

Answer the following questions by circling the letter for the best response. Show your work where requested. If you simply provide a correct answer without showing work, you will receive ½ credit. You may find the information below useful

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) / 1.8 \quad ^{\circ}\text{F} = (1.8^{\circ}\text{C}) + 32 \quad \text{K} = ^{\circ}\text{C} + 273.15 \quad ^{\circ}\text{C} = \text{K} - 273.15 \quad 1 \text{ cal} = 4.184 \text{ J}$$
$$q = m C \Delta T$$

1) Which state of matter has atomic spacing that is close together and indefinite shape?

- A) solid
- B) gas
- C) plasma
- D) liquid
- E) none of the above

2) Which state of matter has atomic spacing that is close together and definite shape?

- A) liquid
- B) solid
- C) gas
- D) plasma
- E) none of the above

3) Which of the following is a homogeneous mixture?

- A) stainless steel
- B) trail mix
- C) water
- D) molten iron
- E) none of the above

4) If you hold a solid piece of pure gallium metal in your hand, your body heat will melt the gallium into its liquid form. This illustrates which of the following?

- A) chemical property
- B) chemical change
- C) physical property
- D) physical change
- E) none of the above

5) Which of the following items is a physical property?

- A) the corrosive action of acid rain on granite
- B) the tarnishing of a copper statue
- C) the combustion of gasoline
- D) the odor of spearmint gum
- E) none of the above

# QUIZ 2A pg. 2

6) When methane is burned with oxygen, the products are carbon dioxide and water. If you produce 18 grams of water from 8 grams of methane and 32 grams of oxygen, how many grams of carbon dioxide were produced in the reaction?  $\text{CH}_4 + \text{O}_2 \rightarrow \text{H}_2\text{O} + \text{CO}_2$  **SHOW YOUR WORK**

**WORK**

A) 40

B) 58

C) 22

D) 18

E) none of the above

$8\text{g} + 32\text{g} = 40\text{g}$  of reactants. Due to the law of conservation of mass, 40g of products must also be produced. Therefore

$$40\text{g} - 18\text{g} = 22\text{g} \text{ of } \text{CO}_2 \text{ produced.}$$

7) What is the value of 98 °F in units of °C? **SHOW YOUR WORK**

A) 72

B) 37

C) 371

D) 22

E) none of the above

$$^{\circ}\text{C} = \frac{(98 - 32)}{1.8} = 36.6\bar{6} \text{ Round to 2 digits}$$

8) What is the value of 27°C on the Kelvin temperature scale? **SHOW YOUR WORK**

A) 81

B) 273

C) 246

D) 300

E) none of the above

$$\text{K} = 27 + 273.15 = 300.15$$

Round off to decimal point

9) How many joules are there in a 255 calorie snack bar? **SHOW YOUR WORK**

A)  $2.55 \times 10^5$

B)  $1.07 \times 10^6$

C)  $1.07 \times 10^3$

D)  $6.09 \times 10^4$

E) none of the above

$$\frac{255 \text{ cal}}{1 \text{ cal}} \times 4.184 \text{ J} = 1066.92 \text{ J}$$

Round to 3 digits

10) Given the table of specific heat values below, what is the identity of a 10.0 g metal sample that increases by 14.0°C when 62.9 J of energy is absorbed? **SHOW YOUR WORK**

Element	Specific Heat (J/g°C)
Au	0.128
Ag	0.235
Cu	0.385
Fe	0.449
Al	0.903

$$C = \frac{q}{m\Delta T} = \frac{62.9 \text{ J}}{(10.0 \text{ g})(14^{\circ}\text{C})} = 0.449 \text{ J/g}^{\circ}\text{C}$$

A) Al

B) Fe

C) Au

D) Ag

E) none of the above