- 1. Which testing method involves applying a pulling force to a material until it breaks?
- a) Tensile test
- b) Compression test
- c) Shear test
- d) Bend test

Answer: a) Tensile test

Explanation: In a tensile test, a material specimen is subjected to a gradually increasing pulling force until it fractures. This test helps determine the material's mechanical properties such as yield strength, ultimate tensile strength, and elongation.

- 2. Which test is used to evaluate a material's resistance to being squeezed or crushed?
- a) Tensile test
- b) Compression test
- c) Shear test
- d) Bend test

Answer: b) Compression test

Explanation: Compression testing involves applying a compressive force to a material specimen to assess its compressive strength and deformation behavior under load.

- 3. In which test is a material subjected to a force that causes it to slide in opposite directions along parallel planes?
- a) Tensile test
- b) Compression test

- c) Shear test
- d) Bend test

Answer: c) Shear test

Explanation: Shear testing evaluates a material's shear strength and deformation characteristics when subjected to forces acting parallel to the plane of the material.

- 4. Which test assesses a material's ability to withstand bending or flexing without breaking?
- a) Tensile test
- b) Compression test
- c) Shear test
- d) Bend test

Answer: d) Bend test

Explanation: Bend testing involves applying a bending force to a material specimen to determine its flexibility, ductility, and resistance to fracture under bending loads.

- 5. What type of test measures a material's resistance to indentation or scratching?
- a) Tensile test
- b) Compression test
- c) Hardness test
- d) Bend test

Answer: c) Hardness test

Explanation: Hardness tests assess a material's resistance to deformation, indentation, or scratching, providing information about its strength and wear resistance.

- 6. Which test evaluates a material's ability to absorb energy under sudden impact?
- a) Tensile test
- b) Compression test
- c) Impact test
- d) Bend test

Answer: c) Impact test

Explanation: Impact testing involves subjecting a material specimen to a sudden force or impact to measure its toughness and ability to withstand sudden loading conditions.

- 7. What type of test examines a material's endurance limit under repeated loading cycles?
- a) Tensile test
- b) Compression test
- c) Fatigue test
- d) Bend test

Answer: c) Fatigue test

Explanation: Fatigue testing assesses a material's fatigue strength by subjecting it to repeated loading cycles to simulate real-world conditions and determine its endurance limit.

- 8. Which test measures a material's ability to be hardened by heat treatment?
- a) Tensile test
- b) Compression test
- c) Hardenability test
- d) Bend test

Answer: c) Hardenability test

Explanation: Hardenability testing evaluates a material's capacity to be hardened by heat treatment processes such as quenching, providing insights into its suitability for specific applications.

- 9. What analysis is conducted to determine the cause of a material's fracture?
- a) Tensile analysis
- b) Compression analysis
- c) Shear analysis
- d) Fracture analysis

Answer: d) Fracture analysis

Explanation: Fracture analysis investigates the characteristics and circumstances surrounding a material's fracture to determine the causes, which can include factors such as material defects, loading conditions, and environmental factors.

- 10. Which method is NOT a non-destructive testing (NDT) technique?
- a) Ultrasonic testing
- b) Radiographic testing
- c) Tensile testing
- d) Magnetic particle testing

Answer: c) Tensile testing

Explanation: Tensile testing is a destructive testing method where the material specimen is subjected to failure to assess its mechanical properties.

- 11. Which NDT method utilizes sound waves to detect internal flaws in materials?
- a) Ultrasonic testing
- b) Radiographic testing
- c) Eddy current testing
- d) Magnetic particle testing

Answer: a) Ultrasonic testing

Explanation: Ultrasonic testing involves sending high-frequency sound waves through a material to detect internal defects or discontinuities based on the reflections or changes in the sound wave pattern.

- 12. What property is typically evaluated using a Rockwell hardness test?
- a) Elastic modulus
- b) Yield strength
- c) Surface hardness
- d) Toughness

Answer: c) Surface hardness

Explanation: The Rockwell hardness test measures the indentation hardness of a material's surface, providing information about its resistance to indentation or scratching.

- 13. Which material property is NOT typically evaluated in a Charpy impact test?
- a) Ductility
- b) Toughness
- c) Brittleness

d) Hardness

Answer: d) Hardness

Explanation: The Charpy impact test primarily assesses a material's toughness by measuring

the energy absorbed by a specimen when it fractures under a standard impact load.

14. What type of material property is determined using a Brinell hardness test?

- a) Elastic modulus
- b) Yield strength
- c) Surface hardness
- d) Ductility

Answer: c) Surface hardness

Explanation: The Brinell hardness test evaluates a material's resistance to indentation by measuring the diameter of the impression left by a hardened steel or carbide ball under a known load.

15. Which alloying element is commonly added to steel to improve corrosion resistance?

- a) Aluminium
- b) Copper
- c) Manganese
- d) Chromium

Answer: d) Chromium

Explanation: Chromium is often added to steel to form a passive oxide layer on its surface,

enhancing its corrosion resistance properties.

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