**Final Exam Practice Test**

**Unit 1 Practice**

**Mass Measurements of a Platinum Cylinder**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Balance | First measure  (g) | Second Measure  (g) | Third Measure  (g) | Fourth Measure  (g) |
| Q | 24.94 | 25.26 | 25.29 | 24.51 |
| R | 25.50 | 24.50 | 25.00 | 24.49 |
| S | 24.99 | 24.99 | 25.20 | 24.92 |
| T | 24.99 | 25.03 | 24.98 | 25.02 |

1. The table shows four mass readings of one object as measured by four different balances.  Which balance produced the most precise measurements?

(A)   Q

(B)    R

(C)    S

(D)   T

1. The reason for wafting or fanning a small amount of chemical vapors toward the nose as a means to detect odors in a test tube is to —

(A) avoid experimental error from excessive loss of mass of reactants or products.

(B) avoid splashing chemicals into the face of any person.

(C) protect the respiratory tract against potentially harmful vapors.

(D) determine the relative strength of the odor before smelling directly.

1. Choose the correct answer for the following problem.

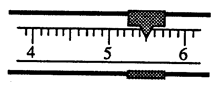
3.56 x 10-4 L  +  2.11 x 10-3 L

(A) 2.47 x 10-4 L (B) 5.67 x 10-4 L   (C) 3.77 x 10-4 L (D) 2.47 x 10-3 L

1. Choose the correct answer for the following problem.

3.00 x 108 m3 /  5.0 x 10-2 m2

(A) 6 x 1010 m(B) 6 x 109 m         (C)  6 x 106 m         (D)  6 x 105  m

1. A piece of iron wire is placed on the pan of a triple beam balance.   The riders are all zero except for the rider on the 0 -10 gram beam, which is shown.
2. 

What is the mass of the iron wire?

(A)   0.455 g                           (B)    0.55 g

(C)    5.5 g                               (D)   5.50 g

1. Which measurement contains four significant figures?

(A)   0.0002 L                         (B)    0.002 L

(C)    2020 L                            (D)   2002 L

1. What is the correct set-up for the conversion of 950 g to kg?

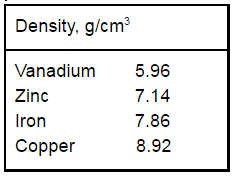
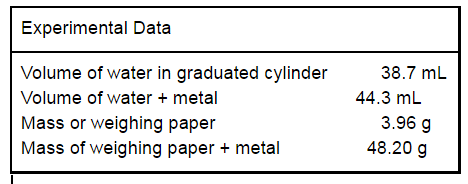
(A)   950 g x    1000 g                     (B)    950 g    x 1000 kg

                              1 kg                                                    1 g

(C)    950 g x       1 kg                      (D)   950 g    x    1 g

                            1000 g                                            1000 kg

The following tables are used in the problem below.

1. 

Based on the given data, what kind of metal was used in this experiment?

(A)   zinc                                (B)    iron

(C)    copper                            (D)   vanadium

**Unit 2 Practice**

1. A sample of material, which has a definite volume but no definite shape

(A) is a solid.                       (B)    is a liquid.

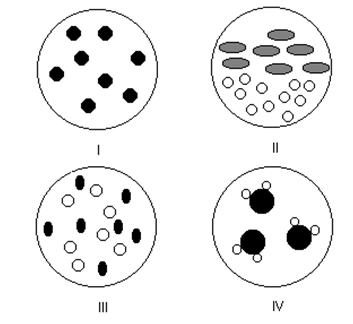
(C)  is a gas.                          (D)   does not exist.

1. Which is a chemical change?

(A)   evaporating alcohol                   (B)    burning butter

(C)    melting ice cubes                      (D)   forming fog

1. Which of the following microscopic representation shows a homogeneous mixture?



(A)  I                  (B)  II           (C)  III          (D)  IV

1. Which state of matter describes a precipitate?

(A) liquid   (B)  gas        (C)  plasma     (D)  solid    (E) aqueous

1. Which of the following is an example of a chemical change?

(A)           Ice cracking

(B)           Sugar dissolving

(C)           Milk souring

(D)           Lead melting

1. Which property is ***always*** conserved during a chemical reaction?

  (A) mass (B)    volume                     (C)    pressure       (D)   solubility

1. Which statement describes a chemical property of iron?

(A) Iron can be flattened into sheets.

