Materials Science Fundamentals

Materials Science · Answer Key · 8 Questions

1. Which naturally occurring mineral is classified as the hardest material on the Mohs hardness scale with a rating of 10?

A) Quartz
B) Corundum
C) Diamond
D) Topaz

2. Which alloy composed of nickel and titanium is known for its shape-memory property?

A) Nitinol
B) Solder
C) Invar
D) Electrum

3. Which chemical element serves as the primary semiconductor substrate for most modern integrated circuits?

A) Germanium
B) Silicon
C) Copper
D) Gallium

4. Which element is traditionally added to natural rubber during vulcanization to enhance its durability and elasticity?

A) Carbon
B) Sulfur
C) Chlorine
D) Nitrogen

5. What name is given to the expulsion of a magnetic field from a superconductor when it drops below its critical temperature?

A) Seebeck effect
B) Hall effect
C) Meissner effect
D) Piezoelectric effect

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6. Graphene consists of a single layer of carbon atoms arranged in which lattice structure?

A) Hexagonal
B) Cubic
C) Triangular
D) Square

7. What term describes the temperature range in which an amorphous material changes from a hard, glassy state to a rubbery state?

A) Melting point
B) Glass transition temperature
C) Curie point
D) Critical temperature

8. Which element must be added to iron at a minimum concentration of about 10.5% to create stainless steel?

A) Nickel
B) Titanium
C) Chromium
D) Zinc