Henrico County Public Schools

Unit 2 Test Review - Matter and Energy

Instructor: **Jennifer Krug**

ID: **3466**

Name: _____ Score: / 100

Instructions:

You will have **two attempts** to get your highest score. If you score 80% or above, you will earn 5 points extra test credit. This assignment must be completed on time in order to earn extra credit.

Question 1 /1

A sample of aluminum metal has a density of 2.70 g/ml. Is density a physical property or a chemical property of the metal?

- [ ] chemical property
- [ ] physical property

Question 2 /1

What is the difference between an element and a compound?

- [ ] An element contains one type of atom while a compound contains two or more types of atoms
- [ ] An element is has a high melting point while a compound has a low melting point
- [ ] An element is stable while a compound is radioactive
- [ ] An element is a pure substane while a compound is a mixture

Name: _____

Question 3 /1

Balancing a chemical equation so that the same number of atoms of each element is found in both the reactants and products is an illustration of

- [ ] The Law of Mass Conservation
- [ ] The Law of Multiple Proportions
- [ ] The Law of Energy Conservation
- [ ] The First Atomic Theory

Question 4 /1

Which of the following types of matter would be classified as a **compound**?

- [ ] sodium chloride
- [ ] chlorine
- [ ] salt water
- [ ] sodium

Name: _____

Question 5 /1

All of the following are examples of a chemical change *EXCEPT* -

- [ ] oxidation
- [ ] ductility
- [ ] electrolysis
- [ ] fermentation

Question 6 /1

Which of the following types of matter is considered a **pure substance**?

- [ ] air
- [ ] ice tea
- [ ] aluminum
- [ ] bronze

Name: _____

Question 7 /1

Temperature is a measure of the _____ kinetic energy of the particles in a substance.

- ☐ minimum
- ☐ potential
- ☐ average
- ☐ maximum

Question 8 /1

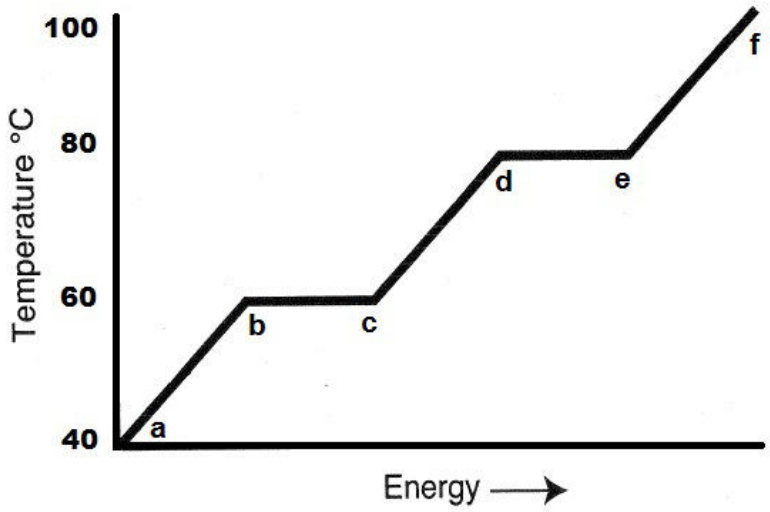
A student places an object on the balance and records the mass as 9.30 grams. Then the student adds exactly 25.0 ml of water to a graduated flask and drops in the object. The final volume of the flask is 28.4 ml. What is the density of the object?

- ☐ 2.73 g/ml
- ☐ 3.72 g/ml
- ☐ 0.327 g/ml
- ☐ 0.372 g/ml

Name: _____

Question 9 /1

Which letters represent **condensation**?



- [ ] c ← d
- [ ] e ← f
- [ ] d ← e
- [ ] b ← c

Name: _____

Question 10 /1

A _____ change occurs when heat is gained or lost causing a change in the state of matter.

- ☐ chemical
- ☐ electrical
- ☐ mechanical
- ☐ physical

Question 11 /1

Match each lab technique with the process of separating a mixture.

