

Biophysics lab – Quiz

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7/10

Q: Choose the most correct answer for the following.

1- How can you remove energy from matter?

- a) By increasing its volume.
- b) By lowering its temperature
- c) By increasing its pressure

2- Energy of an object has due to its motion is.....

- a) Thermal energy
- b) Kinetic energy
- c) Potential energy

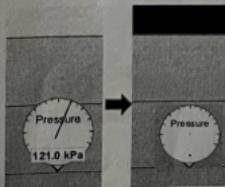
3- Gas molecules can easily be compressed because \_\_\_\_\_

- a) Gas molecules are soft
- b) Gas molecules are far apart
- c) Gas molecules follow the shape of the container

4- The boiling point of H<sub>2</sub>O is 100 degrees Celsius. This is the same as it's:

- a) Melting point
- b) Freezing point
- c) Condensation point

5- If the only change was to remove the air pressure (atmosphere), what will happen to the pressure?



- a) Increase by 101.3 kPa
- b) Decrease by 101.3 kPa
- c) Stay the same

6-What is it called when a gas turns directly into a solid?

- a) Melting
- b) Sublimation
- c) Deposition

7- If you put a thermometer into a pot of melting ice, when will the temperature rise past zero?

- a) As soon as the ice begins to melt.
- b) After most of the ice has melted.
- c) When all the ice has melted.

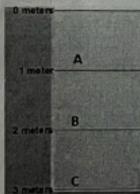
8-How is pressure related to density?

- a) Greater Density = Greater Pressure
- b) Greater Density = Lesser Pressure
- c) They are not related

9-Microwaves, x-rays, ultraviolet rays, infrared waves, light waves are all examples of:

- a) Electrical energy
- b) Nuclear energy
- c) Electromagnetic energy

10- Order from lowest to highest pressure.



- a)  $A < B < C$
- b)  $A > B > C$
- c) All are equal

11- What energy transformation occurs from a light bulb?

- a) Electrical energy = kinetic energy + potential energy
- b) Electrical energy = light energy + thermal energy
- c) Electrical energy = electrical energy

Q2: Solve the following questions:

- A gas occupies 1.00 L at standard temperature. What is the volume at 333.0 °C?

$$\begin{aligned} V_1 &= 1 \text{ L} \\ V_2 &= ?? \\ T_1 &= 273 \text{ K} \\ T_2 &= 333.0 \text{ }^\circ\text{C} \\ &= 606 \text{ K} \end{aligned}$$

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$
$$\frac{1.00}{273} = \frac{V_2}{606}$$

$$273 V_2 = 606 \rightarrow V_2 = 2.22 \text{ L}$$

- If a gas in a closed container is pressurized from 15.0 atmospheres to 16.0 atmospheres and its original temperature was 25.0 °C, what would the final temperature of the gas be in degrees Celsius?

$$\begin{aligned} P_1 &= 15.0 \text{ atm} \\ P_2 &= 16.0 \text{ atm} \\ T_1 &= 25.0 \text{ }^\circ\text{C} \\ T_2 &= ? \\ &\text{in celsius} \end{aligned}$$

$$\frac{P_1}{T_1} = \frac{P_2}{T_2}$$

$$\frac{15}{25} = \frac{16}{T_2}$$

$$15 T_2 = 400$$

$$T_2 = 26.6 \text{ }^\circ\text{C}$$