Materials Science Essentials

Materials Science · Practice Test · 9 Questions

1. In metallic bonding, what term describes the behavior of valence electrons?

A) Locked in ionic bonds
B) Shared in covalent pairs
C) A 'sea' of delocalized electrons
D) Transferred permanently to non-metals

2. Bronze is an alloy traditionally composed of which two primary chemical elements?

A) Iron and Carbon
B) Copper and Tin
C) Zinc and Lead
D) Aluminium and Magnesium

3. Which type of polymer can be repeatedly melted, reshaped, and hardened by cooling?

A) Thermosetting polymer
B) Ceramic polymer
C) Thermoplastic polymer
D) Crystalline polymer

4. The Mohs scale is used to determine which specific property of a material?

A) Electrical conductivity
B) Scratch resistance
C) Melting point
D) Magnetic flux

5. In reinforced concrete, why is steel rebar added to the mixture?

A) To decrease the weight
B) To prevent chemical oxidation
C) To increase tensile strength
D) To lower the melting point

6. Nitinol, a 'shape memory alloy' used in medical stents, is primarily composed of which two metals?

A) Nickel and Titanium
B) Gold and Silver
C) Iron and Copper
D) Aluminium and Zinc

7. Which element is the primary semiconductor used in the manufacturing of modern microchips?

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

8. What is a common characteristic of most ceramic materials?

A) High ductility
B) High electrical conductivity
C) High melting points and brittleness
D) High flexibility

9. What is the name of the process where iron reacts with oxygen and moisture to form rust?

A) Polymerization
B) Oxidation
C) Galvanization
D) Distillation