States of Matter

Choose one answer per question. Circle A, B, C, or D.

1. Which sample keeps its own shape when moved intact from one bowl to another?
   A. A solid cube of wax
   B. A cupful of juice
   C. The air inside a balloon
   D. Liquid food coloring

2. What changes when you pour the same amount of syrup into a wider bowl without spilling any?
   A. Its total mass
   B. Its volume
   C. Its shape in the bowl
   D. Its state of matter

3. Which sample expands to occupy all the space available inside a larger closed container?
   A. A marble
   B. A sample of helium gas
   C. A piece of chalk
   D. A spoonful of olive oil

4. A candle in a warm room forms a puddle of wax. What change took place in the wax that became liquid?
   A. Deposition
   B. Freezing
   C. Condensation
   D. Melting

5. What change occurs when liquid juice becomes a solid ice pop?
   A. Vaporization
   B. Freezing
   C. Sublimation
   D. Condensation

6. What process produces liquid droplets on the outside of a cold glass on a humid day?

A. Water vapor in the air condenses.
B. The glass changes from solid to liquid.
C. Water vapor inside the glass freezes.
D. Liquid water passes through the glass.

7. A shallow puddle shrinks on a mild day even though the water never boils. Which process explains this?

A. Deposition from the air
B. Solidification below its surface
C. Boiling throughout the liquid
D. Evaporation from its surface

8. Dry ice goes directly from solid carbon dioxide to carbon dioxide gas in an open room. What is this called?

A. Freezing
B. Deposition
C. Sublimation
D. Condensation

9. Water vapor forms ice crystals directly on a freezer surface. Which phase change is this?

A. Deposition
B. Fusion
C. Sublimation
D. Evaporation

10. Which sample typically has the largest average gaps between its molecules under ordinary conditions?

A. All three have about the same gaps.
B. Ice
C. Liquid water
D. Water vapor

11. Why is a sealed syringe full of air generally easier to compress than one full of liquid water?

A. Liquid water always freezes under the plunger.
B. Air molecules can be destroyed by gentle pressure.
C. Gas molecules have much more space between them.
D. Gases are made of particles that shrink when pushed.

12. Which observation distinguishes boiling in a pot from ordinary evaporation at the surface?

A. Some molecules leave the liquid.
B. Vapor bubbles form within the liquid.
C. The amount of liquid decreases.
D. The vapor is made of the same substance.

13. Which process releases energy to the surroundings as it occurs?

A. Solid carbon dioxide sublimating
B. Ice melting into liquid water
C. Liquid water evaporating
D. Water vapor condensing into liquid water

14. At fixed pressure a pure solid is heated while solid and liquid both remain present at its melting point. What happens to its temperature during the change?

A. It stays at the melting point.
B. It immediately jumps to the boiling point.
C. It falls steadily as liquid forms.
D. It must increase at the same rate as before.

15. At higher elevation, water in an uncovered pot typically boils at a lower temperature. Why?

A. Water molecules become heavier with elevation.
B. A larger surrounding pressure makes the room absorb more heat.
C. Water vapor pressure reaches the lower surrounding pressure sooner as the pot warms.
D. Boiling begins only when the pot runs out of dissolved air.