(B) Iron conducts electricity and heat.

(C) Iron combines with oxygen to form rust.

(D) Iron can be drawn into a wire.

1. Which of the following is NOT an intensive physical property for bromine
2. Bromine has a reddish brown color
3. Bromine is a liquid at room temperature
4. Bromine has a density of 3.1 g/cm3
5. Bromine has a volume of 5.00 L
6. The weather man has just confirmed that this holiday season 5250.00 g of snow will fall from the sky.  If the mass of the oxygen gas in the sky is 787.90 g.   What mass of hydrogen gas was in the sky?  Remember that snow is solid water.

(A) 6037.90 g

(B) 4462.10 g

(C) 6.6633 g

(D) 0.15007 g

**Unit 3 Practice**

1. Which of the following elements cannot be classified as a nonmetal or metaloid?

(A)   Arsenic, As

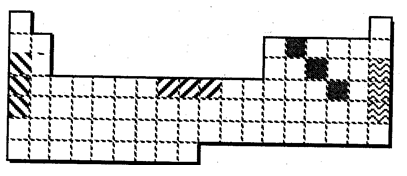
(B)    Sodium, Na

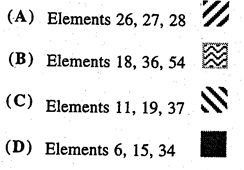
(C)    Boron, B

(D)   Bromine, Br

(E)    Oxygen, O

1. Which set of elements contains transition elements?





1. An isotope differs from other isotopes of the same element,

(A)   only by number of electrons

(B)    only by number of protons.

(C)    by atomic number.

(D)   only by mass number.

(E)    by mass number and number of neutrons.

1. If atoms of a metallic element (such as sodium) react with atoms of a nonmetallic

element (such as sulfur), which element loses electrons and which element gains

them?

(A)           metallic element gains and non-metallic element loses electrons

(B)           both gain electrons

(C)           metallic element loses and non-metallic element gains electrons

(D)           both lose electrons

1. On the periodic table, where are the nonmetals located?

(A)      upper right                  (B)    lower right

(C)       upper left                    (D)   lower left

The hypothetical element X has two isotopes.

|  |
| --- |
| Isotope          Isotopic               Percentage of Naturally                       Mass (amu)       Occurring Isotope |
| 40X             39.997                 30.1%  45X             44.995                 69.9% |

1. What is the average atomic mass of element X?

(A)      45.0 amu                                 (B)    43.5 amu

(C)       42.5 amu                                 (D)   40.0 amu

1. The ion of potassium-42, 42K+, contains

19

(A)      18 protons, 19 electrons, and 24 neutrons.

(B)       19 protons, 18 electrons, and 22 neutrons.

(C)       19 protons, 19 electrons, and 23 neutrons.

(D)      19 protons, 18 electrons, and 23 neutrons.

1. What is the composition of one atom of bromine-80?

(A) 45 protons, 35 neutrons, 45 electrons

(B) 35 protons, 45 neutrons, 35 electrons

(C) 35 protons, 45 neutrons, 80 electrons

(D) 80 protons, 80 neutrons, 35 electrons

1. How many neutrons are present in an ion of 75As3-?

33

(A) 108               (B)  75                      (C)  42                      (D)  33

1. The quantum mechanical model of the atom

(A) Defines the exact path of an electron around the nucleus

(B) Was proposed by Niels Bohr.

(C) Is concerned with the probability of finding an electron in a certain position.

(D) Has many analogies in the visible world.

**Unit 4 Practice**

1. One of the emission lines associated with the hydrogen atom has a frequency of   3.23 x 1015 Hz.  What is the energy associated with a photon of this frequency?

(A)           2.14 x 10-18 J

(B)           2.14 x 10-19 J

(C)           6.25 x 10-32 J

(D)           1.86 x 10-32 J

1. A popular radio station broadcasts with a frequency of 9.87 x 107 Hz. What is the

wavelength (in meters) of the broadcast?

