Answer Key
Topic 3: States of Matter

Set 1: Multiple Choice Questions

1. What is the scientific word for what everything is made of?

   Answer: C) Matter

2. Which state of matter has particles that are packed very close together and arranged in order?

   Answer: A) Solid

3. What process occurs when a liquid is heated and turns into a gas?

   Answer: D) Evaporation

4. What is a substance in its simplest form, such as gold, called?

   Answer: C) Element

5. Which of the following describes a reversible, physical change?

   Answer: B) Melting ice

6. Why can powders sometimes be confused for liquids?

   Answer: C) They can be poured into a container

7. What happens to particles in a solid?

   Answer: C) They are always vibrating

8. What is formed when two or more elements are combined, such as hydrogen and oxygen making water?

   Answer: A) A compound

9. What is the reverse process of melting?

   Answer: C) Solidifying or freezing

10. What is created when plaster of Paris powder is mixed with water to make a hard cast for a broken bone?

    Answer: B) A chemical reaction

Set 2: True or False

11. The particles in a solid do not move or vibrate at all.

    Answer: False (They are always moving and vibrating, but cannot move around from place to place)

12. A chemical reaction occurs when particles are rearranged to make a new product.

    Answer: True

13. The particles in a gas have very small spaces between them.

    Answer: False (They have large spaces between them)

14. Condensation happens when the temperature is lowered and a gas turns back into a liquid.

    Answer: True

15. Digestion of food in our bodies is an example of a chemical reaction.

    Answer: True

16. Powders are crushed solids that have changed their state into liquids.

    Answer: False (They are crushed solids and have not changed their state)

17. Changes of state between solids, liquids, and gases are irreversible.

    Answer: False (They are physical changes and are reversible)

18. A single grain of sugar keeps its shape because it is a solid.

    Answer: True

19. Some solids need more heat than others to make them melt.

    Answer: True

20. Plastic is a useful product made from oil through a chemical reaction that cannot be reversed.

    Answer: True

Set 3: Fill in the Blanks

21. The smallest parts of a substance that are unique to that substance are called _____.

    Answer: particles

22. Scientists use a _____ model to help explain the differences between solids, liquids, and gases.

    Answer: particle

23. When temperature is increased, a solid will change into a liquid in a process called _____.

    Answer: melting

24. Chemical changes are different from physical changes because they cannot be reversed; we say the changes are _____.

    Answer: irreversible

25. A change of state from a liquid to a solid is called solidifying or _____.

    Answer: freezing

26. Water is a combination of hydrogen and oxygen, which means it is an example of a _____.

    Answer: compound

27. The particles in a _____ fill the shape of the container they are in and can move around each other.

    Answer: liquid

28. To reverse evaporation, the temperature needs to be lowered to cause _____.

    Answer: condensation

29. Five different types of _____ enquiry include research, fair testing, observing over time, identifying and classifying, and pattern seeking.

    Answer: scientific

30. In a solid, the particles are packed closely together and are arranged in a _____ way.

    Answer: regular

Set 4: Match the Term

31. The process that is the exact reverse of freezing.

    Answer: Melting

32. A type of matter where particles are arranged in a random way, cannot be squashed, and touch at least one other particle.

    Answer: Liquid

33. Substances that are made of only one type of element in its simplest form, like gold.

    Answer: Elements

34. A material, also known as gypsum, which forms a hard cast through a chemical reaction when mixed with water.

    Answer: Plaster of Paris

35. The state of matter where particles are the most spread out with large spaces between them.

    Answer: Gas

36. An action where you squeeze something to make it smaller or take up less space (which liquids and solids generally cannot do).

    Answer: Compress

37. A type of reaction that creates a new product and cannot be reversed back to its original state.

    Answer: Chemical reaction / Chemical change

38. The state of crushed solids, like sugar or sand, that can be poured into a container but still remain solids.

    Answer: Powder

39. The physical process where a gas is cooled and returns to its liquid state.

    Answer: Condensation

40. The overarching term for what metals, plastics, ceramics, glass, and fabrics are classified as.

    Answer: Materials

Set 5: Short Answer Questions

41. According to the text, what is the difference between an element and a compound?

    Answer: An element is a substance in its simplest form, while a compound is made from two or more elements joined together.

42. How are the particles in a liquid different from the particles in a solid?

    Answer: The particles in a liquid are not as close together, are arranged in a random way, and can move around each other, while particles in a solid are packed closely together in order and cannot move from place to place.

43. Give an example from the text that proves different solids melt at different rates or temperatures.

    Answer: If you melt butter in a metal pan, the butter will melt (turn to liquid), but the metal pan will not melt because it requires much more heat.

44. What must happen to the temperature of a liquid for it to turn into a gas, and what is this process called?

    Answer: The temperature must be increased (heated), and the process is called evaporation.

45. Why is a change of state (like ice melting) considered a physical change rather than a chemical change?

    Answer: Because it is a reversible change and the matter is not changed chemically into a new product.

46. What happens to the particles of substances when they go through a chemical reaction?

    Answer: The particles are rearranged to make a completely new product.

47. Why might a powder, like sugar, be easily confused with a liquid?

    Answer: Because powders can be poured into a container and appear to take its shape, similar to liquids.

48. Give two examples of chemical reactions mentioned in the text.

    Answer: Digesting food in our bodies, making a baking soda volcano, making plastic from milk, making a bath fizzer, or mixing plaster of Paris with water.

49. What is the main characteristic of an ”irreversible” change?

    Answer: The substances cannot be changed back to their original form because a new product has been made.

50. Based on the scientific enquiry investigating 'play slime', what questions were scientists trying to answer to classify its state of matter?

    Answer: They asked if it can be compressed, if its shape changes according to the container it is in, and if it always takes up the same amount of space.