

1) Calculate the kinetic energy in joules of an automobile weighing 2135 lb and traveling at 55 mph. (1 mile = 1.6093 km, 1lb = 453.59 g).

- A) 1.2×10^4
- B) 2.9×10^5
- C) 5.9×10^5
- D) 3.2×10^6
- E) 3.2×10^{-6}

2) Calculate the kinetic energy in joules of a 150 lb jogger (68.1 kg) traveling at 12.0 mile/hr (5.36 m/s).

- A) 1.96×10^3
- B) 365
- C) 978
- D) 183
- E) 68.1

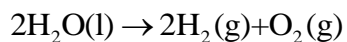
3) Calculate the kinetic energy in joules of an 80.0 g bullet traveling at 300.0 m/s.

- A) 3.60×10^6
- B) 1.20×10^4
- C) 3.60×10^3
- D) 12.0
- E) 80.0

4) Given the following reactions



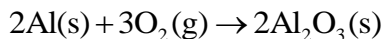
the enthalpy for the decomposition of liquid water into gaseous hydrogen and oxygen



is _____ kJ.

- A) -395.62
- B) -527.65
- C) 439.63
- D) 571.66
- E) 527.65

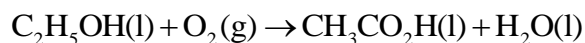
5) The value of ΔH° for the following reaction is -3351 kJ:



The value of ΔH_f° for $\text{Al}_2\text{O}_3(s)$ is _____ kJ.

- A) -3351
- B) -1676
- C) -32.86
- D) -16.43
- E) +3351

6) Given the data in the table below, $\Delta H_{\text{rxn}}^\circ$ for the reaction



is _____ kJ.

Substance	ΔH_f° (kJ/mol)
$\text{C}_2\text{H}_4(g)$	52.3
$\text{C}_2\text{H}_5\text{OH}(l)$	-277.7
$\text{CH}_3\text{CO}_2\text{H}(l)$	-484.5
$\text{H}_2\text{O}(l)$	-285.8

- A) -79.0
- B) -1048.0
- C) -476.4
- D) -492.6
- E) The value of ΔH_f° of $\text{O}_2(g)$ is required for the calculation.

7) For a given process at constant pressure, ΔH is negative. This means that the process is _____.

- A) endothermic
- B) equithermic
- C) exothermic
- D) a state function
- E) energy

8) Which one of the following statements is true?

- A) Enthalpy is an intensive property.
- B) The enthalpy change for a reaction is independent of the state of the reactants and products.
- C) Enthalpy is a state function.
- D) H is the value of q measured under conditions of constant volume.
- E) The enthalpy change of a reaction is the reciprocal of the ΔH of the reverse reaction.

9) Which of the following statements is false?

- A) Internal energy is a state function.
- B) Enthalpy is an intensive property.
- C) The enthalpy change for a reaction is equal in magnitude, but opposite in sign, to the enthalpy change for the reverse reaction.
- D) The enthalpy change for a reaction depends on the state of the reactants and products.
- E) The enthalpy of a reaction is equal to the heat of the reaction.

10) A chemical reaction that absorbs heat from the surroundings is said to be _____ and has a _____ ΔH at constant pressure.

- A) endothermic, positive
- B) endothermic, negative
- C) exothermic, negative
- D) exothermic, positive
- E) exothermic, neutral

11) Under what condition(s) is the enthalpy change of a process equal to the amount of heat transferred into or out of the system?

- (a) temperature is constant
- (b) pressure is constant
- (c) volume is constant

- A) a only
- B) b only
- C) c only
- D) a and b
- E) b and c

12) What color of visible light has the highest energy?

- A) violet
- B) blue
- C) red
- D) green
- E) yellow

13) Which one of the following is considered to be ionizing radiation?

- A) visible light
- B) radio waves
- C) X-rays
- D) microwaves
- E) infrared radiation

14) A spectrum containing only specific wavelengths is called a _____ spectrum.

- A) line
- B) continuous
- C) visible
- D) Rydberg
- E) invariant

15) When the electron in a hydrogen atom moves from $n = 6$ to $n = 2$, light with a wavelength of _____ nm is emitted.

- A) 93.8
- B) 434
- C) 487
- D) 657
- E) 410

16) At what speed (m/s) must a 10.0 mg object be moving to have a de Broglie wavelength of 3.3×10^{-41} m?

- A) 4.1
- B) 1.9×10^{-11}
- C) 2.0×10^{12}
- D) 3.3×10^{-42}
- E) 9.1×10^{31}

17) The $n = 1$ shell contains _____ p orbitals. All the other shells contain _____ p orbitals.

- A) 3, 6
- B) 0, 3
- C) 6, 2
- D) 3, 3
- E) 0, 6

18) The photoelectric effect is _____.

- A) the total reflection of light by metals giving them their typical luster
- B) the production of current by silicon solar cells when exposed to sunlight
- C) the ejection of electrons by a metal when struck with light of sufficient energy
- D) the darkening of photographic film when exposed to an electric field
- E) a relativistic effect

19) The uncertainty principle states that _____.

- A) matter and energy are really the same thing
- B) it is impossible to know anything with certainty
- C) it is impossible to know the exact position and momentum of an electron
- D) there can only be one uncertain digit in a reported number
- E) it is impossible to know how many electrons there are in an atom

20) Sodium is much more apt to exist as a cation than is chlorine. This is because _____.

- A) chlorine is a gas and sodium is a solid
- B) chlorine has a greater electron affinity than sodium does
- C) chlorine is bigger than sodium
- D) chlorine has a greater ionization energy than sodium does
- E) chlorine is more metallic than sodium

QUIZ Prep Calorimetry, 6, & 7

a.k.a. Why Does Mr.C Do This to Us?

1) Answer: B
Diff: 3
Page Ref: Sec. 5.1

11) Answer: B
Diff: 3
Page Ref: Sec. 5.4

2) Answer: C
Diff: 2
Page Ref: Sec. 5.1

12) Answer: A
Diff: 1
Page Ref: Sec. 6.2

3) Answer: C
Diff: 2
Page Ref: Sec. 5.1

13) Answer: C
Diff: 1
Page Ref: Sec. 6.2

4) Answer: D
Diff: 3
Page Ref: Sec. 5.6

14) Answer: A
Diff: 1
Page Ref: Sec. 6.3

5) Answer: B
Diff: 2
Page Ref: Sec. 5.7

15) Answer: E
Diff: 1
Page Ref: Sec. 6.3

6) Answer: D
Diff: 3
Page Ref: Sec. 5.7

16) Answer: C
Diff: 1
Page Ref: Sec. 6.4

7) Answer: C
Diff: 1
Page Ref: Sec. 5.3

17) Answer: B
Diff: 1
Page Ref: Sec. 6.5

8) Answer: C
Diff: 3
Page Ref: Sec. 5.4

18) Answer: C
Diff: 1
Page Ref: Sec. 6.2

9) Answer: B
Diff: 3
Page Ref: Sec. 5.4

19) Answer: C
Diff: 1
Page Ref: Sec. 6.5

10) Answer: A
Diff: 2
Page Ref: Sec. 5.4

20) Answer: D
Diff: 1
Page Ref: Sec. 7.4