(A)      2.96 x 1016 m

(B)    3.04 x 106 m

(C)    2.96 x 1010 m

(D)    6.54 x 10-26 m

1. Which atom contains a partially filled 3*p* orbital?

        (A)   iron      (B)   calcium    (C)   argon      (D)   aluminum (E)   boron

1. What is the maximum number of electrons allowed in an orbital?

        (A)   1       (B)    2       (C)    3       (D)   6       (E)    10

1. Which element has the electron configuration 1*s*22*s*22*p*63*s*23*p*6 4*s2*3*d10*?

        (A)   zinc                  (B)   chromium        (C)   copper              (D)   manganese

1. What is the electron dot diagram for the nitrogen atom?https://lh3.googleusercontent.com/n1iSw6xTNNO9edvGR7BfGZDW4tFDP5Ob1GfccIlNu3UbPTvr0pGLNh2qrkx798Vf-da9TKyWVx_Hhtl7WdFBHo1dE6FZyisrV3weGV9la--ybK6oJRSLS8GQDX29D4gxDAhttps://lh4.googleusercontent.com/TdQpGNg7vF1UfCywh7Gc1RNmDCErPwnuvoDHy7iid9Mr2ZLbQKeSrrH0SKdF8qu0QgtHDPOddR9xZOMcLZLZQ_lpplR1z_OaCTfXVDAiaCLRoMaAozoZcW0Uteyj7R5Fgghttps://lh4.googleusercontent.com/TTPLuOCaVTUn9RM-NCmD4gzOjQR7TeLoYmzkJYcv1gxSxXXzLSrolBy14jTOHxHzj4SlVQrthdPRmEZ78V5gyqrHNB7y7EUKZ8z7GMmy-Z49Kjb39A1WvqkcUyaLovqgtg

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(A)   (B)        (C)      (D)

1. Which is the electronic configuration for the scandium atom, Mn ?

(A)           [Ne]3*s*23*p*3

(B)           [Ar]4*s*2

(C)           [Kr]

(D)            [Ar]4*s*23*d*5

1. An atom has atomic number 13 and mass number 27.  The number of valence

electrons is

(A)   2    (B)   3           (C)   4           (D)   5          (E)   13

1. Which group represents particles with the same number of electrons?

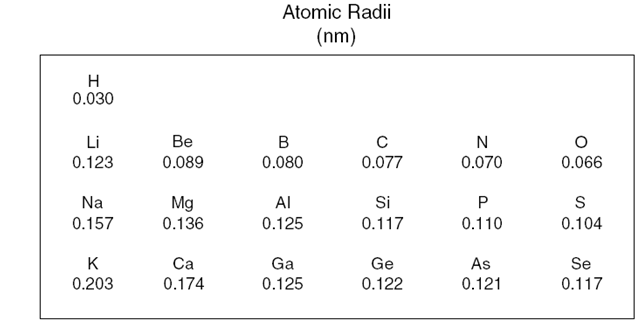
(A)    F, Ne, Na            (B)    Mg+2, Al, Si+4        (C)    Cl-, Ar, K+

(D)   O2-, S2-, Se2-       (E)    Ca+2, Fe+2, Cd+2

10. What is the electron configuration for the sodium ion?

  (A)   1*s*21*p*62*s*22*p*6                                     (B)    1*s*22*s*22*p*6

  (C) 1*s*22*s*22*p*63*s*2                                    (D)   1*s*22*s*22*p*63*s*1

11.

The table shows the atomic radii of some elements in Periods 1 through 4 of the periodic table. Which inference can be made from this information?

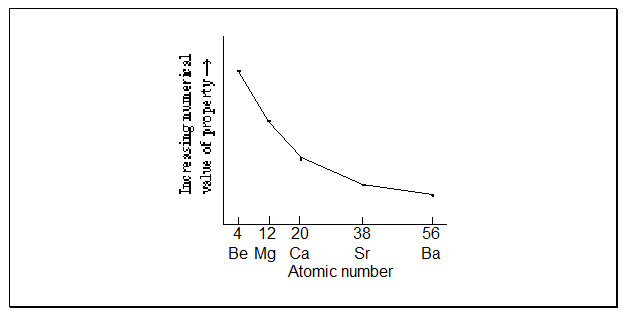
(A) Atomic radii double from top to bottom.

