

Post-Introduction Quiz **Answer Key**

Instructions: For each question, select one correct answer.

1. The development of new materials was an important factor in the rise of ancient civilizations.
 True
 False
2. A composite is the combination of two or more different materials to create a new material.
 True
 False
3. Composites are important contributions to our modern civilization's quality of life.
 True
 False
4. A cell phone screen is a composite.
 True
 False
5. All composites have these two things in common:
 Cement and gravel
 Plastic and epoxy adhesive
 Matrix and reinforcement
 Fiberglass and resin
 Wood and glue
6. In a composite material, the fibers (reinforcement) carry the majority of the loads and characterize the material's properties. The resin (matrix) helps to transfer loads between the fibers, prevents the fibers from buckling, and binds the materials together.
 True
 False
7. The continuous molding process whereby reinforcing fibers are saturated with a liquid polymer resin and then carefully formed and pulled through a heated die to form a part is called...
 Molding
 Saturation
 Poltrusion
 Composition
 None of the above
8. Carbon fiber consists of extremely thin fibers ranging from 0.005 to 0.010 mm in diameter. Thousands of these fibers are twisted together to form yarn that is weaved into a carbon fiber cloth.
 True
 False

Name: _____ Date: _____ Class: _____

9. Epoxy adhesives can be used to bond:

- Plastics
- Metals
- Glass
- Acrylics
- All of the above

10. Composites are used in:

- Planes and automobiles
- Sport equipment and toys
- Medical Instruments and prostheses
- Buildings and streets
- All of the above

11. Carbon fiber is very lightweight and has considerably lower density than steel, and when mixed with epoxy it creates a composite weaker than steel.

- True
- False

12. Carbon fiber patches + epoxy adhesives have been successfully used to repair cracked steel and concrete structures.

- True
- False

13. A shape-memory alloy is a combination of two or more metallic elements that ____ when heated:

- Changes its color
- Increases its electrical conductivity
- Recovers its original shape
- Becomes softer
- All of the above

14. Nitinol is a shape-memory alloy obtained by the combination of:

- Nitrogen and ethanol
- Nitrite and alcohol
- Nickel and titanium
- Nickel and gold
- None of the above

15. Nitinol has been successfully used in:

- Eyeglasses frames
- Dental braces
- Stents to open clotted arteries
- Muscle wires in robotics
- All of the above