, decreases down

c. Decreases across, increases down

60. H_2, N_2, O_2, F_2, Cl_2, Br_2, I_2