☐ 1. Separatory Funnel	A. different particle size
☐ 2. Distillation	B. different densities
☐ 3. Chromatography	C. different boiling points
☐ 4. Filtration	D. different pigments or dyes

Name: _____

Question 12 /1

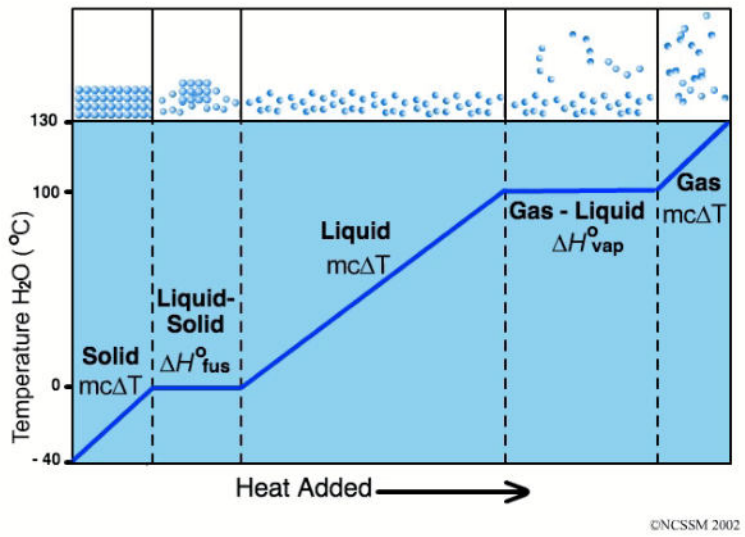
Dry ice is composed of carbon dioxide and sublimes at room temperature. Which state of matter does it skip?

- ☐ liquid
- ☐ plasma
- ☐ gas
- ☐ solid

Name: _____

Question 13 /1

Which **state of matter** is the end result when a substance *condenses* ?



- [ ] liquid
- [ ] plasma
- [ ] gas
- [ ] solid

Name: _____

Question 14 /1

Chocolate milk can be classified as a

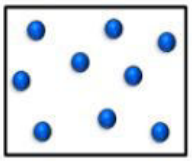
- ☐ heterogeneous mixture.
- ☐ chemical compound.
- ☐ pure solution.
- ☐ homogeneous mixture.

Name: _____

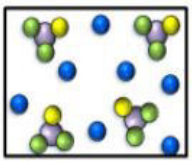
Question 15 /1

Which of the following depicts a sample of a **pure substance**?

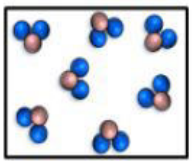
I



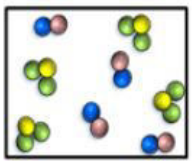
II



III



IV

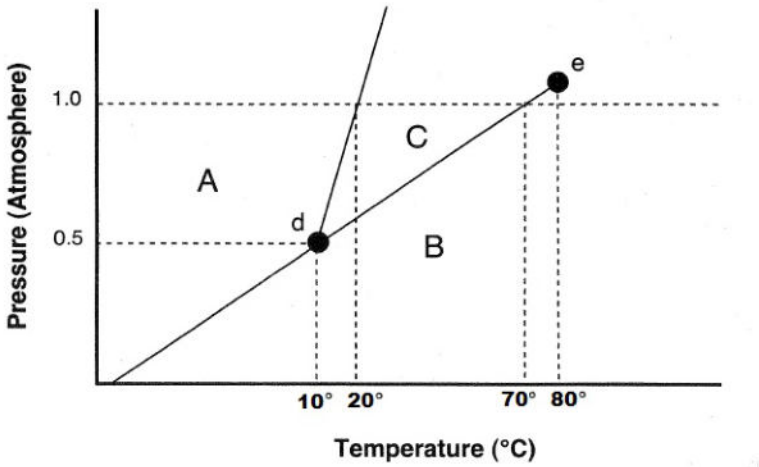


- ☐ I and III
- ☐ III and IV
- ☐ II and IV
- ☐ I and II

Name: _____

Question 16 /1

What is the normal boiling point for this substance?



