Circle the best answer to each of the following questions (30 minutes) – <u>Answers are on the last page</u>

1 in. = 2.54 cm (exactly) 1 mile = 5280 ft = 1.609 km	1 L = 1000 cm^3 1 gal = 4 qt = 8 pt = 3.785 L	1 kg = 2.205 lb 1 lb = 16 oz = 453.6 g
1 cal = 4.184 J 1 Cal = 1000 cal	1 mole = 6.022 x 10^{23} "things"	C (water) = 4.18 J/g•°C C (copper) = 0.385 J/g•°C

1) How many electrons does the Ru ion have in compound $Ru(AsO_4)_2$?
    A) 44   C) 48   E) 40
    B) 38   D) 50

2) Report the answer to this calculation with the correct significant figures: (0.45)(145.4) + (0.70)(128.4)
    A) 1.5 x 10^2 C) 155   E) 155.31
    B) 1.6 x 10^2 D) 155.3

3) How many μg are in 6.0 x 10^{-5} Mg?
    A) 6.0 x 10^{-7} μg   C) 6.0 x 10^7 μg   E) 4.0 x 10^9 μg
    B) 6.0 x 10^5 μg   D) 6.0 x 10^{-5} μg

4) A sample of an unknown material has a mass of 38 g and a volume of 6.5 cm^3. What is the density of
    the material in lb/in^3?
    A) 5.8 lb/in^3 C) 4.7 lb/in^3 E) 0.083 lb/in^3
    B) 0.033 lb/in^3 D) 0.21 lb/in^3

5) A 20.0 g sample of copper is heated to 203°C and dropped into a sample of water at 25.0°C. If the final temperature of the water is 39.0°C, what mass of water (to 3 significant figures) was used?
     A) 80.0 g   C) 0.165 g   E) 35.0 g
     B) 0.0233 g   D) 21.6 g

6) How many atoms are in 15 g of perchloric acid?
     A) 5.4×10^{23} atoms   C) 9.4×10^{24} atoms   E) 3.8×10^{27} atoms
     B) 9.0×10^{22} atoms   D) 1.5×10^{22} atoms

7) A sample of ore is 65% Ni and the remainder is O. How many moles of O are in 62 g of ore?
     A) 1.4 mol   C) 2.5×10^{2} mol   E) 3.9 mol
     B) 2.5 mol   D) 1.4×10^{2} mol

8) A 1.45-g sample of phosphorus burns in air and forms 2.57 g of a phosphorus oxide. What is the empirical formula of the oxide.
A) PO
B) PO_4
C) P_2O_3
D) P_2O_7
E) P_3O_4

9) A mixture of 3.0 g of hydrogen and 8.0 grams of oxygen is ignited, forming water. After the reaction is complete, how much of the excess reactant (in grams) will remain?
A) 2.0 g H_2
B) 1.0 g H_2
C) 6.0 g O_2
D) 2.0 g O_2
E) 9.0 g H_2O

10) What is the maximum mass (in grams) of gas that can be created when 5.0 g of hydrochloric acid react with 5.0 g of potassium sulfide?
A) 1.8 g
B) 3.2 g
C) 2.3 g
D) 5.0 g
E) 1.5 g

Answers:

1) B	2) C	3) C	4) D	5) D
6) A	7) A	8) C	9) A	10) E