

16 Multiple choice questions

1. the ability of a material to withstand shock loading (opposite to brittleness)
 - a. toughness
 - b. steel
 - c. voltage
 - d. polymer
2. a hard phase produced when steel is cooled from the hardening temperature at a speed greater than its critical cooling rate, martensite is an acicular (needle-like) phase when seen under microscopic examination
 - a. martensite
 - b. voltage
 - c. steel
 - d. pearlite
3. involves the movement of planes of atoms moving relative to each other
 - a. steel
 - b. slip
 - c. pearlite
 - d. voltage
4. a phase of carbon steel and cast iron consisting of ferrite and cementite formed into distinct layers (or lamellae) on slow cooling from austenite
 - a. pearlite
 - b. martensite
 - c. slip
 - d. polymer
5. a giant molecule based on carbon
 - a. voltage
 - b. vector
 - c. slip
 - d. polymer
6. the amount of energy required to move a small electric charge along a path
 - a. vector
 - b. slip
 - c. voltage
 - d. polymer

7. involves the use of a variety of rates of cooling to cause a steel to harden; media include water, brine and oil
 - a. tempering
 - b. pearlite
 - c. quenching
 - d. vector

8. reheating of a quenched steel to a sub-critical temperature in order to improve ductility and toughness
 - a. tempering
 - b. steel
 - c. quenching
 - d. vector

9. contains no, or minimal, iron
 - a. tempering
 - b. vector
 - c. polymer
 - d. non-ferrous

10. when three forces act on a body and the body is in a state of equilibrium, then the three forces must be concurrent, i.e. they will all intersect a common point
 - a. transformer
 - b. three force rule
 - c. work hardening
 - d. tempering

11. the result of a plastic or permanent deformation of the crystal structure
 - a. normalising
 - b. quenching
 - c. work hardening
 - d. tempering

12. the work or energy per unit charge needed to move an electron from one point to another; measured in volts
 - a. polymer
 - b. potential difference
 - c. non-ferrous
 - d. work hardening

13. reduce or increase the voltage of an alternating current
 - a. steel
 - b. tempering
 - c. transformer
 - d. polymer

14. when a quantity has a magnitude, direction and sense e.g. displacement, velocity, acceleration
 - a. steel
 - b. vector
 - c. voltage
 - d. polymer

15. an alloy of iron and up to 2% carbon often with other additions of other alloying elements such as manganese, silicon, chromium, nickel and molybdenum
 - a. polymer
 - b. vector
 - c. steel
 - d. slip

16. a heat treatment process for ferrous alloys involving heating the material above the upper critical temperature then cooling in still air, the objective being to enhance toughness by refining grain size
 - a. tempering
 - b. work hardening
 - c. quenching
 - d. normalising