- [ ] 20°C
- [ ] 70°C
- [ ] 80°C
- [ ] 10°C

Name: _____

Question 17 /1

Which of the following represents a **homogeneous mixture**?

- [ ] table salt
- [ ] chocolate milk
- [ ] air
- [ ] salad dressing

Name: _____

Question 18 /1

Which **state of matter** has strong intermolecular forces and low kinetic energy?


solid


liquid


gas

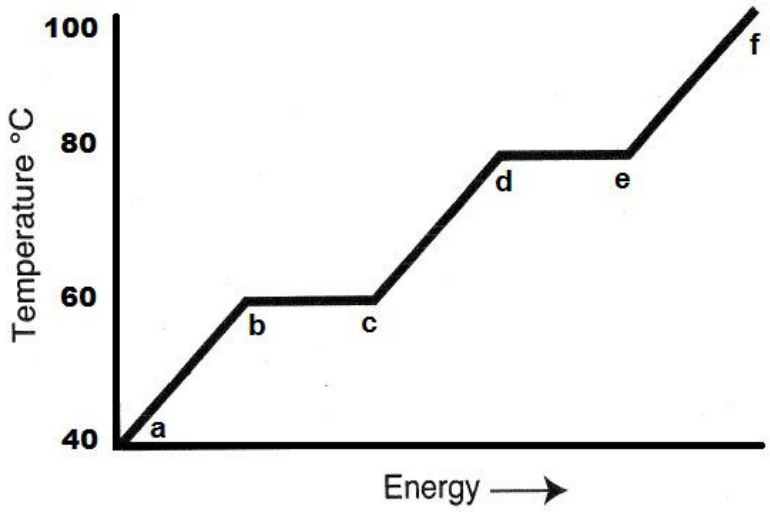

plasma

- [ ] gas
- [ ] plasma
- [ ] solid
- [ ] liquid

Name: _____

Question 19 /1

Which letters represent **freezing**?



- [ ] c ← d
- [ ] e ← f
- [ ] d ← e
- [ ] b ← c

Name: _____

Question 20 /1

What is the heat capacity of a 250 gram object that absorbes 3.575 kilojoules, when the temperature is increased by 15 degrees?

- ☐ 950 J/ g °C
- ☐ 9500 J/ g °C
- ☐ 0.95 J/ g °C
- ☐ 9.5 J/ g °C

Question 21 /1

The transfer of **energy** between objects of different temperature is called −

- ☐ energy
- ☐ thermodynamics
- ☐ temperature
- ☐ heat

Name: _____

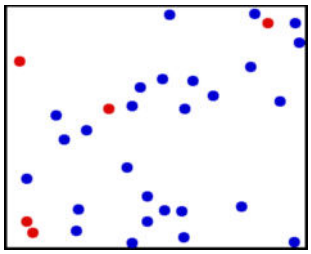
Question 22 /1

A 50.0 gram sample of water is heated from 22.3 °C to 100.0 °C. The specific heat of water is 4.184 J/g °C. Calculate the energy absorbed *in calories.*

- [ ] 16254.84 calories
- [ ] 3855 calories
- [ ] 3885 joules
- [ ] 287 Joules

Question 23 /1

Which **state of matter** contains molecules that move freely in straight line paths?

