**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

1. A composite is the combination of two or more different materials to create a new material.

🗹 True

❑ False

1. Composites are important contributions to our modern civilization’s quality of life.

🗹 True

❑ False

1. A cell phone screen is a composite.

🗹 True

❑ False

1. All composites have these two things in common:

❑ Cement and gravel

❑ Plastic and epoxy adhesive

🗹 Matrix and reinforcement

❑ Fiberglass and resin

❑ Wood and glue

1. 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

1. 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

1. 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

1. Epoxy adhesives can be used to bond:

❑ Plastics

❑ Metals

❑ Glass

❑ Acrylics

🗹 All of the above

1. Composites are used in:

❑ Planes and automobiles

❑ Sport equipment and toys

❑ Medical Instruments and prostheses

❑ Buildings and streets

🗹 All of the above

1. 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

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

🗹 True

❑ False

1. 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

1. 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

1. Nitinol has been successfully used in:

❑ Eyeglasses frames

❑ Dental braces

❑ Stents to open clotted arteries

❑ Muscle wires in robotics

🗹 All of the above