

Materials Science Fundamentals

Materials Science · Answer Key · 18 Questions

1. Which property describes a material's ability to be hammered or rolled into thin sheets without breaking?

- A) Brittleness
- B) Malleability**
- C) Elasticity
- D) Hardness

2. Which of the following is classified as a composite material?

- A) Pure Gold
- B) Concrete**
- C) Copper wire
- D) Diamond

3. What is the primary characteristic of a ceramic material?

- A) High electrical conductivity
- B) High heat resistance and brittleness**
- C) Flexibility at room temperature
- D) Ability to be drawn into wires

4. Which metal is most commonly used in the production of beverage cans due to its low density and high corrosion resistance?

- A) Iron
- B) Lead
- C) Aluminium**
- D) Mercury

5. What occurs when a metal undergoes oxidation, commonly known as rusting?

- A) It becomes stronger
- B) It loses mass
- C) It reacts with oxygen to form a new compound**
- D) It changes into a plastic

6. Which material is an example of a synthetic polymer?

- A) Wood
- B) Cotton
- C) Nylon**
- D) Silk

7. What term refers to the resistance of a material to surface indentation or scratching?

A) Hardness

B) Density

C) Ductility

D) Lustre

8. Which of these is a property of metals that allows them to conduct electricity?

A) Presence of free electrons

B) High melting point

C) Non-crystalline structure

D) Transparency

9. Glass is typically made by melting which primary raw material at high temperatures?

A) Clay

B) Sand

C) Limestone

D) Graphite

10. Which material type is typically characterized by long, repeating molecular chains?

A) Metals

B) Polymers

C) Ceramics

D) Minerals

11. What is the main advantage of alloying steel with chromium to create stainless steel?

A) Increased weight

B) Improved resistance to corrosion

C) Greater magnetic strength

D) Decreased melting point

12. Which term describes the amount of mass per unit volume of a material?

A) Weight

B) Density

C) Volume

D) Hardness

13. Which of these materials is considered an electrical insulator?

- A) Copper
- B) Aluminium
- C) Rubber**
- D) Iron

14. What is the defining feature of a thermoplastic material?

- A) It decomposes when heated
- B) It can be melted and reshaped multiple times**
- C) It remains hard at any temperature
- D) It cannot be recycled

15. Which material is extracted from bauxite ore?

- A) Iron
- B) Aluminium**
- C) Copper
- D) Zinc

16. Which property describes the ability of a material to return to its original shape after being stretched or compressed?

- A) Elasticity**
- B) Plasticity
- C) Brittleness
- D) Conductivity

17. Which of these is a natural fibre?

- A) Polyester
- B) Acrylic
- C) Wool**
- D) Rayon

18. What is the name of the process used to increase the hardness of steel by heating and then rapidly cooling it?

- A) Quenching**
- B) Annealing
- C) Tempering
- D) Galvanizing