General Chemistry Multiple Choice Questions Chapter 2

1 What is the final temperature of 30 g of Al if 2000 J of heat is added to a sample at 25°C?

a 32.6°C
b 98.9°C
c 120.2°C
d 2192°C

	2.1

2 What is the specific heat of copper if 90.0 g of Cu at 39.1°C is placed in water at 30.0°C, the calorimeter gains 263 J, and the final temperature of the mixture is 31.5°C?

a 0.126 J/K g
b 0.385 J/K g
c 10.2 J/K g
d 34.65 J/K g

	2.1

3 What is the final temperature in degrees centigrade of 100.0 g of water at 30.0°C if it is mixed with 50.0 g of water at 0.0°C?

a 40
b 20
c 15
d 10

	2.1

4 In an insultated cup of negligible heat capacity, 50. g of water at 40.°C is mixed with 30. g of water at 20.°C. The final temperature of the mixture is closest to

a 22 °C
b 27°C
c 30.°C
d 33°C
e 38°C

	2.1

5 A 10. gube of copper at a temperature T_1 is placed in an insulated cup containing 10. g of water at temperature T_2. If $T_1 > T_2$, which of the following is true of the system when it has attained thermal equilibrium?

a The temperature of the copper changed more than the temperature of the water
b The temperature of the water changed more than the temperature of the copper
c The temperature of the water and the copper changed by the small amount
d The relative temperature changes of the copper and the water cannot be determined without knowing T_1 and T_2.

	2.1

General Chemistry Multiple Choice Questions Chapter 2

1 Which of the following states of matter is defined by only vibratory motions of the molecules?

a Solid **b** Liquid

c Gas **d** Plasma

	2.2

2 Which of the following states of matter is characterized by the fastest motion of molecules?

a Solid **b** Liquid

c Gas **d** None of the above

	2.2

3 Which of the following states of matter is characterized by the slowest motion of molecules?

a Solid **b** Liquid

c Gas **d** None of the above

	2.2

General Chemistry Multiple Choice Questions Chapter 2

1 How much energy does it take to melt 1.5 kg of ice?

a 3100 J
b 50000 J
c 80000 J
d 4800 J

	2.3

2 How much energy does it take to transform 3.5 kg of ice at the melting point to water at 50.°C?

a 170000 J
b 1700000 J
c 650000 J
d 850000 J

	2.3

3 How much energy does it take to transform 350 g of ice at -20°C to steam at 150°C?

a 5000000 J
b 10000000 J
c 50000 J
d 1000000 J

	2.3

General Chemistry Multiple Choice Questions Chapter 2

1 Which of the following is not a form of energy?

a Heat
b Chemical
c Sound
d Lunar

	2.4

2 Which of the following is one of the fundamental six types of energy?

a Light
b Kinetic
c Potential
d Nuclear

	2.4

3 Kinetic and Potential are forms of what type of energy?

a Sound
b Mechanical
c Chemical
d Heat

	2.4

General Chemistry Multiple Choice Questions Chapter 2

1 The energy required to break a nitrogen triple bond in a particular molecule is 1113 kJ/mol. Calculate the wavelength in meters of photons having sufficient energy to break this bond.
There are 6.02×10^{23} molecules in one mole of a substance.

	2.5

a 1.79×10^{-28} m
b 1.79×10^{-31} m
c 5.92×10^{-52} m
d 1.07×10^{-7} m

2 What is the frequency of ultraviolet radiation with a wavelength of 15.3 nm?

	2.5

a 1.96×10^{16} Hz
b 1.96×10^{7} Hz
c 4.59 Hz
d 4.59×10^{9} Hz

3 Which of the following statements is *not* correct?

	2.5

a Photons of lower-frequency radiation have lower energies
b Planck's study of black-body radiation led to the hypothesis that radiation is emitted in quantas of energy
c Bohr's model of the hydrogen atom showed emission of energy by atoms occurs when an electron moves to a higher orbit
d The lowest energy state of an electron in an atom is known as the ground state

