

17 Multiple choice questions

1. the ability of a material to withstand permanent deformation without failure
 - a. weldability
 - b. matrix
 - c. pearlite
 - d. plasticity

2. a phase of carbon steel and cast iron consisting of ferrite and cementite formed into distinct alternating layers (or lamellae) on slow cooling from austenite; pearlite is a tough phase responsible for the mechanical properties of unhardened steel
 - a. tension
 - b. matrix
 - c. plasticity
 - d. pearlite

3. a surrounding substance within which something else originates, develops or is contained
 - a. shear
 - b. strain
 - c. matrix
 - d. steel

4. when one section of a body tends to slide over a neighbouring section
 - a. power
 - b. steel
 - c. shear
 - d. strain

5. the ratio of stress to strain within the elastic region of the stress-strain curve (prior to the yield point)
 - a. toughness
 - b. normal
 - c. tension
 - d. Young's modulus

6. the result of twisting forces produced in engine crankshafts while the engine is running; forces causing torsion produce torque or turning moments
 - a. strain
 - b. tension
 - c. torsion
 - d. normal

7. the ease with which a material is able to be welded
 - a. plasticity
 - b. pearlite
 - c. weldability
 - d. tension

8. most often associated with powder metallurgy, sintering involves heating compressed parts in a controlled-atmosphere furnace; the pressed powder particles fuse together (at temperatures below their melting point), forming metallurgic bonds
 - a. matrix
 - b. strain
 - c. sintering
 - d. steel

9. a metallic product whose principal element is iron and where the carbon content is not more than 2%
 - a. power
 - b. steel
 - c. shear
 - d. strain

10. the ratio of the applied load (L) to the instantaneous cross-sectional area (A)
 - a. strain
 - b. toughness
 - c. steel
 - d. true stress

11. the amount of deformation an object experiences compared to its original size
 - a. steel
 - b. shear
 - c. strain
 - d. torsion

12. the extent to which a material absorbs energy without fracture; the area under a stress-strain diagram is a measure of toughness
- power
 - torsion
 - true stress
 - toughness
13. a measure of work done over a period of time; power is measured in watts, where one watt is the power used to perform one joule of work in one second
- shear
 - steel
 - normal
 - power
14. a force applied at 90 degrees to a surface
- torsion
 - strain
 - normal
 - shear
15. the maximum stress a material can withstand before failing
- sintering
 - ultimate tensile strength (UTS)
 - kinetic energy
 - true stress
16. the capacity to do work due to a particle's motion
- toughness
 - sintering
 - plasticity
 - kinetic energy
17. a force tending to stretch or elongate something, a pulling force
- strain
 - torsion
 - tension
 - steel