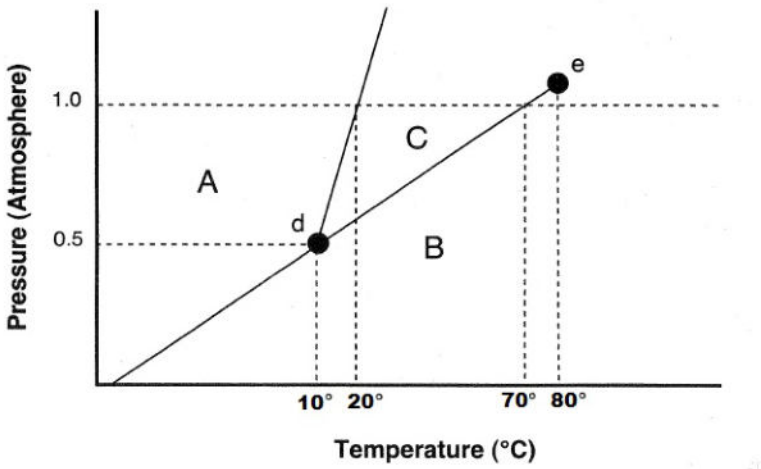


- [ ] liquid
- [ ] plasma
- [ ] gas
- [ ] solid

Name: _____

Question 24 /1

Which state of matter exists when the pressure is **0.75 atm** and the temperature is **−30°C**?



- [ ] Liquid
- [ ] Triple Point
- [ ] Gas
- [ ] Solid

Name: _____

Question 25 /1

When sugar is dissolved in water, it represents _____.

- ☐ a chemical property.
- ☐ a chemical change.
- ☐ a physical change.
- ☐ a physical property.

Instructions for grading: Grade each question and tally the score to obtain the total test points. If the factor does not equal 1, multiply the total points by the factor to obtain the student's final score.

Question 1

A sample of aluminum metal has a density of 2.70 g/ml. Is density a physical property or a chemical property of the metal?

☐ physical property

1 possible pts.

Question 2

What is the difference between an element and a compound?

☐ An element contains one type of atom while a compound contains two or more types of atoms

1 possible pts.

Question 3

Balancing a chemical equation so that the same number of atoms of each element is found in both the reactants and products is an illustration of

☐ The Law of Mass Conservation

1 possible pts.

Question 4

Which of the following types of matter would be classified as a **compound**?

☐ sodium chloride

1 possible pts.

Question 5

All of the following are examples of a chemical change *EXCEPT* -

☐ ductility

1 possible pts.

Question 6

Which of the following types of matter is considered a **pure substance**?

☐ aluminum

1 possible pts.

Question 7

Temperature is a measure of the _____ kinetic energy of the particles in a substance.

☐ average

1 possible pts.

Question 8

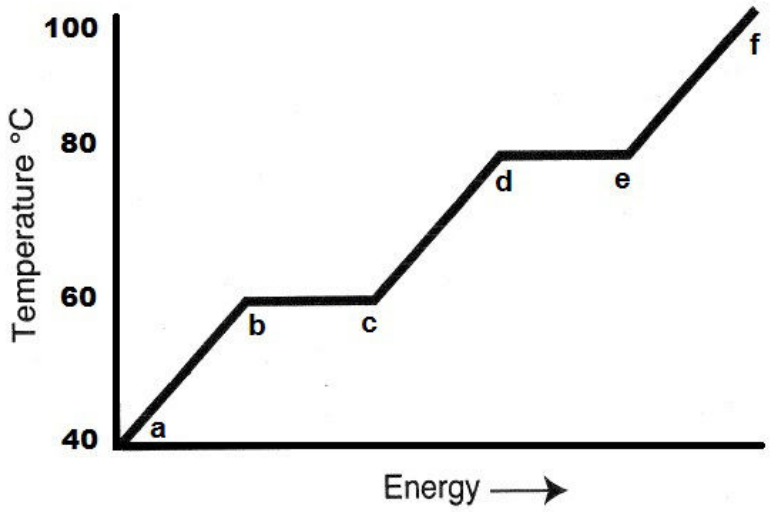
A student places an object on the balance and records the mass as 9.30 grams. Then the student adds exactly 25.0 ml of water to a graduated flask and drops in the object. The final volume of the flask is 28.4 ml. What is the density of the object?

☐ 2.73 g/ml

1 possible pts.

Question 9

Which letters represent **condensation**?



☐ d ← e

1 possible pts.

Question 10

A _____ change occurs when heat is gained or lost causing a change in the state of matter.