(B) Atomic radii increase from bottom to top.

(C) Atomic radii decrease from right to left.

(D) Atomic radii decrease from left to right.

12. Consider a plot of a property of the alkaline earth metals.



Which property is plotted on this graph?

(A)   ionization energy

(B)    atomic radius

(C)   atomic mass

(D)   number of valence electrons

**Unit 5 Practice**

1. Elements **Q** and **T** are on opposite sides of the periodic chart. This indicates that in the compound **QT**

  (A)   **Q** and **T** are widely separated in atomic number.

  (B)    there is a polyatomic ion present.

  (C)    the bond is principally molecular (covalent) in character.

  (D)   the bond is principally ionic in character

1. In an ionic compound that the “goal” (or end result) is for the compound to have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charge.

(A) positive

(B) negative

(C) neutral

(D) large

(E)  small

1. The correct formula for iron (III) sulfate is

           (A) FeSO4                      (B)    Fe2(SO4)3

           (C)  Fe(SO4)2                (D)   Fe3(SO4)2

  (E) Fe2SO4

1. Which formula represents the compound diphosphorus pentasulfide?

(A) P2S   (B) PS2         (C) P4S         (D)  P2S5

1. Which formula is followed by its correct name?

           (A) FeCl3, iron(III) chloride

           (B) FeS, iron(II) sulfite

           (C) Mg3N2, magnesium nitrite

           (D)  KNO2, potassium nitrate

1. The formula for ytterbium nitrate is Yb(NO3)3. What is the formula for ytterbium chloride?

           (A) YbCl2          (B) Yb2Cl3        (C) Yb2Cl2       (D) YbCl3

1. What is the formula for copper (II) chloride?

(A)  CuCl    (B)  CuCl2      (C)  Cu2Cl2       (D)  Cu3Cl2 (E)  Cu2Cl

1. What is the name of (NH4)2SO4?

(A)           ammonia sulfite

(B)           ammonium sulfate

(C)           ammonium sulfite

(D)           ammonia sulfate

(E)           diammonia sulfur tetroxide

1. What type of bond exists in calcium oxide, CaO?

(A)   covalent                         (B)    ionic

(C)    hydrogen                        (D)   metallic

1. What is the formula for diarsenic trioxide?

(A)   As2(O2)3                         (B)    As3(O2)2

(C)    As2O3                             (D)   As3O2

**Unit 6 Practice**

1. The percentage of hydrogen in NH4OH is

(A)   5.00%        (B)   35.0% (C)   14.3% (D)   11.4% (E)   25.7%

1. What is the smallest representative unit for Al2O3?

(A)      atoms                          (B)    molecules

(C)       formula units              (D)   moles

1. A compound consists of 36.5% sodium, 25.4% sulfur and 38.0% oxygen.  What is its empirical formula?

(A)   Na2SO4      (B)   NaS2O4       (C)   Na2SO3     (D)   Na2(SO4)2

1. How many atoms are in one molecule of acetone, CH3COCH3?

(A) 1                   (B)   6           (C)   3           (D)   10

1. Which is an empirical formula?

(A) N2O4           (B)   P4O10    (C)   Hg2I2        (D)   Al2O3

1. What is the molecular formula for a compound whose empirical formula is CH4O and molar mass is 96.0 g/mole.

(A)   C4H16O4                         (B)    C3H12O3

(C)    C2H8O2                           (D)   CH4O

1. What is the number of molecules in 4.4 g of carbon dioxide?

(A)  1.0 x 1022                    (B)   6.0 x 1022 (C)  6.0 x 1023       (D)  6.0 x 1024

1. What is the approximate molar mass of ammonium thiosulfate,  (NH4)2S2O3?

(A)      148 g/mole                  (B)    134 g/mole

(C)       102 g/mole                  (D)   61 g/mole

1. At STP, what is the mass of 5.00 L of nitrogen gas, N2(g)?

(A)   6.25 g                             (B)    3.13 g

(C)    1.25 g                             (D)   0.625 g

1. Which expression gives the number of moles in 175 g sucrose?

(A)      175 g C12H22O11  x  1 mole C12H22O11

                  342 g C12H22O11

(B)       175 g C12H22O11  x  342 g C12H22O11

               1 mole C12H22O11

(C)       175 g C12H22O11  x  342 g C12H22O11  x  6.02  x  1023 molecules C12H22O11