General Chemistry Multiple Choice Questions Chapter 2

1 Which of the following types of electromagnetic radiation has the highest frequency?

a X-Rays **b** Gamma Rays

c Microwave Rays **d** Ultraviolet Rays

	2.6

2 Which of the following types of electromagnetic radiation has the longest wavelength?

a X-Rays **b** Gamma Rays

c Microwave Rays **d** Ultraviolet Rays

	2.6

3 Photons of visible light have more energy than photons of

a X-Rays **b** Gamma Rays

c Microwave Rays **d** Ultraviolet Rays

	2.6

General Chemistry Multiple Choice Questions Chapter 2

1 Which of the following is true about Dalton's Atomic Theory?

a Atoms were viewed as indivisible
b It was the first statement on the atomic characteristics of matter
c It was immediately and widely accepted
d All of his postulates are still true based on today's information

	2.7

2 Rutherford's famous experiment that disproved the Plum-Pudding model of the atom utilized _____ and alpha particles, which are simply helium nuclei.

a Aluminum Foil
b Tin Foil
c Silver Foil
c Iron Foil
e None of the Above

	2.7

3 What substance was symbolized by the "plums" in Thompson's Plum Pudding Model?

a Positively-charged particles
b Neutral particles
c Negatively-charged particles
d Very massive particles
e Very light particles

	2.7

General Chemistry Multiple Choice Questions Chapter 2

1 Which of the following is true about $^{63}_{29}Cu$ It has…

a 63 protons
b 29 electrons
c 29 neutrons
d 63 neutrons

	2.8

2 How many electrons does $^{24}_{12}Mg^{2-}$ have?

a 10
b 12
c 14
d 24

	2.8

3 How many protons, neutrons, and electrons are in a $^{56}_{26}Fe$ atom?

a Protons: 26, Neutrons: 30, Electrons: 26
b Protons: 26, Neutrons: 56, Electrons: 26
c Protons: 30, Neutrons: 26, Electrons: 30
d Protons: 56, Neutrons: 26, Electrons: 26
e Protons: 56, Neutrons: 82, Electrons: 56

	2.8

4 The charge, in Coulombs, of an electron is most nearly

a 1.602×10^{-19} C
b -1.602×10^{-19} C
c 1.67×10^{-27} C
d -1.67×10^{-27} C
e None of the above

	2.8

5 The mass number is the _____ of the protons _____ neutrons in an atom.

a sum, and
b sum, but not the
c product, and
d product, but not the
e None of the above

	2.8

6 The mass number of an element is represented by the letter _ while the atomic number is represented by

a A, Z
b Z, A
c A, M
d M, A
e None of the above

	2.8

7 The nucleus of an atom is comprised of protons and what?

a Protons
b Electrons
c Positrons
d Negatrons
e None of the Above

	2.8

General Chemistry Multiple Choice Questions Chapter 2

1 Which of the following is the atomic mass of silver given the following distribution and masses of naturally occurring isotopes of silver: Ag-107: 51.88%, 106.906 amu; Ag-109: 48.12%, 108.905 amu

	2.9

a 107.868 amu
b 106.926 amu
c 108.235 amu
d 108.642 amu

2 Which of the following is the atomic mass of magnesium given the following distribution and masses of naturally occurring isotopes of magnesium: Mg-24: 23.985 u, 78.99%, Mg-25: 24.986 u, 10.00 %, Mg-26: 25.983 u, 11.01%

	2.9

a 25.22 amu
b 24.81 amu
c 23.77 amu
d 24.31 amu

3 Argon has three naturally occurring isotopes: Argon-36, Argon-38, and Argon-40. Based on argon's reported atomic mass on the Periodic Table, which isotope is the most abundant?

	2.9

a Argon - 36
b Argon - 38
c Argon - 40
d Not enough information to determine