Chapter 1-3 Quiz answers

1. It is impossible to ever have an instrument that can measure down to the single atom, so there will always be uncertainty, and since is it impossible to see single atoms, we also will never be sure that we have transferred them all or reacted them all.
2. A) 79.4

B) 261

C) 0.0002

D) 23000

 3) 150x109 people x 75years x 365days x 24hours x 60min x 60heartbeats (est.) = 3.55x1020 heartbeats

 1 person 1 year 1 day 1 hour 1 min

No, a mole is 6.02x1023 or over 1000x more

1. Beryllium sulfite Zn(NO3)2

Diantimony pentoxide UF6

Ammonium hydrogenphosphate KHCO3

Cesium perchlorate (NH4)2C2O4

1. In the gold foil experiment, alpha particles were shot at a thin layer of gold foil, and it was determined that most went straight through while a few were deflected or bounced back. From this experiment it was concluded that there was a small, dense positively charged nucleus. Small, because only a few alpha particles hit it; dense since alpha particles were relatively massive themselves and did not cause the nuclei to shift or move; positive, since alpha particles are positive, they would be repelled explaining why they were deflected away.
2. 4 ( 63.55gCu) x 100 = .390% Cu x = 65200g

X g fungus

1. 53.9389(0.0238) + 52.9407(x) + 51.9405(y) + 49.9461(0.0431) = 51.996

X+y+ 0.0238 +0.0431 = 1.00

X +y = 0.9331

X = 0.9331-y

 53.9389(0.0238) + 52.9407(0.9331-y) + 51.9405(y) + 49.9461(0.0431) = 51.996

 1.283746 + 49.398967 – 52.9407y + 51.9405y + 2.15267 = 51.996

 0.839383 = 1.0002y

 Y = 0.8392

 S0…… 53.9389 = 2.38% 52.9407 = 9.39% 51.9405 = 83.92% 49.9461 = 4.31%

1. A) Hg + Br2 → HgBr2

5.00mL Hg x 13.6g/mL x 1mole HgBr2/ x 360.39g HgBr2/ 1mole HgBr2 = 122g HgBr2

5.00mL Br2 x 3.10g Br2 / 1mL Br2 x 1 mole Br2/ 199.8g Br2 x 1mole HgBr2/1 mole Br2 x =

 34.9g HgBr2 ←correct answer

B) 34.9 g HgBr2 x HgBr2 /360.39g HgBr21mole x 1 mole Hg /1mole HgBr2 = 0.24mol or 49.6g or 3.57mL of Hg

1. 0.213g CO2 x 12.01gC/44.01g CO2 = 0.0581gC / 0.157g total x 100 = 37.00% C

0.0310g H2O x 2.02gH/ 18.02g H2O = 0.00348gH /0.157g total x 100 = 2.22%H

0.0230g NH3 x 14.01gN/17.04g NH3 = 0.0189g N / 0.103g total x 100 = 18.35%N

100% - 37.00% - 2.22% - 18.35% = 42.43% O

37gC x 1mole C/12.01gC = 3.08mole C /1.310 ≈ 2.35 x 3 =7

2.22gH x 1mole H/1.01gH = 2.198moleH/1.310 ≈1.68 x 3 = 5

18.35gN x 1 mole N/14.01gN = 1.310mole N/1.310 = 1 x3 = 3

42.43O x 1moleO/16.00gO = 2.652mole O / 1.310 ≈ 2 x 3 =6

Structure is C7H5N3O6

1. 0.755g total – 0.483g CuSO4 = 0.272g H2O 0.272g H2O/0.755g total = 36% H2O

36g H2O x 1mole H2O/18.02g H2O = 2 mole H2O x 2.5 = 5

64g CuSO4 x 1mole CuSO4/159.61g CuSO4 = 0.401 mole CuSO4 x 2.5 = 1 x = 5

MC

1. A 2) B 3) A 4) A 5) B 6) C 7) A 8) D 9) E 10) C 11) E 12) D 13) E 14) A

15) D 16) B 17) C 18) D