☐ physical

1 possible pts.

Question 11

Match each lab technique with the process of separating a mixture.

B 1. Separatory Funnel

C 2. Distillation

D 3. Chromatography

A 4. Filtration

1 possible pts. / partial credit

Question 12

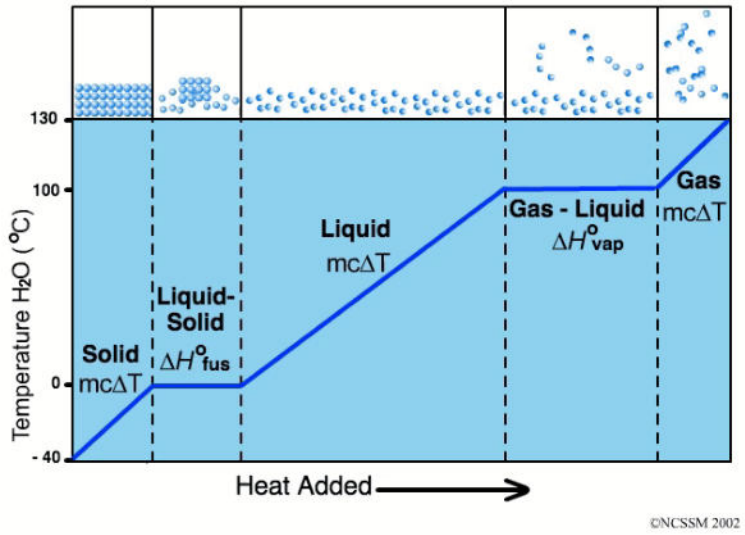
Dry ice is composed of carbon dioxide and sublimes at room temperature. Which state of matter does it skip?

☐ liquid

1 possible pts.

Question 13

Which **state of matter** is the end result when a substance *condenses* ?



☐ liquid

1 possible pts.

Question 14

Chocolate milk can be classified as a

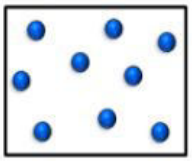
☐ heterogeneous mixture.

1 possible pts.

Question 15

Which of the following depicts a sample of a **pure substance**?

I



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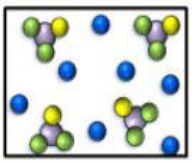

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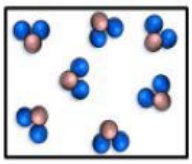

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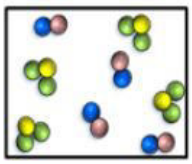
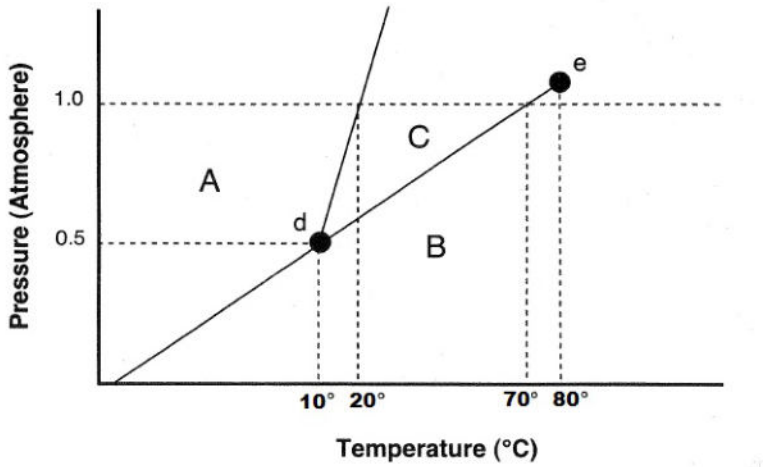


☐ I and III

1 possible pts.

Question 16

What is the normal boiling point for this substance?



☐ 70°C

1 possible pts.

Question 17

Which of the following represents a **homogeneous mixture**?

☐ air

1 possible pts.