                                   1 mole C12H22O11                1 mole C12H22O11

(D)      175 g  C12H22O11  x  1 mole C12H22O11  x  6.02  x 1023 molecules C12H22O11

                                             342 g C12H22O11        1 mole C12H22O11

**Unit 7 Practice**

1. What is the correct equation for the following scenario:  “Solid sodium

chlorate decomposes into solid sodium chloride and oxygen gas.”

(A)           2 NaClO3 (s)  🡪  2 NaClO2 (s)  +  O2 (g)

(B)           NaClO3 (s)  🡪  NaClO2 (s)  +  O (g)

(C)           2 NaClO3 (s)  🡪  2 NaCl (s)  +  3 O2 (g)

(D)           2 NaClO2 (s)  +  O2 (g)  🡪  2 NaClO3 (s)

(E)            NaClO4 (s)  🡪  NaCl (s)  +  2 O2 (g)

1. Which reactants produce Al2(SO4)3 by double replacement?

(A)   Al  +  H2SO4                              (B)    AlSO2  +  O2

(C)    Al2O3  +  SO2                             (D)   AlCl3  +  H2SO4

1. What are the products of the complete combustion of propane, C3H8, in oxygen?

(A) carbon monoxide, CO, and hydrogen, H2

(B) carbon monoxide, CO, and water, H2O

(C) carbon dioxide, CO2, and hydrogen, H2

(D) carbon dioxide, CO2, and water, H2O

1. The type of reaction illustrated by the equation below is \_\_\_\_\_.

HC2H3O2 (*aq*)  +  LiOH (*aq*)  🡪  H2O (*l*)  +  LiC2H3O2 (*aq*)

(A) synthesis

(B) decomposition

(C)combustion

(D) precipitation

(E)  acid-base neutralization

1. Which of the following skeleton reactions is incorrect?

(A)   F2 (g)  +  KI (aq)  🡪  KF (aq)  +  I2 (s)

(B)    SiF4 (l)  +  H2O (l)  🡪  Si(OH)4 (s)  +  HF (aq)

(C)    H2SO4 (aq)  +  NaOH (aq)  🡪  Na2S (aq)  +  H2O (l)

(D)   C5H12 (g)  +  O2 (g)  🡪  CO2 (g)  +  H2O (g)

(E)    Na (s)  +  Cl2 (g)  🡪  NaCl (s)

1. What is the coefficient of oxygen, O2, in the balanced equation?

2 C2H6 (*g*)  +  ? O2 (*g*)  🡪  4 CO2 (*g*)  +  6 H2O (l)

(A)  3                 (B)  4            (C)  6            (D)  7

1. Which equation best represents the decomposition of solid aluminum oxide when electricity is passed through it?

  (A)   2 AlO (s)  🡪  2 Al (s)  +  O2 (g)

  (B)    AlO (s)  🡪  Al (s)  + O (g)

  (C)    2 Al2O3 (s) 🡪  4 Al (s)  +  3 O2 (g)

  (D)   Al3O2 (s)  🡪  3 Al (s)  +  O2 (g)

  (E)    3 Al (s)  +  O2 (g)  🡪  Al3O2 (s)

1. Which set of coefficients will balance this equation?

? ZnS (*s*)  +  ? O2 (*g*)  🡪  ? ZnO (*s*)  +  ? SO2 (*g*)

(A)   1, 1, 1, 1                         (B)    1, 2, 1, 1

(C)    2, 3, 2, 2                         (D)   2, 5, 2, 2

1. This table summarizes the results when solutions are added as indicated.

|  |  |  |
| --- | --- | --- |
| Solutions | KOH | K2SO4 |
| FeCl3 | Precipitate Occurs | No Precipitate |
| Zn(NO3)2 | Precipitate Occurs | No Precipitate |

Which substance is a precipitate?

       (A)   Fe2(SO4)3                  (C)    Zn(OH)2

        (B)    Fe(NO3)3              (D)   KNO3