Question 18

Which **state of matter** has strong intermolecular forces and low kinetic energy?

solid

liquid

gas

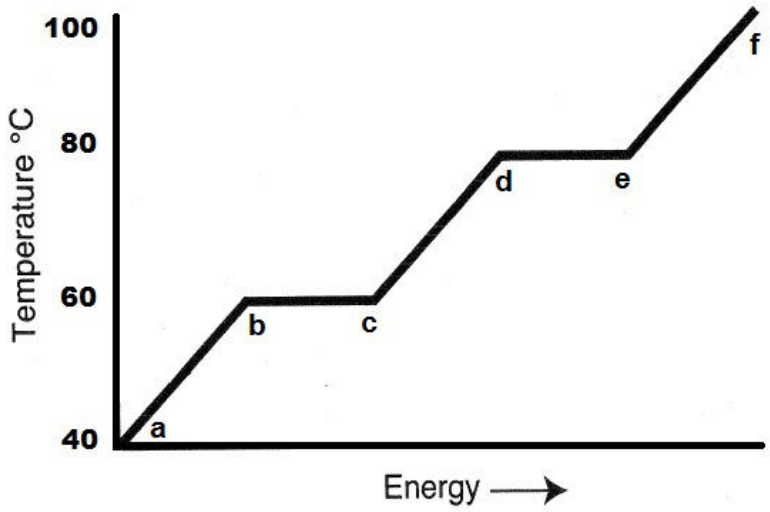
plasma

☐ solid

1 possible pts.

Question 19

Which letters represent **freezing**?



☐ b ← c

1 possible pts.

Question 20

What is the heat capacity of a 250 gram object that absorbes 3.575 kilojoules, when the temperature is increased by 15 degrees?

☐ 0.95 J/ g °C

1 possible pts.

Question 21

The transfer of **energy** between objects of different temperature is called −

☐ heat

1 possible pts.

Question 22

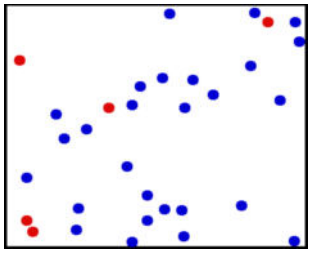
A 50.0 gram sample of water is heated from 22.3 °C to 100.0 °C. The specific heat of water is 4.184 J/g °C. Calculate the energy absorbed *in calories.*

☐ 3855 calories

1 possible pts.

Question 23

Which **state of matter** contains molecules that move freely in straight line paths?

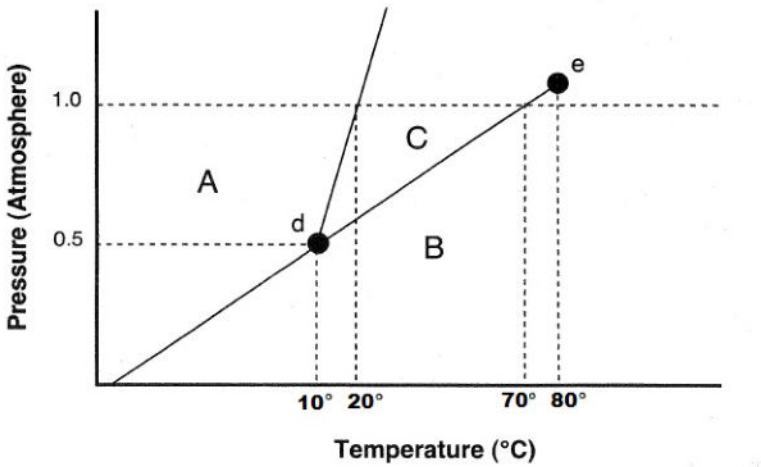


☐ gas

1 possible pts.

Question 24

Which state of matter exists when the pressure is **0.75 atm** and the temperature is **−30°C**?



☐ Solid

1 possible pts.

Question 25

When sugar is dissolved in water, it represents _____.

☐ a physical change.

1 possible pts.